



Perception Planning

Fullerton Cove Masterplan

TRANSPORT AND MOVEMENT ASSESSMENT

WGA242607

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Appendix A Modelled Traffic Volumes

Appendix B SIDRA Movement Summaries

1 INTRODUCTION

1.1 General

WGA has been engaged by Perception Planning on behalf of the applicant to prepare a Transport and Movement Assessment (TMA) report to accompany a Planning Proposal for the proposed rezoning and subsequent masterplan development broadly located at 10 Fullerton Cove Road, 21 Coxs Lane and 16 George Street (Lot 991 DP627179, Lot 1 DP1142113, Lot 201 DP39968, Lot 1910 DP557701, Lot 1 DP1006307, Lot 3 DP111519 and Lot 1 DP794575), Fullerton Cove.

1.2 Development Application History

A draft Planning Proposal was submitted to Port Stephens Council on 23 May 2024 seeking to gain approval to rezone the site from RU2 Rural Landscape to R1 General Residential to allow the development of the site.

Port Stephens Council subsequently requested that a Transport and Movement Assessment be prepared and outlined the following requirements to be considered:

- *Detail the approach, methodology and assumptions used in the assessment.*
- *Discuss anticipated traffic and transport implications of the proposal (existing conditions and future planned development).*
- *Detail transport infrastructure improvements (not engineering designs) required to accommodate the proposal, proposed funding and delivery arrangements (if relevant).*
- *The PSEARS contains further detail on the matters to be considered in the assessment.*
- *The planning proposal must be informed by the transport and movement assessment and demonstrate consistency with Local Planning Direction 5.1 Integrating Land Use and Transport.*

In correspondence dated 17 June 2024, Port Stephens Council requested that a “whole of precinct approach” be implemented to address the entirety of the development located to the north of Coxs Lane, also known as Precinct 1.

The following report has since been refined to focus on the following lots subject to the planning proposal as shown in Table 1.1.

Table 1.1: Summary of Planning Proposal

LOT	ADDRESS	EXISTING ZONE	PROPOSED ZONE
Lot 991 DP627179	16 George Street, Fullerton Cove	RU2 Rural Landscape	R2 Low Density Residential, R3 Medium Density Residential and C2 Environmental Conservation
Lot 201 DP 39968		RU2 Rural Landscape	C2 Environmental Conservation
Lot 1910 DP 557701	21 Coxs Lane, Fullerton Cove	RU2 Rural Landscape	R3 Medium Density Residential
Lot 1 DP 1006307		RU2 Rural Landscape	R3 Medium Density Residential and C2 Environmental Conservation
Lot 1 DP 1142113		RU2 Rural Landscape	
Lot 3 DP 111519	10 Fullerton Cove Road, Fullerton Cove	RU2 Rural Landscape	R2 Low Density Residential, R3 Medium Density Residential and C2 Environmental Conservation
Lot 1 DP 794575		RU2 Rural Landscape	

The Place Strategy Environmental Assessment Requirements (PSEARS) prepared by the Department of Planning, Housing and Infrastructure (DPHI) goes on to state that the Transport and Movement Assessment must also consider:

- *Suitability of the site access arrangements in terms of location and layout.*
- *Staging of the development.*
- *Hierarchy of streets.*
- *Public transport access requirements.*
- *Traffic generating aspects of the proposal.*
- *Trip containment.*
- *The likely future developments in the surrounding area that would impact the transport assessment.*
- *Active transport – walking and cycling network.*
- *The likely future transport infrastructure that would be generated by the development and link to the surrounding area.*
- *Traffic, transport and access impacts of the place strategy on the surrounding transport network.*
- *Approach to parking*
- *Sustainable transport use and mode share targets. In particular, active transport connections to social services (such as the existing school) and the supporting local centre.*

Therefore, the following Transport and Movement Assessment has been prepared to accompany the Planning Proposal and address the requirements outlined above in order to assess the likely traffic and parking characteristics of the proposal and its subsequent impact on the road network.

1.3 Documentation Referenced

While preparing this TMA report, the following information and documentation have been referenced:

- Fullerton Cove Place Strategy Draft Project Plan prepared by NSW Department of Planning and Environment dated November 2023.
- Urban Design Study for Fullerton Cove Town Centre Masterplan Rev B prepared by Shac dated 18 September 2024.
- Traffic volume surveys undertaken by Trans Traffic Surveys.
- Port Stephens Development Control Plan 2014.
- Port Stephens Local Environmental Plan 2013.
- Austroads Guide to Traffic Management:
 - Part 3: Transport Study and Analysis Methods.
 - Part 6: Intersections, Interchanges and Crossings Management.
 - Part 12: Integrated Transport Assessments for Developments.
- Transport for NSW Guide to Transport Impact Assessment.
- RTA Guide to Traffic Generating Developments 2002 (Version 2.2).
- RMS Technical Direction: Guide to Traffic Generating Developments Updated Traffic Surveys 2013 (TDT 2013-04a).
- Australian Standard Parking Facilities:
 - Part 1: Off-Street Parking (AS2890.1).
 - Part 2: Off-Street Commercial Vehicle Facilities (AS2890.2).
 - Part 5: On-Street Parking (AS2890.5).
 - Part 6: Off-Street Parking for People with Disabilities (AS2890.6).
- Port Stephens Council 0041 Geometric Road Design Development Design Specification.
- TfNSW Guidelines for Public Transport Capable Infrastructure in Greenfield Sites.
- Transport for NSW Traffic Volume Viewer.
- Nearmap aerial imagery and Google Streetview imagery, as required.

2 SITE CONTEXT

2.1 Subject Site

The subject site is generally located across 10 Fullerton Cove Road 21 Cocks Lane and 16 George Street (Lot 991 DP627179, Lot 1 DP1142113, Lot 201 DP39968, Lot 1910 DP557701, Lot 1 DP1006307, Lot 3 DP111519 and Lot 1 DP794575), Fullerton Cove.

For the purposes of this assessment the subject site has been considered in the context of Precinct 1. The subject site focuses on the proposed residential uses situated within the Precinct 1 development, with the location of the subject site in the context of the overall site and surrounding road network illustrated in Figure 2.1. The respective lot boundaries detailed within Figure 2.2.

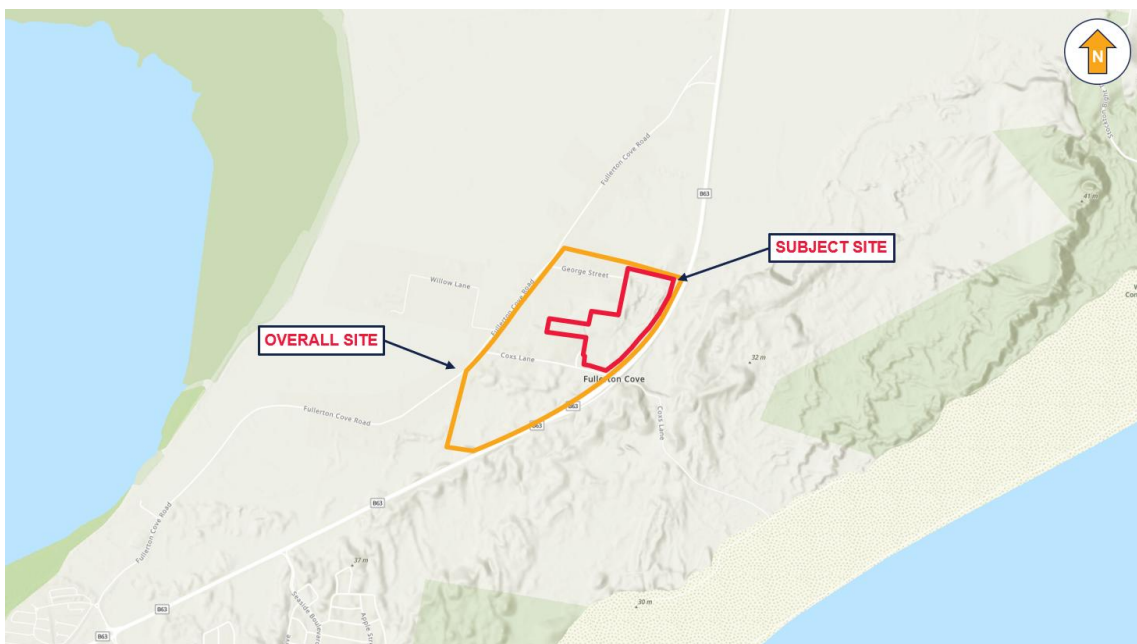


Figure 2.1: Subject Site and Surrounding Road Network

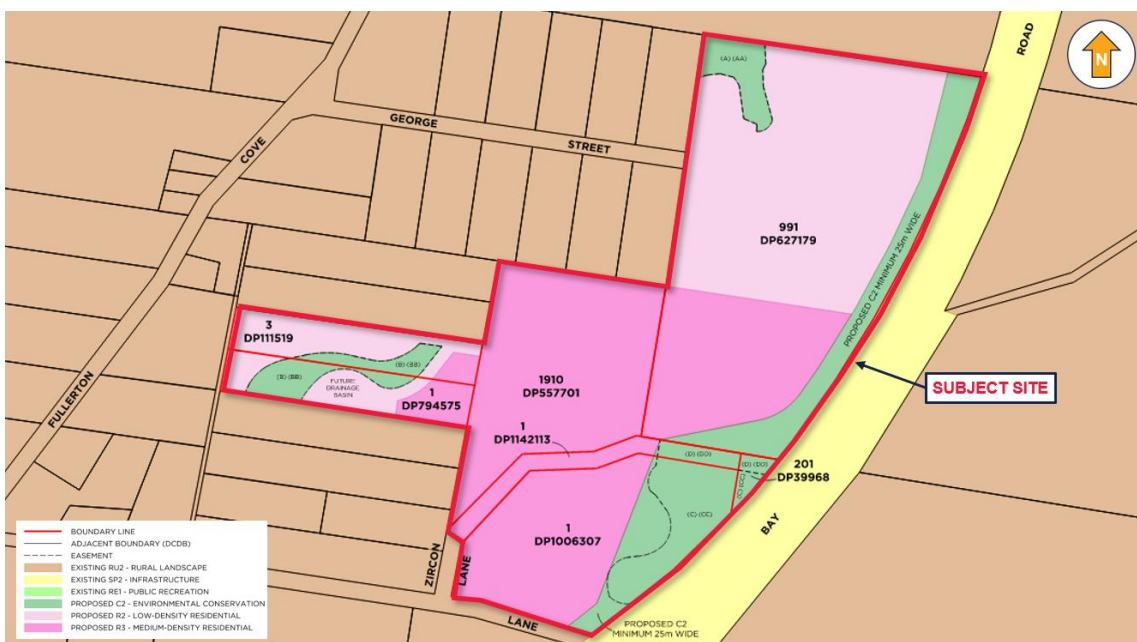


Figure 2.2: Subject Site Existing Lot Boundaries

2.2 Existing Land Uses

Land uses within the broader site generally include a mix of large lot rural residential properties and local businesses.

Outside of the existing residential properties, a significant portion of the site has been used as a sand quarry in the past. The site is highly disturbed and consists of cleared land and bushland, with the majority of the site being cleared for the extraction of heavy mineral sands.

2.3 Planning Zone

The subject site is located within a Rural Landscape (RU2) zone and is bordered by an Infrastructure (SP2) zone along the eastern boundary of the site. The location of the subject site in the context of the surrounding planning zones is shown in Figure 2.3.



Figure 2.3: Extract of Land Zoning Map

The Port Stephens Local Environmental Plan 2013 outlines the following objectives for a Rural Landscape (RU2) zone:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.
- To facilitate a variety of tourist and visitor-orientated land uses that complement and promote a stronger rural sector appropriate for the area.

2.4 Road Network

The broader subject site will be accessed via Nelson Bay Road with Coxs Lane and George Street proposed to ultimately provide local access to the precinct.

Both Coxs Lane and George Street are designated as Local Roads under Transport for NSW's (TfNSW) Road Network Classification. The road hierarchy of the surrounding network has been reproduced in Figure 2.4.



Figure 2.4: Surrounding Road Hierarchy

Nearby the site, Coxs Lane, Fullerton Cove Road and George Street are all designated local roads under the management of Port Stephens Council.

2.4.1 Nelson Bay Road

Nelson Bay Road is a state road managed by TfNSW. In the vicinity of the site, Nelson Bay Road is generally aligned in a north-south direction and provides connection between Newcastle in the south and Nelson Bay in the north.

Nelson Bay Road generally provides one (1) traffic lane in each direction with auxiliary lanes provided at key intersections across its approximate 11.5m wide sealed carriageway. Overtaking lanes are intermittently provided along the length of Nelson Bay Road.

In the proximity of the site, Nelson Bay Road provides 3.3m wide traffic lanes in each direction with an approximate 1.8m wide sealed shoulder. A posted speed limit of 90km/h applies to Nelson Bay Road in the vicinity of the site. Views of Nelson Bay Road proximate to the subject site are shown in Figure 2.5 and Figure 2.6.



Figure 2.5: Nelson Bay Road Facing North Towards Coxs Lane Exit



Figure 2.6: Nelson Bay Road Facing South

2.4.2 Coxs Lane

Coxs Lane is a local road managed by Port Stephens Council. Along the site frontage, Coxs Lane is generally aligned in an east-west direction along the southern perimeter of the site and runs from Fullerton Cove Road in the west to its termination approx. 300m east of Nelson Bay Road.

Coxs Lane accommodates two-way traffic across its approximate 6.5m wide sealed pavement width, with unsealed shoulders provided in the vicinity of the site. No on-street parking is provided along Coxs Lane. A posted speed limit of 50km/h in the along the site frontage.

Truck restrictions are currently in place along Coxs Lane and are limited to trucks less than 5 tonnes in mass, with a height clearance of 4.5m provided beneath the Nelson Bay Road overpass. Views of Coxs Lane in the vicinity of the site are shown in Figure 2.7 and Figure 2.8.



Figure 2.7: Coxs Lane Facing West from Nelson Bay Road Exit



Figure 2.8: Coxs Lane Facing East from Fullerton Cove Road

2.4.3 Fullerton Cove Road

Fullerton Cove Road is a local road managed by Port Stephens Council and is generally aligned in a north-south direction along the western perimeter of the site.

Fullerton Cove Road provides local access for residential areas to the north of Nelson Bay Road and runs between Seaside Boulevard in the south and Nelson Bay Road in the north.

Along the site frontage, Fullerton Cove Road provide one (1) traffic lane in each direction across its approximate 7.5m sealed pavement width with wide unsealed verges. A posted speed limit of 70km/h applies to Fullerton Cove Road, with views of the typical arrangement shown in Figure 2.9 and Figure 2.10.



Figure 2.9: Fullerton Cove Road Facing North Beyond Coxs Lane



Figure 2.10: Coxs Lane Facing South from George Street

2.4.4 George Street

George Street is a local road managed by Port Stephens Council and is generally aligned in an east-west direction and provides local access from Fullerton Cove.

Fullerton Cove is a No Through Road with a default speed limit of 50km/h and a pavement width of approximately 5.7m. Wide unsealed shoulders are provided along the length of George Street, with a view of the typical arrangement shown in Figure 2.11.



Figure 2.11: George Street Facing East from Fullerton Cove Road

2.5 Crash History

Recent crash statistics have been obtained from the Transport for NSW Centre for Road Safety Interactive Crash Statistics and includes data for a five (5) year period between 2019 and 2023. The crash history surrounding the subject site is shown in Figure 2.12.



Figure 2.12: Historical Crashes Surrounding the Subject Site

A review of the available data suggests that there have been no crashes on the network in close proximity to the subject site.

2.6 Sustainable Transport

2.6.1 Public Transport

The broader subject site is serviced by public transport, with a number of bus services providing access to nearby destinations such as Newcastle, Medowie and Raymond Terrace operating along Fullerton Cove Road in the vicinity of the site as shown in Figure 2.13.



Figure 2.13: Nearby Public Transport Services

The nearby public transport services are summarised in Table 2.1.

Table 2.1: Summary of Nearby Public Transport Services

SERVICE	ROUTE NO.	ROUTE	NEAREST STOP
Bus	136	Stockton to Raymond Terrace via Medowie	Fullerton Cove Road (opposite George Street)
	138	Newcastle Interchange to Lemon Tree Passage via Airport	

2.6.2 Walking & Cycling

There are limited facilities for pedestrians in the vicinity of the site with no formal, sealed pedestrian footpaths provided within the surrounding road network. It is however noted that the wide, grassed verges are suitable for accommodating pedestrians.

Similarly, no formal cyclist facilities are provided within close proximity of the site, with cyclists required to utilise the existing road network.

2.7 Journey to Work

To gain an understanding of the existing travel behaviours in the areas surrounding the subject site, 2021 Journey to Work (JTW) Census data has been analysed for the suburbs of Fullerton Cove, Singleton, Fern Bay and Williamtown.

The mode share for residents living in the area and travelling to work is summarised in Table 2.2 and illustrated in Figure 2.14.

Table 2.2: 2021 Census – Journey to Work Data

SUBURB	PUBLIC TRANSPORT	VEHICLE	ACTIVE TRANSPORT
Fullerton Cove	0%	96%	4%
Singleton	1%	94%	5%
Fern Bay	1%	98%	1%
Williamtown	0%	92%	8%
TOTAL	1%	95%	4%

Surrounding Suburb Transport Mode Split

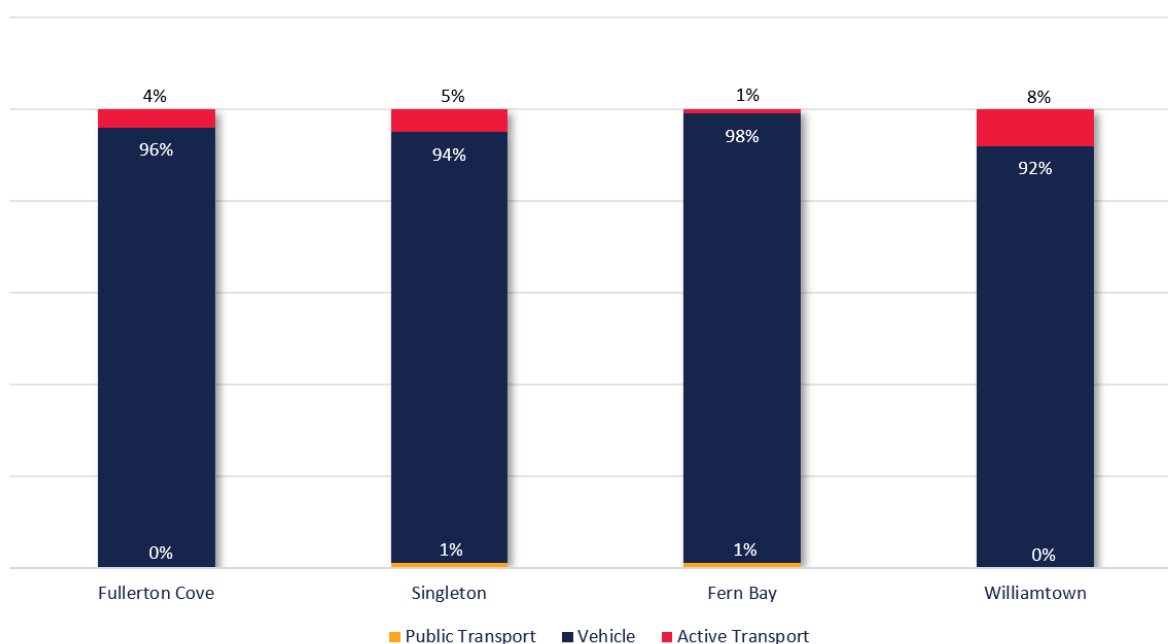


Figure 2.14: Summary of Journey to Work Data (2021)

3 PROPOSED DEVELOPMENT

3.1 General

The broader proposal seeks to rezone the subject site in order to permit the masterplanned Fullerton Cove development and is to comprise a combination of detached and medium density dwellings.

The proposed masterplan development is proposed to be delivered under a staged approach with the subject site (Precinct 1) shown in Figure 3.1.



Figure 3.1: Fullerton Cove Masterplan Precincts

The specific land uses and yield across the overall site will be the subject to future Development Applications. However, in order to inform the following assessment of the subject site within Precinct 1, the following land uses identified in the indicative masterplan have been considered:

- Residential Precinct comprising:
 - 92 Low Density Dwellings.
 - 125 Low Density Townhouses.
 - 300 Medium Density and Duplex Residences.

An overview of the indicative development is shown in Figure 3.2, with a summary of the potential development yields within the masterplanned development detailed within Table 3.1.



Figure 3.2: Excerpt of Staged Masterplan

Table 3.1: Summary of Proposed Residential Yield

DWELLING TYPE	TOTAL YIELD	INDICATIVE NO. OF BEDROOMS			
		1 BEDROOM	2 BEDROOM	3 BEDROOM	4 BEDROOM
Low Density Dwellings	92 dwellings	-	-	46	46
Low Density Townhouses	125 dwellings	-	-	62	63
Medium Density and Duplex Residences	300 dwellings	90	150	45	15

It is noted that the yields presented in Table 3.1 are preliminary only and subject to change.

3.2 Access Arrangements

The staged masterplan identifies an unsignalised roundabout intersection is intended to provide convenient access to the site from the surrounding road network.

An overview of the access arrangements is shown in Figure 3.3.



Figure 3.3: Proposed Site Access Arrangements

4 CAR PARKING CONSIDERATIONS

The following section provides an assessment and associated commentary of the likely car parking requirements anticipated to be generated by the proposal based on the indicative yields outlined within Section 3.1 only.

The preliminary car parking supply likely to be required by the proposal has been determined by adopting the following requirements outlined within the Port Stephens Development Control Plan 2014 (DCP).

4.1 Car Parking Requirements

4.1.1 Port Stephens Development Control Plan

Figure BU of Section B8 of the Port Stephens DCP specifies the requirements relating to the provision of car parking spaces across a number of land uses.

Table 4.1 has been prepared to detail the assessed land use relevant to the components proposed as part of Precinct 1 of the proposal.

Table 4.1: Applicable Car Parking Rates – Port Stephens DCP

COMPONENT	ASSESSED LAND USE
Low Density & Townhouses Residences	Dwelling house, dual occupancy and semi-detached dwellings.
Medium Density & Duplex Residences	Residential flat buildings, attached dwellings, multi-dwelling housing and shop-top housing.

The applicable car parking requirements based on the rates prescribed within Figure BU of the Port Stephens DCP have been outlined in Table 4.2.

Table 4.2: Indicative Masterplan Car Parking Requirements – Port Stephens DCP

USE	SIZE / NO.	PARKING RATE	CAR PARKING REQUIREMENT
Low Density & Townhouses Residences	217 ¹ dwellings	1 car space for one and two bedroom dwellings. 2 car spaces for three > bedroom dwellings.	434 spaces
Medium Density & Duplex Residences	300 ² dwellings	1 car space for one and two bedroom dwellings. 2 car spaces for three > bedroom dwellings. 1 visitor space for every three dwellings.	460 spaces ³
TOTAL			894 spaces

¹ Assumed to comprise three bedroom and four bedroom dwellings

² Assumed to comprise 240 one or two bedroom dwellings and 60 three bedroom dwellings

³ Including 100 visitor spaces

Application of the car parking rates outlined in Figure BU results in a requirement to provide 894 parking spaces across the subject site within Precinct 1 of the staged masterplan development.

4.2 Recommended Parking Provision

Due to the limited public transport services currently servicing Fullerton Cove and the somewhat isolated nature of the subject site, it is recommended to provide parking in line with the requirements outlined within the Port Stephens Development Control Plan.

Following the realisation of the full masterplan development, it is recommended to adopt a combined parking approach in which public car parking areas can be consolidated to accommodate shared parking demands across a number of uses.

For example, various uses may generate peak parking demands at differing times. Therefore, they may be able to utilise a combined parking area and reduce the overall provision of parking provided within the broader site.

Lastly, to encourage sustainable forms of transport such as walking and cycling as an alternative to private car trips within the site, it is recommended to provide a comprehensive network of footpaths, shared paths and on-road bicycle lanes to provide convenient access to destinations within the site.

5 TRAFFIC CONSIDERATIONS

5.1 Existing Traffic Conditions

To gain an understanding of the prevailing traffic conditions throughout the surrounding area, WGA commissioned turning movement count surveys at key intersections across a typical weekday and weekend period at the following intersections:

1. Fullerton Cove Road / Coxs Lane.
2. Fullerton Cove Road / Nelson Bay Road.
3. Nelson Bay Road (on-ramp) / Coxs Lane.
4. Nelson Bay Road (off-ramp) / Coxs Lane.

The surveyed intersections and their proximity to the subject site are illustrated in Figure 5.1.

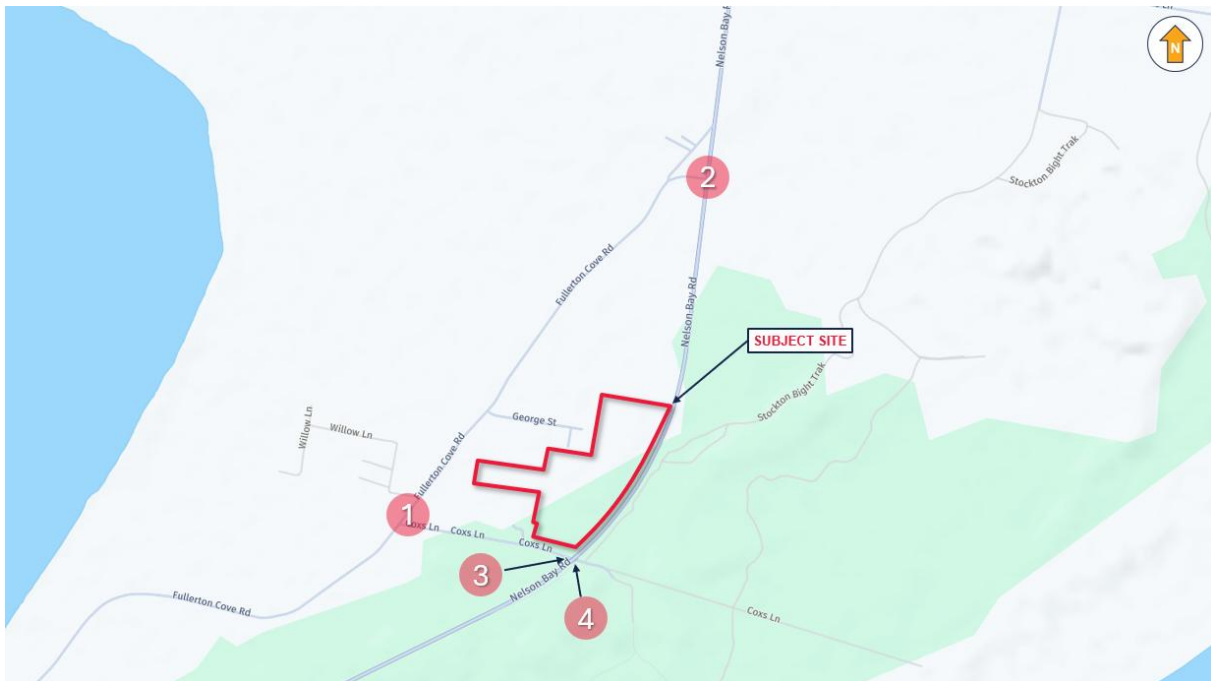


Figure 5.1: Traffic Volume Survey Locations

A review of the surveyed traffic volumes suggests that the surrounding road network peaks at the following times across a typical weeklong period:

- **Weekday AM Peak:** 7:45am – 8:45am.
- **Weekday PM Peak:** 4:30pm – 5:30pm.
- **Weekend Peak:** 11:00am – 12:00pm.

The surveyed weekday and weekend peak hour volumes have been illustrated in Figure 5.2 and Figure 5.3, respectively.

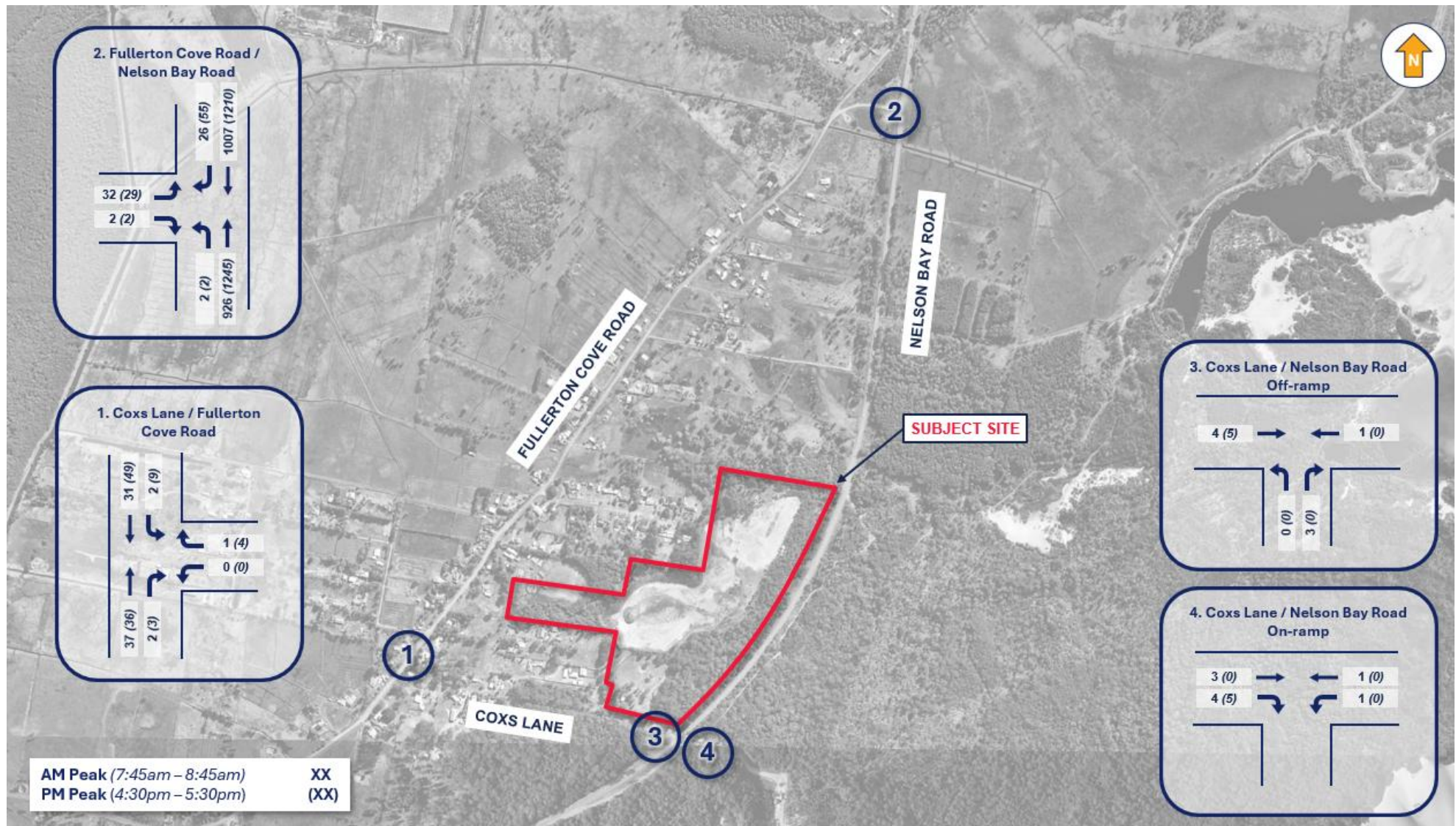


Figure 5.2: Existing Weekday Traffic Volumes – Wednesday 11 December 2024

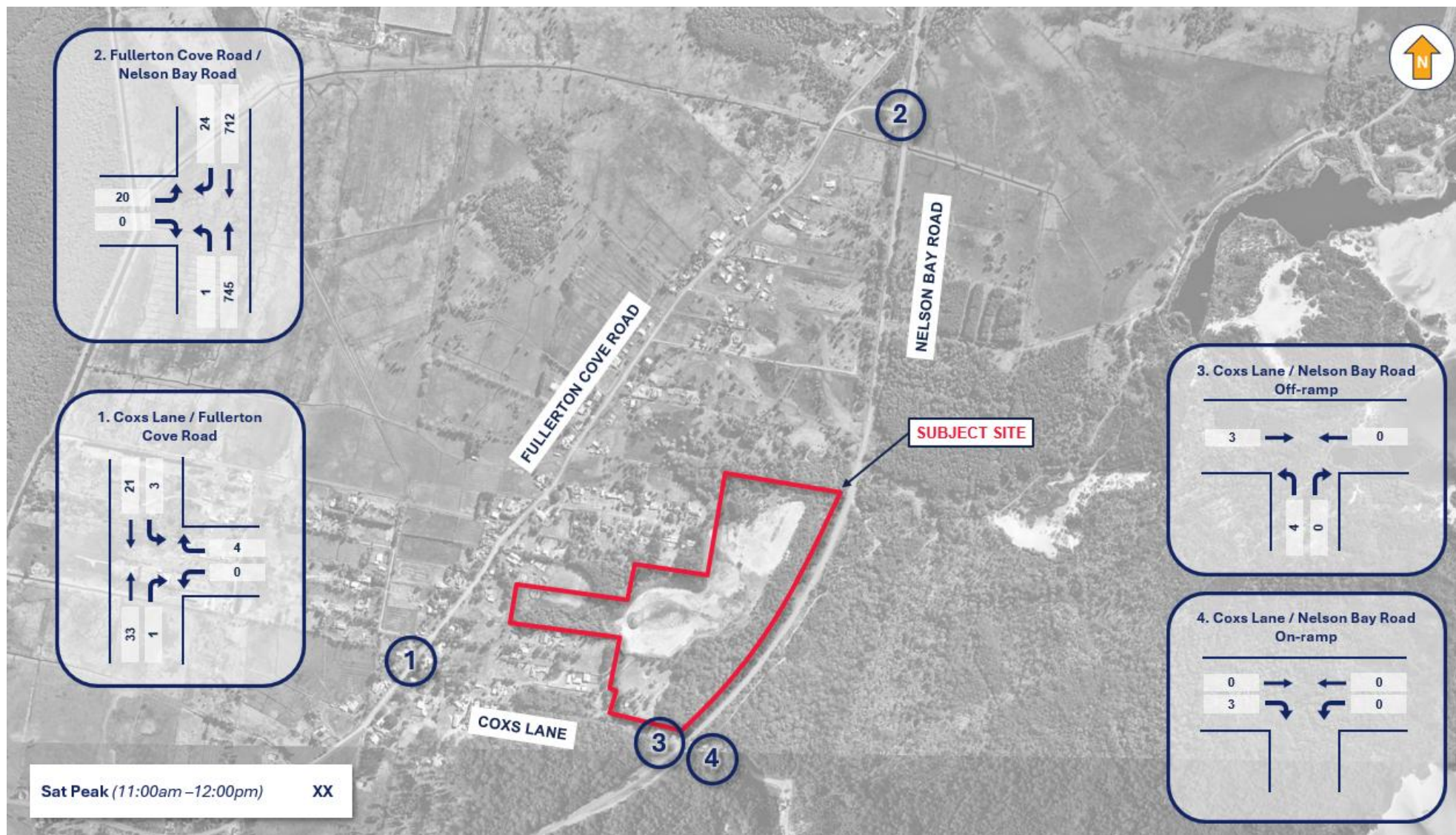


Figure 5.3: Existing Weekend Traffic Volumes - Saturday 7 December 2024

5.2 Historical Traffic Growth

To determine the prevailing background traffic growth across the surrounding network, historical traffic volume data has been obtained from Transport for NSW and compared against the surveyed traffic volumes outlined in Section 5.1.

Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management states that peak hour volumes typically equate to 8 to 10% of the Annual Average Daily Traffic (AADT) volumes for urban situations and 11 to 16% for rural situations.

With consideration of the location of the subject site in the context of the surrounding network and land uses, the peak hour periods have therefore been taken to be 12% of the AADT values obtained from the TfNSW Traffic Volume Viewer.

A comparison between the historical 2010 traffic volumes and the surveyed volumes obtained in December 2024 are summarised in Table 4.1.

Table 5.1: Nelson Bay Road – Background Traffic Growth

YEAR	AM PEAK	PM PEAK
2010	1,422 vph	1,422 vph
2024	2,178 vph	2,791 vph
Peak Period Growth Rate	+ 3.09%	+ 4.94%
Average Growth Rate	+ 4.01%	

5.3 Base Traffic Volumes

To gain an understanding of the anticipated future traffic volumes, the prevailing growth rate across the surrounding network determined in Section 5.2 has been applied to the surveyed traffic volumes in accordance with *Austroads’ Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments*.

The following factors have been used to determine the future base traffic volumes (pre-development):

- Applied compounding growth rate: 4.01%.
- Year of development completion: 2037.
 - Based on the following assumptions:
 - Construction to commence 2030.
 - Total number of dwellings: 517 approx.
 - Rate of construction: 75 dwellings per year.
- Design period: 10 years.
- Assessed design year: 2047.

With consideration of the above factors, the anticipated future traffic volumes (existing traffic volumes plus anticipated background growth across the network) across the AM and PM peak periods (pre-development) is shown in Figure 5.4.



Figure 5.4: Anticipated 2047 Base AM and PM Peak Period Traffic Volumes

5.4 Anticipated Traffic Generation

5.4.1 General

To assess the potential traffic generation associated with the proposed rezoning, the *RTA Guide to Traffic Generating Developments Issue 2.2 (October 2002)* and subsequent *TfNSW Guide to Transport Impact Assessment* have been referenced.

The RTA Guide and associated updates are the widely accepted standard that is used to determine the traffic generation associated with a range of land uses. It is also acknowledged in Part 12 of *Austroads Guide to Traffic Management* as the most comprehensive Australian reference on traffic generation.

A number of factors can influence travel behaviour, including (but not limited to):

- Distance to public transport services.
- Distance to and quality of surrounding active transport networks
- Distance to other destinations, such as schools, retail, etc.
- Type of road access.

These characteristics will affect the total number of trips generated for a given development. Therefore, with consideration of the above factors, the various uses contemplated as part of the masterplanned proposal have been assessed as follows:

5.4.2 Residential

Low Density Dwellings

Low density residential areas are defined as areas where the majority of dwellings are on separate lots. For the purposes of this assessment, duplexes have also assumed to be low density generating dwellings in line with the guidance outlined within the *Guide to Transport Impact Assessment*.

The following rates have been used to determine the likely traffic generation rate associated with the low density residential component:

- **Weekday Periods:**
 - AM Peak Hour Traffic Generation: 0.68 trips/dwelling.
 - PM Peak Hour Traffic Generation: 0.77 trips/dwelling.
 - Daily Traffic Generation: 8.12 trips/dwelling.
- **Weekend Periods:**
 - Peak Hour Traffic Generation: 0.68 trips/dwelling.
 - Daily Traffic Generation: 5.28 trips/dwelling.

It is noted that the traffic generation rates outlined above do not include trips internal to the site, including trips to local shops, schools, childcare centres, recreational venues, etc.

Medium Density Dwellings

The *Guide to Transport Impact Assessment* outlines the following traffic generation rates associated with medium density dwellings and has been applied to the indicative medium density development yield:

- **AM Peak Hour Traffic Generation:** 0.39 trips/dwelling.
- **PM Peak Hour Traffic Generation:** 0.37 trips/dwelling.
- **Daily Traffic Generation:** 2.72 trips/dwelling.

5.5 Anticipated Traffic Distribution

5.5.1 General

To determine the likely future traffic distribution, the existing traffic volumes have been reviewed at the intersection of Fullerton Cove Road / Nelson Bay Road, with a summary of the existing traffic volumes and the resultant distribution shown in Table 5.2.

Table 5.2: Existing Traffic Distribution

DIRECTION	TRAFFIC VOLUMES		DISTRIBUTION	
	AM PEAK	PM PEAK	AM PEAK	PM PEAK
Northbound	95 vph	120 vph	73%	69%
Southbound	35 vph	53 vph	27%	31%

It is assumed that site generated traffic movements would exhibit the same distribution outlined in Table 5.2 when entering / exiting the site.

Furthermore, the directional distribution and assignment of traffic generated by the proposal is expected to be primarily influenced by the configuration of the road network, with the following assumptions adopted with regards to the origin and destination of site generated movements:

- Northbound movements will primarily exit to Fullerton Cove Road before turning left at Nelson Bay Road.
- Southbound movements will access Nelson Bay Road from either Coxs Lane or Fullerton Cove Road, depending on their proximity to the relevant access point.

5.5.2 Residential

For the purposes of this assessment, the following direction splits have been adopted for the residential component of the proposal:

	Inbound:	Outbound:
AM Peak:	30%	70%
PM Peak:	60%	40%

5.6 Site Generated Traffic Volumes

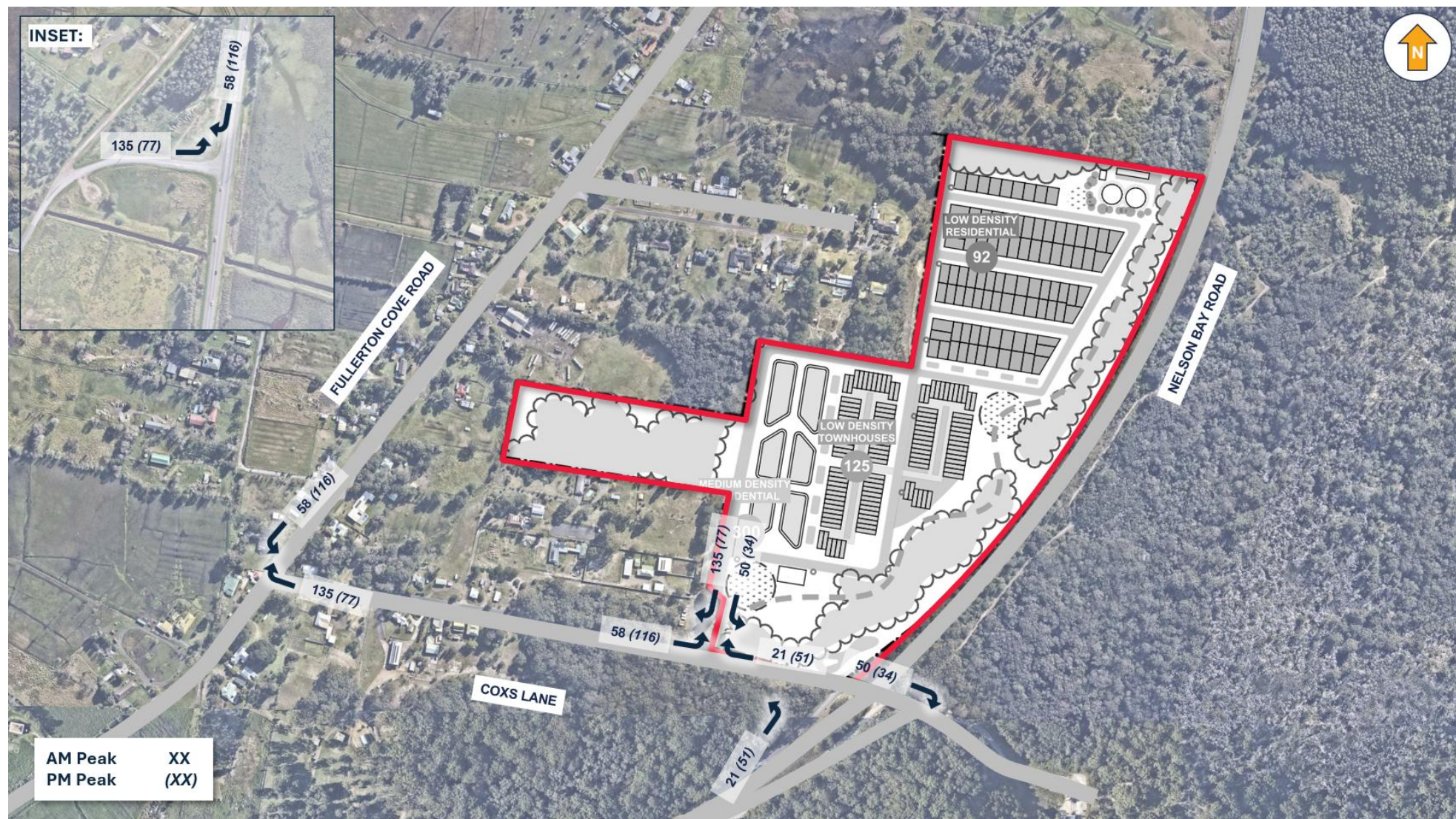
Based on the traffic generation rates summarised in Section 5.2, it is anticipated that the subject site will generate 236 vehicle movements per hour during the morning commuter peak, and 251 movements during the evening commuter peak.

A summary of the traffic generation calculations is shown in Table 5.3 and illustrated in Figure 5.5.

Table 5.3: Summary of Site Generated Traffic Volumes

USE	NO.	TRIP GENERATION		
		AM PEAK	PM PEAK	DAILY
Low Density Dwellings ¹	217 dwellings	148 vph	167 vph	1,762 vpd
Medium Density Dwellings	300 dwellings	117 vph	111 vph	816 vpd
TOTAL		265 vph	278 vph	2,578 vpd

¹ Includes townhouse dwellings



5.7 Post Development Traffic Conditions

5.7.1 General

WGA has undertaken an assessment of both the projected 2047 Base and Post Development conditions of the proposed site access intersections and surrounding road network using SIDRA Intersection 9.1 modelling software.

SIDRA Intersection 9.1 is a computer-based modelling tool that allows for the capacity of an intersection or a number of intersections to be analysed in terms of a range of parameters, as described below.

The most commonly used measure of intersection performance is Degree of Saturation (D.o.S), which is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Various degrees of saturation and their rating are shown in Table 5.4.

Table 5.4: Ratings of Degree of Saturation

DEGREE OF SATURATION (D.O.S)	RATING
Up to 0.6	Excellent
0.6 to 0.7	Very Good
0.7 to 0.8	Good
0.8 to 0.9	Fair
0.9 to 1.0	Poor
Above 1.0	Very Poor

It is considered acceptable for some critical movements in an intersection to operate with a D.o.S up to 0.95 during peak periods, reflecting actual conditions in a significant proportion of suburban signalised intersections. Beyond a D.o.S of 0.95 queuing and delays begin to increase disproportionately.

Additionally, *Austrroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods* refers to target ‘practical degrees of saturation’ for a number of intersection configurations, as follows:

- Signals: 0.90
- Roundabouts: 0.85
- Unsignalised Intersections: 0.80

95th Percentile (95%ile) Queue represents that maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour.

Average Delay is the delay time, in seconds, which can be expected over all vehicles making a particular movement in the peak hour.

The proposed site access intersections and key existing intersections surrounding the site have been modelled in SIDRA to determine their likely operation under the base 2047 traffic conditions (no development) and potential operation when accounting for the anticipated traffic movements generated by the proposal.

The assessed 2047 Post Development traffic volumes outlined in Figure 5.6, with a summary of the SIDRA outputs included in Appendix B.

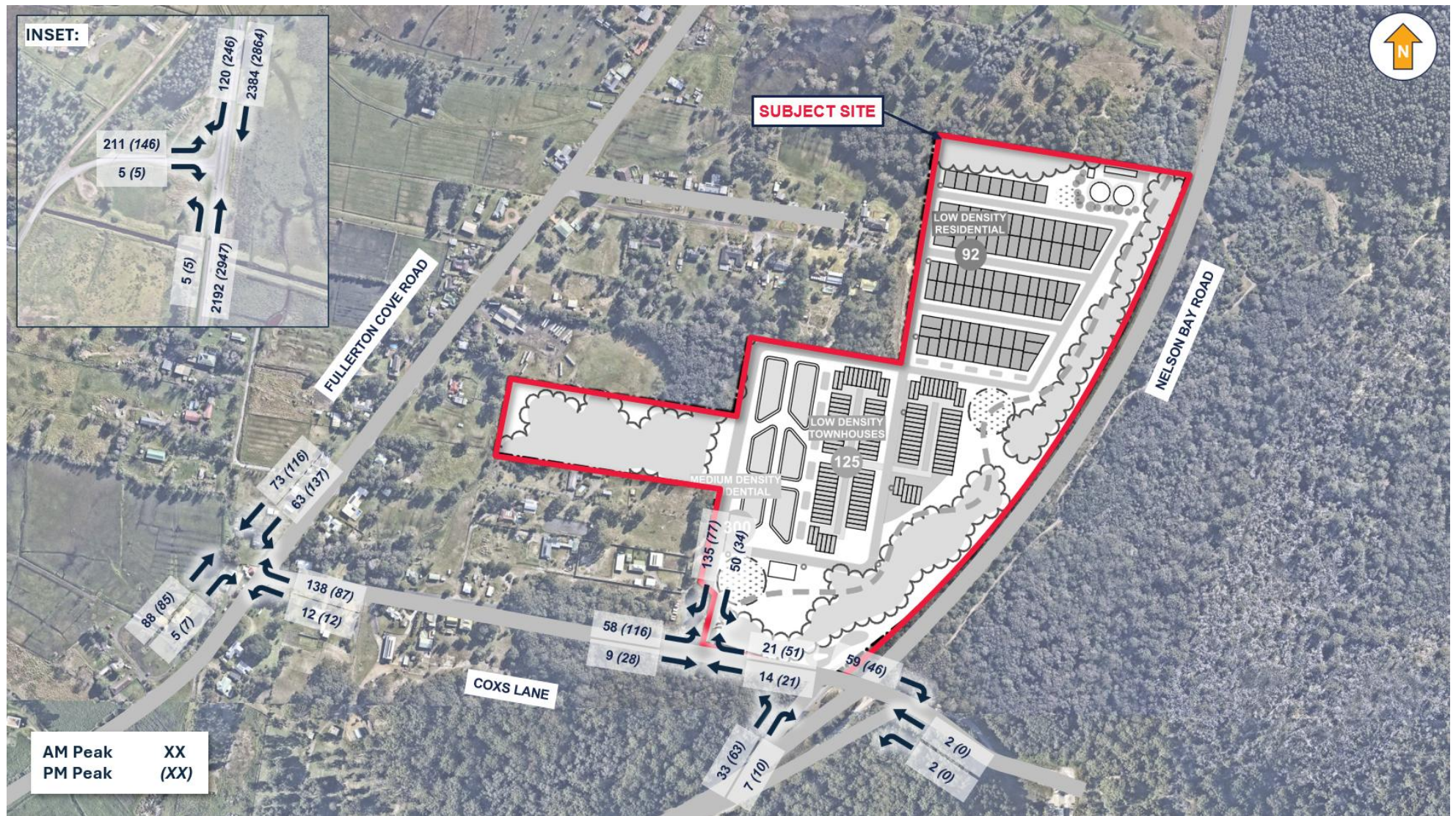


Figure 5.6: Anticipated 2047 Post Development Traffic Volumes

5.7.2 Nelson Bay Road Interchange (On Ramp & Off Ramp)

The existing Nelson Bay Road off and on ramps to Coxs Lane are considered to provide primary access to the broader site from the south (e.g. Newcastle) and have been modelled as a networked intersection as shown in Figure 5.7.



Figure 5.7: Existing Nelson Bay Road Interchange and Modelled Arrangement

Table 5.5 and Table 5.6 detail the performance of the existing interchange arrangement under the anticipated 2047 future conditions (no development), and the projected post-development conditions across the morning and afternoon peaks, respectively.

Table 5.5: SIDRA Movement Summary – Nelson Bay Road Interchange (AM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Nelson Bay Road Off Ramp (S)	0.01	7	0	0.03	8	0
Coxs Lane (E)	0.00	2	0	0.00	2	0
Coxs Lane (W)	0.01	2	0	0.04	4	1

Table 5.6: SIDRA Movement Summary – Nelson Bay Road Interchange (PM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Nelson Bay Road Off Ramp (S)	0.01	8	0	0.04	8	0
Coxs Lane (E)	0.00	2	0	0.00	2	0
Coxs Lane (W)	0.01	4	0	0.03	4	0

5.7.3 Fullerton Cove Road / Coxs Lane Unsignalised Intersection

The existing unsignalised intersection of Fullerton Cove Road and Coxs Lane at the south-west corner of the site has been assessed to determine the likely future operation when accounting for the expected traffic volumes under the 2047 post development conditions.

The existing intersection arrangement is shown against the modelled arrangement in Figure 5.8.



Figure 5.8: Existing Fullerton Cove Road / Coxs Lane Intersection and Modelled Arrangement

Table 5.7 and Table 5.8 detail the performance of the existing intersection arrangement under the anticipated 2047 future conditions (no development) and the projected post-development conditions for the AM and PM peaks, respectively.

Table 5.7: SIDRA Movement Summary – Fullerton Cove Road / Coxs Lane (AM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Fullerton Cove Road (S)	0.05	0	0	0.05	0	0
Coxs Lane (E)	0.01	5	0	0.15	5	4
Fullerton Cove Road (N)	0.04	0	0	0.08	3	0

Table 5.8: SIDRA Movement Summary – Fullerton Cove Road / Coxs Lane (PM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Fullerton Cove Road (S)	0.05	1	0	0.05	1	0
Coxs Lane (E)	0.02	5	1	0.10	6	3
Fullerton Cove Road (N)	0.08	1	0	0.14	4	0

5.7.4 Fullerton Cove Road / Nelson Bay Road Unsignalised Intersection

The existing traffic volumes outlined in Section 5.1 suggest that the unsignalised intersection of Fullerton Cove Road and Nelson Bay Road provide the primary access to the area surrounding the site, particularly for movements to/from the north of the subject site.

An overview of the existing intersection arrangement is shown against the modelled arrangement in Figure 5.7.

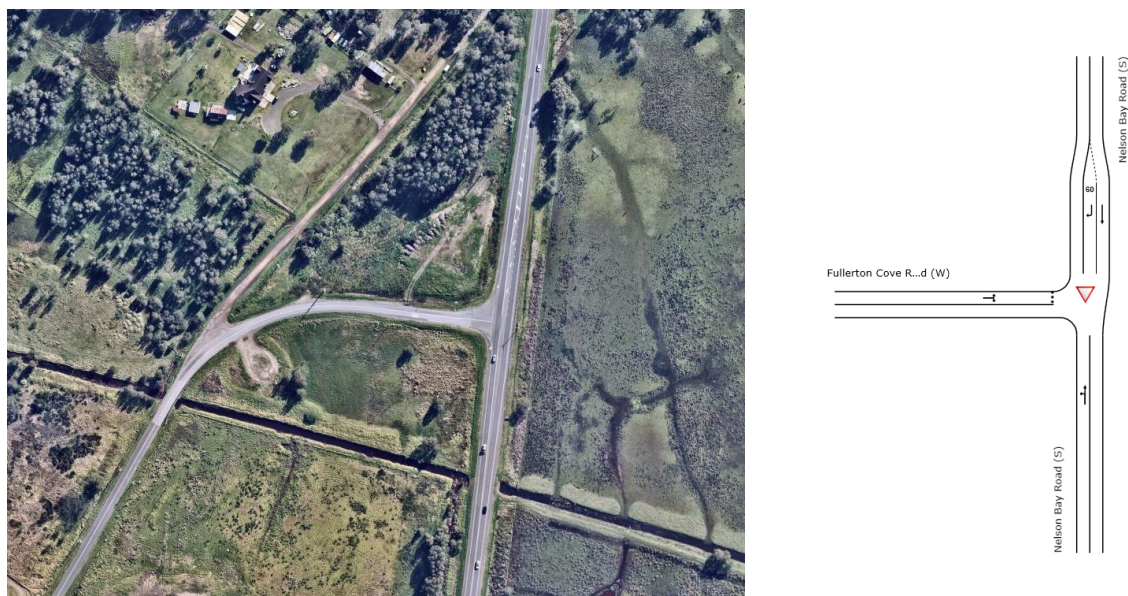


Figure 5.9: Existing Nelson Bay Road / Fullerton Cove Road Intersection and Modelled Arrangement

Table 5.9 and Table 5.10 details the performance of the existing intersection arrangement under the anticipated 2047 future conditions (no development) and the projected post-development conditions for the AM and PM peaks, respectively.

Table 5.9: SIDRA Movement Summary – Fullerton Cove Road / Nelson Bay Road (AM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Nelson Bay Road (S)	> 1.00	-	-	> 1.00	-	-
Nelson Bay Road (N)	> 1.00	-	-	> 1.00	-	-
Fullerton Cove Road (W)	> 1.00	-	-	> 1.00	-	-

Table 5.10: SIDRA Movement Summary – Fullerton Cove Road / Nelson Bay Road (PM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Nelson Bay Road (S)	> 1.00	-	-	> 1.00	-	-
Nelson Bay Road (N)	> 1.00	-	-	> 1.00	-	-
Fullerton Cove Road (W)	> 1.00	-	-	> 1.00	-	-

The results outlined in Table 5.9 and Table 5.10 suggest that due to the significantly increase northbound and southbound traffic volumes along Nelson Bay Road under the projected 2047 future scenario, turning movements to / from Fullerton Cove Road will not have sufficient opportunity to complete the required turning movement, resulting in considerable queuing and delays.

It is noted that the capacity of the unsignalised intersection of Nelson Bay Road and Fullerton Cove Road intersection is expected to be exceeded independent of the proposal, with a potential future intersection arrangement discussed in Section 6.

5.7.5 Fullerton Cove Road / George Street Unsignalised Intersection

The existing unsignalised intersection of Fullerton Cove Road and George Street at the western boundary of the site has been assessed to determine the likely future operation when accounting for the expected traffic volumes under the 2047 post development conditions.

The existing intersection arrangement is shown against the modelled arrangement in Figure 5.10.



Figure 5.10: Existing Fullerton Cove Road / Cocks Lane Intersection and Modelled Arrangement

Table 5.11 and Table 5.12 details the performance of the existing intersection arrangement under the anticipated 2047 future conditions (no development) and the projected post-development conditions, across the AM and PM peaks, respectively.

Table 5.11: SIDRA Movement Summary – Fullerton Cove Road / George Street (AM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Fullerton Cove Road (S)	0.05	0	0	0.13	0	0
George Street (E)	0.02	5	1	0.02	6	1
Fullerton Cove Road (N)	0.04	0	0	0.08	0	0

Table 5.12: SIDRA Movement Summary – Fullerton Cove Road / George Street (PM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Fullerton Cove Road (S)	0.05	0	0	0.10	0	0
George Street (E)	0.02	5	1	0.02	5	1
Fullerton Cove Road (N)	0.08	0	0	0.08	0	0

5.7.6 Eastern Site Access Roundabout

The proposed eastern site access has been modelled as a compact roundabout intersection providing one (1) traffic lane in each direction as shown in Figure 5.11.

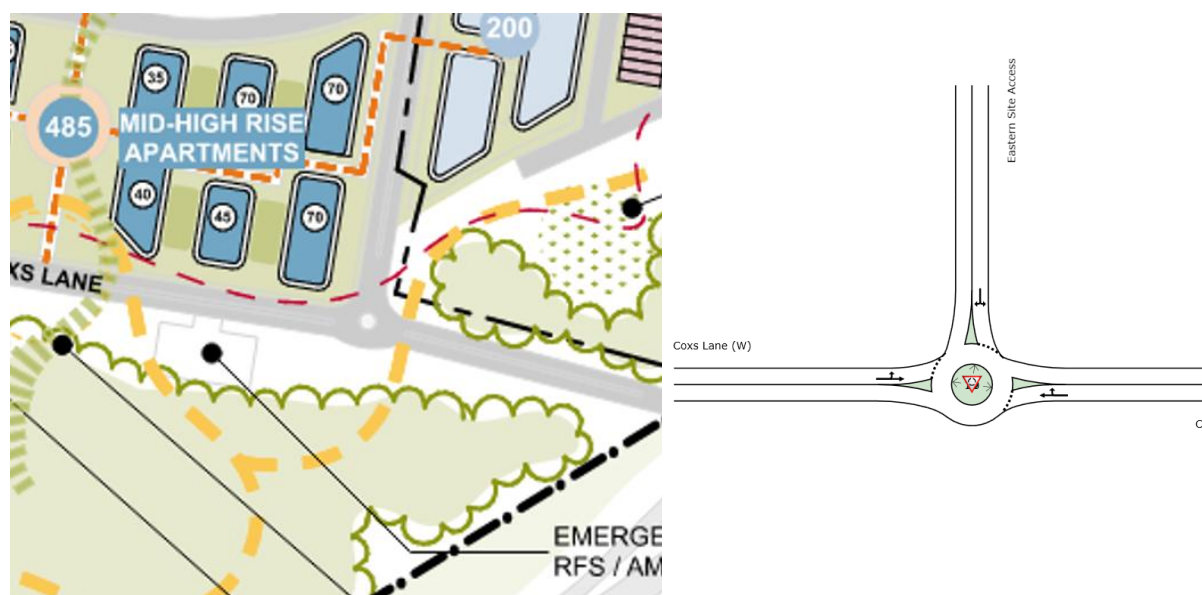


Figure 5.11: Proposed East Site Access Intersection and Modelled Arrangement

Table 5.13 and Table 5.14 detail the performance of the intersection under the anticipated 2047 post-development conditions for the AM and PM peaks, respectively.

Table 5.13: SIDRA Movement Summary – Eastern Site Access Roundabout (AM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Coxs Lane (E)	-	-	-	0.03	6	1
Eastern Access (N)	-	-	-	0.13	6	5
Coxs Lane (W)	-	-	-	0.05	4	2

Table 5.14: SIDRA Movement Summary – Eastern Site Access Roundabout (PM Peak)

APPROACH	FUTURE BASE CONDITIONS			POST DEVELOPMENT CONDITIONS		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Coxs Lane (E)	-	-	-	0.07	6	2
Eastern Access (N)	-	-	-	0.09	6	3
Coxs Lane (W)	-	-	-	0.12	4	5

5.8 Anticipated Traffic Impacts

A review of the results of the preceding SIDRA assessment outlined in Section 5.7 suggests that the proposal will have only a relatively modest impact on the assessed intersections surrounding the site.

The proposed site access intersection at the southern perimeter of the site would be expected to function well as a roundabout intersection, with the differing demands on each approach able to be accommodated well resulting in manageable queuing and delays during peak periods.

The satisfactory operation of the key intersections surrounding the site is expected to be largely a function of the minimal existing traffic volumes currently on the network during peak period, with it expected that the majority of peak hour traffic movements on the network would be associated with the proposal.

It is however noted due to the high traffic volumes currently using Nelson Bay Road, the theoretical capacity of the existing Fullerton Cove Road / Nelson Bay Road intersection arrangement is expected to be exceeded independent of the proposal and would be required to be upgraded to cater for future demand.

A potential intersection arrangement and the timing of these works is discussed in Section 6.

6 INFRASTRUCTURE UPGRADE REQUIREMENTS

6.1 Road Upgrades

6.1.1 Nelson Bay Road

A review of the future traffic volumes detailed within Figure 5.4 suggest that Nelson Bay Road may accommodate in excess of 4,000 vehicles across both directions during the critical afternoon peak periods under the anticipated 2047 base scenario (not including proposal related traffic).

Austrroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods and Highway Capacity Manual 2016 indicate that the capacity for two-lane highways (taken to be equivalent to Nelson Bay Road) is 1,700 pc/h (approx. 1,600vph when accounting for 6% heavy vehicles on Nelson Bay Road) for each direction of travel.

As such, the capacity of Nelson Bay Road is expected to be exceeded prior to the 2047 design year, resulting in minimal opportunities for vehicles to merge into Nelson Bay Road during peak periods, causing excessive queuing and delays as detailed in the results of the SIDRA analysis outlined in Section 5.7.4.

It is expected that, as a result of the anticipated growth along the corridor, Nelson Bay Road would be required to be duplicated to provide two (2) traffic lanes in each direction independent of the proposal and prior to the completion of the proposed masterplan.

6.1.2 Fullerton Cove Road and Coxs Lane

Section 5.1.1 of *Austrroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods* provides guidance for determining midblock lane capacities for uninterrupted flow for roads such as Fullerton Cove Road and Coxs Lane as follows:

$$C = 1800 f_w f_{HV}$$

C = capacity in veh/h under prevailing roadway and traffic conditions
 f_w = adjustment factor for narrow lanes and lateral clearances
 f_{HV} = adjustment factor for heavy vehicles

With consideration of the existing cross-sections of Fullerton Cove Road and Coxs Lane proximate to the subject site, an adjustment factor (f_w) of 0.95 and 0.8 has been applied, respectively. Additionally, accounting for 3% heavy vehicles results in a heavy vehicle factor (f_{HV}) of 0.97.

Application of the above factors results in a two-way capacity of 3,317 vehicles per hour and 2,794 vehicles per hour for Fullerton Cove Road and Coxs Lane, respectively.

The subject site is expected to generate up to 278 peak hour movements during a typical day. Based on the existing network, it is expected that motorists wishing to travel south would do so by accessing Nelson Bay Road via Coxs Lane, with vehicles wishing to travel north to do so via Fullerton Cove Road.

Application of the directional distributions outlined in Table 5.2 suggests that on average 29% of the surveyed traffic volumes travel south and 71% of external traffic travels north. Adopting this distribution would result in 81 vehicles per hour travelling along Coxs Lane and 197 vehicles per hour travelling via Fullerton Cove Road during peak periods, which is well within the theoretical peak hour capacities of the respective road segments.

Therefore, Fullerton Cove Road and Coxs Lane are considered to have sufficient capacity to accommodate the vehicular movements generated by the proposal and are not required to be upgraded as a result of the proposal.

6.2 Intersection Upgrades

Based on the preceding analysis outlined in Section 5.7.4, it is expected that the intersection of Fullerton Cove Road and Nelson Bay Road will be required to be upgraded to accommodate the future traffic demand.

The following assessment has been prepared to gain an understanding of the likely geometric requirements associated with the upgraded intersection.

6.2.1 Operational Considerations

The operational capacity of an intersection is the maximum sustainable hourly rate vehicles can be reasonably expected to traverse a section of roadway during a given time period, with the primary measurement referred to a Degree of Saturation (D.o.S) as noted in Section 5.7.1.

The D.o.S of an intersection is defined as the ratio of the arrival flow (demand) to the capacity of the approach during the same period.

The D.o.S of an intersection approach ranges from near zero for very low traffic flows up to 1.0 for saturated flow or capacity. A D.o.S of greater than 1.0 indicates over saturated conditions in which long queues of vehicles build up on the critical approaches. In general, the lower the D.o.S the better the quality of traffic service.

6.2.2 Indicative Intersection Arrangement

As outlined previously in Section 5.7.4, the theoretical capacity of the Fullerton Cove Road / Nelson Bay Road intersection is expected to be exceeded prior to the completion of the masterplanned development.

Therefore, in order to provide safe and efficient access to the site, the intersection will be required to be upgraded. To understand the required intersection arrangement and associated geometric requirements, the intersection of Fullerton Cove Road / Nelson Bay Road have been assessed against the calculated 2047 design year traffic volumes.

To accommodate the expected increase in turning movements to/from Fullerton Cove Road whilst providing a target D.o.S of 0.90, the intersection would likely be required to be signalised with additional through and turning lanes provided. An overview of the indicative layout is detailed in Figure 6.1.

The expected post-development intersection operation for the 2047 design year is summarised in Table 6.1.

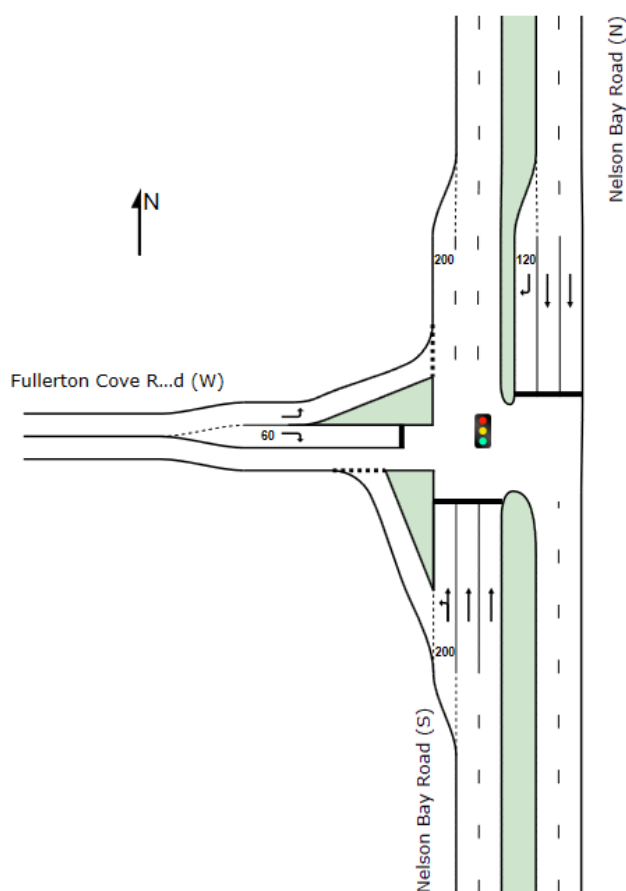


Figure 6.1: Indicative Future Nelson Bay Road / Fullerton Cove Road Intersection Layout

Table 6.1: SIDRA Movement Summary – Design Year 2047 Indicative Nelson Bay Road / Fullerton Cove Road Intersection Arrangement

APPROACH	AM PEAK			PM PEAK		
	D.o.S	AVERAGE DELAY (s)	QUEUE (m)	D.o.S	AVERAGE DELAY (s)	QUEUE (m)
Nelson Bay Road (S)	0.59	11	169	0.86	21	352
Nelson Bay Road (N)	0.78	7	227	0.90	9	347
Fullerton Cove Road (W)	0.44	43	77	0.27	36	50

A review of the results outlined in Table 6.1 suggest that the signalised intersection will operate satisfactorily under the anticipated post development 2047 traffic volumes.

7 OTHER CONSIDERATIONS

7.1 Road Network and Hierarchy

The Port Stephens Council 0041 Geometric Road Design Development Design Specification outlines the typical road hierarchy and relevant cross-sections to ensure that the nominated roads can fulfill their required function such as providing safe and efficient movement, allowance for parked vehicles, provision for public utilities and landscaping, etc.

Figure 7.1 has been prepared to demonstrate the anticipated daily volumes within the internal road network relative to the overall masterplan, based on the daily traffic generation rates outlined within Section 5.4.

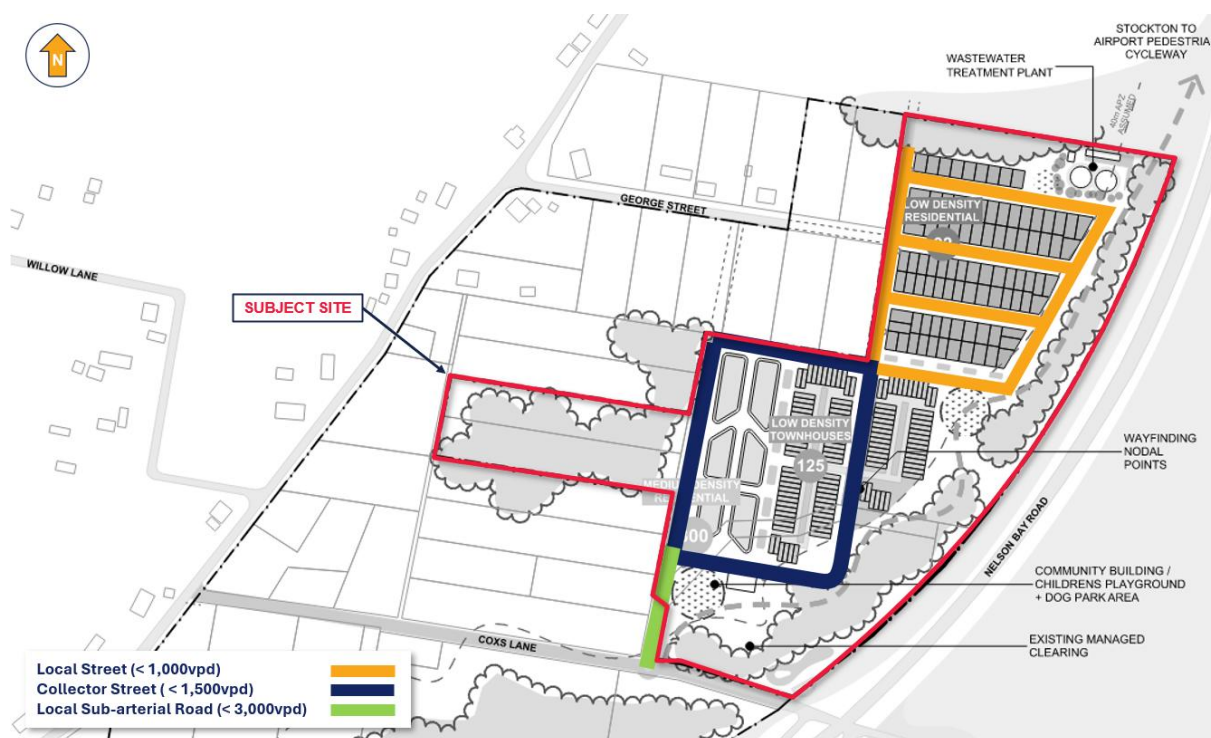


Figure 7.1 Daily Internal Traffic Volumes and Cross-Sections

Section 1.5 of the Geometric Road Design Planning and Design Specification outlines the road hierarchy applicable to the site, with the design characteristics for the various cross-sections reproduced in Table 7.1.

Table 7.1: Summary of Road Cross-Sections

ROAD CLASS	MAX TRAFFIC VOLUME	MAX POTENTIAL DWELLINGS	MIN TRAFFIC WIDTH	MIN VERGE WIDTH
Local Street	1,000 vpd	200	8.0m	4.0m
Collector Street	1,500 vpd	300	11.8m	4.0m
Local Sub-Arterial Road	3,000 vpd	600	15.0m	4.0m

An example of the typical street cross-sections is illustrated in Figure 7.2 to Figure 7.4.

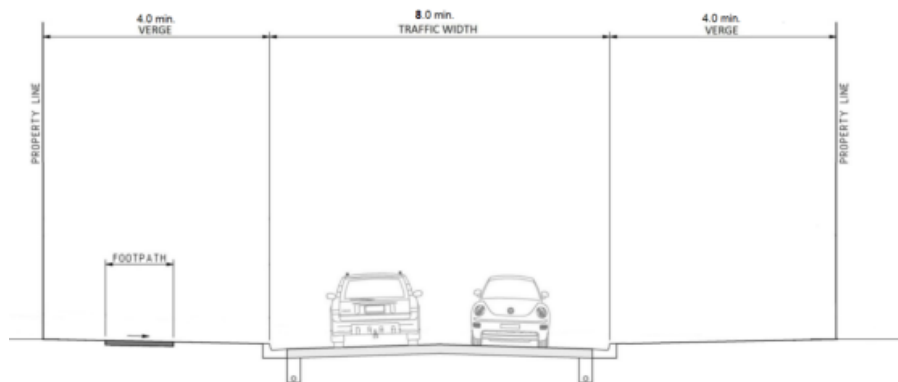


Figure 7.2: Typical Local Street Cross-Section

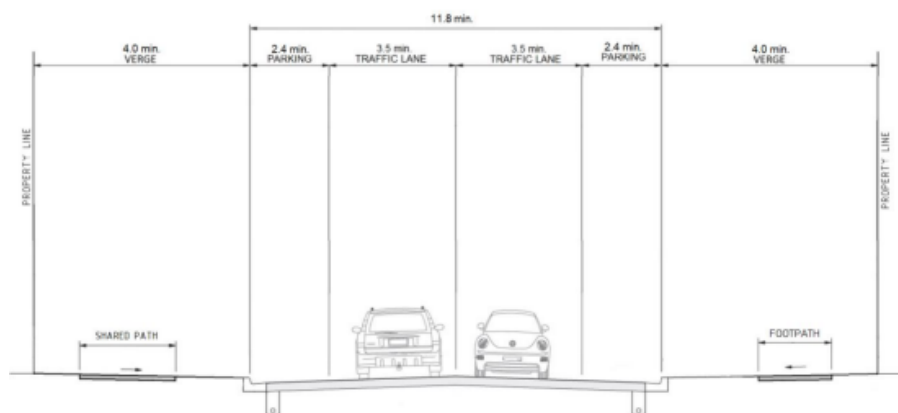


Figure 7.3: Typical Collector Street Cross-Section

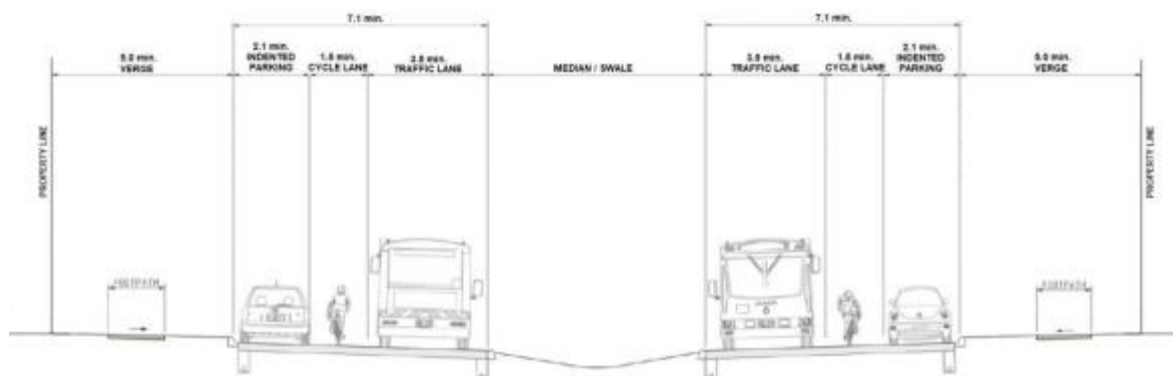


Figure 7.4: Typical Local Sub-Arterial Cross-Section

The Geometric Road Design Planning and Design Specification goes on to state that provision shall be made to enable a second pathway within the above cross-sections to be constructed, if required. Additionally, a shared path may be implemented to link popular connections (such as residential areas to potential future retail and/or sporting precincts).

Lastly, should Collector Street or Sub-Arterial Roads be nominated as a future bus route, they will be required to meet the minimum traffic width outlined in TfNSW Guidelines for Public Transport Capable Infrastructure in Greenfield Sites.

7.2 Active Transport Connections

The cross-sections outlined in Section 7.1 typically provide 4m wide verges capable of accommodating formal, sealed pedestrian footpaths on each side of the road. It is expected that pedestrian footpaths would generally be provided within both verges throughout the subject site.

Additionally, for higher order roads such as the Local Sub-Arterial Road, cycling lanes may be incorporated into the overall cross-section to provide convenient cycling links within the subject site to further encourage alternatives to private car use, particularly for trips internal to the site.

Figure 7.5 has been prepared to detail the potential active transport connections within the staged masterplanned site proximate to the subject site.



Figure 7.5: Active Transport Connections

7.3 Public Transport Connections

The road network detailed within the Precinct 1 area provides good permeability for the introduction of public transport services to service site.

The existing bus services (bus routes 136 and 138) currently operate along the western boundary of the site. Following the completion of the internal network, these services may be diverted to service the internal areas (subject to service operator approval) with an indicative route shown in Figure 7.6.

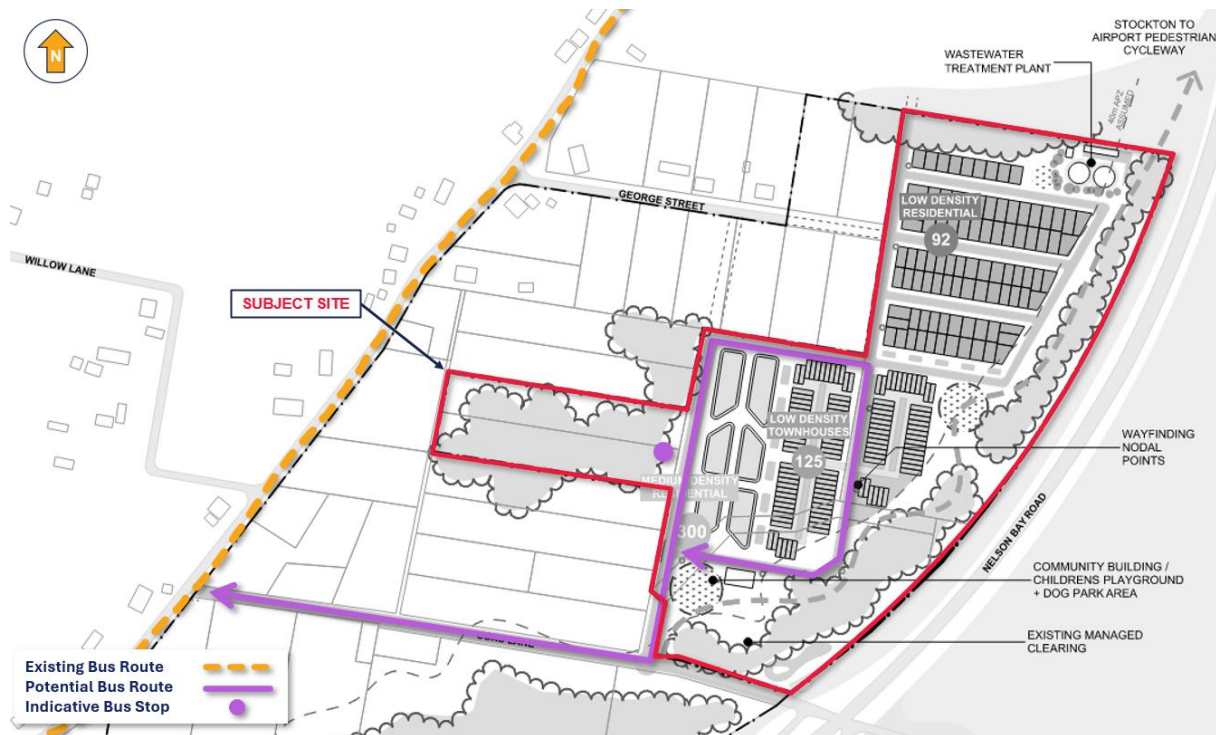


Figure 7.6: Potential Public Transport Services

The route shown in Figure 7.6 intends to provide a bus stop within 200m to 300m of all residential dwellings providing convenient access to destinations within the site and also further afield (e.g. Newcastle, Raymond Terrace, Medowie, etc.).

8 SUMMARY AND CONCLUSIONS

This Transport and Movement Assessment report has been prepared for the proposed rezoning and subsequent masterplan development broadly located at 10 Fullerton Cove Road, 21 Coxs Lane and 16 George Street (Lot 991 DP627179, Lot 1 DP1142113, Lot 201 DP39968, Lot 1910 DP557701, Lot 1 DP1006307, Lot 3 DP111519 and Lot 1 DP794575), Fullerton Cove.

Based on the discussions and analysis outlined within this report the following key conclusions are derived:

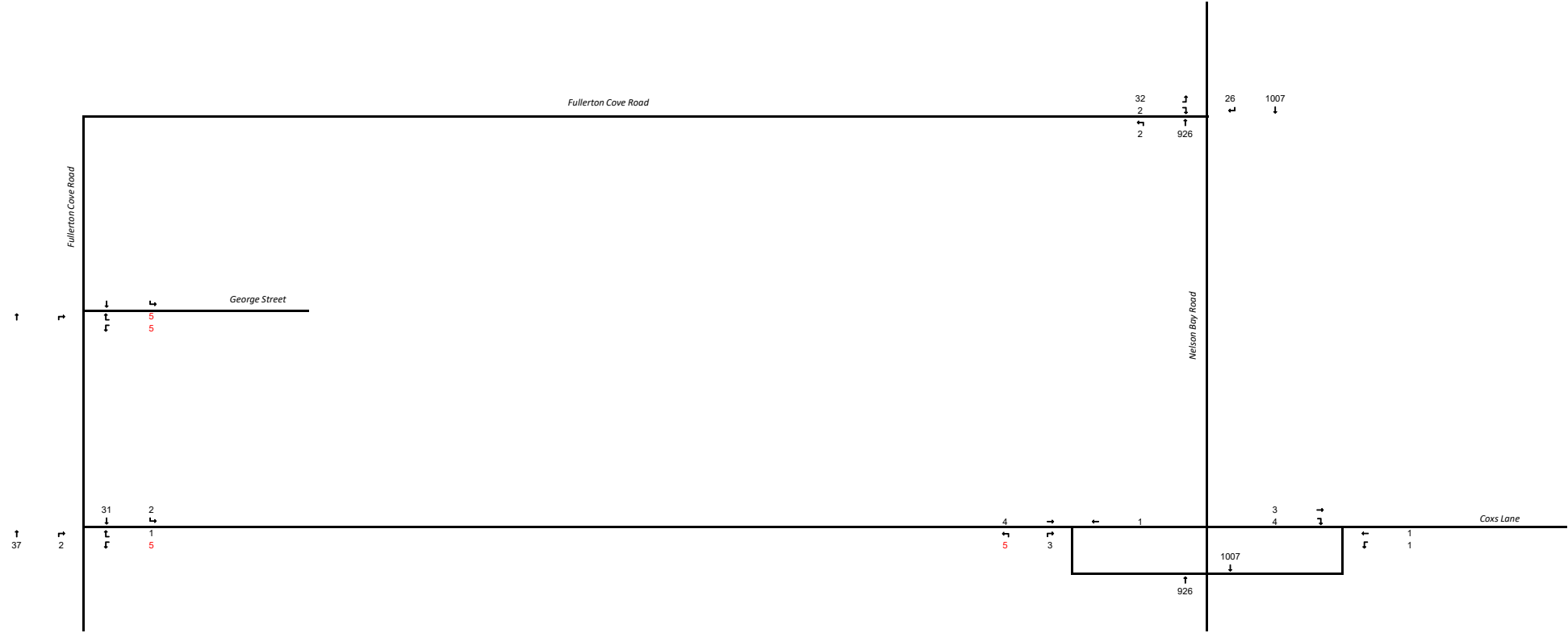
- The staged masterplan proposal comprises a combination of mixed density residential uses and is to be accessed via a roundabout intersection to Coxs Lane.
- The proposal is estimated to generate a requirement to provide a parking supply in the order of 894 spaces.
- The existing road network generally operates well during peak periods, with minimal queuing and delays across all assessed intersections except the intersection of Nelson Bay Road / Fullerton Cove Road.
- The proposal is anticipated to generate in the order of 2,578 daily vehicular movements.
- The proposal is expected to generate 265 and 278 trips per hour during the morning and afternoon peaks, respectively.
- The assessed intersections are expected to continue to operate within their capacity with manageable queuing and delays during the projected 2047 post development scenario. However, the intersection of Nelson Bay Road / Fullerton Cove Road will experience considerable delays and queue lengths and will likely be required to be upgraded.
- It is noted that the intersection of Nelson Bay Road / Fullerton Cove Road is nearing its capacity under existing conditions and will likely be required to be upgraded independent of the proposal.
- When accounting for the observed historical growth in traffic volumes across the network, Nelson Bay Road will likely be required to be duplicated to accommodate to expected increase in demand.
- The site generated traffic volumes associated with the proposal are expected to remain within the theoretical midblock capacity of Fullerton Cove Road and Coxs Lane.
- The indicative road layout provides good permeability of active transport and public transport services to encourage alternatives to private car use and is considered appropriate.

APPENDIX A

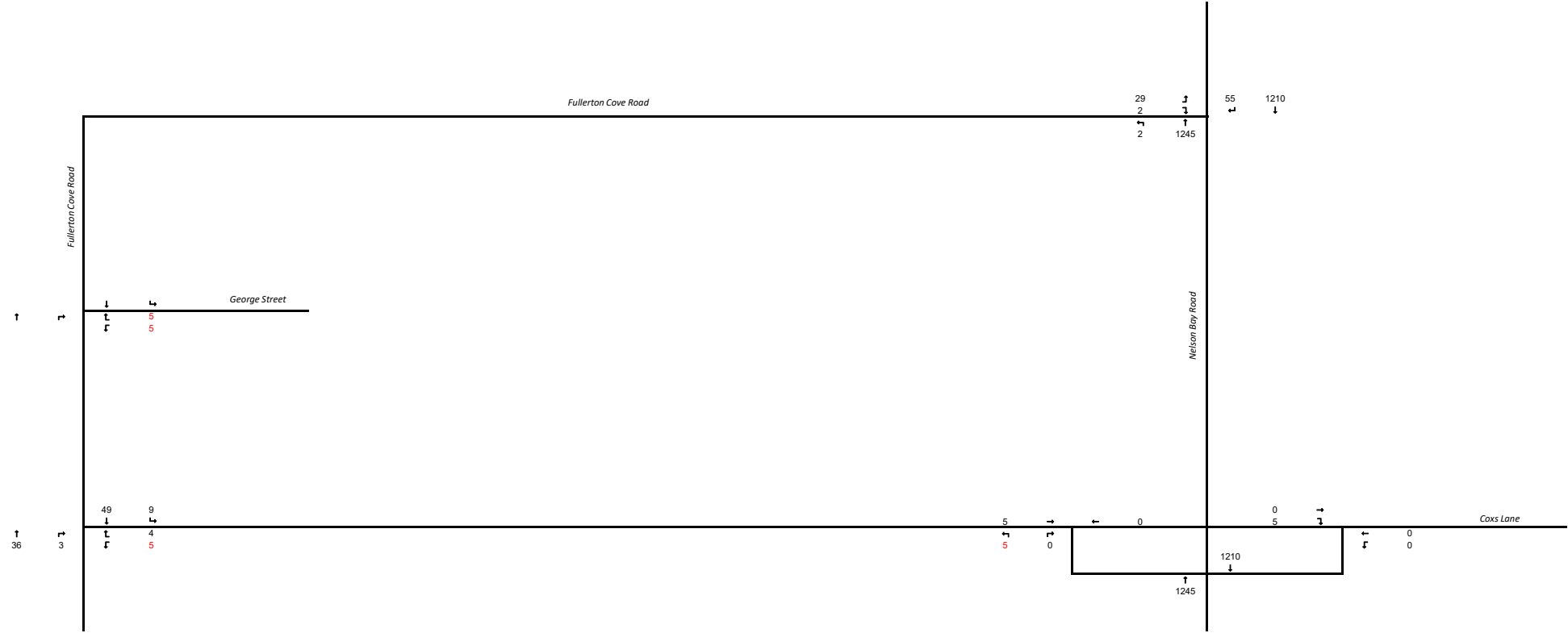
MODELLED TRAFFIC VOLUMES



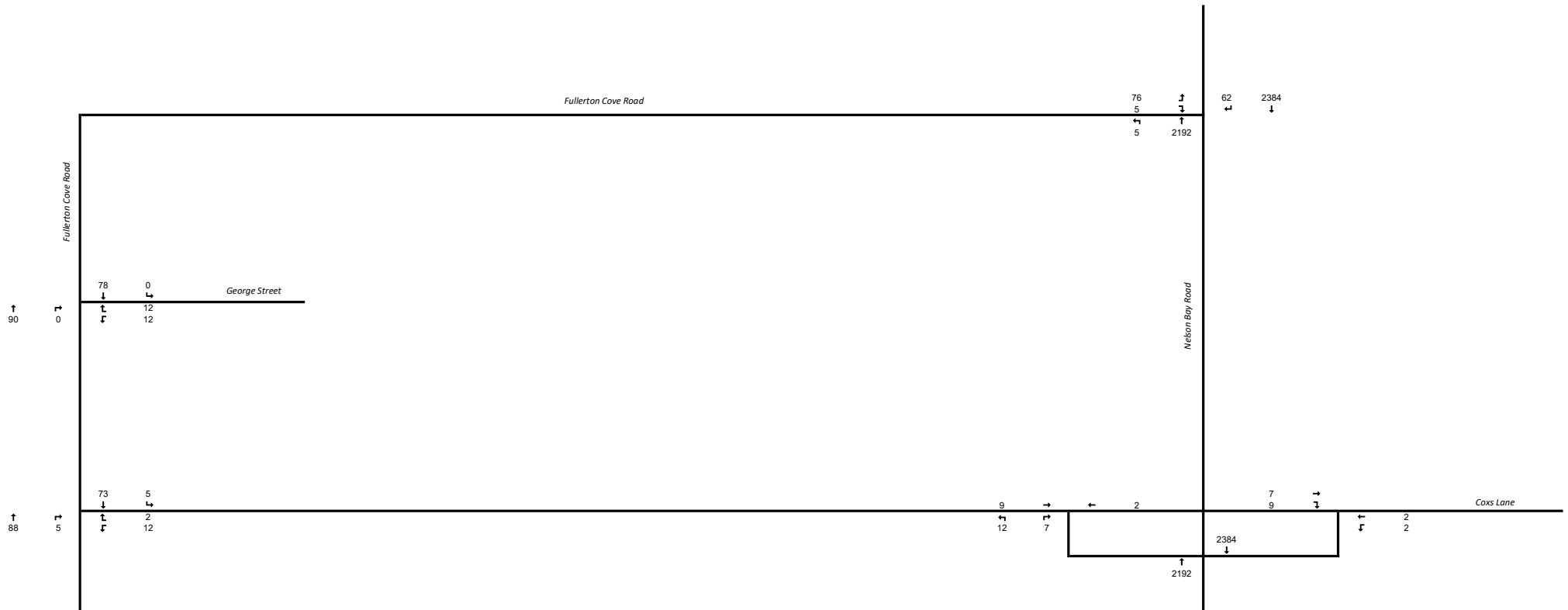
Existing AM Scenario
Wednesday 11 December 2024 - 7:45am - 8:45am



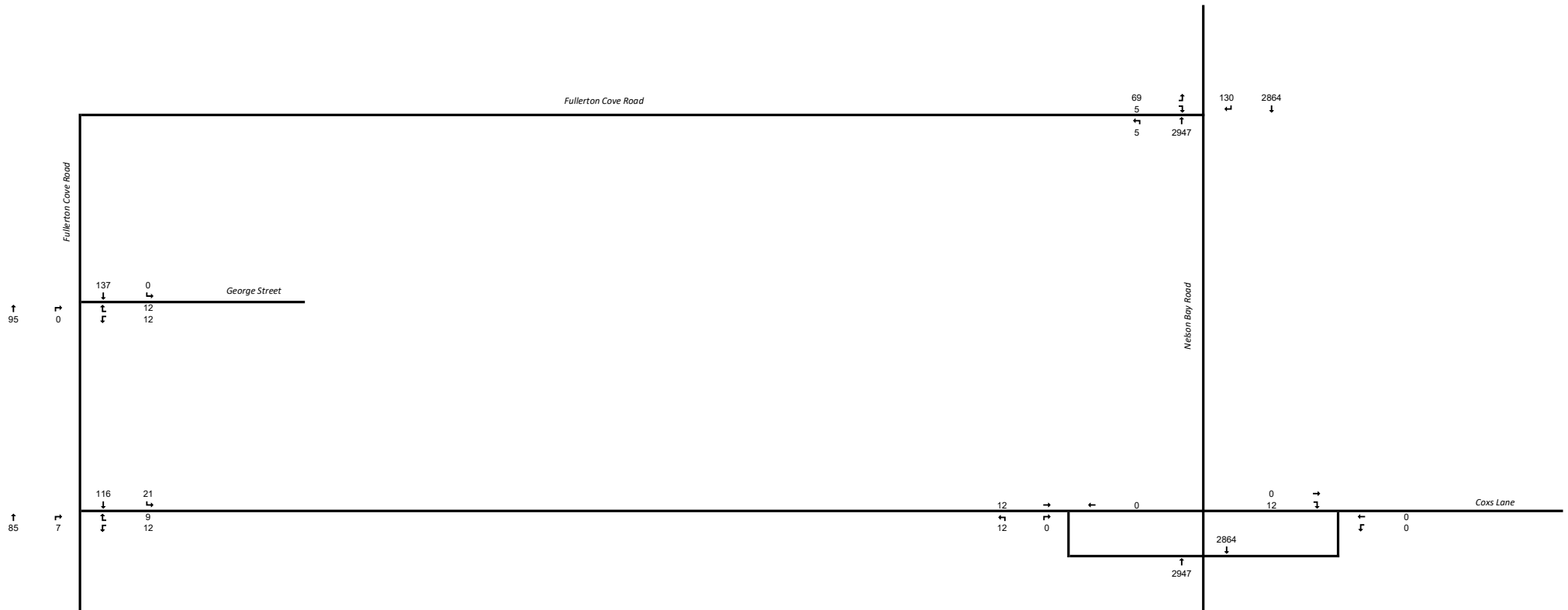
Existing PM Scenario
Wednesday 11 December 2024 - 4:30pm - 5:30pm



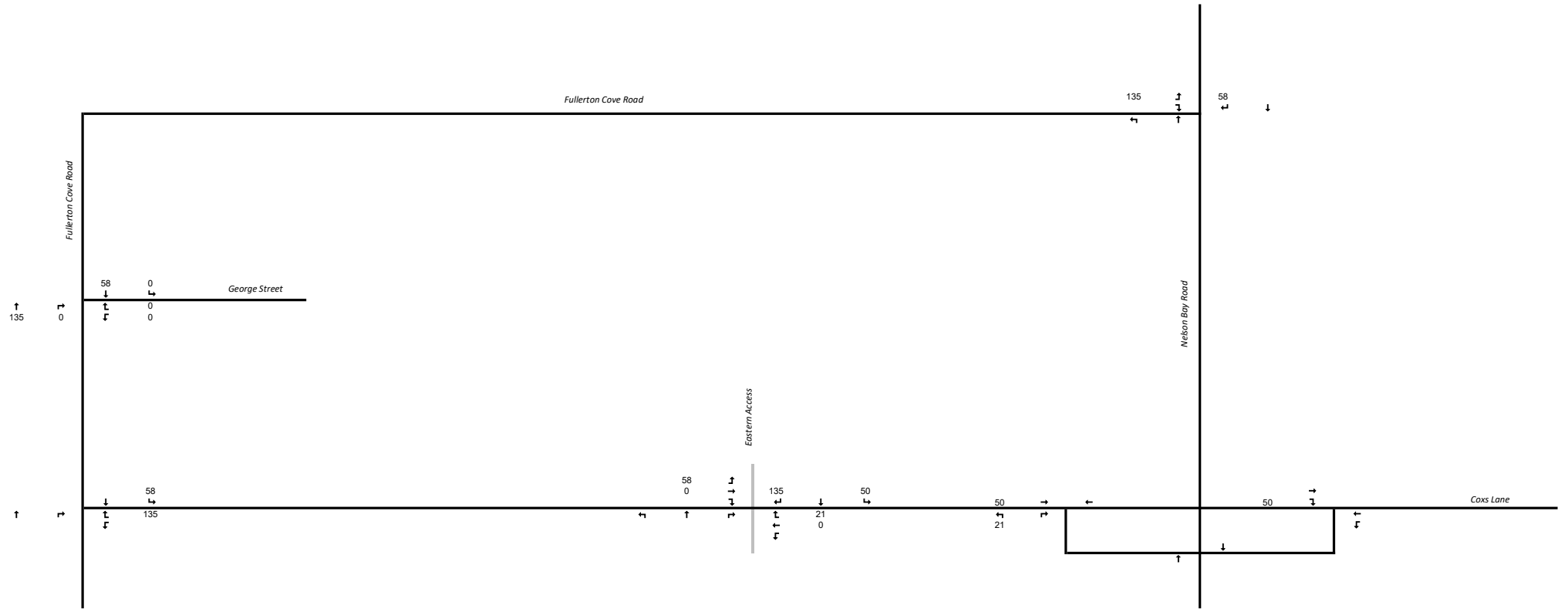
Future AM Scenario
Design Year 2047



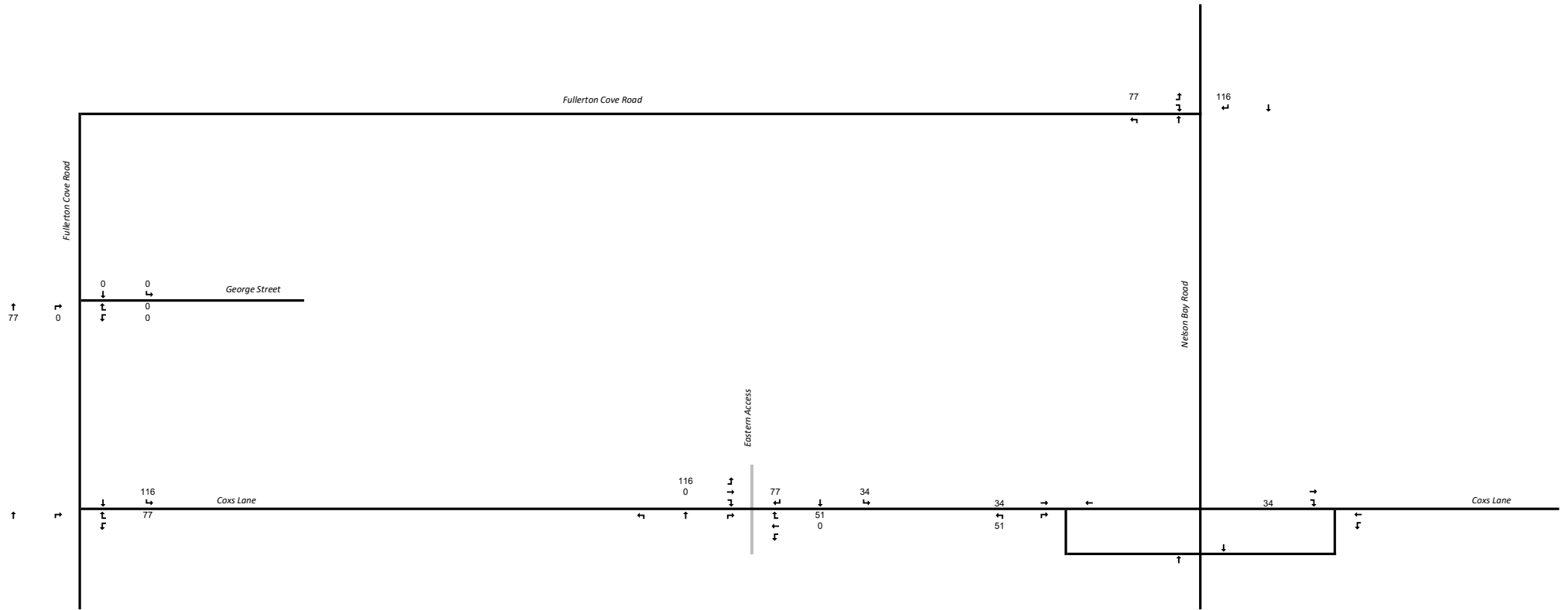
Future PM Scenario
Design Year 2047



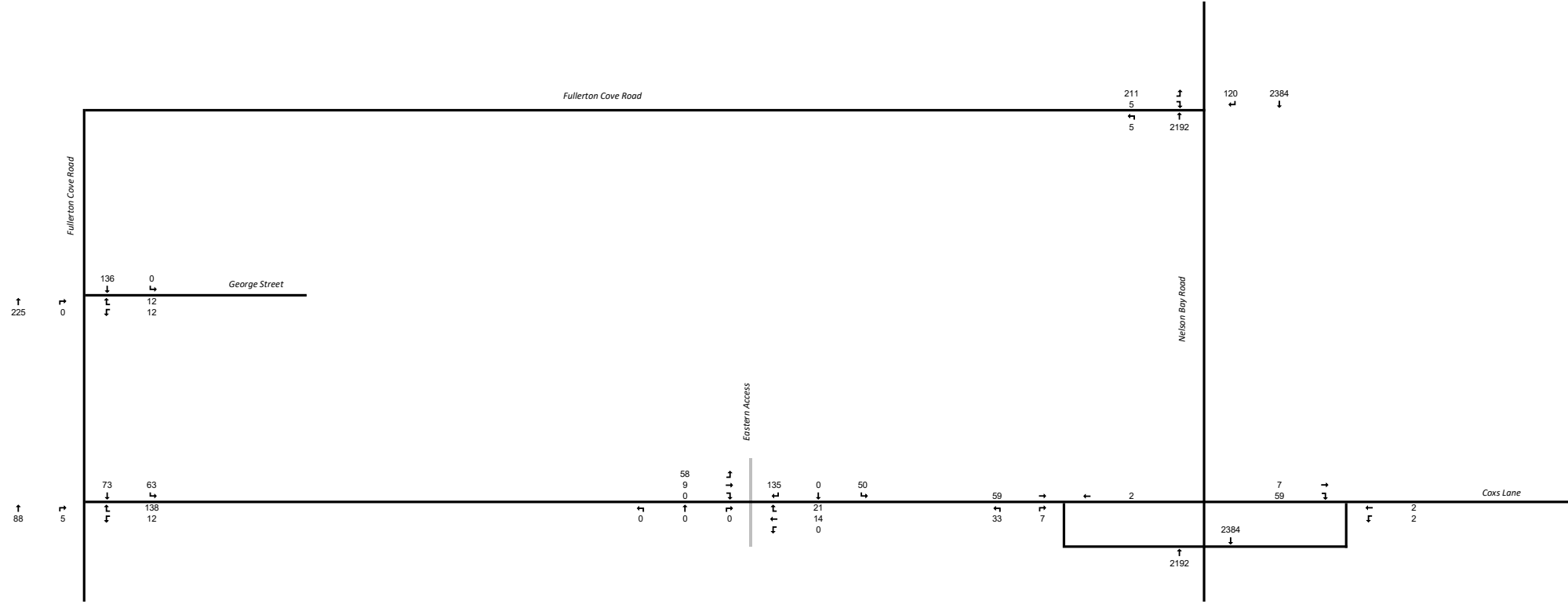
Site Generation AM Traffic Volumes



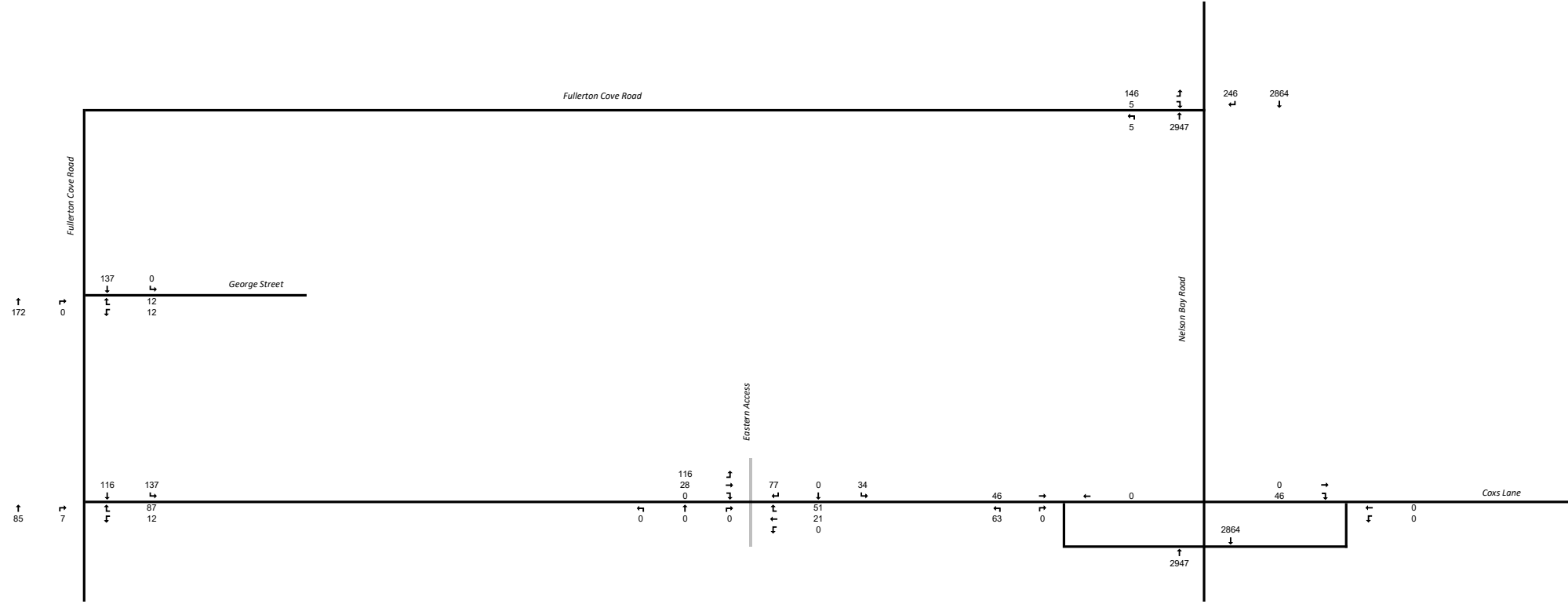
Site Generation PM Traffic Volumes



Post-Development AM Scenario
Design Year 2047



Post-Development PM Scenario
Design Year 2047



APPENDIX B

SIDRA MOVEMENT SUMMARIES



MOVEMENT SUMMARY

Site: 101 [Nelson Bay Off Ramp_Base AM (Site Folder: 2047 Base AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [Nelson Bay Road Interchange_Base AM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road Off Ramp (S)															
1	L2	All MCs	13	3.0	13	3.0	0.014	7.5	LOS A	0.0	0.1	0.02	0.65	0.02	53.5
3	R2	All MCs	7	3.0	7	3.0	0.014	7.3	LOS A	0.0	0.1	0.02	0.65	0.02	60.1
Approach			20	3.0	20	3.0	0.014	7.4	LOS A	0.0	0.1	0.02	0.65	0.02	55.2
East: Coxs Lane (E)															
5	T1	All MCs	2	3.0	2	3.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			2	3.0	2	3.0	0.001	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Coxs Lane (W)															
11	T1	All MCs	9	3.0	9	3.0	0.005	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			9	3.0	9	3.0	0.005	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles			32	3.0	32	3.0	0.014	4.7	NA	0.0	0.1	0.01	0.41	0.01	54.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Nelson Bay On Ramp_Base AM (Site Folder: 2047 Base AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

■ ■ Network: N101 [Nelson Bay Road Interchange_Base AM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
East: Coxs Lane (E)															
4	L2	All MCs	2	3.0	2	3.0	0.002	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	46.5
5	T1	All MCs	2	3.0	2	3.0	0.002	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	45.0
Approach			4	3.0	4	3.0	0.002	2.3	NA	0.0	0.0	0.00	0.27	0.00	46.1
West: Coxs Lane (W)															
11	T1	All MCs	7	3.0	7	3.0	0.009	0.0	LOS A	0.0	0.1	0.03	0.33	0.03	45.5
12	R2	All MCs	9	3.0	9	3.0	0.009	4.1	LOS A	0.0	0.1	0.03	0.33	0.03	62.5
Approach			17	3.0	17	3.0	0.009	2.3	NA	0.0	0.1	0.03	0.33	0.03	55.9
All Vehicles			21	3.0	21	3.0	0.009	2.3	NA	0.0	0.1	0.02	0.32	0.02	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Coxs Lane_Base AM (Site Folder: 2047 Base AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	93	3.0	93	3.0	0.052	0.0	LOS A	0.0	0.2	0.02	0.04	0.02	69.3
12	R2	All MCs	5	3.0	5	3.0	0.052	6.2	LOS A	0.0	0.2	0.02	0.04	0.02	58.5
Approach			98	3.0	98	3.0	0.052	0.3	NA	0.0	0.2	0.02	0.04	0.02	68.7
East: Coxs Lane (E)															
1	L2	All MCs	13	3.0	13	3.0	0.010	4.8	LOS A	0.0	0.3	0.17	0.50	0.17	50.7
3	R2	All MCs	2	3.0	2	3.0	0.010	5.2	LOS A	0.0	0.3	0.17	0.50	0.17	47.3
Approach			15	3.0	15	3.0	0.010	4.9	LOS A	0.0	0.3	0.17	0.50	0.17	50.2
North: Fullerton Cove Road (N)															
4	L2	All MCs	5	3.0	5	3.0	0.043	6.4	LOS A	0.0	0.0	0.00	0.04	0.00	61.4
5	T1	All MCs	77	3.0	77	3.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	69.3
Approach			82	3.0	82	3.0	0.043	0.4	NA	0.0	0.0	0.00	0.04	0.00	68.9
All Vehicles			195	3.0	195	3.0	0.052	0.7	NA	0.0	0.3	0.02	0.07	0.02	67.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_George Street_Base AM (Site Folder: 2047 Base AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	95	3.0	95	3.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	69.9
12	R2	All MCs	1	3.0	1	3.0	0.050	6.2	LOS A	0.0	0.0	0.00	0.01	0.00	56.3
Approach			96	3.0	96	3.0	0.050	0.1	NA	0.0	0.0	0.00	0.01	0.00	69.7
East: George Street (E)															
1	L2	All MCs	13	3.0	13	3.0	0.020	4.8	LOS A	0.1	0.5	0.20	0.52	0.20	50.4
3	R2	All MCs	13	3.0	13	3.0	0.020	5.2	LOS A	0.1	0.5	0.20	0.52	0.20	50.2
Approach			25	3.0	25	3.0	0.020	5.0	LOS A	0.1	0.5	0.20	0.52	0.20	50.3
North: Fullerton Cove Road (N)															
4	L2	All MCs	1	3.0	1	3.0	0.044	6.4	LOS A	0.0	0.0	0.00	0.01	0.00	64.5
5	T1	All MCs	82	3.0	82	3.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	69.9
Approach			83	3.0	83	3.0	0.044	0.1	NA	0.0	0.0	0.00	0.01	0.00	69.8
All Vehicles			204	3.0	204	3.0	0.050	0.7	NA	0.1	0.5	0.03	0.07	0.03	66.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Nelson Bay Road_Base AM (Site Folder: 2047 Base AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road (S)															
4	L2	All MCs	5	3.0	5	3.0	1.209	96.7	LOS F	0.0	0.0	0.00	0.00	0.00	15.3
5	T1	All MCs	2307	3.0	2307	3.0	1.209	96.7	LOS F	0.0	0.0	0.00	0.00	0.00	15.3
Approach			2313	3.0	2313	3.0	1.209	96.7	NA	0.0	0.0	0.00	0.00	0.00	15.3
North: Nelson Bay Road (N)															
11	T1	All MCs	2509	3.0	2509	3.0	8.090	6863.0	LOS F	1473.6	10580.5	1.00	1.00	2.93	0.5
12	R2	All MCs	65	3.0	65	3.0	10.877	9345.5	LOS F	38.9	279.0	1.00	1.31	3.00	0.4
Approach			2575	3.0	2575	3.0	10.877	6926.0	NA	1473.6	10580.5	1.00	1.01	2.94	0.5
West: Fullerton Cove Road (W)															
1	L2	All MCs	80	3.0	80	3.0	14.211	12329.0	LOS F	51.2	367.8	1.00	1.40	3.10	0.3
3	R2	All MCs	5	3.0	5	3.0	14.211	11902.3	LOS F	51.2	367.8	1.00	1.40	3.10	0.3
Approach			85	3.0	85	3.0	14.211	12302.7	LOS F	51.2	367.8	1.00	1.40	3.10	0.3
All Vehicles			4973	3.0	4973	3.0	14.211	3842.1	NA	1473.6	10580.5	0.53	0.55	1.57	0.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Nelson Bay Off Ramp_Base PM (Site Folder: 2047 Base PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

■ ■ Network: N101 [Nelson Bay Road Interchange_Base PM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]				km/h
South: Nelson Bay Road Off Ramp (S)															
1	L2	All MCs	13	3.0	13	3.0	0.009	7.5	LOS A	0.0	0.1	0.01	0.64	0.01	53.5
3	R2	All MCs	1	3.0	1	3.0	0.009	7.3	LOS A	0.0	0.1	0.01	0.64	0.01	60.1
Approach			14	3.0	14	3.0	0.009	7.5	LOS A	0.0	0.1	0.01	0.64	0.01	53.9
East: Coxs Lane (E)															
5	T1	All MCs	1	3.0	1	3.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			1	3.0	1	3.0	0.001	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Coxs Lane (W)															
11	T1	All MCs	13	3.0	13	3.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			13	3.0	13	3.0	0.007	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles			27	3.0	27	3.0	0.009	3.7	NA	0.0	0.1	0.01	0.32	0.01	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Nelson Bay On Ramp_Base PM (Site Folder: 2047 Base PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

■ ■ Network: N101 [Nelson Bay Road Interchange_Base PM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
East: Coxs Lane (E)															
4	L2	All MCs	1	3.0	1	3.0	0.001	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	46.5
5	T1	All MCs	1	3.0	1	3.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	45.0
Approach			2	3.0	2	3.0	0.001	2.3	NA	0.0	0.0	0.00	0.27	0.00	46.1
West: Coxs Lane (W)															
11	T1	All MCs	1	3.0	1	3.0	0.008	0.0	LOS A	0.0	0.1	0.02	0.53	0.02	43.1
12	R2	All MCs	13	3.0	13	3.0	0.008	4.1	LOS A	0.0	0.1	0.02	0.53	0.02	59.8
Approach			14	3.0	14	3.0	0.008	3.8	NA	0.0	0.1	0.02	0.53	0.02	58.8
All Vehicles			16	3.0	16	3.0	0.008	3.6	NA	0.0	0.1	0.02	0.49	0.02	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Coxs Lane_Base PM (Site Folder: 2047 Base PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	89	3.0	89	3.0	0.052	0.0	LOS A	0.0	0.4	0.05	0.06	0.05	68.9
12	R2	All MCs	7	3.0	7	3.0	0.052	6.6	LOS A	0.0	0.4	0.05	0.06	0.05	58.2
Approach			97	3.0	97	3.0	0.052	0.5	NA	0.0	0.4	0.05	0.06	0.05	68.1
East: Coxs Lane (E)															
1	L2	All MCs	13	3.0	13	3.0	0.018	4.9	LOS A	0.1	0.5	0.24	0.52	0.24	50.4
3	R2	All MCs	9	3.0	9	3.0	0.018	5.4	LOS A	0.1	0.5	0.24	0.52	0.24	47.1
Approach			22	3.0	22	3.0	0.018	5.1	LOS A	0.1	0.5	0.24	0.52	0.24	49.1
North: Fullerton Cove Road (N)															
4	L2	All MCs	22	3.0	22	3.0	0.076	6.4	LOS A	0.0	0.0	0.00	0.10	0.00	60.4
5	T1	All MCs	122	3.0	122	3.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	68.5
Approach			144	3.0	144	3.0	0.076	1.0	NA	0.0	0.0	0.00	0.10	0.00	67.5
All Vehicles			263	3.0	263	3.0	0.076	1.2	NA	0.1	0.5	0.04	0.12	0.04	66.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_George Street_Base PM (Site Folder: 2047 Base PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	100	3.0	100	3.0	0.053	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	69.9
12	R2	All MCs	1	3.0	1	3.0	0.053	6.2	LOS A	0.0	0.1	0.01	0.01	0.01	56.3
Approach			101	3.0	101	3.0	0.053	0.1	NA	0.0	0.1	0.01	0.01	0.01	69.7
East: George Street (E)															
1	L2	All MCs	13	3.0	13	3.0	0.021	5.0	LOS A	0.1	0.5	0.26	0.53	0.26	50.3
3	R2	All MCs	13	3.0	13	3.0	0.021	5.5	LOS A	0.1	0.5	0.26	0.53	0.26	50.1
Approach			25	3.0	25	3.0	0.021	5.3	LOS A	0.1	0.5	0.26	0.53	0.26	50.2
North: Fullerton Cove Road (N)															
4	L2	All MCs	1	3.0	1	3.0	0.076	6.4	LOS A	0.0	0.0	0.00	0.00	0.00	64.5
5	T1	All MCs	144	3.0	144	3.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			145	3.0	145	3.0	0.076	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.9
All Vehicles			272	3.0	272	3.0	0.076	0.5	NA	0.1	0.5	0.03	0.05	0.03	67.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Nelson Bay Road_Base PM (Site Folder: 2047 Base PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road (S)															
4	L2	All MCs	5	3.0	5	3.0	1.625	287.0	LOS F	0.0	0.0	0.00	0.00	0.00	5.9
5	T1	All MCs	3102	3.0	3102	3.0	1.625	287.0	LOS F	0.0	0.0	0.00	0.00	0.00	5.9
Approach			3107	3.0	3107	3.0	1.625	287.0	NA	0.0	0.0	0.00	0.00	0.00	5.9
North: Nelson Bay Road (N)															
11	T1	All MCs	3015	3.0	3015	3.0	16.921	14803.3	LOS F	1827.4	13120.9	1.00	0.97	3.08	0.2
12	R2	All MCs	137	3.0	137	3.0	22.807	20176.0	LOS F	83.3	598.3	1.00	1.33	3.11	0.2
Approach			3152	3.0	3152	3.0	22.807	15134.3	NA	1827.4	13120.9	1.00	0.98	3.08	0.2
West: Fullerton Cove Road (W)															
1	L2	All MCs	73	3.0	73	3.0	12.982	11224.7	LOS F	46.7	335.0	1.00	1.40	3.09	0.3
3	R2	All MCs	5	3.0	5	3.0	12.982	10798.0	LOS F	46.7	335.0	1.00	1.40	3.09	0.3
Approach			78	3.0	78	3.0	12.982	11195.9	LOS F	46.7	335.0	1.00	1.40	3.09	0.3
All Vehicles			6337	3.0	6337	3.0	22.807	7756.7	NA	1827.4	13120.9	0.51	0.51	1.57	0.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Nelson Bay Off Ramp_Post Dev AM (Site Folder: Post Dev AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

■ Network: N101 [Nelson Bay Road Interchange_Post Dev AM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]				km/h
South: Nelson Bay Road Off Ramp (S)															
1	L2	All MCs	35	3.0	35	3.0	0.028	7.5	LOS A	0.0	0.3	0.02	0.64	0.02	53.5
3	R2	All MCs	7	3.0	7	3.0	0.028	7.3	LOS A	0.0	0.3	0.02	0.64	0.02	60.0
Approach			42	3.0	42	3.0	0.028	7.5	LOS A	0.0	0.3	0.02	0.64	0.02	54.2
East: Coxs Lane (E)															
5	T1	All MCs	2	3.0	2	3.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			2	3.0	2	3.0	0.001	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Coxs Lane (W)															
11	T1	All MCs	62	3.0	62	3.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			62	3.0	62	3.0	0.032	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles			106	3.0	106	3.0	0.032	3.0	NA	0.0	0.3	0.01	0.25	0.01	52.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Nelson Bay On Ramp_Post Dev AM (Site Folder: Post Dev AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

■ Network: N101 [Nelson Bay Road Interchange_Post Dev AM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
East: Coxs Lane (E)															
4	L2	All MCs	2	3.0	2	3.0	0.002	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	46.5
5	T1	All MCs	2	3.0	2	3.0	0.002	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	45.0
Approach			4	3.0	4	3.0	0.002	2.3	NA	0.0	0.0	0.00	0.27	0.00	46.1
West: Coxs Lane (W)															
11	T1	All MCs	7	3.0	7	3.0	0.039	0.0	LOS A	0.1	0.5	0.03	0.51	0.03	43.2
12	R2	All MCs	62	3.0	62	3.0	0.039	4.1	LOS A	0.1	0.5	0.03	0.51	0.03	60.0
Approach			69	3.0	69	3.0	0.039	3.7	NA	0.1	0.5	0.03	0.51	0.03	58.5
All Vehicles			74	3.0	74	3.0	0.039	3.6	NA	0.1	0.5	0.03	0.50	0.03	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Coxs Lane_Post Dev AM (Site Folder: Post Dev AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	93	3.0	93	3.0	0.052	0.0	LOS A	0.0	0.3	0.03	0.04	0.03	69.2
12	R2	All MCs	5	3.0	5	3.0	0.052	6.5	LOS A	0.0	0.3	0.03	0.04	0.03	58.5
Approach			98	3.0	98	3.0	0.052	0.4	NA	0.0	0.3	0.03	0.04	0.03	68.7
East: Coxs Lane (E)															
1	L2	All MCs	13	3.0	13	3.0	0.146	4.8	LOS A	0.5	3.7	0.28	0.57	0.28	50.3
3	R2	All MCs	145	3.0	145	3.0	0.146	5.5	LOS A	0.5	3.7	0.28	0.57	0.28	47.0
Approach			158	3.0	158	3.0	0.146	5.4	LOS A	0.5	3.7	0.28	0.57	0.28	47.3
North: Fullerton Cove Road (N)															
4	L2	All MCs	66	3.0	66	3.0	0.077	6.4	LOS A	0.0	0.0	0.00	0.29	0.00	57.2
5	T1	All MCs	77	3.0	77	3.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.29	0.00	65.6
Approach			143	3.0	143	3.0	0.077	3.0	NA	0.0	0.0	0.00	0.29	0.00	62.2
All Vehicles			399	3.0	399	3.0	0.146	3.3	NA	0.5	3.7	0.12	0.34	0.12	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: [Fullerton Cove Road_George Street_Post Dev AM (Site Folder: Post Dev AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	237	3.0	237	3.0	0.125	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	69.9
12	R2	All MCs	1	3.0	1	3.0	0.125	6.2	LOS A	0.0	0.1	0.00	0.00	0.00	56.3
Approach			238	3.0	238	3.0	0.125	0.0	NA	0.0	0.1	0.00	0.00	0.00	69.9
East: George Street (E)															
1	L2	All MCs	13	3.0	13	3.0	0.023	5.0	LOS A	0.1	0.6	0.29	0.54	0.29	50.2
3	R2	All MCs	13	3.0	13	3.0	0.023	6.1	LOS A	0.1	0.6	0.29	0.54	0.29	50.0
Approach			25	3.0	25	3.0	0.023	5.6	LOS A	0.1	0.6	0.29	0.54	0.29	50.1
North: Fullerton Cove Road (N)															
4	L2	All MCs	1	3.0	1	3.0	0.075	6.4	LOS A	0.0	0.0	0.00	0.00	0.00	64.5
5	T1	All MCs	143	3.0	143	3.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			144	3.0	144	3.0	0.075	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.9
All Vehicles			407	3.0	407	3.0	0.125	0.4	NA	0.1	0.6	0.02	0.04	0.02	68.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: [Fullerton Cove Road_Nelson Bay Road_Post Dev AM
(Site Folder: Post Dev AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nelson Bay Road (S)															
4	L2	All MCs	5	3.0	5	3.0	1.209	96.7	LOS F	0.0	0.0	0.00	0.00	0.00	15.3
5	T1	All MCs	2307	3.0	2307	3.0	1.209	96.7	LOS F	0.0	0.0	0.00	0.00	0.00	15.3
Approach			2313	3.0	2313	3.0	1.209	96.7	NA	0.0	0.0	0.00	0.00	0.00	15.3
North: Nelson Bay Road (N)															
11	T1	All MCs	2509	3.0	2509	3.0	14.829	12921.2	LOS F	1516.1	10885.6	1.00	0.96	3.06	0.3
12	R2	All MCs	126	3.0	126	3.0	21.053	18588.4	LOS F	76.8	551.4	1.00	1.32	3.10	0.2
Approach			2636	3.0	2636	3.0	21.053	13281.2	NA	1516.1	10885.6	1.00	0.98	3.06	0.3
West: Fullerton Cove Road (W)															
1	L2	All MCs	222	3.0	222	3.0	37.895	33639.2	LOS F	139.5	1001.8	1.00	1.42	3.20	0.1
3	R2	All MCs	5	3.0	5	3.0	37.895	33212.6	LOS F	139.5	1001.8	1.00	1.42	3.20	0.1
Approach			227	3.0	227	3.0	37.895	33629.3	LOS F	139.5	1001.8	1.00	1.42	3.20	0.1
All Vehicles			5176	3.0	5176	3.0	37.895	8239.0	NA	1516.1	10885.6	0.55	0.56	1.70	0.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site:** [Eastern Access_Coxs Lane_Post Dev AM (Site Folder: Post Dev AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Coxs Lane (E)															
5	T1	All MCs	15	3.0	15	3.0	0.034	4.3	LOS A	0.2	1.1	0.30	0.55	0.30	40.5
6	R2	All MCs	22	3.0	22	3.0	0.034	7.5	LOS A	0.2	1.1	0.30	0.55	0.30	37.7
Approach			37	3.0	37	3.0	0.034	6.2	LOS A	0.2	1.1	0.30	0.55	0.30	38.9
North: Eastern Site Access															
7	L2	All MCs	53	3.0	53	3.0	0.130	3.8	LOS A	0.7	4.8	0.06	0.59	0.06	38.6
9	R2	All MCs	142	3.0	142	3.0	0.130	6.8	LOS A	0.7	4.8	0.06	0.59	0.06	39.9
Approach			195	3.0	195	3.0	0.130	6.0	LOS A	0.7	4.8	0.06	0.59	0.06	39.6
West: Coxs Lane (W)															
10	L2	All MCs	61	3.0	61	3.0	0.054	3.9	LOS A	0.3	1.9	0.11	0.47	0.11	42.2
11	T1	All MCs	9	3.0	9	3.0	0.054	3.7	LOS A	0.3	1.9	0.11	0.47	0.11	42.8
Approach			71	3.0	71	3.0	0.054	3.9	LOS A	0.3	1.9	0.11	0.47	0.11	42.3
All Vehicles			302	3.0	302	3.0	0.130	5.5	LOS A	0.7	4.8	0.10	0.56	0.10	40.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Nelson Bay Off Ramp_Post Dev PM (Site Folder: Post Dev PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

Network: N101 [Nelson Bay Road Interchange_Post Dev PM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road Off Ramp (S)															
1	L2	All MCs	66	3.0	66	3.0	0.042	7.5	LOS A	0.1	0.5	0.01	0.64	0.01	53.5
3	R2	All MCs	1	3.0	1	3.0	0.042	7.3	LOS A	0.1	0.5	0.01	0.64	0.01	60.1
Approach			67	3.0	67	3.0	0.042	7.5	LOS A	0.1	0.5	0.01	0.64	0.01	53.6
East: Coxs Lane (E)															
5	T1	All MCs	1	3.0	1	3.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			1	3.0	1	3.0	0.001	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
West: Coxs Lane (W)															
11	T1	All MCs	48	3.0	48	3.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			48	3.0	48	3.0	0.025	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles			117	3.0	117	3.0	0.042	4.3	NA	0.1	0.5	0.01	0.37	0.01	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: 101 [Nelson Bay On Ramp_Post Dev PM (Site Folder: Post Dev PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

■ Network: N101 [Nelson Bay Road Interchange_Post Dev PM (Network Folder: General)]

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
East: Coxs Lane (E)															
4	L2	All MCs	1	3.0	1	3.0	0.001	4.6	LOS A	0.0	0.0	0.00	0.27	0.00	46.5
5	T1	All MCs	1	3.0	1	3.0	0.001	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	45.0
Approach			2	3.0	2	3.0	0.001	2.3	NA	0.0	0.0	0.00	0.27	0.00	46.1
West: Coxs Lane (W)															
11	T1	All MCs	1	3.0	1	3.0	0.028	0.0	LOS A	0.1	0.4	0.02	0.56	0.02	42.8
12	R2	All MCs	48	3.0	48	3.0	0.028	4.1	LOS A	0.1	0.4	0.02	0.56	0.02	59.4
Approach			49	3.0	49	3.0	0.028	4.0	NA	0.1	0.4	0.02	0.56	0.02	59.1
All Vehicles			52	3.0	52	3.0	0.028	4.0	NA	0.1	0.4	0.02	0.55	0.02	58.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: [Eastern Access_Coxs Lane_Post Dev PM (Site Folder: Post Dev PM)]**

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Coxs Lane (E)															
5	T1	All MCs	22	3.0	22	3.0	0.065	4.0	LOS A	0.3	2.2	0.23	0.56	0.23	40.4
6	R2	All MCs	54	3.0	54	3.0	0.065	7.2	LOS A	0.3	2.2	0.23	0.56	0.23	37.6
Approach			76	3.0	76	3.0	0.065	6.3	LOS A	0.3	2.2	0.23	0.56	0.23	38.5
North: Eastern Site Access															
7	L2	All MCs	36	3.0	36	3.0	0.088	3.9	LOS A	0.4	3.2	0.13	0.57	0.13	38.4
9	R2	All MCs	81	3.0	81	3.0	0.088	6.9	LOS A	0.4	3.2	0.13	0.57	0.13	39.8
Approach			117	3.0	117	3.0	0.088	6.0	LOS A	0.4	3.2	0.13	0.57	0.13	39.4
West: Coxs Lane (W)															
10	L2	All MCs	122	3.0	122	3.0	0.120	4.1	LOS A	0.6	4.5	0.19	0.46	0.19	41.9
11	T1	All MCs	29	3.0	29	3.0	0.120	3.9	LOS A	0.6	4.5	0.19	0.46	0.19	42.5
Approach			152	3.0	152	3.0	0.120	4.0	LOS A	0.6	4.5	0.19	0.46	0.19	42.0
All Vehicles			344	3.0	344	3.0	0.120	5.2	LOS A	0.6	4.5	0.18	0.52	0.18	40.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▼ Site: [Fullerton Cove Road_George Street_Post Dev PM (Site Folder: Post Dev PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	181	3.0	181	3.0	0.095	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	69.9
12	R2	All MCs	1	3.0	1	3.0	0.095	6.2	LOS A	0.0	0.1	0.00	0.00	0.00	56.3
Approach			182	3.0	182	3.0	0.095	0.0	NA	0.0	0.1	0.00	0.00	0.00	69.8
East: George Street (E)															
1	L2	All MCs	13	3.0	13	3.0	0.022	5.0	LOS A	0.1	0.6	0.28	0.54	0.28	50.2
3	R2	All MCs	13	3.0	13	3.0	0.022	5.9	LOS A	0.1	0.6	0.28	0.54	0.28	50.0
Approach			25	3.0	25	3.0	0.022	5.4	LOS A	0.1	0.6	0.28	0.54	0.28	50.1
North: Fullerton Cove Road (N)															
4	L2	All MCs	1	3.0	1	3.0	0.076	6.4	LOS A	0.0	0.0	0.00	0.00	0.00	64.5
5	T1	All MCs	144	3.0	144	3.0	0.076	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			145	3.0	145	3.0	0.076	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.9
All Vehicles			353	3.0	353	3.0	0.095	0.4	NA	0.1	0.6	0.02	0.04	0.02	67.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Nelson Bay Road_Post Dev PM
(Site Folder: Post Dev PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road (S)															
4	L2	All MCs	5	3.0	5	3.0	1.625	287.0	LOS F	0.0	0.0	0.00	0.00	0.00	5.9
5	T1	All MCs	3102	3.0	3102	3.0	1.625	287.0	LOS F	0.0	0.0	0.00	0.00	0.00	5.9
Approach			3107	3.0	3107	3.0	1.625	287.0	NA	0.0	0.0	0.00	0.00	0.00	5.9
North: Nelson Bay Road (N)															
11	T1	All MCs	3015	3.0	3015	3.0	28.719	25412.2	LOS F	1844.7	13245.0	1.00	0.92	3.13	0.1
12	R2	All MCs	259	3.0	259	3.0	43.158	38541.0	LOS F	159.2	1143.0	1.00	1.33	3.15	0.1
Approach			3274	3.0	3274	3.0	43.158	26592.4	NA	1844.7	13245.0	1.00	0.95	3.13	0.1
West: Fullerton Cove Road (W)															
1	L2	All MCs	154	3.0	154	3.0	26.491	23377.3	LOS F	97.0	696.6	1.00	1.42	3.18	0.2
3	R2	All MCs	5	3.0	5	3.0	26.491	22950.7	LOS F	97.0	696.6	1.00	1.42	3.18	0.2
Approach			159	3.0	159	3.0	26.491	23363.1	LOS F	97.0	696.6	1.00	1.42	3.18	0.2
All Vehicles			6540	3.0	6540	3.0	43.158	13944.4	NA	1844.7	13245.0	0.52	0.51	1.64	0.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [Fullerton Cove Road_Coxs Lane_Post Dev PM (Site Folder: Post Dev PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Fullerton Cove Road (S)															
11	T1	All MCs	89	3.0	89	3.0	0.052	0.1	LOS A	0.1	0.4	0.07	0.08	0.07	68.8
12	R2	All MCs	7	3.0	7	3.0	0.052	7.1	LOS A	0.1	0.4	0.07	0.08	0.07	58.1
Approach			97	3.0	97	3.0	0.052	0.6	NA	0.1	0.4	0.07	0.08	0.07	68.0
East: Coxs Lane (E)															
1	L2	All MCs	13	3.0	13	3.0	0.103	5.0	LOS A	0.4	2.5	0.32	0.59	0.32	50.2
3	R2	All MCs	92	3.0	92	3.0	0.103	5.8	LOS A	0.4	2.5	0.32	0.59	0.32	46.8
Approach			104	3.0	104	3.0	0.103	5.7	LOS A	0.4	2.5	0.32	0.59	0.32	47.3
North: Fullerton Cove Road (N)															
4	L2	All MCs	144	3.0	144	3.0	0.143	6.4	LOS A	0.0	0.0	0.00	0.34	0.00	56.4
5	T1	All MCs	122	3.0	122	3.0	0.143	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	64.9
Approach			266	3.0	266	3.0	0.143	3.5	NA	0.0	0.0	0.00	0.34	0.00	60.8
All Vehicles			467	3.0	467	3.0	0.143	3.4	NA	0.4	2.5	0.09	0.34	0.09	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 Site: [Fullerton Cove Road_Nelson Bay Road_2047 Post Dev AM (Site Folder: Intersection Upgrade)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road (S)															
4	L2	All MCs	5	3.0	5	3.0	0.590	9.1	LOS A	23.0	165.2	0.56	0.53	0.56	53.7
5	T1	All MCs	2307	3.0	2307	3.0	0.590	27.8	LOS C	23.5	168.5	0.57	0.53	0.57	64.2
Approach			2313	3.0	2313	3.0	0.590	27.8	LOS C	23.5	168.5	0.57	0.53	0.57	64.2
North: Nelson Bay Road (N)															
11	T1	All MCs	2509	3.0	2509	3.0	* 0.775	4.3	LOS A	31.7	227.4	0.48	0.44	0.48	73.3
12	R2	All MCs	126	3.0	126	3.0	0.595	63.6	LOS E	7.3	52.3	1.00	0.80	1.00	30.8
Approach			2636	3.0	2636	3.0	0.775	7.1	LOS A	31.7	227.4	0.51	0.46	0.51	68.5
West: Fullerton Cove Road (W)															
1	L2	All MCs	222	3.0	222	3.0	0.439	92.1	LOS F	10.7	76.7	0.88	0.94	0.88	41.9
3	R2	All MCs	5	3.0	5	3.0	* 0.058	79.5	LOS E	0.3	2.2	0.98	0.65	0.98	29.3
Approach			227	3.0	227	3.0	0.439	91.8	LOS F	10.7	76.7	0.88	0.93	0.88	36.3
All Vehicles			5176	3.0	5176	3.0	0.775	20.1	LOS C	31.7	227.4	0.55	0.51	0.55	64.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

 Site: [Fullerton Cove Road_Nelson Bay Road_2047 Post Dev PM (Site Folder: Intersection Upgrade)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Nelson Bay Road (S)															
4	L2	All MCs	5	3.0	5	3.0	0.855	13.1	LOS B	48.7	349.6	0.86	0.81	0.88	47.0
5	T1	All MCs	3102	3.0	3102	3.0	0.855	335.0	LOS F	49.0	352.0	0.87	0.81	0.88	55.0
Approach			3107	3.0	3107	3.0	0.855	334.4	LOS F	49.0	352.0	0.87	0.81	0.88	54.9
North: Nelson Bay Road (N)															
11	T1	All MCs	3015	3.0	3015	3.0	* 0.903	5.2	LOS A	48.3	346.9	0.59	0.54	0.60	72.2
12	R2	All MCs	259	3.0	259	3.0	0.657	54.6	LOS D	14.0	100.8	0.97	0.84	0.97	33.4
Approach			3274	3.0	3274	3.0	0.903	9.1	LOS A	48.3	346.9	0.62	0.57	0.63	65.7
West: Fullerton Cove Road (W)															
1	L2	All MCs	154	3.0	154	3.0	0.274	34.1	LOS C	7.0	50.4	0.80	0.86	0.80	39.8
3	R2	All MCs	5	3.0	5	3.0	* 0.174	76.7	LOS E	0.3	2.5	1.00	0.64	1.00	27.2
Approach			159	3.0	159	3.0	0.274	35.5	LOS D	7.0	50.4	0.81	0.85	0.81	39.2
All Vehicles			6540	3.0	6540	3.0	0.903	164.3	LOS F	49.0	352.0	0.74	0.69	0.75	59.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)



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