MR538 and MR600 Corridor Strategy

Corridor Strategy Technical Report

Port Macquarie-Hastings Council

04 April 2022





Future Two Lane Road Cross-Section













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Document Issue History

Report File Name	Prepared	Reviewed	Issued	Date	Issued to
P4665.001R MR538 and M600 Corridor Strategy Technical Report	S. Seeney / J. Brook	A. Eke	J. Brook	21/01/2022	Clinton Grohs via email
P4665.001R MR538 and M600 Corridor Strategy Technical Report	S. Seeney / J. Brook	J.Brook	J. Brook	4/04/2022	Clinton Grohs via email

EXECUTIVE SUMMARY

Executive Summary

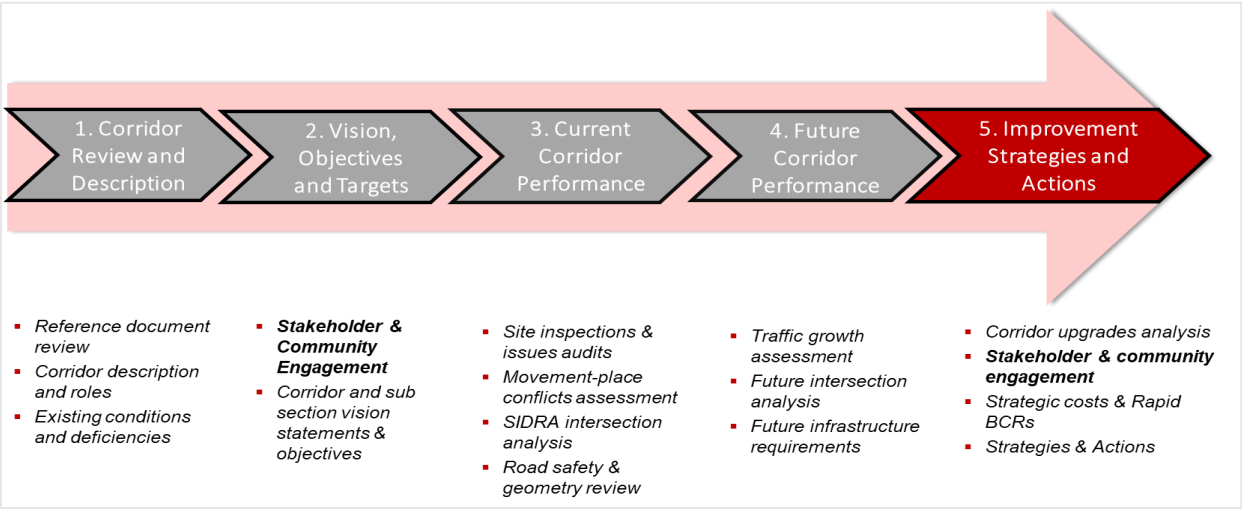
The Port Macquarie-Hastings local government area has experienced significant growth in recent years and this growth is anticipated to continue with an estimated population to 112,000 by 2040. With this growth, the region's transport infrastructure will experience pressures, and Council aims to maintain a safe and functional road corridor that provides access between population centres and services for all road users.

Bitzios Consulting has been engaged by Port Macquarie-Hastings Council to prepare a corridor strategy for MR538 and MR600 (approximately 54kms in length), which includes Hastings River Drive, Ocean Drive, Kendall Road, River Street and Nancy Bird Walton Drive. This road corridor links Port Macquarie to neighbouring local towns and villages along the coast, and then inland to Kew and Kendall.

The corridor has been divided into 10 separate sections based on road form, transport modes, function, and surrounding land uses. The start and end of each section was determined at locations where a clear transition occurred in road profile and land use (e.g. transition from rural to urban areas) and generally occurs at intersections.

- Section 1 - Hastings River: Pacific Highway Interchange to southern side of Tuffins Lane
- Section 2 - Port Macquarie: Southern side of Tuffins Lane to southern side of the Hastings River Drive / Oxley Highway intersection
- Section 3 - Port Macquarie: Southern side of Oxley Highway to southern side of Elkhorn Grove
- Section 4 - Port Macquarie to Lake Cathie: Southern side of Elkhorn Grove to southern side of Dirah Street
- Section 5 - Lake Cathie: Southern side of Dirah Street to southern side of Bonny View Drive
- Section 6 - Bonny Hills: Southern side of Bonny View Drive to southern side of no. 800 Ocean Drive
- Section 7 - 800 Ocean Drive to northern side of Edith Street
- Section 8 - North Haven to Laurieton: Southern side of no. 800 Ocean Drive to western side of Kew Road / Ocean Drive intersection
- Section 9 - Laurieton to Kew: Northern side of Kew Road / Ocean Drive intersection to eastern side of Pacific Highway interchange
- Section 10 - Kew to Kendall: Eastern side of Pacific Highway interchange to Comboyne Street / Graham Street

The study process has been divided into five parts as show below:



The traffic assessment provided an assessment of current (2020) and future (2040) traffic impacts at an intersection and link level. Intersection modelling was undertaken using SIDRA Intersection 8 to assess its operational performance levels. A Level of Service (LOS) analysis was undertaken at a link level across the corridor, on a per lane basis.

Traffic growth was still generally observed across the corridor (an average of 4-5%) from 2019 to 2020. Based on this, the 2020 traffic survey data was considered fit for purpose and not adversely impacted by COVID-19. AM and PM peak period site inspections were also undertaken on the 2nd and 3rd of February 2021 to observe typical intersection operations and back of queues. These observations, combined with footage from the traffic surveys (surveys undertaken 22nd October 2020) and site observations undertaken in June 2020, were used to calibrate the SIDRA Intersection models.

While some intersections along the corridor experience peak period queuing or selected approach delays, the majority of intersections across the corridor perform at LOS C or better based on the current performance assessment (2020). The majority of the corridor link performance was identified to operate with a minimum LOS C, except at the following locations, which operated between LOS D and E for some directions / peak periods:

- Hastings River Drive Between Boundary Street and Hibbard Road (west)
- Ocean Dr between Lake Road and Pacific Drive.

A table and maps presenting the LOS as well as key data (volume, number of lanes, capacity, posted speed etc.), for each link segment is presented in **Appendix F**.

For future performance (2030 and 2040), the majority of intersections across the corridor perform at LOS C or better. The following intersections were identified to operate outside the acceptable limits:

- Clifton Drive / Hastings River Drive
- Park Street / Hastings River Drive
- Gordon Street / Ocean Drive
- Lake Road / Ocean Drive
- Koala Street / Ocean Drive
- Greenmeadows Drive / Ocean Drive.

Consistent with the existing operations, downstream capacity constraints near Lake Road were a major factor impacting intersection performance at the Ocean Drive / Lake Road and Ocean Drive / Koala Street intersections. Resolving this downstream capacity constraint will be a key item to address in future upgrade planning.

The majority of the corridor was identified to operate with a minimum LOS C as shown in Table 5.6 and Table 5.7 of this report, except at the following locations, which operated between LOS D some directions / peak periods in 2030:

- Hastings River Drive Between Tuffins Lane and Boundary Street (eastbound)
- Hastings River Drive Between Bellbowrie Street and Findlay Lane (eastbound)
- Ocean Drive between Lake Road and Koala Street (northbound)
- Ocean Drive between Fiona Crescent and Dirah Street (northbound).

In 2040, the following sections are also expected to operate at LOS D as shown in Table 5.8 and Table 5.9:

- Ocean Drive between Greenmeadows Drive and Maranatha Place (northbound)
- Ocean Drive between River Street and Comboyne Street (westbound)
- Ocean Drive between Dirah Street and Aqua Crescent (southbound).

A table and maps presenting the LOS as well as key data (volume, number of lanes, capacity, posted speed etc.), for each link segment is presented in **Appendix G**.

As the corridor's function will change in the future with increased residential and retail growth, its movement and place conflicts will also change. The corridor's future movement and place conflicts has been assessed considering the anticipated key growth areas and future function of each section.

Movement and Place Conflict Change Summary 2020 - 2030

Section	Movement and Place Conflict Category		Comment
	2020	2040	
1	No change		High movement function remains consistent with traffic current performance
2	No change		Movement and place function remains consistent with current performance
3	4B	4C	Slight increase in place function at key locations
4	No change		High movement function remains consistent with traffic current performance
5	4B	4D & 4C	Increase in place function at key locations based on Area 14 development
6	4C	4D	Increase in conflict due to traffic and urban growth
7	No change		High movement function remains consistent with current performance
8	4C	4E	Increase in conflict due to traffic and urban growth
9	4B	4D	Increase in conflict due to Area 15 development
10	5A	4B	Increase in conflict due to traffic and urban growth

As shown above the movement and place conflict assessment is based on a broad spectrum and therefore the changes within the corridor do not significantly impact the conflict assessment.

The proposed actions for each section of the corridor are provided in **Section 8** of the report. The timing and priority of each action is categorised into short (1-10 years), medium (11-20 years) and long (20+ years) which considers land use growth along the corridor. A number of actions are considered to be signature projects that are earmarked by Council to be of key significant in the improvement of the corridor in terms of safety and efficiency specifically for accommodating future growth. ***Signature Projects*** are also highlighted.

Specific projects and improvements out of this Strategy will need to be considered for prioritisation along with a number of other transport improvements identified out of Regional Integrated Transport Strategy and Port Network Transport Network Planning. The below tables highlights the high-level strategic cost estimate by works program type To note these are estimates only to inform program budget planning and would require concept designs level investigation to provide more reliable estimates. These do not include maintenance works which will need to be considered as part of ongoing asset management.

ACTION		PROGRAM BUDGET ESTIMATE
Traffic		
	Short Term (to 2025)	~$11.5 Million
	Medium Term (2026-2030)	~$44.7 Million
	Long Term (2030-2040)	~$12.7 Million
Active Transport		
	Short Term (to 2025)	~$13.7 Million
	Medium Term (2026-2030)	~$16.9 Million
	Long Term (2030-2040)	~$0.9 Million
Public Transport		
	Long Term (2030+)	~$2.5 Million

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1. INTRODUCTION

1.1 Background

The Port Macquarie-Hastings local government area has experienced significant growth in recent years and this growth is anticipated to continue with an estimated population to 112,000 by 2040. With this growth, the region's transport infrastructure will experience pressures, and Council aims to maintain a safe and functional road corridor that provides access between population centres and services for all road users.

Bitzios Consulting has been engaged by Port Macquarie-Hastings Council to prepare a corridor strategy for MR538 and MR600 (approximately 54kms in length), which includes Hastings River Drive, Ocean Drive, Kendall Road, River Street and Nancy Bird Walton Drive. This road corridor links Port Macquarie to neighbouring local towns and villages along the coast, and then inland to Kew and Kendall.

This corridor strategy will integrate with Council's plans and strategies for the region as well as the NSW Government's plans for the Pacific and Oxley Highways. It will focus on preserving the corridor and setting out a broad design framework for future transport network upgrades for all users including traffic, walking, cycling and public transport. It will also define priorities for future road maintenance, operation, and safety for all road users, while also considering the diverse communities it serves and planned growth across the region.

The corridor has been divided into 10 separate sections based on road form, transport modes, function, and surrounding land uses. The start and end of each section was determined at locations where a clear transition occurred in road profile and land use (e.g. transition from rural to urban areas) and generally occurs at intersections.

1.2 Project Process

The study process has been divided into five parts as show in Figure 1.1.

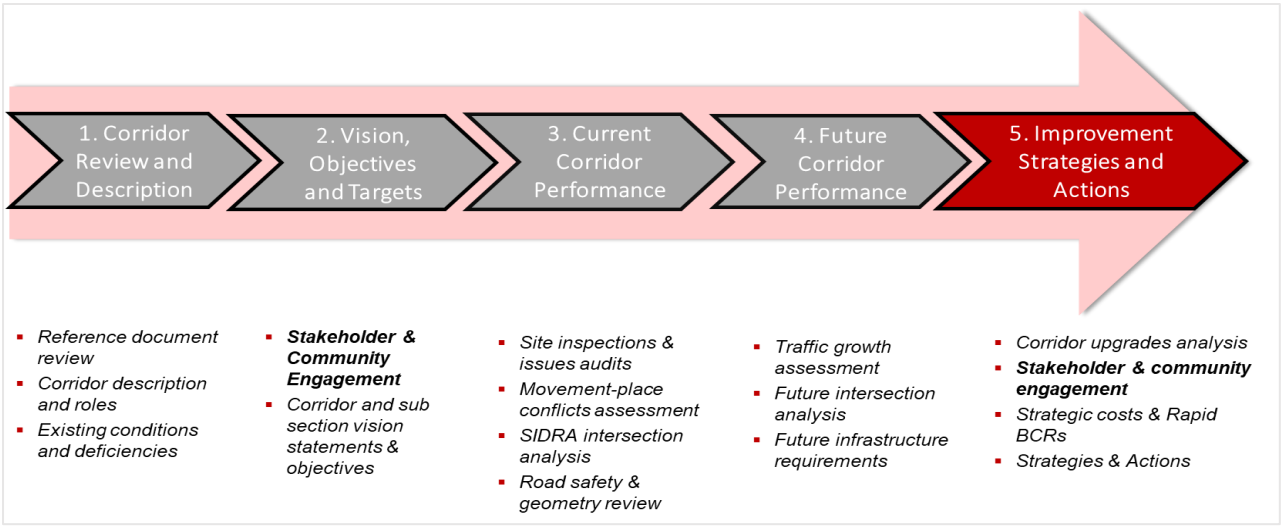


Figure 1.1: Strategy Process and Stages

As shown in Figure 1.1, the study was divided into six 'Parts', summarised as follows:

- **Part 1 - Corridor Review and Description**: involved building on our existing knowledge of the corridor through a thorough review of available material and information gathering via stakeholders and via site inspections. Collected information will be added to the GIS database and the corridor described
- **Part 2 - Vision, Objectives and Targets**: involved the development a corridor-wide Vision along with key objectives and targets. Sub-ordinate visions for each section with specific objectives and metrices will then be developed, with more of a focus on specific aspects of each section
- **Part 3 - Current Corridor Performance**: involved data collection, processing and modelling being undertaken on the existing corridor road environment considering operational, safety and geometry aspects
- **Part 4 - Future Corridor Performance**: involved forecasting traffic growth and applying the objectives to understand how the balance between movement and place should be struck in each sub-section to inform what types of options should be tested to address identified deficiencies in each section
- **Part 5 - Improvements, Strategies and Actions**: involved the development of sub-corridor upgrade plans directly to the vision and objectives and leading to a costed and prioritised actions schedule
- **Part 6 - Reporting**: All of the previous working papers and technical notes are collated and organised into a Technical Report (this report) and the Strategy Summary Report

Key inputs into developing the Corridor Strategy include:

- Intersection traffic counts at 27 key intersections to inform intersection and road capacity analysis
- Site inspections & audits of peak period conditions inform traffic analysis
- Review of crash history along the corridor
- Road safety review including alignment, geometry, pavement health and a roadside environment review
- Assessment of road structures such as culverts, bridges, and sections subject to flooding
- Consideration and alignment with relevant studies, investigation, community strategic plans, and Council's urban growth management strategy

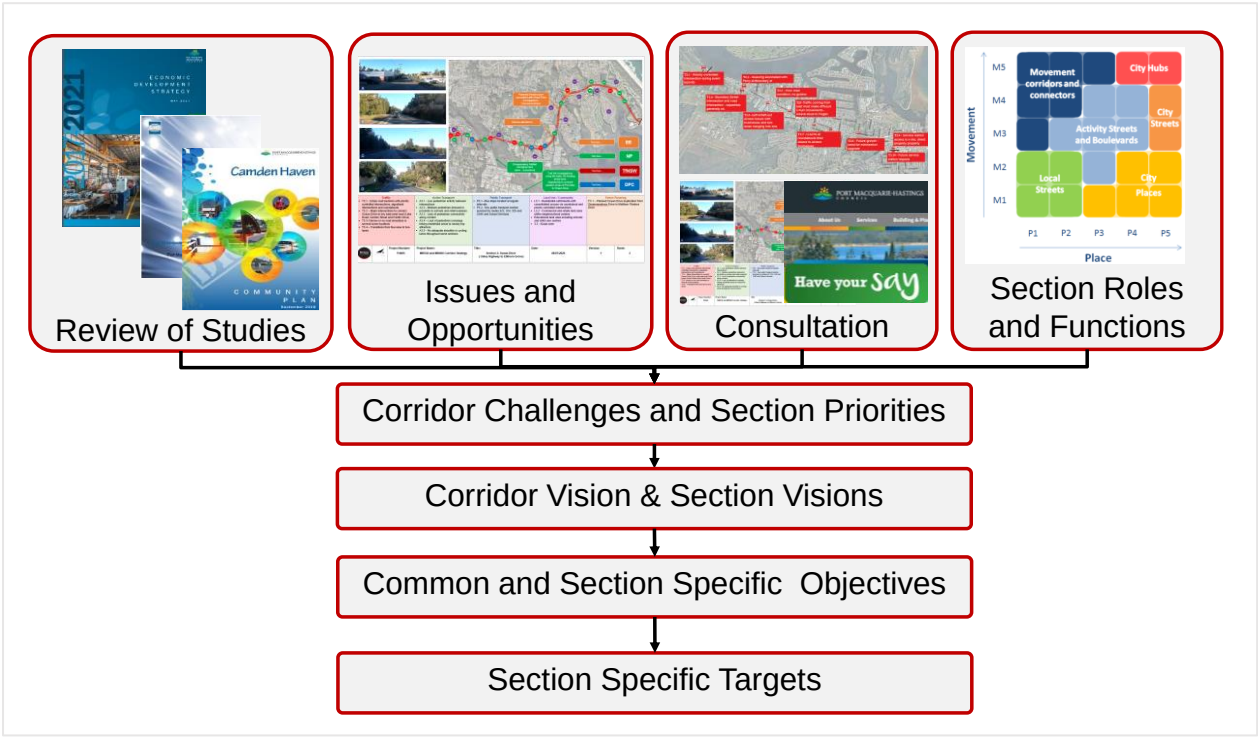


Figure 1.2: Vision, Objective and Target Development Process

1.3 Technical Report Purpose and Scope

This Technical Report collates the detailed work that has been completed throughout the study process that has informed the corridor strategy. Technical detail from the previously prepared reports and technical notes will be included to demonstrate the analysis and evaluation of the corridor strategy development. The technical report scope includes:

- Overview of the corridor study area, sections, and descriptions
- A review of previous reports, plans and strategies that relate to the corridor, various sections, and strategy development
- An overview of the site inspection assessments, road safety review and geometrical review
- Assessment of current and future traffic impacts at an intersection and link level
- Assessment of the existing and future alternate transport infrastructure including bus facilities, footpaths, crossings, and cycle facilities
- A summary of each section's movement - place function and role along the corridor
- Details of the section improvements and actions including timing and priorities
- An overview of the community consultation process and details of the outcomes and key findings
- Details of the next steps from strategy to implementation.

2. CORRIDOR STUDY AREA

2.1 Corridor Sections and Description

The corridor has been divided into 10 separate sections based on road form, transport modes, function, and surrounding land uses. The start and end of each section was determined at locations where a clear transition occurred in road profile and land use (e.g. transition from rural to urban areas) and generally occurs at intersections.

The corridor has a high movement function across its entire length, facilitating movement between coastal towns and the Pacific Highway, Port Macquarie, and the coastal towns along Ocean Drive. The place function varies significantly along the corridor from environmental areas with limited to no activity through to highly urbanised areas with active street frontages.

	Description
1	**Hastings River:** Pacific Highway Interchange to southern side of Tuffins Lane
2	**Port Macquarie:** Southern side of Tuffins Lane to southern side of the Hastings River Drive / Oxley Highway intersection
3	**Port Macquarie:** Southern side of Oxley Highway to southern side of Elkhorn Grove
4	**Port Macquarie to Lake Cathie:** Southern side of Elkhorn Grove to southern side of Dirah Street
5	**Lake Cathie:** Southern side of Dirah Street to southern side of Bonny View Drive
6	**Bonny Hills:** Southern side of Bonny View Drive to southern side of no. 800 Ocean Drive
7	**Bonny Hills to North Haven:** Southern side of no. 800 Ocean Drive to northern side of Edith Street
8	**North Haven to Laurieton:** Southern side of no. 800 Ocean Drive to western side of Kew Road / Ocean Drive intersection
9	**Laurieton to Kew:** Northern side of Kew Road / Ocean Drive intersection to eastern side of Pacific Highway interchange
10	**Kew to Kendall:** Eastern side of Pacific Highway interchange to Comboyne Street / Graham Street

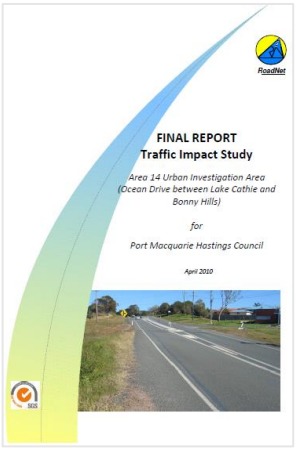


3. REVIEW OF PREVIOUS STUDIES, PLANS AND POLICIES

3.1 Reference Documents

Below provides a review and summary of various reference documents and their relevance to the corridor and strategy development.

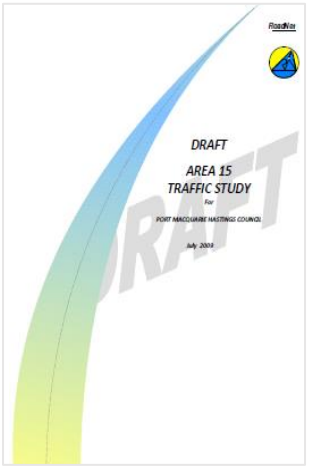
3.1.1 Area 14 Study (2010)



In 2010, the Area 14 Traffic Impact Study assessed the traffic impacts associated with the development of approximately 180 hectares which is planned to accommodate 10,000 future residents between Lake Cathie and Bonny Hills. Key findings from the study identified that Ocean Drive would not cater for the future growth in its current two-lane rural arterial cross section. To accommodate the urban release area as well as background growth along Ocean Drive, a series of upgrades and intersection treatments were recommended to be implemented as Area 14 is developed, and include:

- Sections of Ocean Drive upgraded to a four-lane cross section
- Ocean View Drive / Huston Mitchell Drive intersection upgrade
- Bonny View Drive / Ocean View Drive intersection upgrade
- A new signalised intersection on Ocean View Drive / Baltic Street
- Abel Tasman Drive / Ocean Drive intersection upgrade.

3.1.2 Area 15 Study (2009)



In 2009, the Area 15 Traffic Study assessed the traffic impacts associated with the development of 875 dwellings and a light industrial area located in the West Haven area. The study recommended a range of intersection treatments that are required to cater for the development and include:

- Glen Haven Drive / Ocean View Drive intersection
- Lake Ridge Drive / Ocean View Drive intersection
- Mountain View Drive / Ocean View Drive intersection
- Brother Glen Drive / Ocean View Drive intersection
- Sirius Drive / Ocean View Drive intersection
- Proposed Waste Transfer Station (west of Glen Haven Drive / Ocean Drive intersection).

3.1.3 Kendell Main Street Plan (2017)



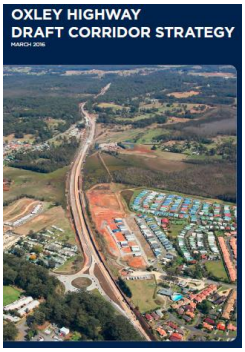
The Kendell Main Street Plan aimed to improve traffic flow and activate the street frontage while making active transport more convenient. Site specific traffic and transport related upgrades include:

- Intersection treatments at the Graham Street / Comboyne Street
- Formalise on-street parking on the northern side of River Street
- Establish a shared path starting from River Street to Comboyne Street
- Improvements to the bus stop located on River Street
- Install a pedestrian refuge on River Street in proximity to the bus stop
- Install a pedestrian crossing on Graham Street near Comboyne Street.

3.1.4 Kew Main Street Masterplan (2010)

The plan focuses on the intersection hub of Nancy Bird Walton Dive, Kendall Road and Ocean Drive. The aim of the plan is to improve traffic management, pedestrian connectivity, and urban amenity in the area. Initial stages of the upgrade are complete including upgrade of the Ocean Drive / Nancy Bird Walton Drive intersection to a roundabout and median upgrade. Further works will include improvements to urban amenity, pathways pedestrian crossings and on-street parking.

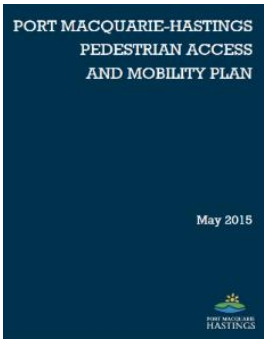




3.1.5 Oxley Highway Corridor Strategy (RMS, 2016)

The Oxley Highway Corridor Strategy sets out a 20-year plan to manage and guide the development of the road corridor to improve safety, traffic efficiency and sustainability. Based on the anticipated growth along the corridor, a number of prioritised actions have been identified. This strategy aims to guide further investigations and the development of site-specific treatments for several actions. The Oxley Highway only intersects with the corridor study area once at the Oxley Highway / Ocean Drive intersection. No specific actions have been identified for this intersection as part of the Oxley Highway Corridor Strategy.

3.1.6 Pedestrian Access and Mobility Plan for Port Macquarie (town centre), North Haven, Laurieton, Kew, Kendall (2015)

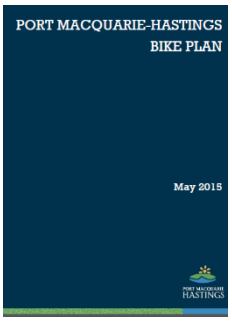


The Pedestrian Access and Mobility Plan (PAMP) is a strategic action plan to identify pedestrian facilities and improve walkability, safety and mobility. A number of pedestrian related treatments are proposed within key focus areas along the corridor. These include:

- Port Macquarie:
  - A footpath on both sides of Hastings River Drive through Port Macquarie
- Lake Cathie:
  - Five pedestrian refuge crossings at different locations along Ocean Drive throughout Lake Cathie.
  - A footpath on Ocean Drive Between Lake Cathie bridge and Evans Street
  - A footpath on the eastern side of Ocean Drive between Aqua Crescent and the main shopping centre access

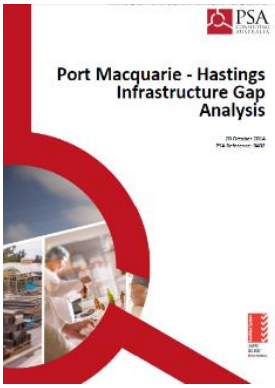
- Bonny Hills:
  - Three pedestrian refuge crossings at different locations on Ocean Drive throughout Bonny Hills
  - A footpath on the northern side of Ocean Drive between Rodley Street and existing path to the surf club
  - A footpath on the western side of ocean drive between the tennis courts and Jungarra Crescent
- North Haven:
  - An upgrade of the Stingray Creek bridge with footpaths on both sides in North Haven
- Kew:
  - A pedestrian refuge crossing on Kendall Road and Homedale Road in Kew village centre
- Kendall:
  - Pedestrian refuge crossing on River Street and Graham Street in Kendall village centre
  - A footpath on Graham Street.

3.1.7 Port Macquarie – Hastings Bike Plan (2015)



The Bike Plan for Port Macquarie-Hastings assists in coordinating the delivery of cycling infrastructure in order to create a cohesive and connected cycle network. This plan aims to increase cycling participation within the community, for both transport and recreation and in return reduce car dependency. Several on and off-road facilities are identified across the region to connect existing facilities. An inter-town bicycle network is also proposed to connect regional towns. The Bike Plan has identified the following treatments relevant to the study corridor:

- Road shoulders along the entire length of Hastings River Drive and Ocean Drive as part of the inter-town bicycle network
- Shared path along Ocean Drive between Laurieton and Kew
- Shared path along the new Stingray Creek bridge
- Shared path along Kendall Road between Kendall and Kew.



3.1.8 Port Macquarie – Hastings Infrastructure Gap Analysis (2014)

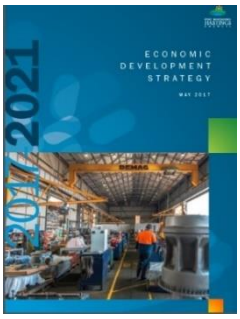
The Port Macquarie-Hastings Infrastructure Gap Analysis provides a capacity assessment of the transport and telecommunications infrastructure for the current and future demands of the region. An audit was undertaken of the existing strategies which provide transport infrastructure upgrades and based on this a number of deficiencies were identified. These gaps within the network have the potential to limit economic growth in the Port Macquarie-Hastings region. The key infrastructure recommendations outlined in the Gap Analysis that impact the study corridor include:

- Duplication of Hastings River Drive (Boundary Street to Wood Street)
- Duplication of Hastings River Drive (Ashton Street to Gordon Street).

3.1.9 Port Macquarie Hastings Orbital Road Feasibility Study (2019)



The Orbital Road Feasibility Study included a detailed analysis of providing a new road link from Hastings Rive Drive to the Oxley Highway and through to Ocean Drive. This new corridor is proposed to provide a more accessible route through Port Macquarie and alleviate congestion on Oxley Highway and Lake Road. The study identified a preferred route based on a multicriteria analysis, environmental constraints and the cost benefit of the Orbital Road. The options analysis identified that Option 1/1A is the preferred route which connects the Ocean Drive / Greenmeadows Drive intersection and the Hastings River Drive / Boundary Street intersection to the proposed Orbital Road.



3.1.10 Port Macquarie – Hastings Economic Development Strategy (2019)

The 2017 – 2021 Economic Development Strategy aims to create the right environment for growth with a balanced economy that will provide employment growth. In order to support this growth improved infrastructure is required to sustain the region into the future. A key action identified within the strategy is to review the Infrastructure Gap Analysis Report which provides direct upgrades to the transport infrastructure along the study corridor.

3.1.11 Port Macquarie – Hastings Local Government Area Traffic Study (2018)

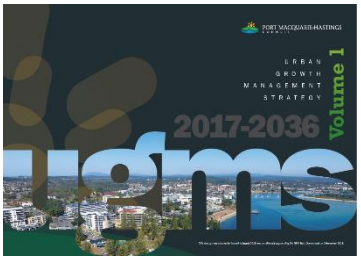


The Local Area Traffic Study evaluated the road network performance for the Port Macquarie-Hastings area. This included testing a range of infrastructure improvements whilst considering future growth, road safety and existing traffic conditions. Approximately 20% of the anticipated future growth will occur along the Ocean Drive corridor between Lake Cathie and Kew. Infrastructure upgrades are therefore required to support this growth in the future.

Upgrades specific to the corridor within the traffic study include:

- Upgrade signals at the Boundary Street / Hastings River Drive intersection
- Signal phasing changes at the Hastings River Drive / Oxley Highway intersection
- Upgrade the Ocean Drive / Kew Road intersection to a roundabout
- Signalise the Ocean Drive / Sirius Drive intersection.

3.1.12 Port Macquarie – Hastings Urban Growth Management Strategy 2017-2036 (2018)

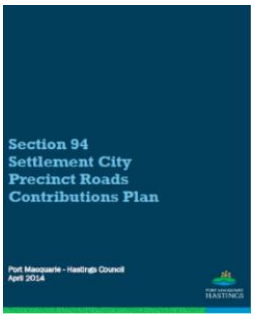


The Port Macquarie-Hastings LGA is identified as a priority area for urban growth within the North Coast Regional Plan (2017). This strategy provides a strategic planning framework for residential, rural, retail, industrial and tourism development for the area. This will be progressively implemented over the 20-year period whilst considering the planning principles of the Regional Strategy and State Government Settlement Planning Guidelines for the Mid North Coast.

A key action from this strategy is the development of an overarching regional integrated transport strategy. A number of the transport infrastructure upgrades identified within the other studies were referenced and include:

- Consideration of the orbital road and corridor planning priorities
- Flood free access options to the Port Macquarie Airport.

3.1.13 Section 94 Settlement City Precinct Roads Contributions Plan



The Settlement City Precinct Roads Contributions Plan clearly indicates the provisions for Council to apply Section 7.11 contributions (previously Section 94) onto developments to levy development contributions for intersections and roadwork upgrading. The plan describes the types of developments excluded from Section 7.11, the monetary value of contributions, and the method and timing of contributions.

3.1.14 Community Plans (CCATS 2019)

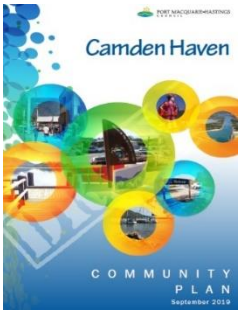
The available Community Plans have been reviewed in relation to the study corridor as community engagement is a critical part of transport planning. By identifying user issues and priorities as well as gaining local knowledge, the community plans will be utilised throughout the corridor study to assist with future planning.

The following community priorities were identified for the corridor:

- Improved footpaths and cycleway connections along Ocean Drive
- Enhanced connectivity between Lake Cathie and North Haven.

Kew, Kendall, Herons Creek and Lorne Community Plan (2019)

- Construct a shared pathway from Kew to Kendall connecting Lakewood and Laurieton which shall be wheelchair accessible. This is highlighted as a top priority
- Install a safe crossing from Kendall Op-Shop to Kendall Services Club and tennis court
- Improve the road and pathway condition from Graham Street to Kendall Public School
- Connect public transport services from Kew, Kendall, Herons Creek and Lorne to Port Macquarie, Laurieton and Bonny Hills.



- Camden Haven Community Plan (2019)
- Having safe roads and pathways
- Significant demand for additional pathways and cycleways
- Frequent public transport services that provide direct options.

3.2 Recent Road Upgrade and Design Projects

Recent upgrades completed along the corridor within the last 5 years, including:

- Reclassification of Hastings River Drive north of Winery Drive to a regional road as part of the Pacific Highway upgrade
- Traffic signals at the intersection of Hastings River Drive and Boundary Street
- Roundabout at the intersection of Hastings River Drive and Newport Island Road
- Duplication of Hastings River Drive between Aston and Park Street including a new roundabout at Findlay Avenue
- Upgrade of Ocean Drive at Abel Tasman Drive and Seaside Drive to accommodate new residential subdivisions
- Roundabout at the intersection of Ocean Drive and Houston Mitchell Drive

- New Ocean drive bridge over Stingray Creek
- Shared path on southern side of Ocean Drive between Pacific Highway and Fairwinds Avenue.

3.3 Planned Road Upgrade and Design Projects

Council had already identified a series of road upgrade design projects, at various stages of development as shown in **Appendix A** and include:

- Hastings River Drive upgrade between Boundary Street and Hughes Place
- Hastings River Drive traffic signals at Aston Street
- Ocean Drive upgrade between Greenmeadows Drive (south) and Matthew Flinders Drive
- Ocean Drive upgrade between Ernest Street and Middle Rock Road
- Ocean Drive upgrade between Abel Tasman Drive and Houston Mitchell Drive
- Ocean Drive shared path between Kendall, Kew, and Laurieton
- Ocean Drive / Nancy Bird Walton Drive / Kendall Road roundabout upgrade.

4. EXISTING CONDITIONS AUDIT

4.1 Overview

The existing conditions audit focuses on infrastructure and road safety which is informed by a range of site visits undertaken by Bitzios Consulting and Northrop in June 2020. Northrop's assessment involved road geometry and infrastructure, including culvert and bridge conditions and pavement health.

4.2 Road Safety Assessment

As part of the assessment, Bitzios Consulting undertook site inspections along the entire corridor length in June 2020 to assess existing conditions and review road safety issues. Northrop has undertaken the assessment of road geometry and infrastructure, including culvert and bridge condition and pavement health. Northrop undertook site inspections along the corridor to inform their assessment. The site inspections formed the basis of Working Paper 1, which reviewed road safety and, geometry and infrastructure. The following sections provide a summary of this assessment.

4.2.1 Crash Analysis

The corridor has a history of crashes occurring consistently along the entire length. Some clusters were identified; however, crashes are generally spread across the sections. The majority of crashes were injury or non-casualty. There are 6 fatal crashes that were recorded across the corridor, 5 occurring within Section 1.

As part of Working Paper 1 – Site Inspection report, detailed crash analysis was undertaken for the entire corridor. This included assessment analysis of crashes by type and severity. Crash maps by severity and Road User Movement (RUM) code were also prepared.

Corridor crash history has also been summarised by proximity to intersections. Crashes that occurred on the corridor within 50m of an intersection have been summarised in Table 4.1.

Table 4.1: Crash Type Summary by Intersection

Cross Street (Closest Intersection)	Total Crashes	Fatal Crashes	Injury Crashes	Non-casualty Crashes
Section 1 (Pacific Highway Interchange to Tuffins Lane)				
Pacific Highway Interchange	1	0	1	0
Swamp Road	1	0	1	0
Glen Ewan Road	1	0	1	0
Winery Drive	6	0	1	5
Willow Creek	1	0	1	0
Fernbank Creek Road	1	1	1	0
Tuffins Lane	1	0	1	0
Section 2 (Tuffins Lane to Gordon Street / Hastings River Drive)				
Boundary Street	2	0	2	0
Hibbard Street	1	0	1	0
Woods Street	1	0	1	0
Mumford Street	1	0	1	0

Cross Street (Closest Intersection)	Total Crashes	Fatal Crashes	Injury Crashes	Non-casualty Crashes
Newport Island Road	1	0	1	0
Bellbowrie Street	2	0	2	0
Clifton Drove	2	0	1	1
Widderson Street	1	0	1	0
Aston Street	3	0	3	0
Hilltop Crescent	1	0	0	1
Park Street	2	0	2	0
Gordon Street	3	0	3	0
Section 3 (Gordon Street / Hastings River Drive to Elkhorn Grove)				
Table Street	1	0	1	0
Heather Street	2	0	2	0
Denehurst Place	2	0	1	1
Hindman Street	1	0	1	0
Lake Street	7	0	5	2
Koala Street	4	0	2	2
Greenmeadows Drive	1	0	1	0
Treeview Way	2	0	1	1
Greenmeadows Drive	2	0	2	0
Crestwood Drive	2	0	1	1
Section 4 (Elkhorn Grove Intersection to Dirah Street)				
Elkhorn Grove	1	0	1	0
Dirah Street	1	0	0	1
Section 5 (Dirah Street to Bonny View Drive)				
Boodgery Street	1	0	1	0
Tallong Drive	1	0	0	1
Ernest Street	1	0	0	1
Ocean Street	1	0	1	0
Miala Street	2	0	2	0
Houston Mitchell Drive	1	0	1	0
Section 6 (Bonny View Drive to 800 Ocean Drive)				
Beach Street	1	0	1	0
Binbilla Drive	1	0	0	1
Seaview Street	1	0	0	1
Section 7 (800 Ocean Drive to Edith Street)				
Alma Street	1	0	1	0
Vine Street	1	0	1	0
Lake Street	1	0	1	0

Cross Street (Closest Intersection)	Total Crashes	Fatal Crashes	Injury Crashes	Non-casualty Crashes
Section 8 (Edith Street to Kew Road / Ocean Drive)				
Hoschke Road	1	0	0	1
Captain Cook Bicentennial Drive	1	0	0	1
Bottlebrush Place	1	0	1	0
Sirius Drive	2	0		2
Section 9 (Kew Road / Ocean Drive to Pacific Highway Interchange)				
Nancy Bird Walton Drive	2	0	1	1
Section 10 (Pacific Highway Interchange to Comboyne Street)				
Pacific Highway	1	0	0	1
Bethesda Place	2	0	1	1

4.2.2 Road Safety Review

A high-level review of road safety issues was undertaken for each section of the corridor as part of Working Paper 1. This was undertaken generally as per the processes specified in Austroads Guide to Road Safety. It is noted that this review did not identify every individual issue and was intended to identify key issues which occur across the section and corridor.

The same types of issues were consistently present in each section. Issues included:

- Hazards within the clear zone / in close proximity to travel lanes. Hazards typically included trees, power poles and non-traversable culverts
- Frequent drop-offs / embankments which are not protected with guardrail
- Limited shoulder provisions
- Limited or no pedestrian / cyclist facilities
- Poor pavement conditions
- Poor delineation of the road environment

Other issues identified across some sections included the occurrence of four-way priority-controlled intersections, lack of turn treatments, poor lighting, and overgrown vegetation.

4.3 Road Geometry Review & Infrastructure Review

The following was identified as part of the Road Geometry and Infrastructure review:

- The road geometry and alignment is inconsistent and often deficient. Particularly:
  - Narrow lane widths of less than 3.5m, which are not appropriate for the road environment, high vehicle volumes or use by heavy vehicles
  - Narrow or no shoulder provision. Shoulders are often unsuitable for the road environment, or the verge commences immediately at the edge of the travel lane. Shoulders are essential to allow for recovery maneuverers, breakdowns, and cyclists. Shoulders also allow general traffic to leave the travel lanes to let emergency vehicles pass
  - Inconsistent provision of kerb and channel across the corridor, particularly through urban sections
  - Sections of poor road alignment within the road reserve
- Consistently poor pavement health across the corridor, including rutting, cracking, potholes and wearing

- Generally poor to average bridge infrastructure. The Stingray Creek Bridge and Pacific Highway overpass (Section 10) are considered to be of high quality. The remainder of bridges had no shoulder provision and poor pathway connectivity or pedestrian facilities
- Sub-standard culvert design with many non-traversable culverts located in the clear zone
- Substandard roadside environment, with limited pedestrian / activity transport provisions. The roadside environment also often included unprotected steep embankments and trees / power poles in close proximity to travel lanes.

5. TRAFFIC ASSESSMENT

5.1 Overview

The traffic assessment provided an assessment of current (2020) and future (2040) traffic impacts at an intersection and link level. Intersection modelling was undertaken using SIDRA Intersection 8 to assess its operational performance levels. A Level of Service (LOS) analysis was undertaken at a link level across the corridor, on a per lane basis.

5.2 Background Traffic

Traffic surveys were undertaken by Matrix on Thursday 22 October 2020 (intersection surveys for AM and PM weekday peak periods) to determine background traffic volumes. Intersection counts were undertaken at 27 intersections across the corridor.

Peak hour periods for each intersection varied, however generally occurred within the following periods:

- AM Peak Period: 7:45-9:00AM
- PM Peak Period: 3:00-5:15PM.

Slight variances in the actual intersection peak periods occurred across the corridor.

Tube count surveys were undertaken between 20 and 26 October 2020 for Annual Average Daily Traffic, (AADT). Tube count surveys undertaken by TTM at 43 locations along the corridor between 11 March and 24 March 2019 was provided by Council.

Network diagrams are presented in **Appendix A** which summarises the 2020 survey traffic volumes, across the varies peak periods. The traffic survey data for each intersection is attached at **Appendix B**. The survey data for each intersection specifies the specific peak hour periods for that intersection. Traffic volumes for the recorded peak hour was used for the intersection assessment.

5.2.1 Survey Data Validation, Inspections and Calibration

Due to the impacts associated with COVID-19 traffic surveys were delayed until October 2020 once restrictions were generally eased and traffic volumes were considered to be back to typical levels. To identify if COVID-19 had any impacts on traffic volumes at the time at which traffic surveys were undertaken, a comparison of AADT volumes between 2019 and 2020 was undertaken. 7-day surveys were undertaken in March 2019 and October 2020, with data compared for the following four locations:

- Hastings River Drive between Tuffins Lane and Boundary Street
- Ocean Drive between Lake Road and Koala Street
- Ocean Drive between Miala Street and Seaside Drive
- Ocean Drive between Pioneer Street and Vine Street.

The comparison of data is presented in Table 5.1.

Table 5.1: AADT Data Comparison

Location	2019		2020		Difference	
	Weekday	7-Day	Weekday	7-Day	% Change Weekly	% Change 7 Day
Hastings River Drive between Tuffins Lane and Boundary Street	9,514	8,728	10,029	9,282	5.4%	6.3%
Ocean Drive between Lake Road and Koala Street	28,392	25,586	28,633	25,658	0.8%	0.3%
Ocean Drive between Miala Street and Seaside Drive	87,84	7,925	9,083	8,412	3.4%	6.1%
Ocean Drive between Pioneer Street and Vine Street	8,204	7,894	8,931	8409	8.9%	6.5%

As demonstrated, growth was still generally observed across the corridor (an average of 4-5%) from 2019 to 2020. Based on this, the 2020 traffic survey data was considered fit for purpose and not adversely impacted by COVID-19.

AM and PM peak period site inspections were also undertaken on the 2nd and 3rd of February 2021 to observe typical intersection operations and back of queues. These observations, combined with footage from the traffic surveys (surveys undertaken 22nd October 2020) and site observations undertaken in June 2020, were used to calibrate the SIDRA Intersection models where required. Calibration was undertaken to back of queue and based on the recommended methodology by SIDRA for different intersection types as follows:

- Signalised intersections: modification of the area type factor and or basic saturation flow value
- Roundabouts: modification of the environment factor and or entry/circulating flow factor
- Priority controlled: modification of the follow up headway and critical gap.

5.3 Assessment Methodology

5.3.1 Intersection Assessments

Intersection modelling was undertaken using SIDRA Intersection 8 to assess the current and future operational performance levels of the subject intersections.

The existing geometric layout for each intersection was used. For the signalised intersections, the Traffic Control Site (TCS) plans, and SCATS Intersection Diagnostic Monitor (IDM) signal data was obtained from Transport for NSW (TfNSW) to inform signal phasing and timing. SCATS phasing is attached at **Appendix E**.

Intersection Level of Service (LOS) was based on intersection delays, consistent with the Roads and Maritime Services (RMS) methodology. The control delay for LOS for the RMS method is summarised in Table 5.2

For traffic signals, the average movement delay and level of service over all movements has been adopted.

For roundabouts and priority control signals intersections, the worst movement has been adopted.

Table 5.2: Level of Service (LOS) Delay – RMS Method

LOS	Average Delay per Vehicle (s)
A	d < 14
B	d < 15 to 28
C	d < 29 to 42
D	d < 43 to 56
E	d ≤ 57 to 70
F	d > 70

Two intersections were considered to have sufficient width (minimum 6m) for vehicles to stage in the central median. To replicate this in SIDRA, these intersections were modelled with a staged crossing.

5.3.2 Link Assessment

A Level of Service (LOS) analysis was undertaken at a link level across the corridor, on a per lane basis. This was undertaken for each direction in the AM and PM peak periods. Tube count data for 43 locations across the corridor undertaken in 2019 was provided by Council.

The corridor was segmented into links based on the tube count locations. The LOS analysis was undertaken based on recorded volumes and midblock lane capacities as detailed in Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods (AGTM03). The adopted lane capacities varied between 900-1,400 vehicles/hour based on the road environment (divided/undivided, presence of kerbside parking, presence of side streets etc.). The adopted LOS criteria is summarised in Table 5.3.

Specific issues identified at intersections are summarised below the table.

Table 5.3: LOS Criteria and Descriptions

LOS	V/C Criteria	Description
A	Maximum V/C of 0.26	Free-flow operations. FFS prevail, and vehicles are almost completely unimpeded in their ability to manoeuvre within the traffic stream.
B	Maximum V/C of 0.41	Reasonably free-flow operations, and FFS is maintained. The ability to manoeuvre within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high
C	Maximum V/C of 0.59	Flow conditions with speeds near the FFS. Freedom to manoeuvre within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will be substantial.
D	Maximum V/C of 0.81	The level at which speeds begin to decline slightly with increasing flows, with density increasing more quickly. Freedom to manoeuvre within the traffic stream is seriously limited, and the drivers experience reduced physical and psychological comfort levels
E	Maximum V/C of 1.0	Operation at or near capacity. Operations on the at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to manoeuvre within the traffic stream
F	V/C greater than 1.0	Describes unstable flow. Such conditions exist within queues forming behind bottlenecks. Breakdowns occur for a number of reasons

The RMS Guide to Traffic Generating Developments (2002) recommends a minimum LOS C for major rural road and LOS C is also the target LOS identified in the RMS Traffic Modelling Guidelines. LOS C was therefore adopted as the threshold for acceptable link performance across the corridor.

5.4 Current Performance

5.4.1 2020 Intersection Performance

The overall intersection operations are summarised in Table 5.4 and Table 5.5 based on the either the overall LOS (signalised intersections) or worst performing leg (priority-controlled intersections and roundabouts) recorded for each intersection and respective scenario. LOS C was adopted as the target LOS based on the RMS Traffic Modelling Guidelines. It should be noted that the overall LOS provides a high-level summary of the intersection performance and does not necessarily identify specific performance issues (such as queues exceeding available storage lengths or intersections operating at capacity). The intersection modelling and detailed model outputs are presented in **Appendix F** and includes the following:

- Peak hour volumes
- SIDRA intersection geometry
- LOS by lane
- Detailed model outputs by lane (LOS, delays, queues)
- Brief commentary on the intersection performance.

Specific operational issues identified at intersections are summarised below in Table 5.4 and Table 5.5.

Table 5.4: Performance Summary (Overall LOS) – All Intersections (Year 2020 AM)

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
1	Hastings River Drive / Boundary Street		20	B	46	D	The overall intersection performance is within acceptable thresholds. Right-turns present as LOS D, due to relatively high delays for these movements. However, the volumes are low, and queues are contained in the right-turn pockets
2	Hastings River Drive / Hughes Place		6	A	13	A	The intersection performance is within acceptable performance thresholds
3	Hastings River Drive / Newport Island Road		6	A	12	A	The intersection performance is within acceptable performance thresholds
4	Hastings River Drive / Clifton Drive		16	B	27	B	The intersection performance is within acceptable performance thresholds
5.1	Hastings River Drive / Bellbowrie Street		5	C	30	C	The intersection performance is within acceptable performance thresholds
5.2	Hastings River Drive / Widderson Street		3	A	12	A	The intersection performance is within acceptable performance thresholds
6	Hastings River Drive / Aston Street		5	F	222	F	The majority of movements at the intersection perform at LOS A. The degree of saturation is 0.87, which is above the acceptable limit of 0.80. This is due to the right-turn on Aston Street, which performs at LOS F. The median width is 4m and not considered wide enough to safely store a vehicle turning right.
7	Hastings River Drive / Findlay Ave		5	B	15	B	The intersection performance is within acceptable performance thresholds
8	Hastings River Drive / Park Street		6	B	16	B	The intersection performance is within acceptable performance thresholds
9	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive		39	C	55	D	The intersection if performing at the practical capacity (DOS 0.90). The right turn movement on the eastern approach has queues of approximately 100m at time times which exceeds the available turn pocket length
10	Ocean Drive / Table Street		2	A	14	A	The intersection performance is within acceptable performance thresholds
11	Ocean Drive / Hindman Street		5	A	12	A	The intersection performance is within acceptable performance thresholds
12	Ocean Drive / Lake Road		77	F	251	F	The intersection performs outside of acceptable performance levels with LOS F and DOS 1.22. This is however as a result of downstream impacts at the Lake Road / Central Street intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. Further details are provided in Section 3.2.4. It is expected the intersection would perform within acceptable limits if the downstream constraints were resolved
13	Ocean Drive / Koala Street		47	F	97	F	The intersection performs outside the acceptable thresholds due to delays on the southern approach. This is as a result of the downstream impacts at the Lake Road / Central Street intersection with queues extending south on Ocean Drive and through to Koala Street. Further details are provided in Section 3.2.4.
14	Ocean Drive / Greenmeadows Drive (north)		36	C	56	D	Overall the intersection operates at the threshold of acceptable performance limits. All of the right-turns presented LOS D, with relatively high delays for these movements. The right turn on the northern approach has queuing in the order 125m, exceeding the turn lane length by almost double. This will impact through movements in the adjacent lane. Right turn queues on the western are in the order of 39m, which is greater than the separation distance from the roundabout to the west. It is likely that right turn queues are queuing into the roundabout and may be blocking other movements at the roundabout. The left turn queues on the western approach also exceed the available spacing from the roundabout to the west
15	Ocean Drive / Crestwood Drive / Dahlsford Drive		43	F	213	F	Overall the intersection has LOS F and the degree of saturation is 1.15, which is above acceptable limit of 0.85. The intersection has high through volumes on Ocean Drive, which are unbalanced with the side streets. The intersection design and location on a crest appears to limit capacity (based on site observations). As a result the southern approach (Crestwood Drive) has high delays.
16	Ocean Drive / Pacific Drive / Jonas Absalom Drive		18	C	35	C	The intersection DOS is 0.91, which is above the acceptable limit of 0.85. This is due to the combination of high right turn volumes on Pacific Drive impacting through movements from the Ocean Drive south-east approach (which also have high volumes). The intersection is a single lane roundabout which limits capacity.
17	Ocean Drive / Matthew Flinders Drive / Emerald Drive		8	B	16	B	The intersection performance is within acceptable performance thresholds
18	Ocean Drive / Woolworths Access (Lake Cathie)		3	A	7	A	The intersection performance is within acceptable performance thresholds
19	Ocean Drive / Abel Tasman Drive / Seaside Drive		4	B	27	B	The intersection performance is within acceptable performance thresholds
20	Ocean Drive / Houston Mitchell Drive		6	B	15	B	The intersection performance is within acceptable performance thresholds
21	Ocean Drive / Beach Street (south)		2	A	12	A	The intersection performance is within acceptable performance thresholds
22	Ocean Drive / The Parade		6	A	10	A	The intersection performance is within acceptable performance thresholds

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
23	Ocean Drive / Kew Road	GIVE WAY	4	A	10	A	The intersection performance is within acceptable performance thresholds
24	Ocean Drive / Sirius Drive	GIVE WAY	4	B	17	B	The intersection performance is within acceptable performance thresholds
25	Ocean Drive / Pacific Highway off-ramp/on-ramp		6	A	12	A	The intersection performance is within acceptable performance thresholds
26	Ocean Drive / Nancy Bird Walton Drive / Kendall Road		8	A	13	A	The intersection performance is within acceptable performance thresholds
27	Graham Street / Comboyne Street	STOP	2	A	6	A	Overall the intersection performs within acceptable thresholds

Table 5.5: Performance Summary (Overall LOS) – All Intersections (Year 2020 PM)

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
1	Hastings River Drive / Boundary Street		23	B	42	C	Overall the intersection performs within acceptable thresholds
2	Hastings River Drive / Hughes Place		7	B	16	B	The intersection performance is within acceptable thresholds
3	Hastings River Drive / Newport Island Road		7	B	17	B	The intersection performance is within acceptable thresholds
4	Hastings River Drive / Clifton Drive		10	B	21	B	The intersection performance is within acceptable performance thresholds
5.1	Hastings River Drive / Bellbowrie Street	GIVE WAY	4	B	11	B	The intersection performance is within acceptable performance thresholds
5.2	Hastings River Drive / Widderson Street	GIVE WAY	3	B	13	B	The intersection performance is within acceptable performance thresholds
6	Hastings River Drive / Aston Street	GIVE WAY	8	F	457	F	The majority of movements at the intersection perform at LOS A. The degree of saturation is 1.2, which is above the acceptable limit of 0.80. This is due to the right-turn on Aston Street, which performs at LOS F. The delay shown for the right turn out of Aston Street is unrealistic as the movement is saturated, however indicates the poor level of service for this right turn from the northern approach.
7	Hastings River Drive / Findlay Ave		5	A	16	A	The intersection performance is within acceptable performance thresholds
8	Hastings River Drive / Park Street		8	B	18	B	The intersection performance is within acceptable performance thresholds
9	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive		37	C	54	D	The intersection if performing just outside capacity (DOS 0.90). The right turn movement on the eastern approach has queues of approximately 100m at time times which exceeds the available turn pocket length
10	Ocean Drive / Table Street		2	A	14	A	The intersection performance is within acceptable performance thresholds
11	Ocean Drive / Hindman Street		5	A	11	A	The intersection performance is within acceptable performance thresholds
12	Ocean Drive / Lake Road		43	D	80	E	The intersection is performing just outside typical performance thresholds with DOS 0.94. The right turn lanes on the west approach exceed the lane length and queue into the through lane. This was consistent with observed operations.
13	Ocean Drive / Koala Street		9	B	18	B	The intersection performance is within acceptable performance thresholds
14	Ocean Drive / Greenmeadows Drive (north)		25	B	35	C	The intersection performance is within acceptable performance thresholds
15	Ocean Drive / Crestwood Drive / Dahlsford Drive		140	F	268	F	The western approach has long queues which extend back in the order of 1.4km (almost as far as Greenmeadows Drive south) which was confirmed during site observations. The intersection design and location on a crest appears to limit the approach capacity (based on site observations). There are limited conflicting vehicle movements or queues on other approaches.
16	Ocean Drive / Pacific Drive / Jonas Absalom Drive		17	C	32	C	The intersection DOS is 0.87, which is just above the acceptable limit of 0.85. This is due to the high volumes on Ocean Drive (north west approach), limiting the vehicles from the north-east approach from entering the intersection.
17	Ocean Drive / Matthew Flinders Drive / Emerald Drive		9	B	16	B	The intersection performance is within acceptable performance thresholds
18	Ocean Drive / Woolworths Access (Lake Cathie)	GIVE WAY	3	A	8	A	The intersection performance is within acceptable performance thresholds
19	Ocean Drive / Abel Tasman Drive / Seaside Drive	GIVE WAY	3	B	28	B	The intersection performance is within acceptable performance thresholds

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
20	Ocean Drive / Houston Mitchell Drive		6	B	16	B	The intersection performance is within acceptable performance thresholds
21	Ocean Drive / Beach Street (south)		1	A	11	A	The intersection performance is within acceptable performance thresholds
22	Ocean Drive / The Parade		6	A	10	A	The intersection performance is within acceptable performance thresholds
23	Ocean Drive / Kew Road		3	A	9	A	The intersection performance is within acceptable performance thresholds
24	Ocean Drive / Sirius Drive		5	B	17	B	The intersection performance is within acceptable performance thresholds
25	Ocean Drive / Pacific Highway off-ramp/on-ramp		6	A	12	A	The intersection performance is within acceptable performance thresholds
26	Ocean Drive / Nancy Bird Walton Drive / Kendall Road		7	A	12	A	The intersection performance is within acceptable performance thresholds
27	Graham Street / Comboyne Street		3	A	6	A	The intersection performance is within acceptable performance thresholds

As demonstrated, the majority of intersections across the corridor perform at LOS C or better. The following intersections were identified to operate outside the acceptable LOS D:

- Hastings River Drive / Aston Street – Hastings River Drive performed at LOS A for both approaches due to this being the priority movement. The right-turn on the northern approach (Aston Street) however performed at LOS F during both the AM and PM peak periods. This is due to the high bi-directional through volumes (min. 1,500 veh/hour) on Hastings River Drive which the right-turn gives way to. While some vehicles may stage in the median, the width of the median (4m) is considered insufficient to safely store vehicles turning right-out of Aston Street
- Hastings River Drive / Oxley Drive – The intersection is performing at or just outside capacity (DOS 0.90). The right turn movement on the eastern approach has queues of approximately 100m at time times which exceeds the available turn pocket length. From an operational perspective the intersection was observed to generally function well, with the majority of vehicles clearing the intersection each cycle
- Ocean Drive / Lake Road – During the AM Peak, the intersection operates outside acceptable performance thresholds. This is however as a result of downstream impacts at the Lake Road / Central Street intersection rather than capacity limitations at the subject intersection. Further details are provided in Section 3.2.4. In the PM peak, queues for the right turn on the western approach exceeded the available turn lane capacity. Various turning movements are operating between LOS D-F
- Ocean Drive / Koala Street – During the AM peak the intersection performs at LOS F due to delays on the southern approach. This is as a result of the downstream impacts at the Lake Road / Central Street intersection with queues extending south on Ocean Drive and through to Koala Street. Further details are provided in Section 3.2.4.
- Ocean Drive / Crestwood Drive / Dahlsford Drive – In the AM peak Ocean Drive performed at LOS A or B for both approaches, primarily due to the high volumes on Ocean Drive and unbalanced flows through the roundabout. The southern approach (Crestwood Drive) performed at LOS F in the AM peak due to the high westbound volumes (over 1,000 veh/hour) on the eastern approach. In the PM Peak, there are long queues in the order of 1.4km on Ocean Drive on the northern approach. The intersection design and location on a crest appears to limit the approach capacity. The intersection performs at overall LOS F

The following was also identified in terms of intersection performance:

- Right turn movements from side streets at the Hastings River Drive / Bellbowrie Street and Hastings River Drive / Widderson Street intersections is likely reliant on the ability to store within the median. It is noted that there are alternate options for these right turns (and other right turns from side streets along the section of the corridor), including utilisation of a number of nearby roundabouts
- The intersection of Ocean Drive / Greenmeadows Drive is operating LOS C and B in the AM and PM peak periods, respectively. However, it is operating at capacity in terms of the overall degree of saturation (DOS). In the AM peak, the right turn queues on the northern approach exceed the turn lane length by in the order of 60m and queues are spilling into the through lane. Similarly, queues on the western approach exceed the separation length from the adjacent roundabout. It is likely that queues are blocking other movements at the roundabout
- While operating with an overall LOS C, the intersection of Ocean Drive / Pacific Drive operates outside the performance threshold for DOS. This is due to the limited capacity of the single lane roundabout and relatively high volumes on a number of approaches

5.4.2 Network Constraints

Network constraints external to the corridor were identified to impact the capacity and operations of the Ocean Drive / Lake Road and Ocean Drive / Koala Street intersections. Site observations during the AM peak hour identified that capacity constraints at the Lake Road / Central Street intersection (downstream of the Ocean Drive / Lake Road intersection) resulted in queues extending:

- Back along Lake Road
- Through the Lake Road / Ocean Drive intersection
- Back on Ocean Drive to the south and through the Ocean Drive / Koala Street intersection.

This specific network issue was only observed in the AM peak. To maintain suitable current and future operations of the corridor from a capacity perspective, capacity constraints external to the corridor such as this will need to be mitigated. From site observations, the overall capacity of the Ocean Drive / Lake Road and Ocean Drive / Koala Street intersections appeared generally sufficient, although queues in the right turn lanes on the Lake Road west approach exceeded the turn lane lengths in the PM peak. Figure 5.1 to Figure 5.3 shows the impact of the external capacity constraints on Ocean Drive.



Figure 5.1: Westbound Queues on Lake Road (west of Ocean Drive, AM Peak)

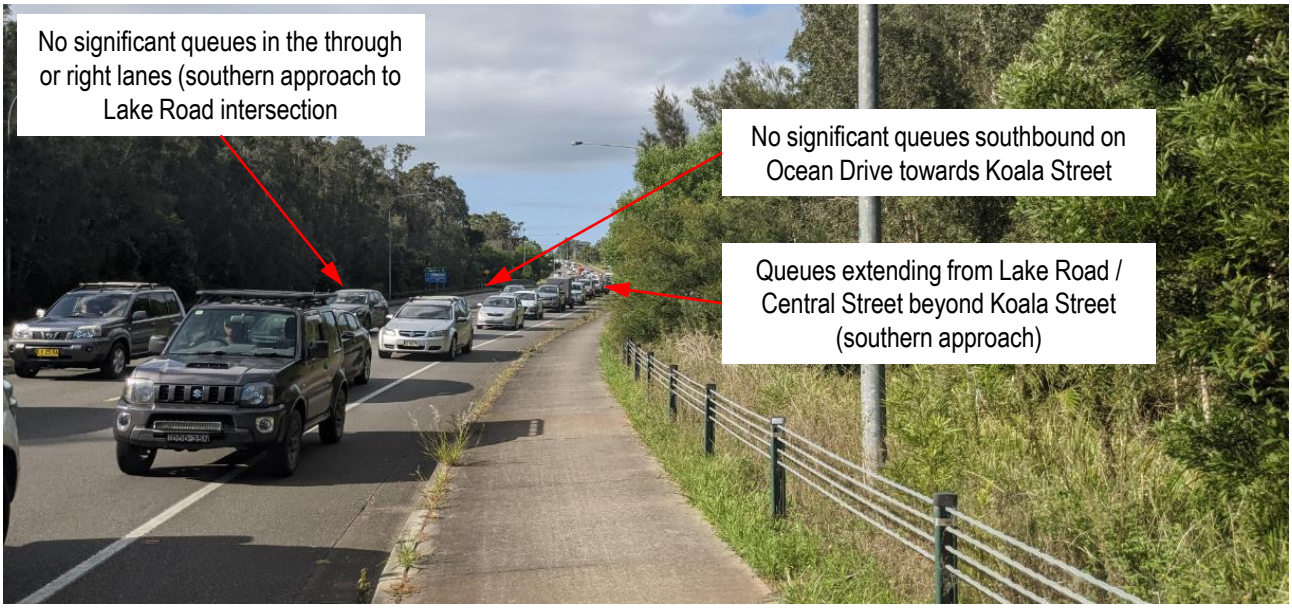


Figure 5.2: Northbound Queues on Ocean Drive (South of Lake Road, AM Peak)



Figure 5.3: Lake Road / Ocean Drive – AM Operations on Northern and Eastern Legs

5.4.3 School and Event Peak Constraints

Intersection modelling utilises peak hour volumes and represents typical weekday peak periods. These peak hour models may not necessarily pick-up confined peaks which occur within the peak hour and the associated intersection performance. School peak periods are usually very short, between 15-30 minutes and often have performance impacts at school accesses and nearby intersections. Known locations where school peaks impact intersection operations are:

- Queuing at the Hastings River Drive / Findlay Avenue roundabout as a result of Hastings Secondary College Westport Campus
- Queues extending beyond turn pockets and available approaches distances at the Greenmeadows Drive / Ocean Drive signalised intersection as a result of St Peter's Primary School
- Localised congestion around St Joseph's Primary School
- Localised congestion around Camden Haven High School near Glen Haven Drive.

Local events, including at sports facilities may also have performance impacts which occur outside typical peak periods from time to time.

5.4.4 Other Intersection Operation Considerations

During site observations and a review of existing conditions, a number of operational aspects for various intersections on the corridor were identified, which do not relate directly to capacity. These are as follows:

- Hastings River Drive yields to Winery Drive, however the dominant moment is the flow of vehicles between the Pacific Highway and Port Macquarie. It would be more practical and efficient for Winery Drive to be re-prioritised to yield to Hastings River Drive (subject to modelling and further assessment)
- The southern approach to the Ocean Drive / Clifton Drive roundabout has a short and narrow stand-up lane (total approach width of approximately 5.6m for two lanes). This is likely limiting the performance of this approach
- The left turn lane on the western approach of the Ocean Drive / Sirius Drive intersection is very narrow (approximately 2.3m wide). This is likely to often be ineffective as a turn lane and is a safety risk
- While operating within acceptable performance limits, the function of the Ocean Drive / Nancy Bird Walton Drive intersection as a roundabout was limited. Most vehicles were observed turning across the flush central island. Further, the approach geometry does not have adequate deflection to reduce vehicle speeds on approach
- While operating within acceptable performance limits, the intersection of Comboyne Street / Graham Street has poor alignment and geometry.

5.4.5 Current Link Performance

The majority of the corridor was identified to operate with a minimum LOS C, except at the following locations, which operated between LOS D and E for some directions / peak periods:

- Hastings River Drive Between Boundary Street and Hibbard Road (west)
- Ocean Dr between Lake Road and Pacific Drive.

A table and maps presenting the LOS as well as key data (volume, number of lanes, capacity, posted speed etc.), for each link segment is presented in **Appendix G**. It is noted that this assessment is intended to assess the available link capacity based on the number of lanes, speed, and surrounding environment. This assessment is based on midblock capacity and does not identify capacity constraints as a result of intersections. This is particularly relevant through Sections 2 and 3 of the corridor, which have frequent intersections.

5.5 Future Performance

5.6 Traffic Growth

The Port Macquarie-Hastings Local Government Area Traffic Aimsun model prepared by GHD was used to determine growth rates for the corridor. The model considers anticipated population growth and development between 2016 and 2036. Peak period traffic volumes for the 2016, 2026 and 2036 scenarios were used for the analysis. Growth for the corridor sections were assessed at a sectional level while side streets were assessed individually.

The compounding growth rates determined from the model were applied to the 2020 survey volumes to establish the 2030 and 2040 future year traffic scenarios. Manual corrections were made to the growth rates at some locations (such as where the model showed negative growth due to re-routing of trips). Corrections were based on growth at surrounding locations, other peak periods, population growth and the likely growth on the approach.

Ocean Drive currently has a limited catchment and the eastern leg of the Houston Mitchel Drive intersection had not yet opened at the time surveys were undertaken. Both of these locations will facilitate access for significant future development areas. Application of growth rates at these locations was therefore not suitable. Peak hour traffic volumes at Ocean Drive (southern leg) were obtained from the Aimsun model as this leg had very low volumes in the survey year.

Volumes for the Houston Mitchel Drive / Ocean Drive intersection were adopted as follows:

- Year 2030: From the Traffic Impact Assessment for the Houston Mitchel Drive Employment Lands prepared by King and Campbell in March 2021
- Year 2040: From the Traffic Impact and Access Assessment for the Area 14 Development prepared by King and Campbell in June 2016
- Where the 2020 survey volumes with growth applied to 2030 and 2040 were higher than the volumes at the intersection from the traffic impact assessments, the higher value was adopted.

The traffic growth rates are summarised in **Appendix C**. The 2030 and 2040 future year traffic volumes are presented in **Appendix D**.

5.6.1 Intersection Performance Summary

The overall intersection operations are summarised in Tables 5.7-5.10 based on the either the overall LOS (signalised intersections) or worst performing leg (priority-controlled intersections and roundabouts) recorded for each intersection and respective scenario. LOS C was adopted as the target LOS based on the RMS Traffic Modelling Guidelines. It should be noted that the overall LOS provides a high-level summary of the intersection performance and does not necessarily identify specific performance issues (such as queues exceeding available storage lengths or intersections operating at capacity). The intersection modelling and detailed model outputs are presented in **Appendix D** and includes the following:

- Peak hour volumes
- SIDRA intersection geometry
- LOS by lane
- Detailed model outputs by lane (LOS, delays, queues)
- Brief commentary on the intersection performance.

Specific operational issues identified at intersections are summarised below in Table 5.6 to Table 5.10

The majority of intersections across the corridor perform at LOS C or better. The following intersections were identified to operate outside the acceptable limits:

- Clifton Drive / Hastings River Drive
- Park Street / Hastings River Drive
- Gordon Street / Ocean Drive
- Lake Road / Ocean Drive
- Koala Street / Ocean Drive
- Greenmeadows Drive / Ocean Drive.

Consistent with the existing operations, downstream capacity constraints near Lake Road were a major factor impacting intersection performance at the Ocean Drive / Lake Road and Ocean Drive / Koala Street intersections. Resolving this downstream capacity constraint will be a key item to address in future upgrade planning.

Section 5.8 discusses potential improvements to address performance issues for these intersections.

Detailed model outputs are presented in **Appendix F.**

5.7 Link Assessment

A Level of Service (LOS) analysis was undertaken at a link level across the corridor, on a per lane basis. This was undertaken for each direction in the AM and PM peak periods. Tube count data for 43 locations across the corridor undertaken in 2019 was provided by Council as part of the current performance assessment. The corridor was segmented into links based on the tube count locations. The LOS analysis was undertaken based on recorded volumes and midblock lane capacities as detailed in Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods (AGTM03). Growth was applied to the 2019 link volumes to determine the 2030, 2040 and 2050 scenarios. The growth rates are detailed in Section 3.

The adopted lane capacities varied between 900-1,400 vehicles/hour based on the road environment (divided/undivided, presence of kerbside parking, presence of side streets etc.). The RMS Guide to Traffic Generating Developments (2002) recommends a minimum LOS C for major rural road and LOS C is also the target LOS identified in the RMS Traffic Modelling Guidelines. LOS C was therefore adopted as the threshold for acceptable link performance across the corridor.

The majority of the corridor was identified to operate with a minimum LOS C as shown in Table 5.6 and Table 5.7, except at the following locations, which operated between LOS D some directions / peak periods in 2030:

- Hastings River Drive Between Tuffins Lane and Boundary Street (eastbound)
- Hastings River Drive Between Bellbowrie Street and Findlay Lane (eastbound)
- Ocean Drive between Lake Road and Koala Street (northbound)
- Ocean Drive between Fiona Crescent and Dirah Street (northbound).

In 2040, the following sections are also expected to operate at LOS D as shown in Table 5.8 and Table 5.9:

- Ocean Drive between Greenmeadows Drive and Maranatha Place (northbound)
- Ocean Drive between River Street and Comboyne Street (westbound)
- Ocean Drive between Dirah Street and Aqua Crescent (southbound).

A table and maps presenting the LOS as well as key data (volume, number of lanes, capacity, posted speed etc.), for each link segment is presented in **Appendix G**.

Table 5.6: Performance Summary (Overall LOS) – All Intersections (Year 2030 AM)

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
1	Hastings River Drive / Boundary Street		17	B	52	D	The overall intersection performance is within acceptable thresholds. Right-turns present as LOS D, due to relatively high delays for these movements. However, the volumes are low, and queues are contained in the right-turn pockets
2	Hastings River Drive / Hughes Place		6	A	13	A	The intersection performance is within acceptable performance thresholds
3	Hastings River Drive / Newport Island Road		6	A	12	A	The intersection performance is within acceptable performance thresholds
4	Hastings River Drive / Clifton Drive		40	E	66	E	The intersection performance is **above** the acceptable performance thresholds. The average delay is 40 seconds. Failure occurs on the Clifton Drive approach and Hastings River Drive (west) approach
5.1	Hastings River Drive / Bellbowrie Street		5	C	30	C	The intersection performance is within acceptable performance thresholds
5.2	Hastings River Drive / Widderson Street		3	A	12	A	The intersection performance is within acceptable performance thresholds
6	Hastings River Drive / Aston Street		16	B	26	B	The majority of movements at the intersection perform at LOS B. The degree of saturation is 0.67, which is within the acceptable limit of 0.90.
7	Hastings River Drive / Findlay Ave		5	B	16	B	The intersection performance is within acceptable performance thresholds
8	Hastings River Drive / Park Street		9	B	19	B	The intersection performance is within acceptable performance thresholds
9	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive		38	C	49	D	The intersection performance of 0.91 is just outside the practical capacity (DOS 0.90). The right turn movement on the eastern approach has queues of approximately 100m at times. This is within the turn pocket (which is planned to be extended)
10	Ocean Drive / Table Street		2	B	16	B	The intersection performance is within acceptable performance thresholds
11	Ocean Drive / Hindman Street		5	A	12	A	The intersection performance is within acceptable performance thresholds
12	Ocean Drive / Lake Road		86	F	294	F	The intersection performs outside of acceptable performance levels with LOS F and DOS 1.27. This is however as a result of downstream impacts at the Lake Road / Central Road intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. Further details are provided in Working Paper 2 which discusses the existing operations. It is expected the intersection would perform significantly better if the downstream constraints were resolved
13	Ocean Drive / Koala Street		18	C	41	C	The intersection performance is within acceptable performance thresholds in terms of LOS and delays. The intersection performs outside the acceptable thresholds for DOS on the southern approach. This is as a result of the downstream impacts at the Lake Road / Central Road intersection with queues extending south on Ocean Drive and through to Koala Street
14	Ocean Drive / Greenmeadows Drive (north)		67	E	100	F	The intersection operates outside the acceptable performance limits. Most of the right turns presented LOS F, with relatively high delays for these movements. The right turn on the northern approach has queuing in the order 244m, exceeding the turn lane length by almost four times. This will impact through movements in the adjacent lane. Right turn queues on the western are in the order of 71m, which is greater than the separation distance from the roundabout to the west. It is likely that right turn queues are queuing into the roundabout and may be blocking other movements at the roundabout. The left turn queues on the western approach also exceed the available spacing from the roundabout to the west
15	Ocean Drive / Crestwood Drive / Dahlsford Drive		28	B	47	D	The intersection performance is within acceptable performance thresholds
16	Ocean Drive / Pacific Drive / Jonas Absalom Drive		22	B	31	C	The intersection performance is within acceptable performance thresholds
17	Ocean Drive / Matthew Flinders Drive / Emerald Drive		18	B	27	B	The intersection performance is within acceptable performance thresholds
18	Ocean Drive / Woolworths Access (Lake Cathie)		14	A	22	B	The intersection performance is within acceptable performance thresholds
19	Ocean Drive / Abel Tasman Drive / Seaside Drive		21	B	32	C	The intersection performance is within acceptable performance thresholds

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
20	Ocean Drive / Houston Mitchell Drive		6	A	15	B	The intersection performance is within acceptable performance thresholds
21	Ocean Drive / Beach Street (south)		2	A	12	A	The intersection performance is within acceptable performance thresholds
22	Ocean Drive / The Parade		6	A	10	A	The intersection performance is within acceptable performance thresholds
23	Ocean Drive / Kew Road		4	A	9	A	The intersection performance is within acceptable performance thresholds
24	Ocean Drive / Sirius Drive		17	B	24	B	The intersection performance is within acceptable performance thresholds
25	Ocean Drive / Pacific Highway off-ramp/on-ramp		6	A	12	A	The intersection performance is within acceptable performance thresholds
26	Ocean Drive / Nancy Bird Walton Drive / Kendall Road		8	A	14	A	The intersection performance is within acceptable performance thresholds
27	Graham Street / Comboyne Street		3	A	6	A	Overall the intersection performs within acceptable thresholds

Table 5.7: Performance Summary (Overall LOS) – All Intersections (Year 2030 PM)

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
1	Hastings River Drive / Boundary Street		41	C	70	E	The intersection performance is over the acceptable thresholds. Right-turns present as LOS E, due to relatively high delays for these movements
2	Hastings River Drive / Hughes Place		7	B	16	B	The intersection performance is within acceptable performance thresholds
3	Hastings River Drive / Newport Island Road		10	B	28	B	Overall the intersection has LOS B and the degree of saturation is 0.93, which is above the acceptable limit of 0.85. This is mostly due to capacity issues for the northern approach
4	Hastings River Drive / Clifton Drive		13	C	30	C	The intersection performance is within acceptable performance thresholds
5.1	Hastings River Drive / Bellbowrie Street		4	B	20	B	The intersection performance is within acceptable performance thresholds
5.2	Hastings River Drive / Widderson Street		3	B	18	B	The intersection performance is within acceptable performance thresholds
6	Hastings River Drive / Aston Street		19	B	26	B	The majority of movements at the intersection perform at LOS B. The degree of saturation is 0.83, which is within the acceptable limit of 0.90.
7	Hastings River Drive / Findlay Ave		5	B	17	B	The intersection performance is within acceptable performance thresholds
8	Hastings River Drive / Park Street		14	B	27	B	The intersection performance is within acceptable performance thresholds
9	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive		36	C	58	E	The intersection performance of 0.95 is just outside the practical capacity (DOS 0.90). The right turn movement on the eastern approach has queues of approximately 100m at times
10	Ocean Drive / Table Street		2	B	15	B	The intersection performance is within acceptable performance thresholds
11	Ocean Drive / Hindman Street		5	A	11	A	The intersection performance is within acceptable performance thresholds
12	Ocean Drive / Lake Road		100	F	295	F	The intersection performs outside of acceptable performance levels with LOS F and DOS 1.26. This is however as a result of downstream impacts at the Lake Road / Central Road intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. Further details are provided in Working Paper 2. It is expected the intersection would perform significantly better if the downstream constraints were resolved
13	Ocean Drive / Koala Street		10	B	22	B	The intersection performance is within acceptable performance thresholds
14	Ocean Drive / Greenmeadows Drive (north)		23	B	36	C	The intersection performance is within acceptable performance thresholds
15	Ocean Drive / Crestwood Drive / Dahlsford Drive		18	B	31	C	The intersection performance is within acceptable performance thresholds

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
16	Ocean Drive / Pacific Drive / Jonas Absalom Drive		22	B	28	B	The intersection performance is within acceptable performance thresholds
17	Ocean Drive / Matthew Flinders Drive / Emerald Drive		20	B	26	B	The intersection performance is within acceptable performance thresholds
18	Ocean Drive / Woolworths Access (Lake Cathie)		15	B	22	B	The intersection performance is within acceptable performance thresholds
19	Ocean Drive / Abel Tasman Drive / Seaside Drive		21	B	16	B	The intersection performance is within acceptable performance thresholds
20	Ocean Drive / Houston Mitchell Drive		6	B	32	C	The intersection performance is within acceptable performance thresholds
21	Ocean Drive / Beach Street (south)		1	A	12	A	The intersection performance is within acceptable performance thresholds
22	Ocean Drive / The Parade		6	A	10	A	The intersection performance is within acceptable performance thresholds
23	Ocean Drive / Kew Road		4	A	9	A	The intersection performance is within acceptable performance thresholds
24	Ocean Drive / Sirius Drive		18	B	27	B	The intersection performance is within acceptable performance thresholds
25	Ocean Drive / Pacific Highway off-ramp/on-ramp		6	A	13	A	The intersection performance is within acceptable performance thresholds
26	Ocean Drive / Nancy Bird Walton Drive / Kendall Road		8	B	15	B	The intersection performance is within acceptable performance thresholds
27	Graham Street / Comboyne Street		2	A	7	A	Overall the intersection performs within acceptable thresholds

Table 5.8: Performance Summary (Overall LOS) – All Intersections (Year 2040 AM)

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
1	Hastings River Drive / Boundary Street		18	B	52	D	The overall intersection performance is within acceptable thresholds. Right-turns present as LOS D, due to relatively high delays for these movements. However, the volumes are low, and queues are contained in the right-turn pockets
2	Hastings River Drive / Hughes Place		8	A	13	A	The intersection performance is within acceptable performance thresholds
3	Hastings River Drive / Newport Island Road		6	A	12	A	The intersection performance is within acceptable performance thresholds
4	Hastings River Drive / Clifton Drive		89	F	228	F	The intersection performance is **above** the acceptable performance thresholds, with DOS 1.22. The Clifton Drive approach and Hastings River Drive (west) fails, with high delays and queues between 310-575m
5.1	Hastings River Drive / Bellbowrie Street		5	C	30	C	The intersection performance is within acceptable performance thresholds
5.2	Hastings River Drive / Widderson Street		3	A	12	A	The intersection performance is within acceptable performance thresholds
6	Hastings River Drive / Aston Street		18	B	26	B	The majority of movements at the intersection perform at LOS B. The degree of saturation is 0.76, which is within the acceptable limit of 0.90.
7	Hastings River Drive / Findlay Ave		5	B	17	B	The intersection performance is within acceptable performance thresholds
8	Hastings River Drive / Park Street		12	B	24	B	The intersection performance is within acceptable performance thresholds
9	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive		43	D	59	E	The intersection performance of 0.89 is just within the practical capacity (DOS 0.90). The right turn movement on the eastern approach has queues of more than 130m at times, which exceeds the available lane length (including with the proposed extension)
10	Ocean Drive / Table Street		2	B	17	B	The intersection performance is within acceptable performance thresholds
11	Ocean Drive / Hindman Street		5	A	13	A	The intersection performance is within acceptable performance thresholds
12	Ocean Drive / Lake Road		137	F	410	E	The intersection performs outside of acceptable performance levels with LOS F and DOS 1.40. This is however as a result of downstream impacts at the Lake Road / Central Road intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. Further details are provided in Working Paper 2. It is expected the intersection would perform significantly better if the downstream constraints were resolved
13	Ocean Drive / Koala Street		56	F	119	F	The intersection performs outside the acceptable thresholds due to delays on the southern approach. This is as a result of the downstream impacts at the Lake Road / Central Road intersection with queues extending south on Ocean Drive and through to Koala Street.
14	Ocean Drive / Greenmeadows Drive (north)		113	F	177	F	The intersection operates outside the acceptable performance limits. Most of the right turns presented LOS F, with relatively high delays for these movements. The right turn on the northern approach has queuing in the order 385m, exceeding the turn lane length by almost six times. This will impact through movements in the adjacent lane. Right turn queues on the western are in the order of 77m, which is greater than the separation distance from the roundabout to the west. It is likely that right turn queues are queuing into the roundabout and may be blocking other movements at the roundabout. The left turn queues on the western approach also exceed the available spacing from the roundabout to the west. There are also significant queues on the Ocean Drive (south) approach
15	Ocean Drive / Crestwood Drive / Dahlsford Drive		32	C	76	F	The intersection performance is within acceptable performance thresholds. The right turns on Ocean Drive operate at LOS E to F due high delays. Queues for these movements are contained within the turn lanes.
16	Ocean Drive / Pacific Drive / Jonas Absalom Drive		26	B	38	C	The intersection performance is within acceptable performance thresholds
17	Ocean Drive / Matthew Flinders Drive / Emerald Drive		19	B	28	B	The intersection performance is within acceptable performance thresholds
18	Ocean Drive / Woolworths Access (Lake Cathie)		14	A	22	B	The intersection performance is within acceptable performance thresholds
19	Ocean Drive / Abel Tasman Drive / Seaside Drive		22	B	36	C	The intersection performance is within acceptable performance thresholds
20	Ocean Drive / Houston Mitchell Drive		6	B	15	B	The intersection performance is within acceptable performance thresholds

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
21	Ocean Drive / Beach Street (south)	STOP	2	A	14	A	The intersection performance is within acceptable performance thresholds
22	Ocean Drive / The Parade	GIVE WAY	6	A	10	A	The intersection performance is within acceptable performance thresholds
23	Ocean Drive / Kew Road	GIVE WAY	4	A	9	A	The intersection performance is within acceptable performance thresholds
24	Ocean Drive / Sirius Drive	Signals	19	B	25	B	The intersection performance is within acceptable performance thresholds
25	Ocean Drive / Pacific Highway off-ramp/on-ramp	GIVE WAY	6	A	13	A	The intersection performance is within acceptable performance thresholds
26	Ocean Drive / Nancy Bird Walton Drive / Kendall Road	GIVE WAY	8	A	15	B	The intersection performance is within acceptable performance thresholds
27	Graham Street / Comboyne Street	STOP	3	A	7	A	Overall the intersection performs within acceptable thresholds

Table 5.9: Performance Summary (Overall LOS) – All Intersections (Year 2040 PM)

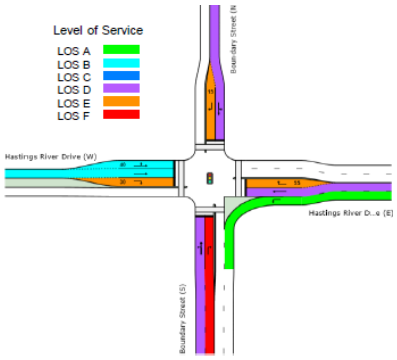
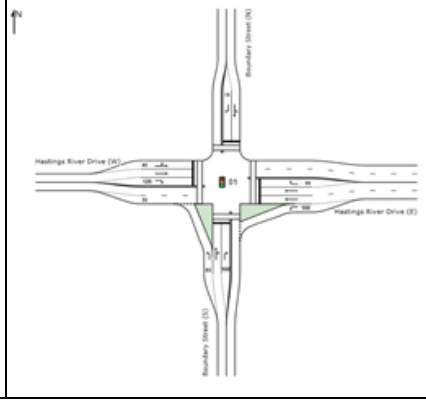
#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
1	Hastings River Drive / Boundary Street	Signals	44	D	74	F	The intersection performance is over the acceptable thresholds. Right-turns present as LOS E and F, due to relatively high delays for these movements
2	Hastings River Drive / Hughes Place	GIVE WAY	7	B	16	B	The intersection performance is within acceptable performance thresholds
3	Hastings River Drive / Newport Island Road	GIVE WAY	30	F	143	F	Overall the intersection has LOS C and the degree of saturation is 1.13, which is above the acceptable limit of 0.85. This is mostly due to capacity issues for the northern approach
4	Hastings River Drive / Clifton Drive	GIVE WAY	29	F	118	F	The intersection performance is **above** the acceptable performance thresholds. This is due to high delays on the Clifton Drive approach
5.1	Hastings River Drive / Bellbowrie Street	GIVE WAY	4	B	20	B	The intersection performance is within acceptable performance thresholds
5.2	Hastings River Drive / Widderson Street	GIVE WAY	3	B	18	B	The intersection performance is within acceptable performance thresholds
6	Hastings River Drive / Aston Street	Signals	18	B	31	C	The majority of movements at the intersection perform at LOS B. The degree of saturation is 0.76, which is within the acceptable limit of 0.90.
7	Hastings River Drive / Findlay Ave	GIVE WAY	5	B	18	B	The intersection performance is within acceptable performance thresholds
8	Hastings River Drive / Park Street	GIVE WAY	32	E	69	E	The intersection performance of 1 is over the practical capacity (DOS 0.85)
9	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive	Signals	42	C	60	E	The intersection performance of 0.94 is just over the practical capacity (DOS 0.90). The right turn movement on the eastern approach has queues of approximately 120m at times, which just exceeds the available turn lane length
10	Ocean Drive / Table Street	GIVE WAY	2	B	16	B	The intersection performance is within acceptable performance thresholds
11	Ocean Drive / Hindman Street	GIVE WAY	6	A	12	A	The intersection performance is within acceptable performance thresholds
12	Ocean Drive / Lake Road	Signals	149	F	389	F	The intersection performs outside of acceptable performance levels with LOS F and DOS 1.37. This is however as a result of downstream impacts at the Lake Road / Central Road intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. Further details are provided in Working Paper 2. It is expected the intersection would perform significantly better if the downstream constraints were resolved
13	Ocean Drive / Koala Street	GIVE WAY	12	B	28	B	The intersection performance is within acceptable performance thresholds
14	Ocean Drive / Greenmeadows Drive (north)	Signals	27	B	38	C	The intersection performance is within acceptable performance thresholds
15	Ocean Drive / Crestwood Drive / Dahlsford Drive	Signals	19	B	32	C	The intersection performance is within acceptable performance thresholds

#	Intersection	Type	Avg. Delay (s)	LOS	Avg. Delay (s) (worst movement)	LOS (worst movement)	Comment
16	Ocean Drive / Pacific Drive / Jonas Absalom Drive		22	B	31	C	The intersection performance is within acceptable performance thresholds
17	Ocean Drive / Matthew Flinders Drive / Emerald Drive		20	B	27	B	The intersection performance is within acceptable performance thresholds
18	Ocean Drive / Woolworths Access (Lake Cathie)		16	B	22	B	The intersection performance is within acceptable performance thresholds
19	Ocean Drive / Abel Tasman Drive / Seaside Drive		21	B	34	C	The intersection performance is within acceptable performance thresholds
20	Ocean Drive / Houston Mitchell Drive		6	B	16	B	The intersection performance is within acceptable performance thresholds
21	Ocean Drive / Beach Street (south)		2	A	13	A	The intersection performance is within acceptable performance thresholds
22	Ocean Drive / The Parade		6	A	10	A	The intersection performance is within acceptable performance thresholds
23	Ocean Drive / Kew Road		4	A	9	A	The intersection performance is within acceptable performance thresholds
24	Ocean Drive / Sirius Drive		19	B	31	C	The intersection performance is within acceptable performance thresholds
25	Ocean Drive / Pacific Highway off-ramp/on-ramp		7	A	13	A	The intersection performance is within acceptable performance thresholds
26	Ocean Drive / Nancy Bird Walton Drive / Kendall Road		8	A	17	B	The intersection performance is within acceptable performance thresholds
27	Graham Street / Comboyne Street		2	A	7	A	Overall the intersection performs within acceptable thresholds

5.8 Future Intersection Improvements

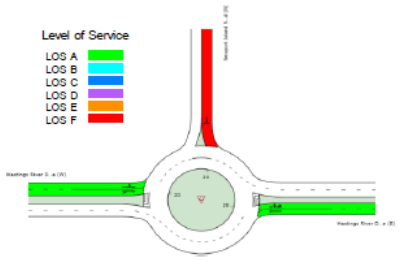
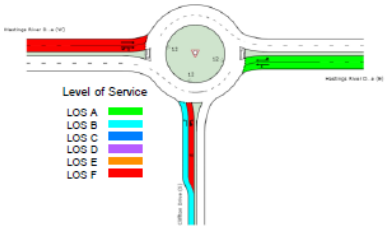
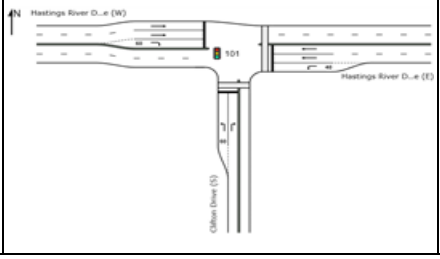
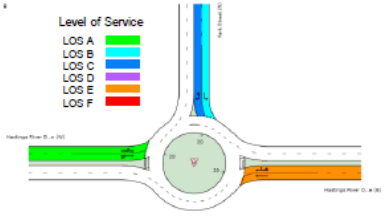
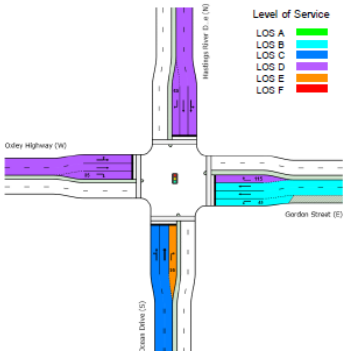
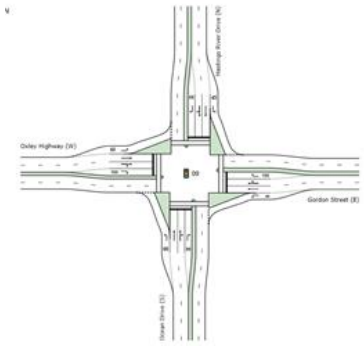
Table 5.10 summarises the intersection upgrades tested to improve the future 2040 performance for the key intersections found to operate at a LOS D or worse during the Working Paper 3: Future Performance. As noted in Section 5.7, downstream capacity constraints near Lake Road were a major factor impacting intersection performance at the Ocean Drive / Lake Road and Ocean Drive / Koala Street intersections. This upgrade is therefore outside the corridor and would need to be considered as part of wider road network planning for the area.

Table 5.10: Suggested Long Term Upgrades

<table>
<tr><th>Intersection</th><th>Base SIDRA Geometry/LOS</th><th>Upgrade SIDRA Geometry</th><th>Comment</th></tr>
<tr><td rowspan="2">Hastings River Drive / Boundary Street</td><td> 
</td><td>  </td><td>▪ Extend right turn lane on Hastings River Drive (W) to 120m
▪ Dual through approach lanes on Hasting River Drive (E) to increase capacity
▪ Left turn slip lane on Boundary Street</td></tr>
<tr><td colspan="3">Intersection Performance Summary:
This analysis had been made on an assumption that only a proportion of airport business park has been developed by 2040 (land uses highlighted below) and not all uses that had been identified as part of the ultimate development of this area.
<table>
<tr><th rowspan="2">Land Use</th><th rowspan="2">Quantity</th><th colspan="2">Trip Rate</th><th colspan="2">Peak Trips</th></tr>
<tr><th>AM</th><th>PM</th><th>AM</th><th>PM</th></tr>
<tr><td colspan="6">Airport Business Park</td></tr>
<tr><td>Low Intensity Industrial</td><td>33600</td><td>0.0085x-62</td><td>0.0082x-30</td><td rowspan="4">643</td><td rowspan="4">456</td></tr>
<tr><td>Warehousing</td><td>14700</td><td>0.0085x-62</td><td>0.0082x-30</td></tr>
<tr><td>High intensity industrial</td><td>32500</td><td>0.0085x-62</td><td>0.0082x-30</td></tr>
<tr><td>Retail</td><td>3200</td><td>0.0085x-62</td><td>0.0082x-30</td></tr>
<tr><td colspan="6">Office</td></tr>
<tr><td>Office</td><td>38400</td><td>0.012</td><td>0.016</td><td>461</td><td>614</td></tr>
<tr><td colspan="6">Future Development Areas</td></tr>
<tr><td>Low Intensity Industrial</td><td>52600</td><td>0.0085x-62</td><td>0.0082x-30</td><td>373</td><td>293</td></tr>
</table>
This approach was taken given there is a level of uncertainty with the timing and staging of this development precinct. The analysis approach sought to determine a potential interim upgrade that could be delivered in a staged manner and accommodated within existing road corridor and without significant land impacts.

The intersection would operate at a LOS B based on 2040 AM conditions and LOS C in 2040 PM under these levels of traffic. This would be under scenario even without a secondary airport link road being in place.

Ultimately, if the full development was realised this would likely trigger the need for further works including a dual right turn lane on Hasting River Drive (W) and further turn lane capacity on Boundary Street. This level of upgrade and investment would need to be considered in the context of wider transport network strategies and investigations for secondary airport link road in order to manage traffic demands and to provide airport access redundancy in the event Boundary Street was blocked or inaccessible.</td></tr>
</table>

Intersection	Base SIDRA Geometry/LOS	Upgrade SIDRA Geometry	Comment
Hastings River Drive / Newport Island Drive			▪ Add a left turn lane on the Newport Island Drive approach to improve capacity and reduce delays on this approach
	Intersection Performance Summary with Upgrade: With addition left turn approach lane the intersection will operate at an overall LOS A in AM and PM periods. Average intersection delays would reduce to 7 seconds from the 30 seconds experience in 2040 PM base analysis for future performance.		
Clifton Drive / Hastings River Drive			▪ Upgrade to traffic signals to operate satisfactorily by 2040.
	Intersection Performance Summary with Upgrade: Overall the intersection will operate at a LOS B with the upgrade to signals.		
Park Street / Hastings River Drive			▪ Upgrade to traffic signals to operate satisfactorily by 2040.
	Intersection Performance Summary: With an upgrade to signals, the intersection will be able to operate at an LOS A in the 2040 AM peak and LOS B in the PM peak. PM peak degree of saturation would be 0.88 which is just below the practical limit of 0.9 DOS and average delays of 18 seconds. This is an improvement on the average 32 second delay that would be experienced as a roundabout configuration.		
Gordon Street/ Ocean Drive			▪ Add left turn slip lanes to all approaches ▪ Extend right turn on Oxley Highway (W) from 55m to 100m
	Intersection Performance Summary: With the upgrade overall the intersection will be able to operate an LOS C and degree of saturation of 0.86 which is just within practical limits. Average delay will be 32 seconds which would be an improvement of 10 seconds from 42 second delays that would be experienced in the base 2040 geometry.		

6. WALKING, CYCLING AND PUBLIC TRANSPORT

6.1 Overview

The walking and cycling infrastructure consists of footpaths, a variety of crossing facilities, on-road cycle lanes and road shoulders. The provision and quality of infrastructure varies significantly along each section, in part due to the varying movement and place function that the corridor serves.

The existing and planned requirements for walking, cycling & public transport infrastructure along the corridor has been reviewed to assess its performance and adequacy in the future.

For a key arterial corridor, the following standard of facilities should be available for road users:

- A connected pathway network, including pathways on both sides of the road in highly urbanised areas with a high place function
- On road cycle facilities including dedicated cycle lanes through urbanised areas where demand is highest and shoulder provisions suitable for cyclists in rural areas
- High quality and frequent bus stops facilities. This includes indented stops to minimise impacts to through traffic and bus shelters and seats to encourage utilisation.

The existing walking, cycling and public transport infrastructure has been mapped for the corridor. The maps also identify missing footpath links in locations where there is a place function.

The following sections provide a summarised review of the pedestrian, cyclist, and public transport deficiencies along each section of the corridor.

Walking, cycling and public transport section maps are provided in **Appendix H**.

6.2 Active Transport

The on-road cycle network is fragmented throughout the corridor with cycle lanes inconsistently starting or ending and with inconsistent sign posting.

Table 6.1: Active Transport Deficiencies

Section	Active Transport Deficiencies
1	No connection to Bridge pathway
2	Incomplete footpath network between: • Tuffins Lane to Boundary Street • Newport Island Road to Widderson Street
3	Incomplete footpath network between Ackroyd Street to Heather Street 2 crossing locations at: • Crestwood Drive • Pacific Drive
4	No connection to recreational trails and beach accesses

Section	Active Transport Deficiencies
5	Incomplete footpath network between: • Dirah Street to Evans Street • Solomon Drive to east of Huston Mitchell Drive • West of Huston Mitchell Drive to Bonny View Drive 2 crossing locations at: • Ernest Street • East of Huston Mitchell Drive
6	Incomplete footpath network between: • Bonny View Drive to Beach Street • Rodley Street to Reflections Holiday Park 4 crossing locations at: • Seawind Chase • Beach Street • Reflections Holiday Park • Panorama Drive
7	No connection to recreational trails or beach accesses
8	Incomplete footpath network between: • Edith Street and the North Haven Public School • East of Adeline Street and Bridge Street • Haven Court to Kew Road 2 crossing locations at: • Haven Court • Kew Road
9	Incomplete footpath network along the entire length of Section 9 5 crossing locations at: • Waterview Crescent • Mission Terrace • Brotherglen Drive • Pacific Highway
10	Incomplete footpath network between: • Nancy Bird Walton Drive to Old Bridge Road

6.3 Public Transport

Public transport infrastructure along the corridor consists of bus stops that are serviced by a number of bus routes.

Bus stop facilities and infrastructure vary along the corridor including the provision of shelters and idented stops. The public transport provisions are managed by Transport for NSW and consultation between government departments is required for future planning.

Examples of the varying quality of bus stop infrastructure along the corridor are shown in Figure 6.1 and Figure 6.2.



Figure 6.1: Indented Bus Stop with Shelter



Figure 6.2: Unformalised Bus Stop – J Pole Only

The bus stop deficiencies identified are summarised by section below.

Table 6.2: Public Transport Deficiencies

Section	Bus Stop Deficiencies
2	Lack of shelters and supporting facilities with 2 bus stop pairs located at: ▪ Clifton Drive ▪ Findlay Avenue
3	Bus stop on Ocean Drive at Greenmeadows Drive (southern end) with lack of shelter and seating provision and possible need for bay indent
8	Lack of provision for bus stops at the North Haven Public School with shelters and seating

6.4 Walking, Cycling and Public Transport Infrastructure Upgrades

There are a range of walking, cycling and public transport infrastructure upgrades planned along the study corridor. These are predominantly associated with the road network upgrades detailed in Section 3.3. The infrastructure associated with these upgrades typically includes new or upgraded:

- Pedestrian paths and shared paths
- Crossing facilities
- Shared paths
- On-road cycle lanes
- Bus stops.

The key planned walking, cycling and public transport infrastructure upgrades are summarised in Table 6.3.

Table 6.3: Key Planned Walking, Cycling and Public Transport Upgrades

Section	Planned Upgrade	Transport Mode
Section 2: Hastings River Drive	▪ Pathway on both sides of Ocean Drive	▪ Walking
	▪ Three crossings located at the Hastings River Drive / Hibbard Drive intersection	▪ Walking
	▪ On-road cycle lane at the Hastings River Drive / Aston Street intersection	▪ Cycling
Section 2: Ocean Drive	▪ Pathway on the western side of Ocean Drive between Greenmeadows Drive to Emerald Drive	▪ Walking
	▪ Bus stops located north of Greenmeadows Crescent, at the Ocean Drive / Dahlsford Drive intersection and Ocean Drive / Pacific Drive intersection	▪ Public Transport (Bus)
Section 4: Ocean Drive	▪ Pathway from Ernest Street to south of Fiona Crescent	▪ Walking
	▪ Two crossings at the Ocean Drive / Fiona Crescent intersection	▪ Walking
Section 8:	▪ Seven crossings located across Ocean Drive	▪ Walking

A number of other active transport upgrades were identified in the Pedestrian Access and Mobility Plan 2015 (PAMP) as outlined in Technical Note 1 of the project. Majority of these upgrades have been constructed and now form part of the existing network along the corridor. The existing and planned infrastructure has been mapped and is provided in **Appendix B**.

7. MOVEMENT AND PLACE

7.1 Current Status

The NSW Government Practitioner's Guide to Movement and Place (2020) was used as a guide in assessing the movement and place functions based on the sectional characteristics of the corridor. The Movement and Place function for the corridor was assessed in Technical Note 1 of the project.

This assessment identified that the corridor has a high movement function across its entire length, facilitating movement between the Pacific Highway, Port Macquarie, and the coastal towns along Ocean Drive. The place function varies significantly along the corridor from environmental areas with limited to no activity through to highly urbanised areas with active street frontages. The place function was determined on the key elements shown Figure 7.1

Figure 7.1 also shows how various movement and place combinations are categorised into main roads, main streets, local streets, and civic spaces based on their movement and place function.

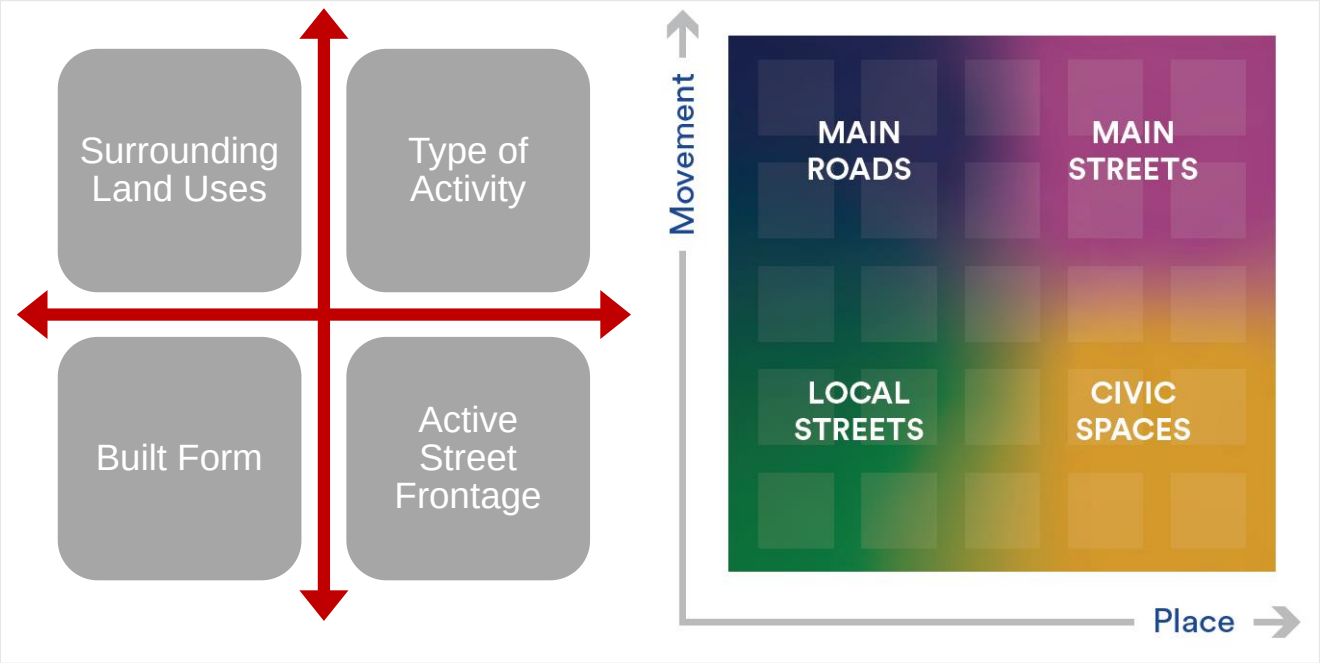


Figure 7.1: Movement and Place – Key Elements

As part of this assessment the 5 x 5 movement and place matrix from the Practitioner's Guide to Movement and Place was adopted to categorise the conflicts in each section of the corridor. Figure 7.2 shows the movement and place conflict assessment for the entire corridor. Conflicts increase as both movement and place functions increase. Category 5E (main streets) has the highest conflict between movement and place, while category 1A (local streets) has the lowest conflict.

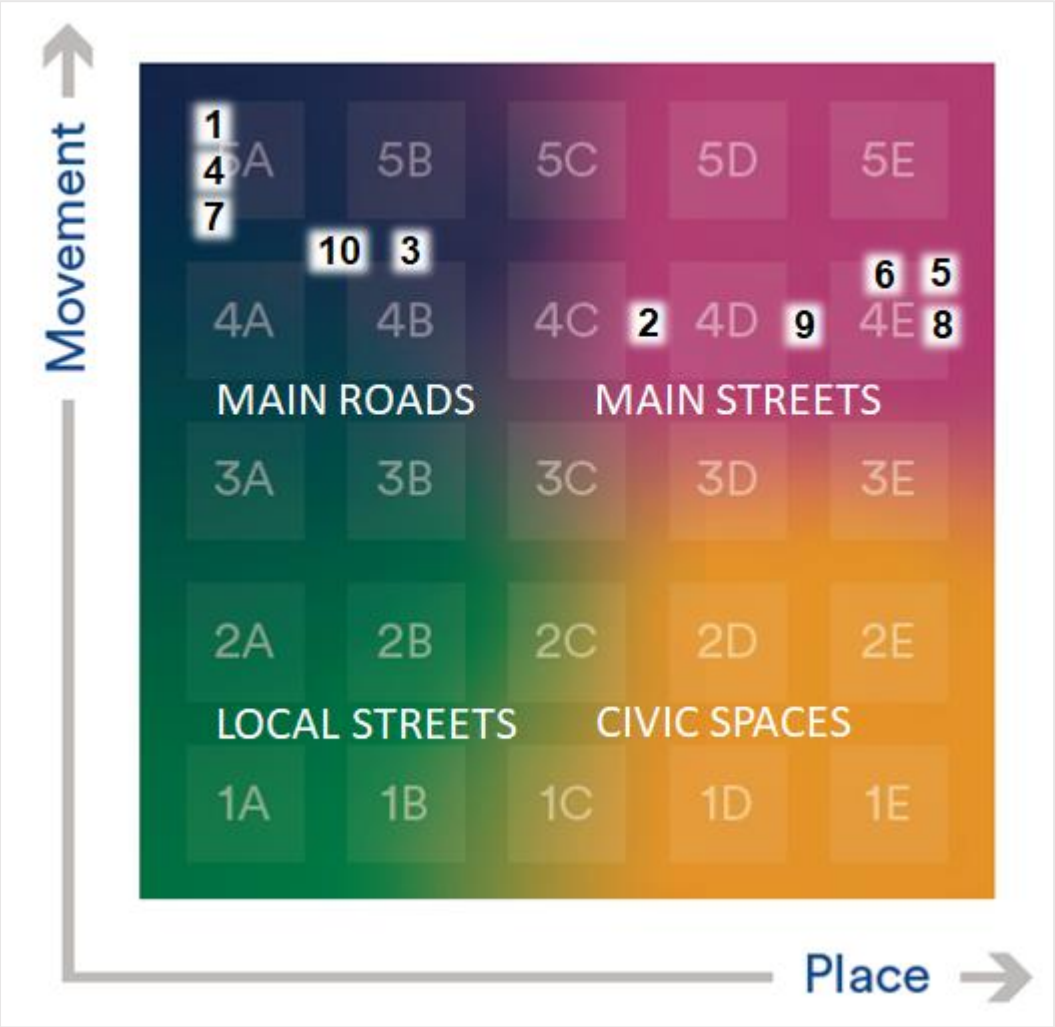


Figure 7.2: Movement and Place Conflict Summary

As shown above, Section 1, 4 and 7 have minimal movement – place conflicts given these sections do not accommodate urban land uses or generate significant activity. The high movement function is catered for in the built form of the road corridor and does not conflict with any current place function.

Sections 2, 5, 6, 8 and 9 have significant conflicts as these sections accommodate both high movement and high place functions. This conflict consists of high traffic volumes with active street frontages throughout the various town centres that include active and public transport usage. The conflict is derived from these various travel modes (i.e. car, bus, walking and cycling) concentrated in an area and having competing priorities.

Sections 3 and 10 accommodate a primarily high movement function however also front small sections of urbanised areas where the place function increases and as such the conflict increases.

The movement and place conflicts for the corridor have been mapped, based on the 5 x 5 matrix. This conflict map is presented in **Appendix I**.

7.2 Future Movement and Place Conflicts

As the corridor's function will change in the future with increased residential and retail growth, its movement and place conflicts will also change. The corridor's future movement and place conflicts has been assessed considering the anticipated key growth areas and future function of each section.

Table 7.1 shows the movement and place conflict assessment for the entire corridor. Conflicts increase as both movement and place functions increase. Category 5E (main streets) has the highest conflict between movement and place, while category 1A (local streets) has the lowest conflict. The future conflicts assessment considers changes in land use that will impact future movement and place functions of the corridor.

Table 7.1: Movement and Place Conflict Change Summary 2020 - 2030

Section	Movement and Place Conflict Category		Comment
	2020	2040	
1	No change		High movement function remains consistent with traffic current performance
2	No change		Movement and place function remains consistent with current performance
3	4B	4C	Slight increase in place function at key locations
4	No change		High movement function remains consistent with traffic current performance
5	4B	4D & 4C	Increase in place function at key locations based on Area 14 development
6	4C	4D	Increase in conflict due to traffic and urban growth
7	No change		High movement function remains consistent with current performance
8	4C	4E	Increase in conflict due to traffic and urban growth
9	4B	4D	Increase in conflict due to Area 15 development
10	5A	4B	Increase in conflict due to traffic and urban growth

As shown above the movement and place conflict assessment is based on a broad spectrum and therefore the changes within the corridor do not significantly impact the conflict assessment.

Key areas where the movement and place conflict has changed based on future growth estimates includes section 5, 6, 8 & 9.

The future movement and place conflicts for the corridor have been mapped, based on the 5 x 5 matrix. This conflict map is presented in **Appendix I.**

8. SECTION IMPROVEMENTS

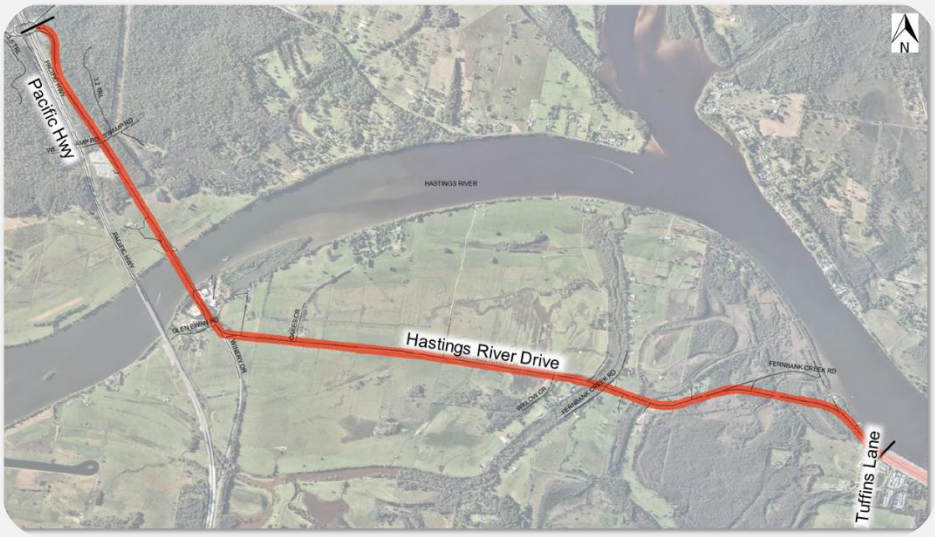
8.1 Overview

The proposed actions for each section of the corridor are provided below.

The timing and priority of each action is categorised into short (1-10 years), medium (11-20 years) and long (20+ years) which considers land use growth along the corridor.

A number of actions are considered to be signature projects that are earmarked by Council to be of key significant in the improvement of the corridor in terms of safety and efficiency specifically for accommodating future growth. ***Signature Projects*** are also highlighted in the following sections.

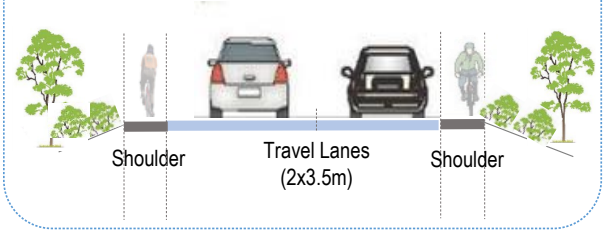
8.2 Section 1: Hastings River Drive (Pacific Highway to Tuffins Lane)



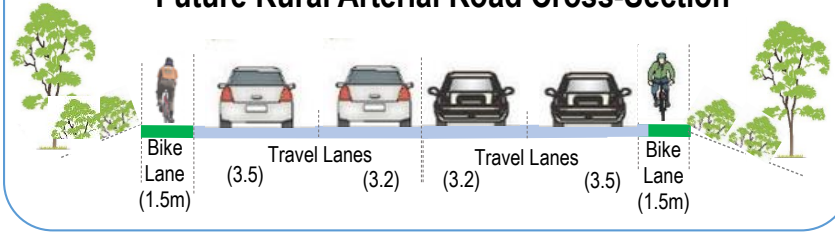


ACTION	TIMING
Traffic	
T1.1: Upgrade road to provide consistent cross section including shoulder improvements to cater for on-road cycling and informal hail'n'ride bus services	Medium term
T1.2: Plan for upgrade to four-lane cross section including bridge realignments to cater for future traffic volumes	Long term
Signature Project **T1.3: Upgrade the Hastings River Drive / Fernbank Creek Road intersection to improve safety**	**Short term**
T1.4: Maintain pavement and bridge condition	Short term

Future Two Lane Road Cross-Section



Future Rural Arterial Road Cross-Section



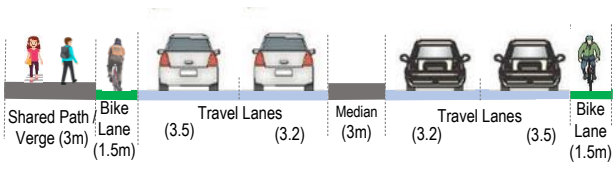
8.3 Section 2: Port Macquarie: Hastings River Drive (Tuffins Lane to Gordon Street)





ACTION	TIMING
Traffic	
Signature Project **T2.1: Upgrade the Boundary Street / Hastings River Drive intersection to include additional turning capacity to accommodate for development of the Airport Precinct and a potential secondary Link road**	**Long Term**
T2.2 Upgrade Hastings River Drive between Boundary Street and Huges Place to a 4-lane cross section including cyclist facilities and cater for traffic growth	Short/Medium Term
T2.3: Upgrade Clifton Drive / Hastings River Drive intersection to cater for traffic growth and to provide safer pedestrian crossing opportunities at peak times	Long term
T2.4: Plan for future corridor needs to cater for a 4-lane cross section from Tuffins Lane to Boundary Street including cyclist facilities (i.e cycle lanes or shared path)	Long term
T2.5: Upgrade the Aston Street / Hastings River Drive to a signalised intersection including additional turning capacity	Long term
T2.6: Upgrade the Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive intersection to increase turning capacity	Short term
T2.7: Schedule maintenance to maintain the pavement and corridor infrastructure	Short term
Active Transport	
A2.1: Provide a shared path on one side of the corridor through Port Macquarie by upgrading the current path	Short term
Public Transport	
P2.1: Formalise and improve bus stops to provide consistent high-quality facilities in the corridor	Long term

Future Urban Arterial Road Cross-Section



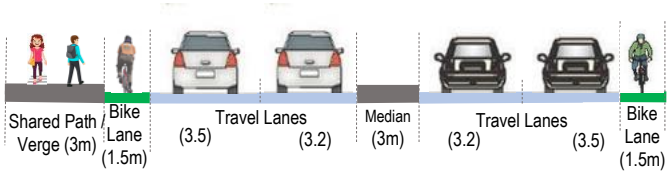
8.4 Section 3: Ocean Drive (Gordon Street to Elkhorn Grove)





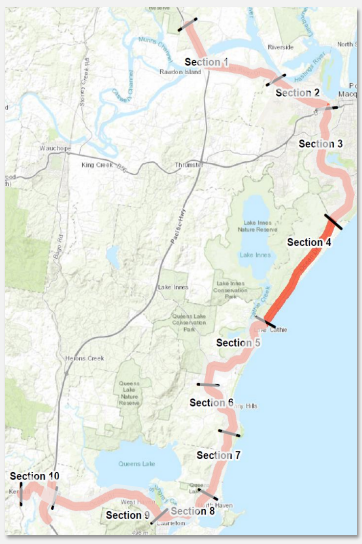
ACTION	TIMING
Traffic	
T3.1: Upgrade Ocean Drive to a four-lane divided cross section on between Gordon Street to Denehurst Place	Long term
T3.2: Upgrade the Ocean Drive / Lake Road to increase turning capacity	Long term
T3.3: Upgrade the Ocean Drive / Green Meadows Drive to improve safety	Long term
Signature Project **T3.4: Upgrade Ocean Drive to a four-lane cross section between Greenmeadows Drive (south) to Matthew Flinders Drive including the following intersections:** • **Ocean Drive / Crestwood Drive / Dahlsford Drive** • **Ocean Drive / Pacific Drive / Jonas Absalom Drive** • **Ocean Drive / Matthew Flinders Drive / Emerald Drive**	**Medium term 2026 - 2030**
T3.5: Upgrade the Ocean Drive /Links Crescent / Elkhorn Grove intersection to improve safety	Long term
T3.6: Maintain pavement and bridge condition	Short term
Active Transport	
A3.1: Provide appropriate crossings at key locations	Short term
A3.2: Provide a shared path on one side of the corridor	Short term
Public Transport	
P3.1: Plan for the upgrade and potential relocation of bus stops north of Greenmeadows Crescent, at the Ocean Drive / Dahlsford Drive intersection and Ocean Drive / Pacific Drive intersection	Long term

Future Urban Arterial Road Cross-Section



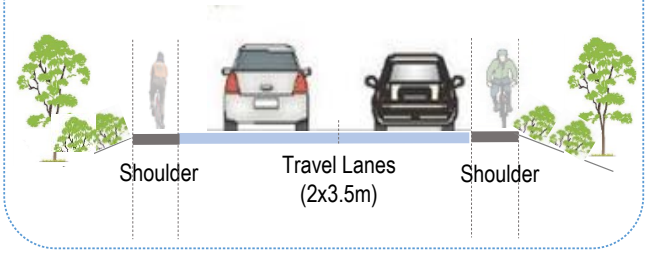
8.5 Section 4: Ocean Drive (Elkhorn Grove to Dirah Street)



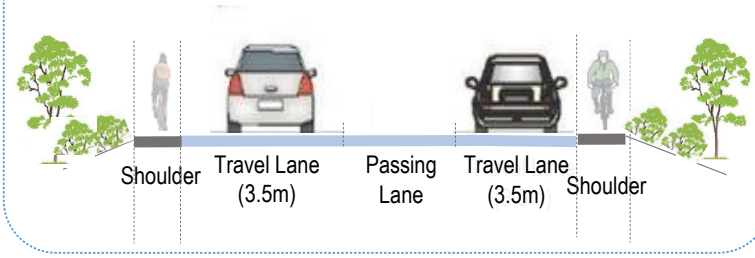


ACTION	TIMING
Traffic	
Signature Project **T4.1: Upgrade Ocean Drive to provide consistent two-lane cross section including shoulder improvements for on-road cyclist including signage and line marking**	**Medium term**
T4.2: Provide overtaking and passing lanes where appropriate to increase traffic flow	Medium term
Active Transport	
A4.1: Complete shoulder improvements and widening for on-road cycle lanes in line with road cross section upgrades	Medium term
A4.2: Investigate opportunities for an off-road path connecting Port Macquarie to Lake Cathie	Long term
Public Transport	
P4.1: Provide suitable lane widths and curve widening to cater for buses	Long term

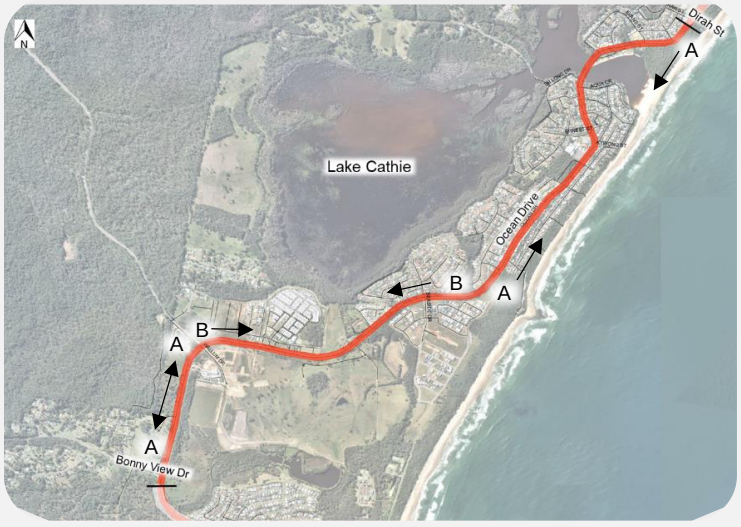
Future Two Lane Road Cross-Section

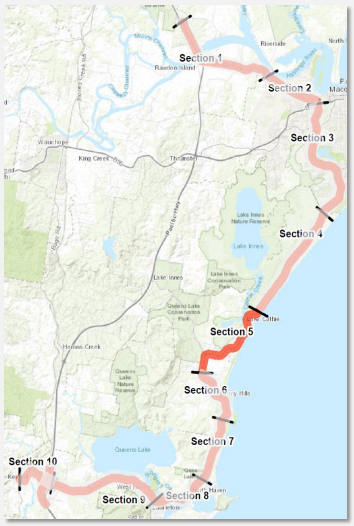


Future Two Lane Road Cross-Section



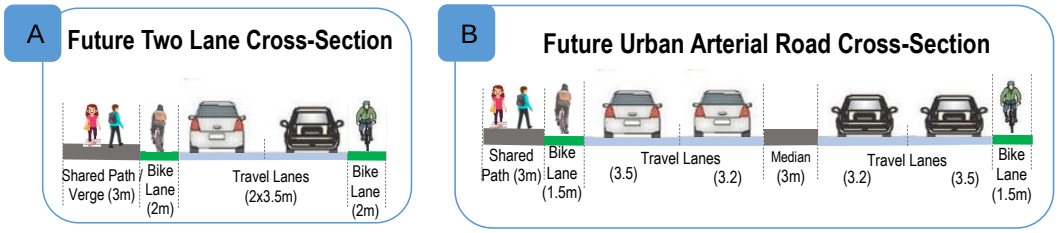
8.6 Section 5: Ocean Drive (Dirah Street to Bonny View Drive)





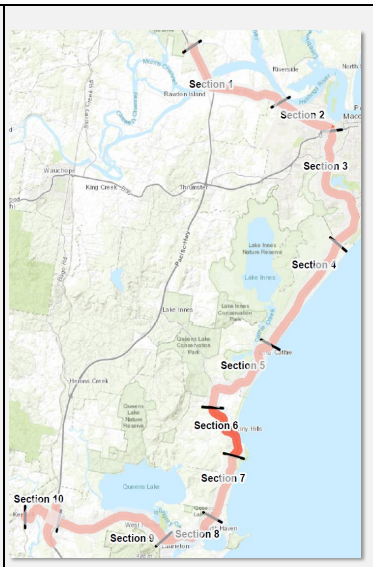
ACTION	TIMING
Traffic	
Signature Project **T5.1: Upgrade Ocean Drive to provide consistent two-lane cross section including shoulder improvements for on-road cyclist including signage and line marking (Cross Section A)**	**Medium term**
T5.2: Upgrade to 4-lane urban arterial cross section between Seaside Drive and Huston Mitchell Drive (Cross Section B)	Long term
T5.3: Upgrade the Ocean drive / Evans Street (south) to a roundabout	Medium term 2026 - 2030
T5.4: Upgrade the Ocean Drive / Woolworths Access (Lake Cathie) to a signalised intersection	Medium term 2026 – 2030
T5.5: Upgrade the Ocean Drive / Abel Tasman Drive / Seaside Drive to a signalised intersection	Medium term 2026 – 2030
T5.6: Upgrade the Ocean Drive / Town Centre Access to a signalised intersection	Medium term 2026 - 2030
Active Transport	
A5.1: Provide shared path on one side of the corridor throughout Lake Cathie	Short term
A5.2: Provide crossing facilities on Ocean Drive specifically around Fiona Crescent	Short term
Public Transport	
P5.1: Formalise and upgrade bus stops to cater for school bus interchanges	Long term
P5.2: Provide suitable lane widths and curve widening to cater for buses	Long term

It is noted that after further investigations and detailed design Council may consider the ability to implement an off-road cycle facility to accommodate for the different user gro



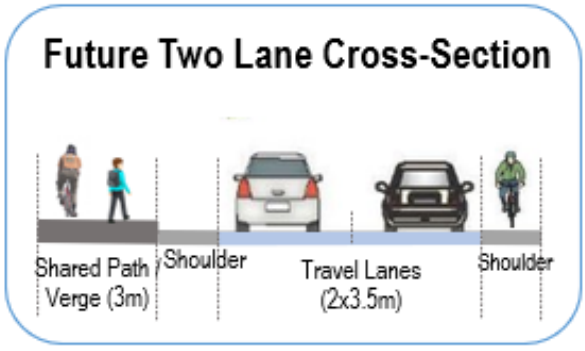
8.7 Section 6: Ocean Drive (Bonny View Drive to 800 Ocean Drive)

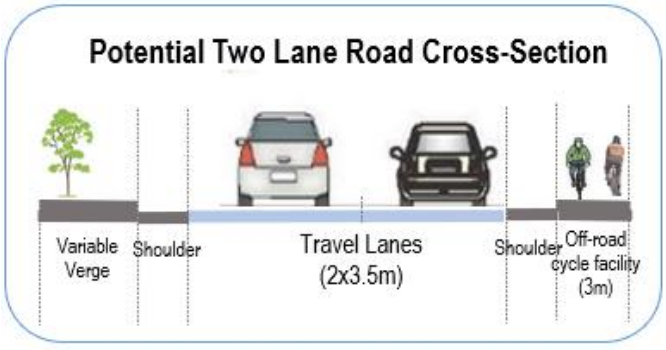




ACTION	TIMING
Traffic	
T6.1: Upgrade the Ocean Drive / McGilvray Road intersection to a roundabout	Medium term
T6.2: Upgrade Ocean Drive to provide consistent two-lane cross section, including shoulder improvements for cyclist including signage and line marking	Medium term
T6.3: Maintain road safety by clearing overgrown roadside vegetation and other roadside hazards	Short term
Active Transport	
A6.1: Provide shared path on one side of Ocean Drive through Bonny Hills	Short term
Signature Project **A6.2: Provide safe crossings at:** • **Beach Street / Ocean Drive** • **Fronting the Reflections Holiday Park** • **Fronting the top shop**	**Short term**
Public Transport	
P6.1: Formalise and upgrade bus stops to provide consistent and frequent stops along Ocean Drive	Long term

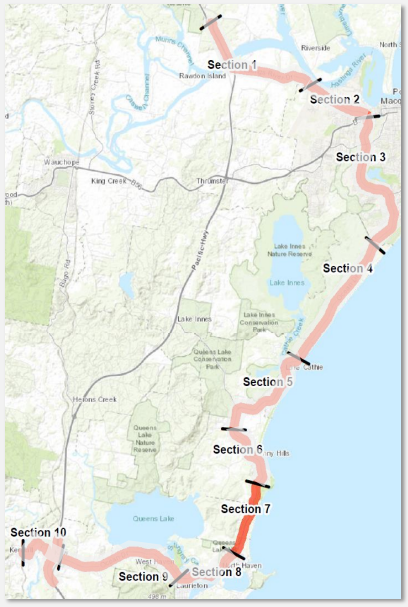
It is noted that after further investigations and detailed design Council may consider the ability to implement an off-road cycle facility to accommodate for the different user groups. A potential cross section is shown below.





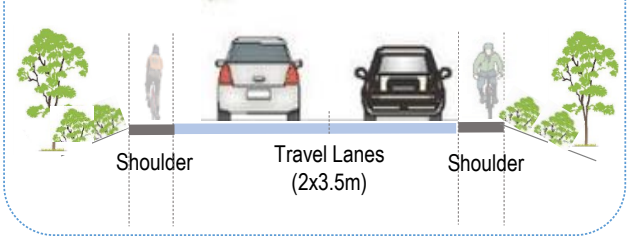
8.8 Section 7: Ocean Drive (800 Ocean Drive to Edith Street)



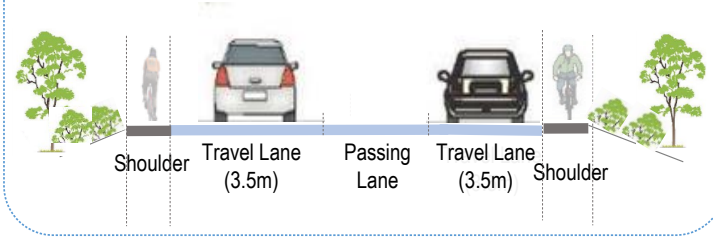


ACTION	TIMING
Traffic	
Signature Project **T7.1: Upgrade Ocean Drive to provide consistent two-lane cross section including shoulder improvements for on-road cyclist including signage and line marking**	**Medium term**
T7.2: Provide overtaking and passing lanes where appropriate to increase traffic flow	Medium term
T7.3: Maintain road safety by clearing overgrown roadside vegetation and other roadside hazards	Short term
Active Transport	
A7.1: Provide pedestrian connections to the beach trails between Bonny Hills and North Haven	Long term
Public Transport	
P7.1: Provide suitable lane widths and curve widening to cater for buses	Long term

Future Two Lane Road Cross-Section



Future Two Lane Road Cross-Section



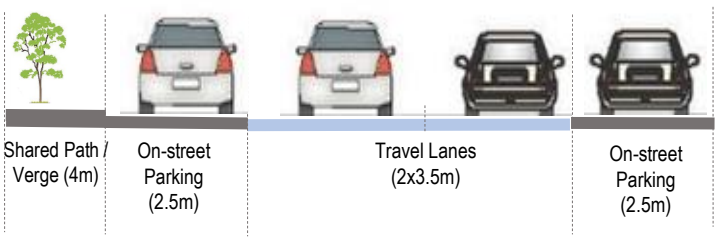
8.9 Section 8: Ocean Drive (Edith Street to Kew Road/Ocean Drive intersection)





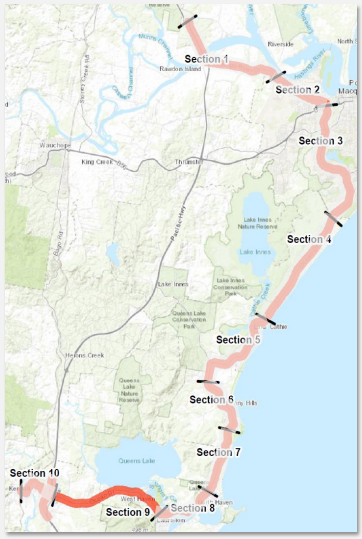
ACTION	TIMING
Traffic	
Signature Project **T8.1: Upgrade the following intersections to a roundabout:** • **Ocean Drive / Edith Street** • **Ocean Drive / Bold Street / Bayside Circuit** • **Ocean Drive / Kew Road**	**Medium term**
T8.2: Maintain road pavement and corridor infrastructure	Short term
Active Transport	
A8.1: Provide a shared path on one side of Ocean Drive through North Haven	Medium term
Public Transport	
P8.1: Formalise and upgrade bus stops to provide consistent and frequent stops along Ocean Drive	Long term

Future Two Lane Road Cross-Section

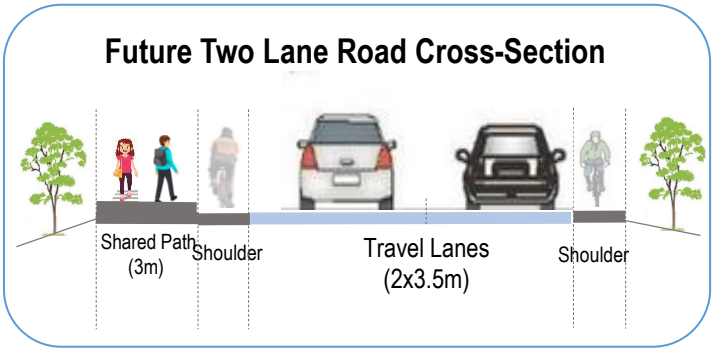


8.10 Section 9: Ocean Drive (Kew Road / Ocean Drive intersection to Pacific Highway)

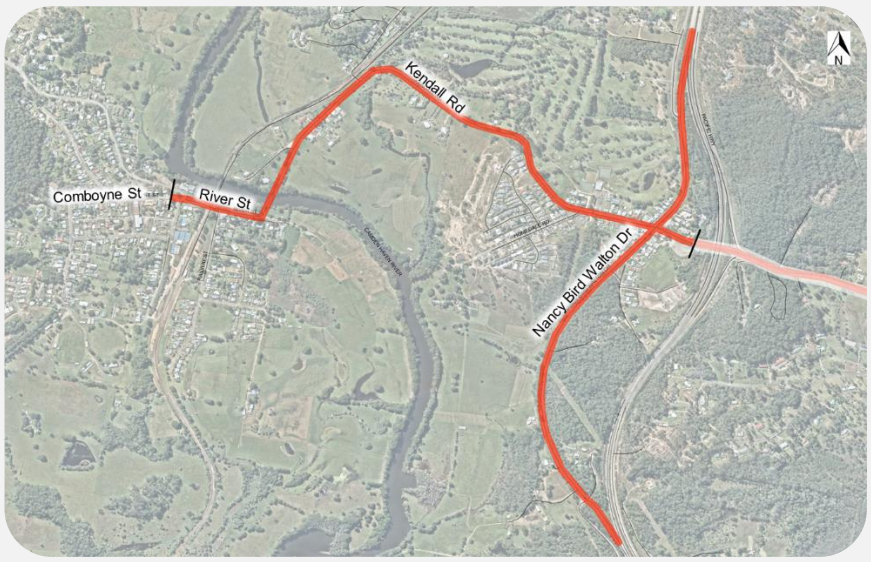


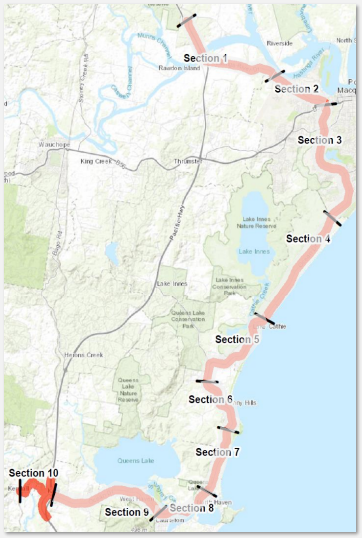


ACTION	TIMING
Traffic	
T9.1: Upgrade the Ocean Drive / Sirius Drive to a signalised intersection	Short term 2021-2025
T9.2: Upgrade the Ocean Drive / Lake Ridge Drive to a signalised intersection	Short term 2026-2030
T9.3: Upgrade the Ocean Drive / Mountain View Road intersection to a roundabout	Medium term
T9.4: Maintain road pavement and corridor infrastructure	Short term
Active Transport	
Signature Project **A9.1: Provide a shared path on one side of Ocean Drive**	**Medium term**
Public Transport	
P9.1: Formalise and upgrade bus stops to provide consistent and frequent stops along Ocean Drive	Long term

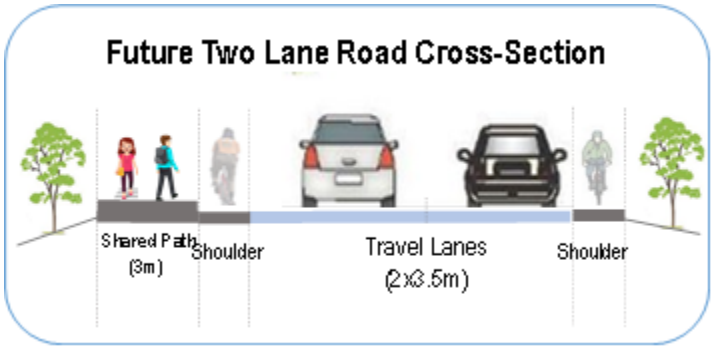


8.11 Section 10: Kendall Road (Pacific Highway interchange to Comboyne Street)





ACTION	TIMING
Traffic	
T10.1: Upgrade the Ocean Drive / Nancy Bird Walton Drive / Kendall Road roundabout to improve delineation and pedestrian safety	Short term 2021
T10.2: Upgrade Ocean Drive to provide consistent two-lane cross section including shoulder improvements for on-road cyclist including signage and line marking	Medium term
T10.3: Maintain road pavement and corridor infrastructure	Short term
Active Transport	
Signature Project **A10.1: Provide a shared path on one side of the corridor between Kew and Kendall**	**Medium term**
A10.2: Provide safe pedestrian crossing opportunities in Kew and Kendall	Medium term
Public Transport	
P10.1: Formalise and upgrade bus stops to provide consistent and frequent stops along Ocean Drive	Long term



9. COMMUNITY CONSULTATION

The community and stakeholder engagement approach was designed to ensure key stakeholders, community groups, and interested local community members were given opportunities to provide direct input to the draft corridor strategy at key points in the process.

The community and stakeholder engagement process consisted of two phases:

- Phase One – Corridor Review, Description and Vision
- Phase Two – Improvement Strategies and Actions.

Community and stakeholder input captured during initial phase of engagement fed into project team's work to define the vision, objectives, and targets for the corridor. The second phase of the engagement captured input to inform the draft strategies and actions.

A third phase of engagement is being delivered by Council, as part of public exhibition on this draft Corridor Strategy.

During both phases of the community and stakeholder engagement consistent feedback emerged.

Analysis of the feedback received during the second phase of engagement indicated that there were a range of issues important to community members and key stakeholders. These consistent issues, or key themes, that were mentioned across all sections of the corridor are illustrated below:

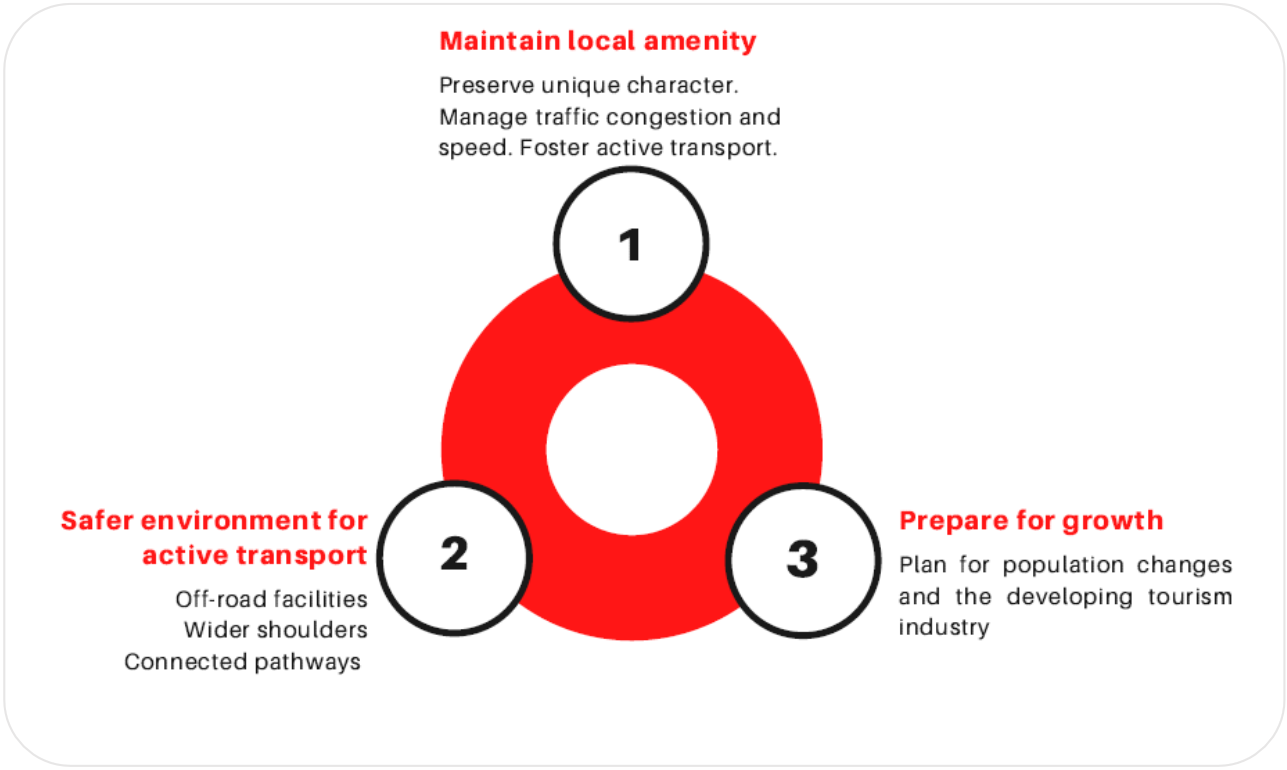


Figure 9.1: Key Themes from Engagement

10. Next Steps: From Strategy to Implementation

As part of Council budget approximately $36M of its $85M capital works program is spent for roads and road associated infrastructure projects annually. This budget is to cover not only this corridor but an overall road infrastructure network with over 1,300kms of sealed and unsealed roads and more than 220kms of footpaths.

Specific projects and improvements out of this Strategy will need to be considered for prioritisation along with a number of other transport improvements identified out of Regional Integrated Transport Strategy and Port Network Transport Network Planning.

Council projects are identified as part a 4-year delivery program which represents what the Council aims to deliver and serves as a guide when developing annual Operational Plans. The last 4-year delivery program (2017-2021) is due for review and update so this Strategy and work on a Regional Integrated Transport Strategy and Port Macquarie Transport Network Planning will be incorporated as part of this next adopted delivery program.

Further, there may be opportunities to seek additional funding from various sources to complete bring forward projects in the implementation plan/program or improvement specific treatments (i.e. off-road cycle tracks as opposed to shoulder widening improvements). For example, the NSW State Government has a Walking and Cycling Program whereby local government authorities can make submissions to allow for jointed funded improvements for shared paths, footpaths, and cycle lanes.

The below tables highlights the high-level strategic cost estimate by works program type and section. To note these are ballpark estimates to inform program budget planning and would require concept designs level investigation to provide more reliable estimates. These do not include maintenance works which will need to be considered as part of asset management.

Table 10.1: Actions Program Cost Estimates by Time Frame

ACTION		PROGRAM BUDGET ESTIMATE
Traffic and Roads Improvements		
	Short Term (to 2025)	~$11.5 Million
	Medium Term (2026-2030)	~$44.7 Million
	Long Term (2030-2040)	~$12.7 Million
Active Transport Improvements		
	Short Term (to 2025)	~$13.7 Million
	Medium Term (2026-2030)	~$16.9 Million
	Long Term (2030-2040)	~$0.9 Million
Public Transport Improvements		
	Long Term (2030+)	~$2.5 Million

Table 10.2: Program Costs Estimates by Section

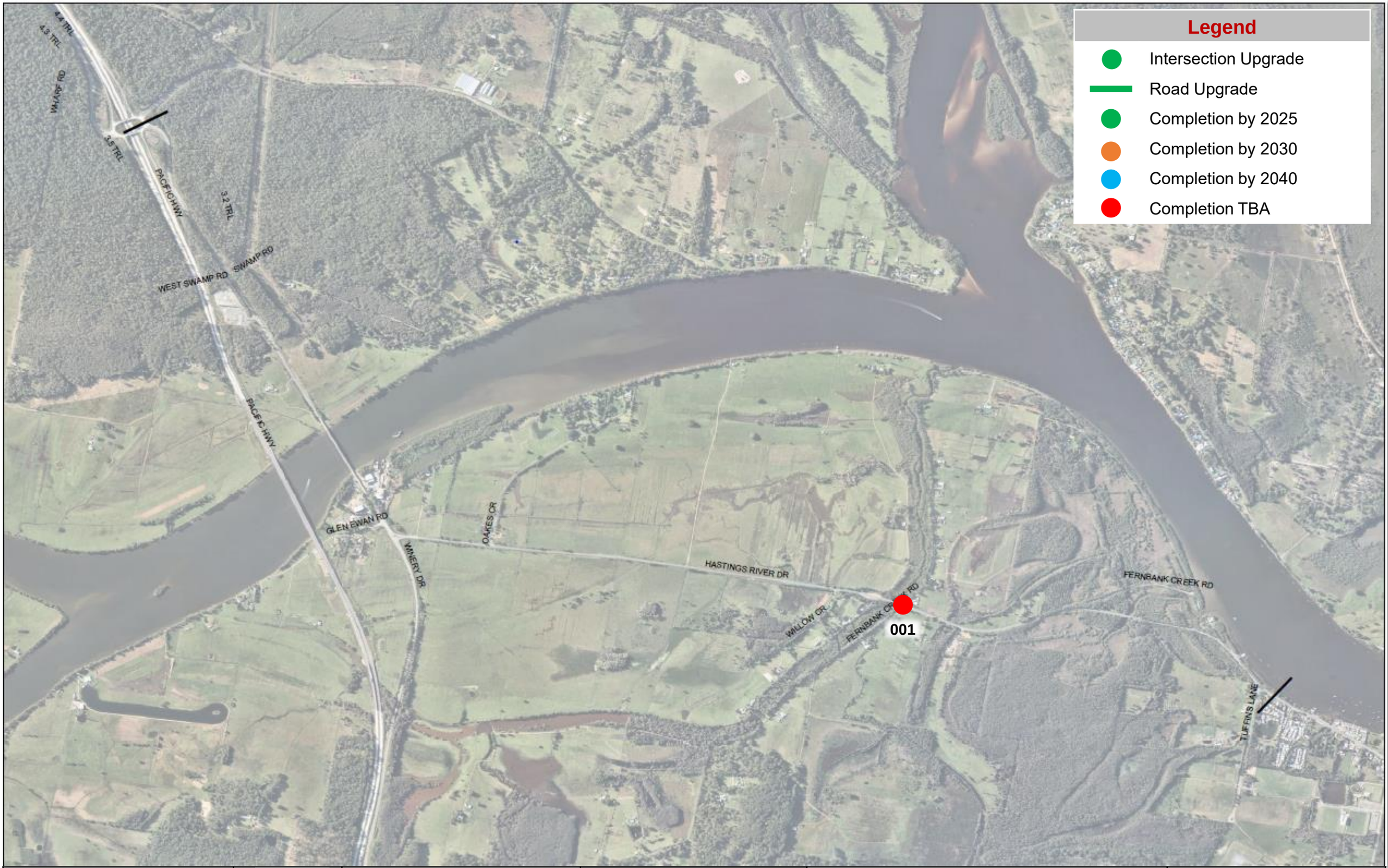
SECTION	TOTAL	SHORT TERM	MEDIUM TERM	LONG TERM
1: Hastings River: Pacific Highway Interchange to southern side of Tuffins Lane	**$2.7 Million**	-	$2,700,000.00	-
2: Port Macquarie: Southern side of Tuffins Lane to southern side of the Hastings River Drive / Oxley Highway intersection	**$9.3 Million**	$2,800,000.00	$2,100,000.00	$4,400,000.00
3: Port Macquarie: Southern side of Oxley Highway to southern side of Elkhorn Grove	**$19.1 Million**	$5,000,000.00	$10,100,000.00	$4,000,000.00
4: Port Macquarie to Lake Cathie: Southern side of Elkhorn Grove to southern side of Dirah Street	**$6.4 Million**	-	$6,100,000.00	$300,000.00
5: Lake Cathie: Southern side of Dirah Street to southern side of Bonny View Drive	**$18.8 Million**	$3,400,000.00	$10,200,000.00	$5,200,000.00
6: Bonny Hills: Southern side of Bonny View Drive to southern side of no. 800 Ocean Drive	**$12.7 Million**	$3,500,000.00	$9,000,000.00	$200,000.00
7: Bonny Hills to North Haven: Southern side of no. 800 Ocean Drive to northern side of Edith Street	**$4.5 Million**	-	$3,300,000.00	$1,200,000.00
8: North Haven to Laurieton: Southern side of no. 800 Ocean Drive to western side of Kew Road / Ocean Drive intersection	**$8.1 Million**	-	$7,800,000.00	$300,000.00
9: Laurieton to Kew: Northern side of Kew Road / Ocean Drive intersection to eastern side of Pacific Highway interchange	**$15.8 Million**	$9,400,000.00	$6,100,000.00	$300,000.00
10. Kew to Kendall: Eastern side of Pacific Highway interchange to Comboyne Street / Graham Street	**$5.5 Million**	$1,100,000.00	$4,200,000.00	$200,000.00

Appendix A: Planned Road Network Upgrades

Appendix A: Planned Road Network Upgrades

ID	Intersection / Road Section	Upgrade Details	Anticipated Completion Year	Drawing Reference
001	Hastings River Drive / Fernbank Creek Road	Black Spot Intersection	N/A	N/A
002	Hastings River Drive / Boundary Street	Four lanes on Boundary Street southern leg. Four lanes on Hastings River Drive eastern leg.	By 2030	*Boundary Street Upgrade (concept - complete, detailed - current) & Hastings River Drive Upgrade (detailed) designs. (13/01/2020)*
003	Hastings River Drive / Hughes Place	Dual lane approach and departure to the western side.	By 2030	*Hastings River Drive Upgrade – Hughes Place to Boundary Street. (24/09/2020)*
004	Hastings River Drive / Aston Street	Upgrade to signalised intersection. Left-turn pocket on western approach, right-turn pocket on easter approach. Four lanes on Aston Street	By 2030	*Hastings River Drive & Aston Street Traffic Signals (01/06/2016)*
005	Oxley Highway / Hastings River Drive / Gordon Street / Ocean Drive	Extension of the right turn lane on the eastern leg.	2021	Gordon Street Drainage Mitigation, Pavement Rehabilitation & Water Main Rejuvenation Works (30/10/2020)
006	Ocean Drive: Gordon Street to Denehurst Place	Upgrade to four lane divided road standard required (as per adjacent section to south)	N/A	N/A
007	Ocean Drive / Lake Road	Right turn pocket extension (both lanes) on western approach	N/A	Lake Road at Ocean Drive extension of eastbound right turn lanes
008	Ocean Drive / Greenmeadows Drive (south)	Blackspot intersection due to high-speed environment, minimal gaps for turning movements and merging manoeuvres.	N/A	N/A
009	Ocean Drive: Greenmeadows Drive (south) to Matthew Flinders Drive	Four lane upgrade of Ocean Drive upgrade between Greenmeadows Drive (south) and Matthew Flinders Drive.	2026-2030	*Ocean Drive upgrade between Greenmeadows Drive (south) and Matthew Flinders Drive detailed design. (Design - ODU-DD-001-DWG-04 IFC Drawings Part 1 Civil - FINAL DESIGN - 2017 05 17.PDF)*
010	Ocean Drive / Crestwood Drive / Dahlsford Drive	Four lane upgrade of Ocean Drive	2026-2030	*See above.*
011	Ocean Drive / Pacific Drive / Jonas Absalom Drive	Four lane upgrade of Ocean Drive	2026-2030	*See above.*
012	Ocean Drive / Matthew Flinders Drive / Emerald Drive	Four lane upgrade of Ocean Drive	2026-2030	*See above.*
013	Ocean Drive / Links Cres / Elkhorn Grove	Blackspot intersection	N/A	*N/A*
014	Ocean Drive / Evans Street (south)	Upgrade to roundabout	2026-2030	*Ocean Drive / Evans Street (south) roundabout concept design. (Concepts Designs Key Intersections_MR600 & 538)*
015	Ocean Drive: Ernest Street to Miala Street	Ocean Drive upgrade between Ernest Street and Miala Street (median divided two lane cross section with bicycle lanes and various intersection upgrades)	2026-2030	*Ocean Drive Upgrade* *Lake Cathie (Revision G)*

ID	Intersection / Road Section	Upgrade Details	Anticipated Completion Year	Drawing Reference
016	Ocean Drive / Woolworths Access (Lake Cathie)	Upgrade to traffic signals	2026-2030	*Ocean Drive Upgrade Lake Cathie (Revision G)*
017	Ocean Drive: Abel Tasman Drive to Bonny View Drive	Various upgrades including cycle lanes and edge treatments	N/A	*Section 94 Local Roads Contributions Plan - Areas 13, 14 & 15.*
018	Ocean Drive / Abel Tasman Drive / Seaside Drive	Upgrade to traffic signals	2026-2030	*Ocean Drive & Abel Tasman Drive Intersection Ultimate Overlay*
019	Ocean Drive / Town Centre Access	See plans for Ocean Drive traffic signals at Town Centre Access.	2026-2030	*Section 94 Local Roads Contributions Plan - Areas 13, 14 & 15.*
020	Ocean Drive / Houston Mitchell Drive	Eastern approach to be opened to traffic in 2021.	2021	N/A
021	Ocean Drive / McGilvray Road	Upgrade to roundabout	N/A	Ocean Drive / McGilvray Road roundabout concept design. (Concepts Designs Key Intersections_MR600 & 538)
022	Ocean Drive / Beach Street (south)	Blackspot intersection	N/A	N/A
023	Ocean Drive / Panorama Drive / Third Ave	Channelisation required	N/A	N/A
024	Ocean Drive / Edith Street	Upgrade to roundabout	2026-2030	*Ocean Dr & Edith St, North Haven Roundabout Sketch Layout*
025	Ocean Drive / Bold Street / Bayside Circuit	Upgrade to roundabout	2026-2030	*Ocean Drive/Bold Street, Laurieton Roundabout Sketch Plan*
026	Ocean Drive / Kew Road	Upgrade to roundabout	2026-2030	*Ocean Drive/ Kew Road, Laurieton 50km/H Roundabout Sketch Plan*
027	Ocean Drive / Sirius Drive	Upgrade to signalised intersection.	2021-2025	*Ocean Drive / Sirius Drive Traffic Signals Sketch Layout*
028	Ocean Drive: Sirius Drive to Pacific Highway	Existing corridor upgrades	2031-2035	N/A
029	Ocean Drive / Mountain View Road	Upgrade to roundabout	N/A	*Section 94 Local Roads Contributions Plan - Areas 13, 14 & 15.*
030	Ocean Drive / Lake Ridge Drive	Upgrade to traffic signals	2026-2030	*Section 94 Local Roads Contributions Plan - Areas 13, 14 & 15.*
031	Ocean Drive / Nancy Bird Walton Drive / Kendall Road	Upgrade of existing roundabout	2021	*Kew Main Street Plan (16167-LD-DR-C-Combined)*
032	Graham Street: River Street to Comboyne Street	General improvements	N/A	*Kendall Main Street Plan*
033	Graham Street / Comboyne Street	See plans for intersection upgrade	2026-2030	*Graham St / Comboyne St Masterplan Concept Sketch*



BITZIOS consulting

N

0 500 1,000 Meters

Planned Road Upgrades

Section 1
Chainage Start:0 End :6900
Description Start: Pacific Highway End Tuffins Lane

Project Number: P4665
Date: 19/04/2021
Sheet: 1



BITZIOS consulting

N

0 330 660 Meters

Planned Road Upgrades

Section 2
Chainage Start:7000 End :10500
Description Start: Tuffins Lane End Oxley Highway

Project Number: P4665
Date: 19/04/21
Sheet: 2



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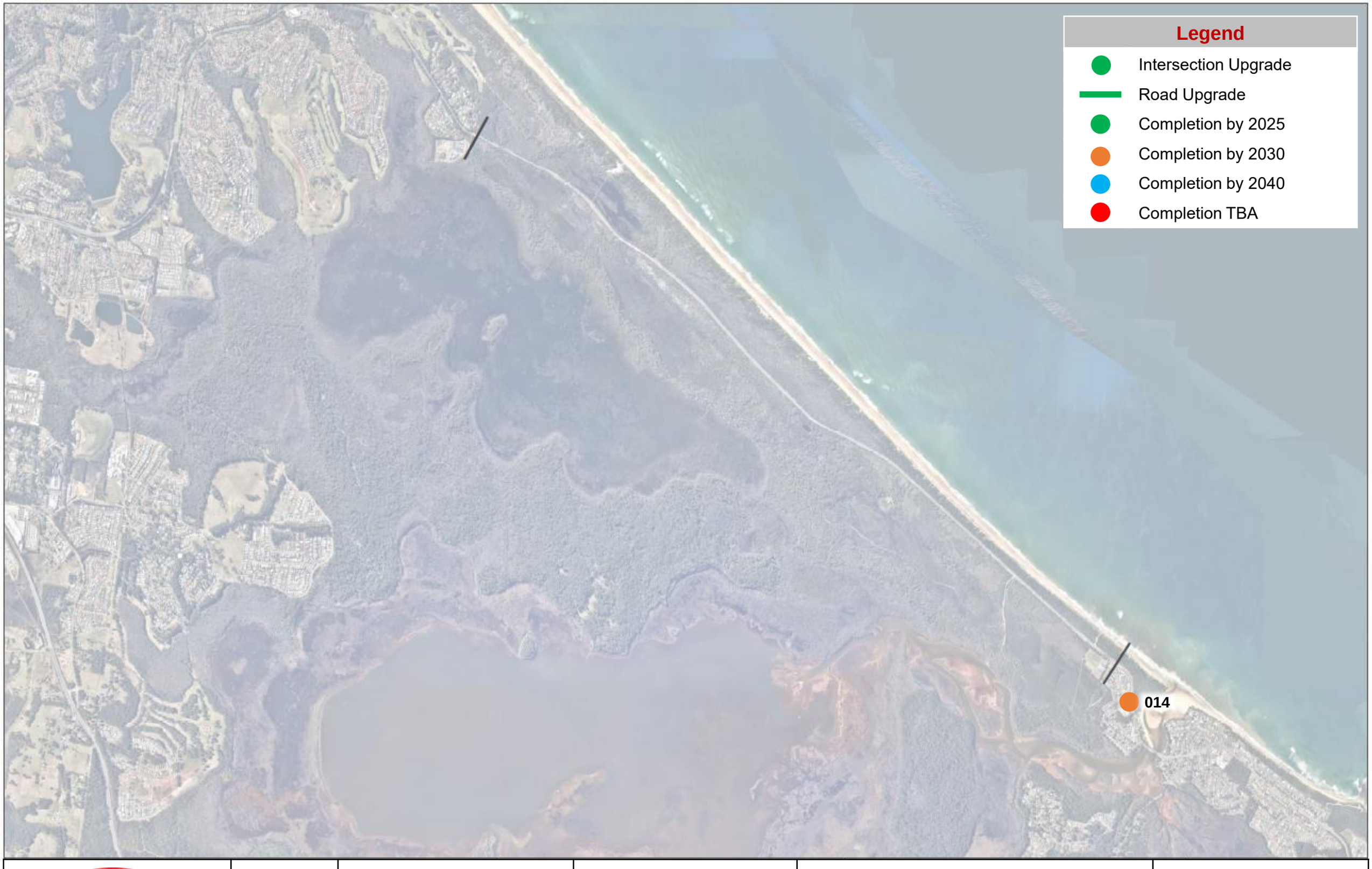
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0 460 920 Meters

Planned Road Upgrades

Section 3
Chainage Start:11000 End :18000
Description Start: Oxley Highway End: Elkhorn Grove

Project Number:P4665
Date: 19/04/21
Sheet: 3



BITZIOS consulting

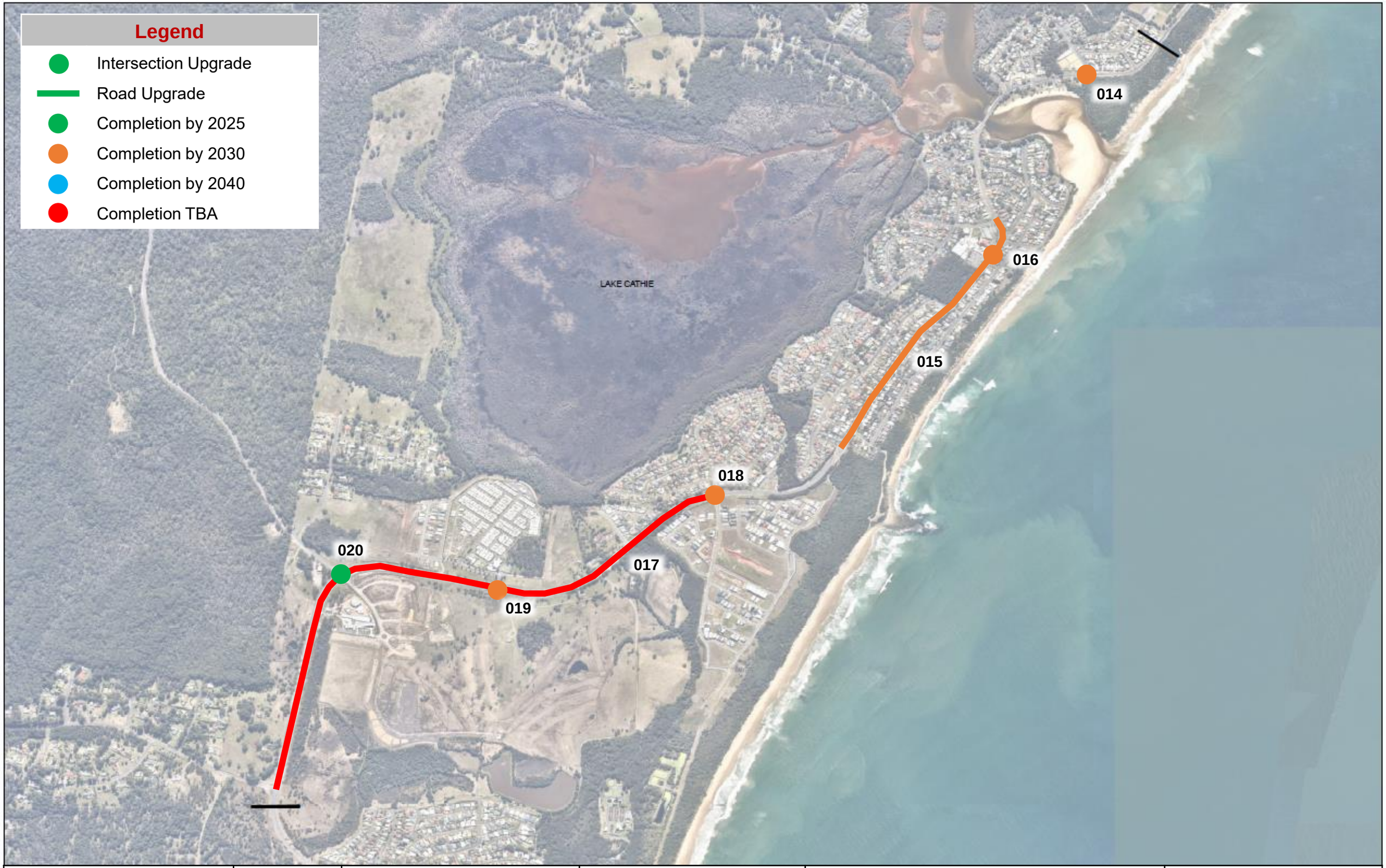
N

0 800 1,600 Meters

Planned Road Upgrades

Section 4
Chainage Start:18500 End :24500
Description Start: Elkhorn Grove End: Dirah Street

Project Number:P4665
Date: 19/04/21
Sheet: 4



BITZIOS consulting	N	0 425 850 Meters	**Planned Road Upgrades**	**Section 5** Chainage Start:25000 End :30500 Description Start: Dirah Street End: Bonny View Drive	**Project Number:**P4665 **Date:** 19/04/21 **Sheet:** 5



BITZIOS consulting

N

0 295 590 Meters

Planned Road Upgrades

Section 6
Chainage Start:31000 End : 34000
Description Start: Bonny View Drive End: 800 Ocean Drive

Project Number:P4665
Date: 19/04/21
Sheet: 6



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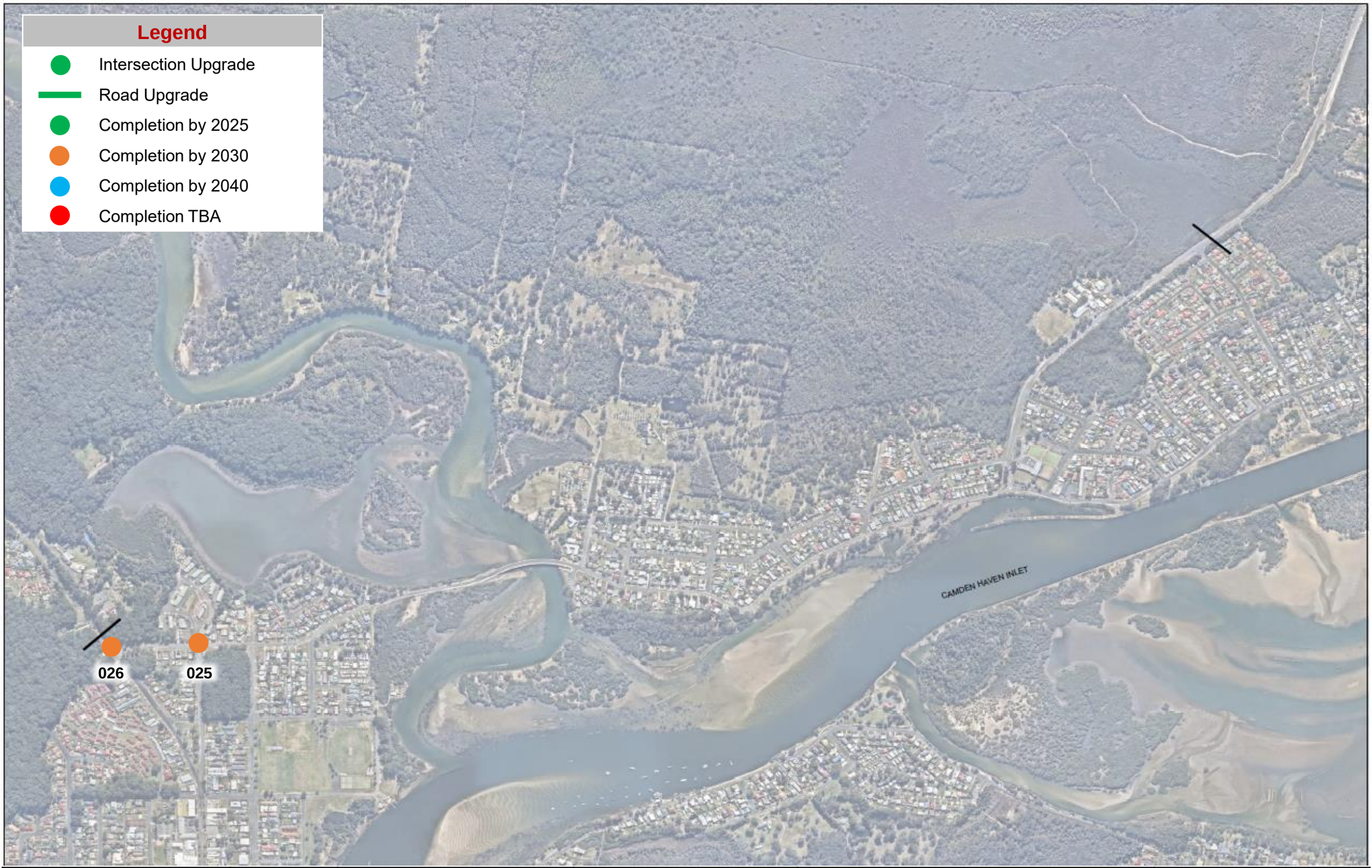
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0 295 590 Meters

Planned Road Upgrades

Section 7
Chainage Start:34500 End : 37500
Description Start: 800 Ocean Drive End: North Haven

Project Number:P4665
Date: 19/04/21
Sheet: 7



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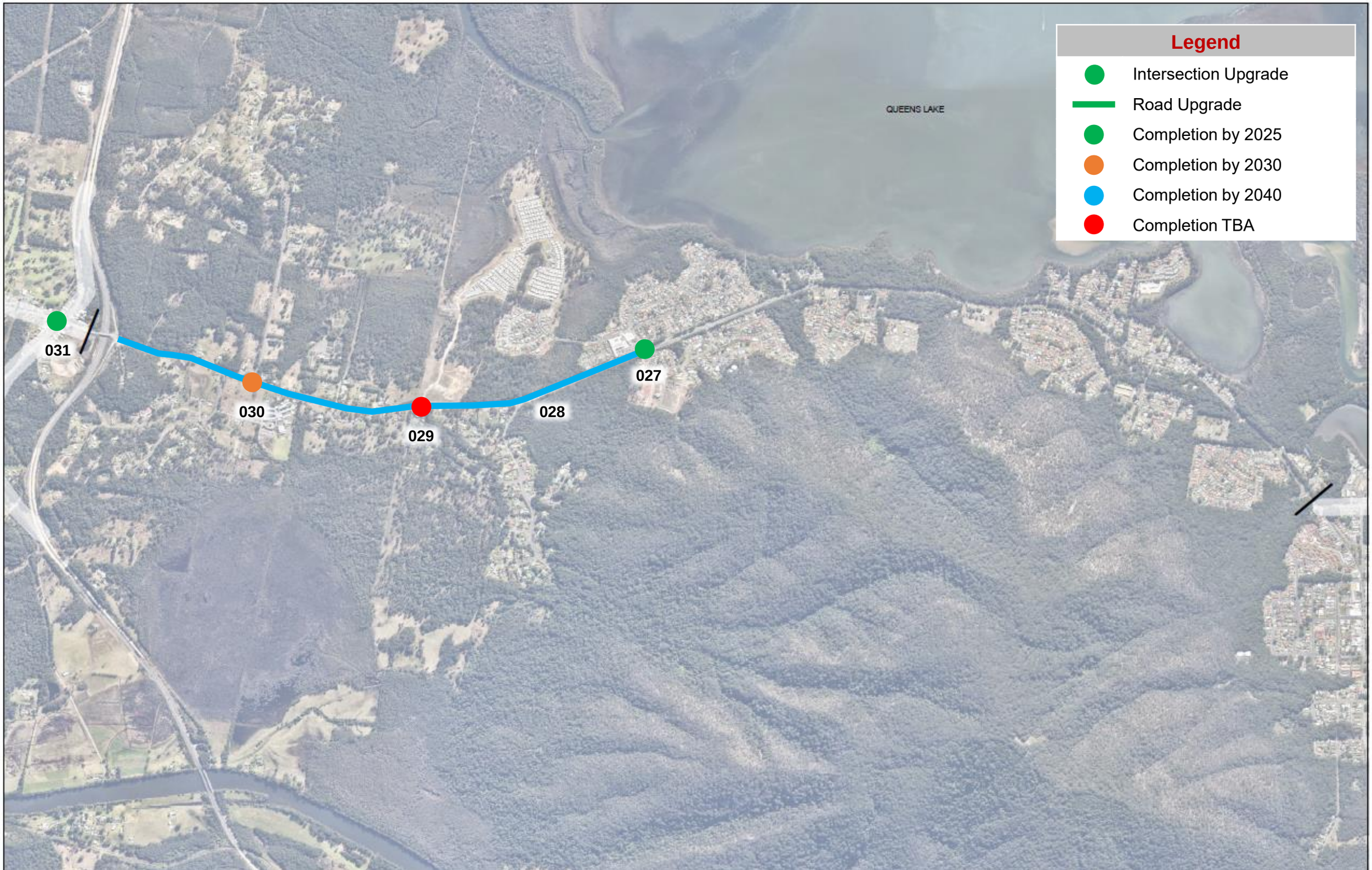
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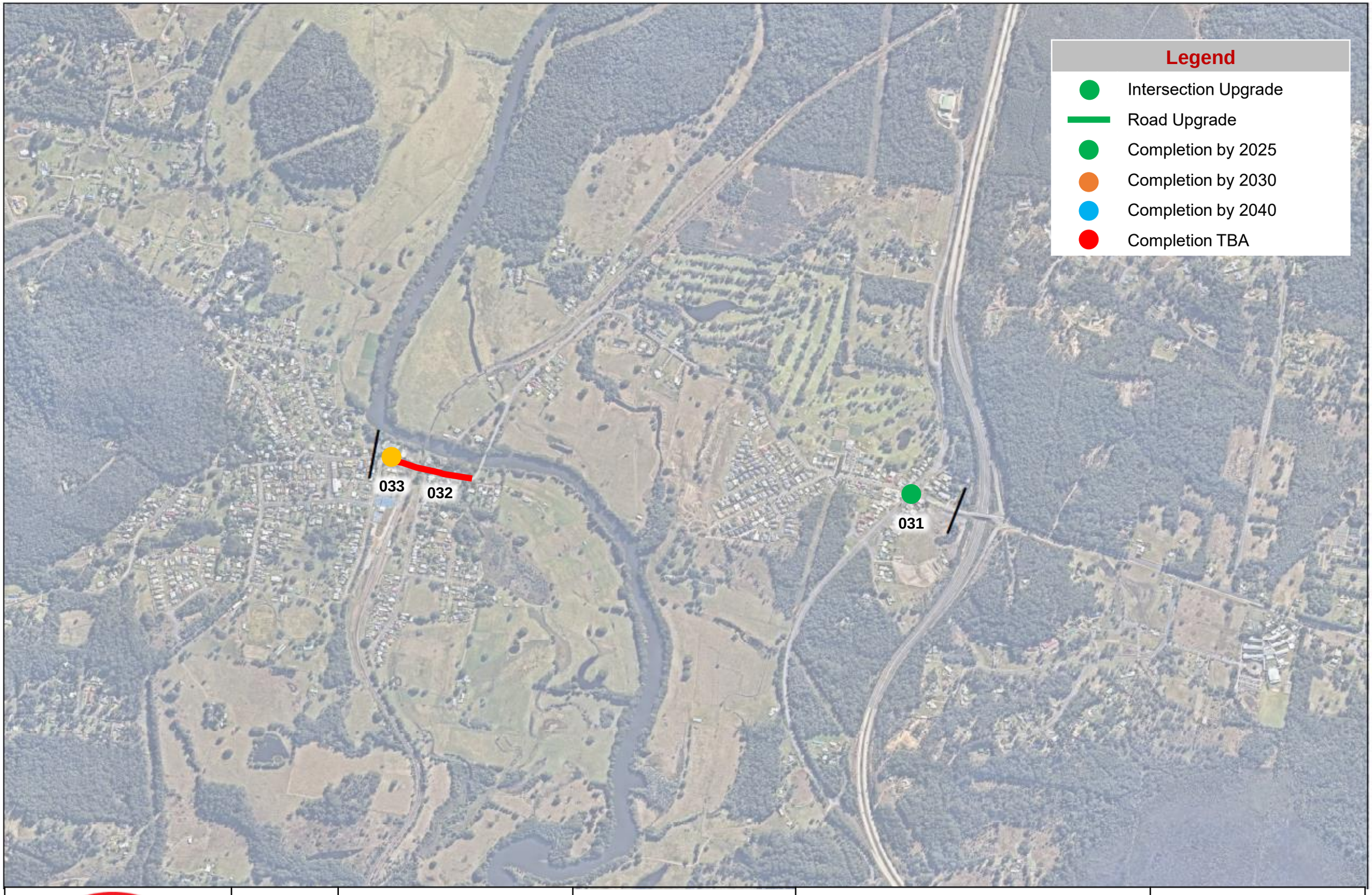
Planned Road Upgrades

Section 8
Chainage Start: 38000 End : 41000
Description Start: Edith Street End: Kew Road / Ocean Drive

Project Number:P4665
Date: 19/04/21
Sheet: 8



BITZIOS consulting	N	0 550 1,100 Meters	**Planned Road Upgrades**	**Section 9** Chainage Start: 41500 End : 48500 Description Start: Kew Road / Ocean Drive End: Ocean Drive	**Project Number:**P4665 **Date:** 19/04/21 **Sheet:** 9



BITZIOS consulting

N

0 337.5 675 Meters

Planned Road Upgrades

Section 10
Chainage Start: 41500 End : 48500
Description Start: Ocean Drive End: Comboyne Street

Project Number: P4665
Date: 19/04/21
Sheet: 10

Appendix B: Existing and Planned Infrastructure



BITZIOS consulting

N

0 500 1,000 Meters

Title:

Section: 1

Chainage Start: 0 End: 6900

Description Start: Pacific Highway End: Tuffins Lane

Location Start: Pacific Highway Interchange End: Tuffins Lane

Project Number:	P4665
Date:	16/04/2021
Sheet:	1



BITZIOS consulting

N

0 330 660 Meters

Title:

Section: 2

Chainage Start: 7000 End: 10500

Description Start: Hastings River Drive End: Hastings River Drive

Location Start: Tuffins Lane End: Oxley Highway

Project Number:	P4665
Date:	19/04/2021
Sheet:	2



BITZIOS consulting

N

0 460 920 Meters

Title:

Section: 3

Chainage Start: 11000 End: 18000
Description Start: Port Macquarie End: Port Macquarie
Location Start: Oxley Highway End: Elkhorn Grove

Project Number:	P4665
Date:	19/04/2021
Sheet:	3



Legend

- Council Planned Bus Stop
- Council Planned Crossing
- Existing Crossing
- Bus Stop
- Council Planned On-Road Cycle Lane
- Council Planned Footpath
- On-road Cycle Lane
- Existing Footpath

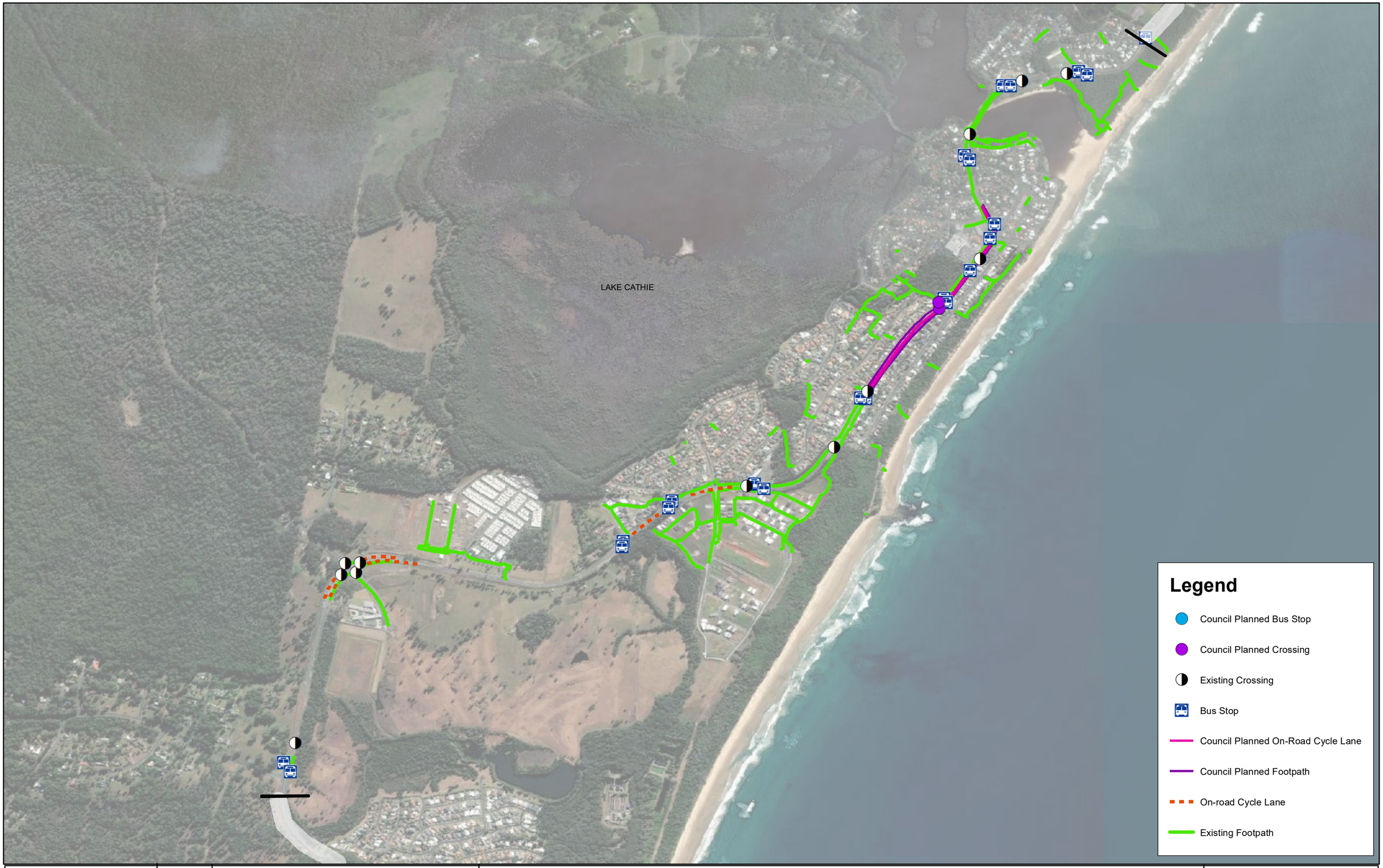
BITZIOS consulting

N

0 800 1,600 Meters

Title:
Section: 4
Chainage Start: 18500 End: 24500
Description Start: Port Macquarie End: Lake Cathie
Location Start: Elkhorn Grove End: Dirah Street

Project Number:	P4665
Date:	19/04/2021
Sheet:	4



BITZIOS consulting

N

0 435 870 Meters

Title:

Section: 5

Chainage Start: 25000 End: 30500

Description Start: Lake Cathie End: Lake Cathie

Location Start: Dirah Street End: Bonny View Drive

Project Number:	P4665
Date:	19/04/2021
Sheet:	5



Legend

- Council Planned Crossing
- Existing Crossing
- Bus Stop
- Council Planned On-Road Cycle Lane
- Council Planned Footpath
- On-road Cycle Lane
- Existing Footpath

BITZIOS consulting

N

0 245 490 Meters

Title:

Section: 6

Chainage Start: 3100 End:3400
Description Start: Bonny Hills End: Bonny Hills
Location Start: Bonny View Drive End: 800 Ocean Drive

Project Number:	P4665
Date:	19/04/2021
Sheet:	6



Legend

- Council Planned Bus Stop
- Council Planned Crossing
- Existing Crossing
- Bus Stop
- Council Planned On-Road Cycle Lane
- Council Planned Footpath
- On-road Cycle Lane
- Existing Footpath

BITZIOS consulting

N

0 295 590 Meters

Title:
Section: 7
Chainage Start: 34500 End: 37500
Description Start: Bonny Hills End: North Haven
Location Start: 800 Ocean Drive End: North Haven

Project Number:	P4665
Date:	19/04/2021
Sheet:	7

Legend

- Council Planned Crossing
- Existing Crossing
- Bus Stop
- Council Planned On-Road Cycle Lane
- Council Planned Footpath
- On-road Cycle Lane

Existing Tracks

- Beach to Beach
- School to School
- Creek to Creek
- Existing Footpath

EDITH ST
OCEAN DR
PIONEER ST
VINE ST
THE PARADE
CAMDEN HAVEN INLET
HILLMAN ST
ADELINE ST
RIVER ST
HAVEN CCT
BOLD ST
LAKE ST
GEORGE ST
KEW RD

BITZIOS consulting

N

0 280 560 Meters

Title:

Section: 8
Chainage Start: 38000 End: 41000
Description Start: North Haven End: Laurieton
Location Start: Edith Street End: Kew Road / Ocean Drive

Project Number:	P4665
Date:	19/04/2021
Sheet:	8

QUEENS LAKE

PACIFIC HWY

LAKE RIDGE DR

BROTHERGLEN DR

SIRIUS DR

FAIRWINDS AV

MISSION TCE

OCEAN DR

HENRY KENDALL DR

KEW RD

Legend

- Council Planned Crossing
- Existing Crossing
- Bus Stop
- Council Planned On-Road Cycle Lane
- Council Planned Footpath
- On-road Cycle Lane

Existing Tracks

- Beach to Beach
- School to School
- Creek to Creek
- Existing Footpath

BITZIOS consulting

N

0 550 1,100 Meters

Title:

Section: 9

Chainage Start: 41500 End: 48500

Description Start: Laurieton End: Kew

Location Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number:	P4665
Date:	19/04/2021
Sheet:	9



Legend

- Council Planned Crossing
- Existing Crossing
- Bus Stop
- Council Planned On-Road Cycle Lane
- Council Planned Footpath
- On-road Cycle Lane

Existing Tracks

- School to School
- Existing Footpath

BITZIOS consulting

N

0 225 450 Meters

Title:

Section: 10

Chainage Start: 49000 End: 51500

Description Start: Ocean Drive End: Comboyne Street

Location Start: Kew End: Kendall

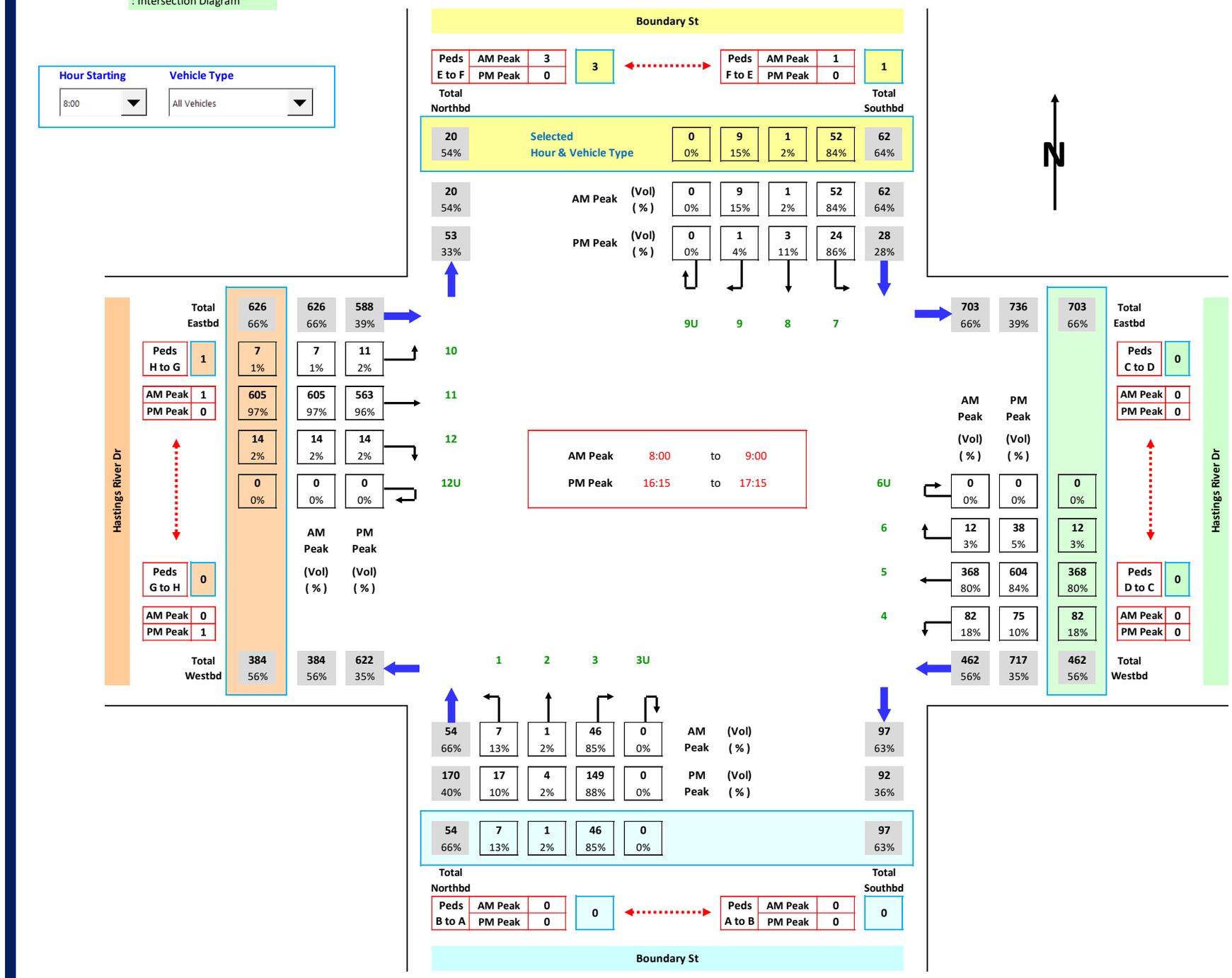
Project Number:	P4665
Date:	19/04/2021
Sheet:	10

Appendix C: Traffic Survey Data

1. Boundary Street / Hastings River Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 1. Boundary St / Hastings River Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



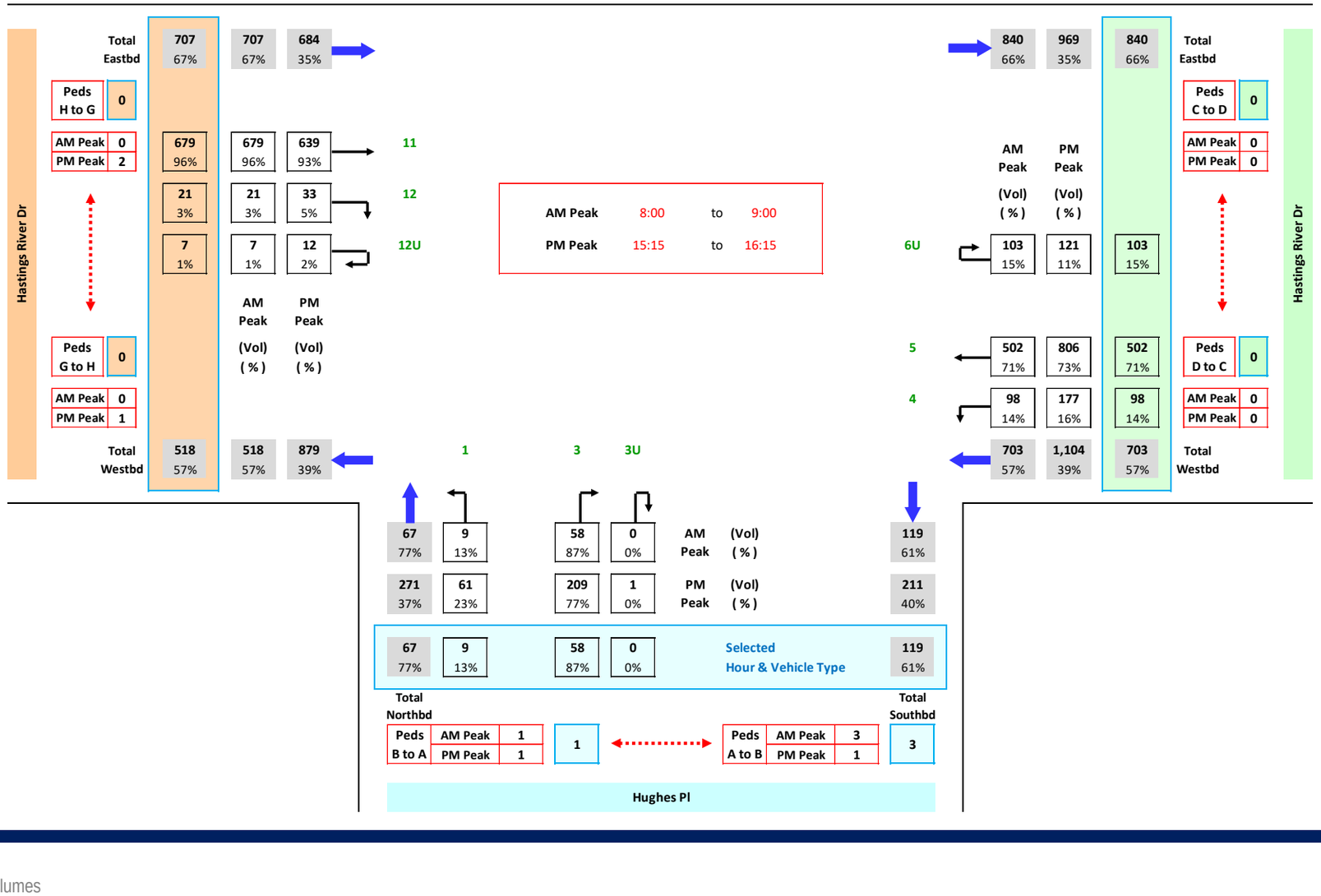
2. Hastings River Drive / Hughes Place

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 2. Hughes Pl / Hastings River Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

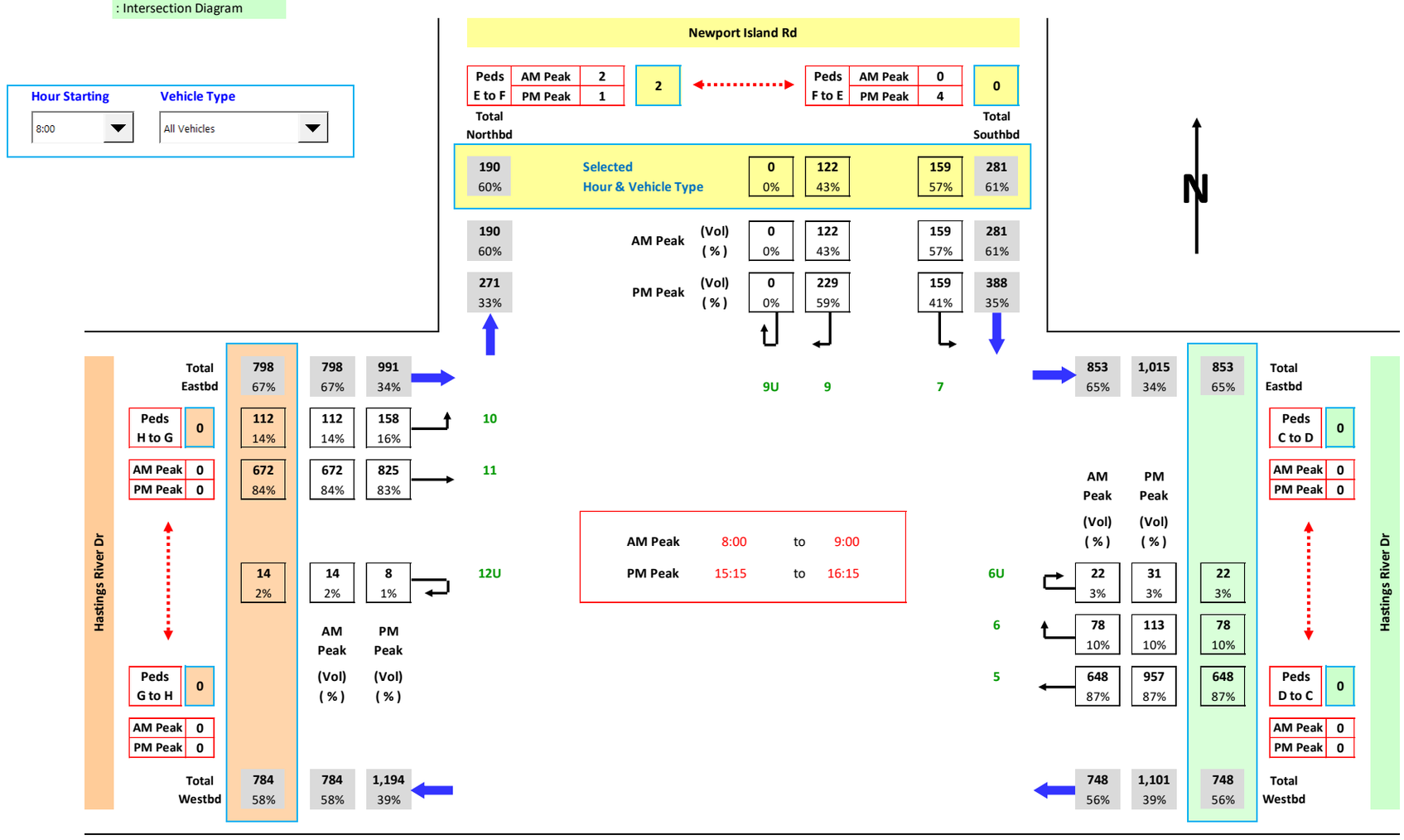
Hour Starting: 8:00 **Vehicle Type**: All Vehicles



3. Hastings River Drive / Newport Island Road

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 3. Newport Island Rd / Hastings River Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



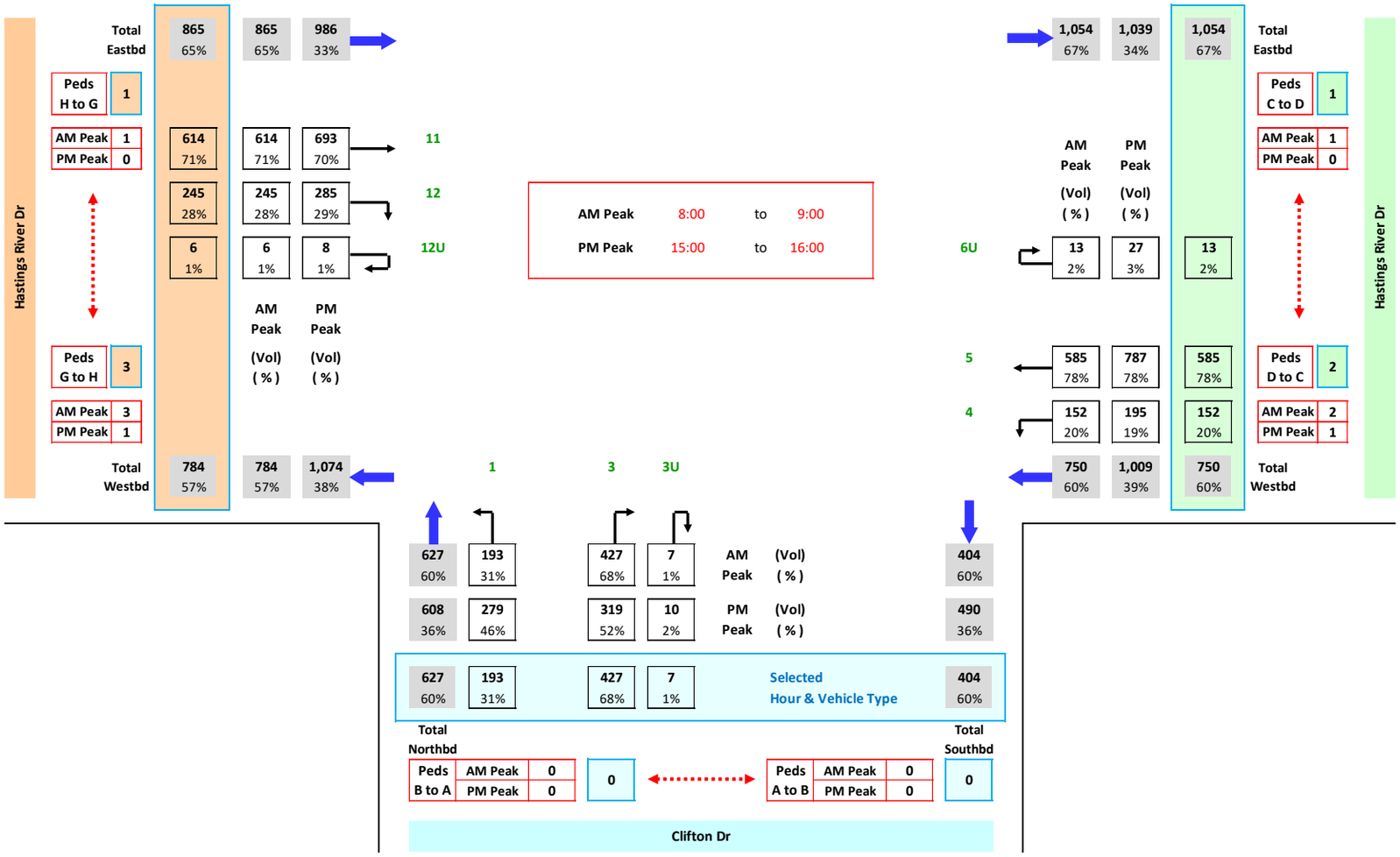
4. Street Hastings River Drive / Clifton Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 4. Clifton Dr / Hastings River Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles



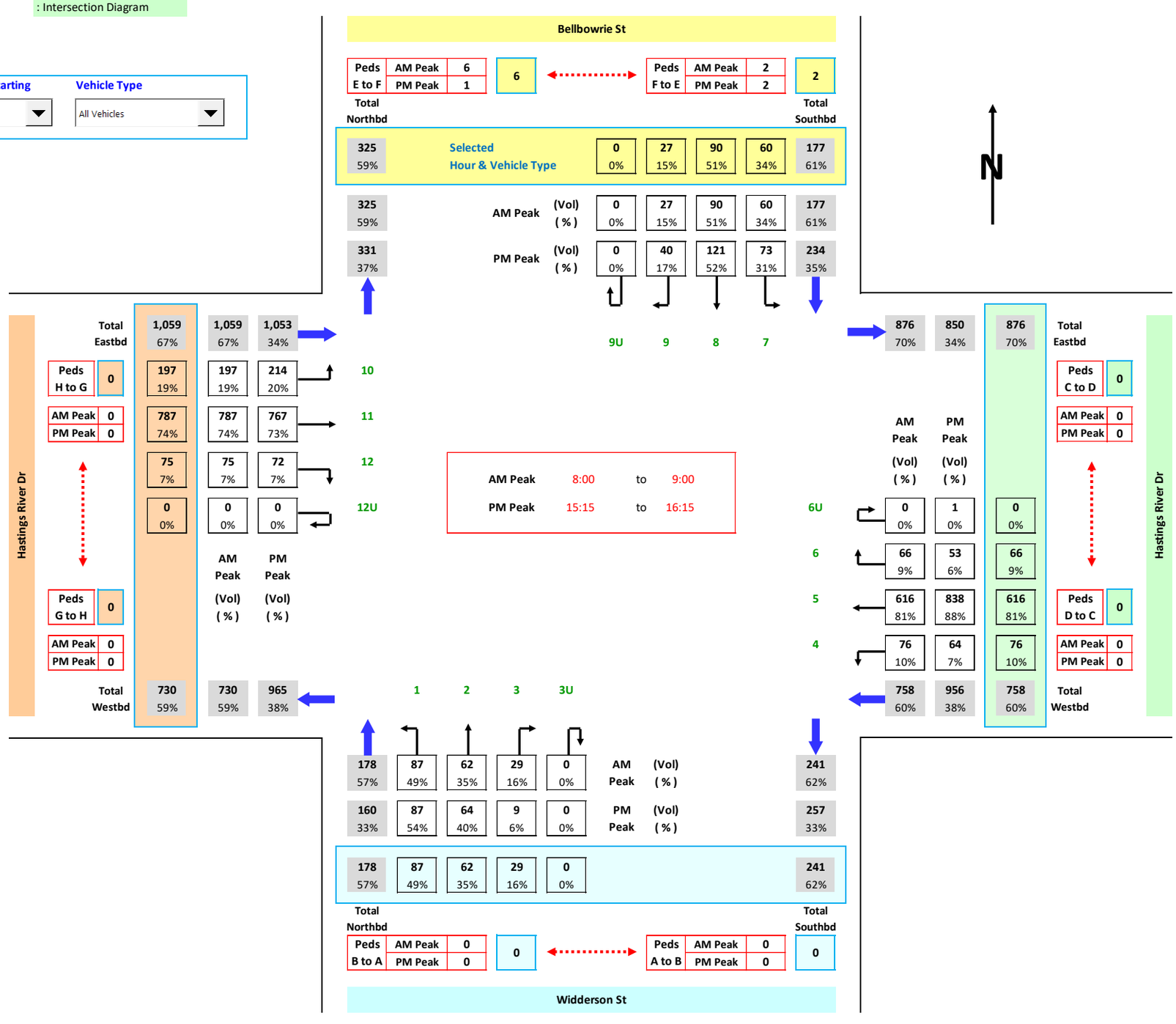
5. Hastings River Drive / Bellbowrie Street / Widderson Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 5. Widderson St / Hastings River Dr / Bellbowrie St

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles



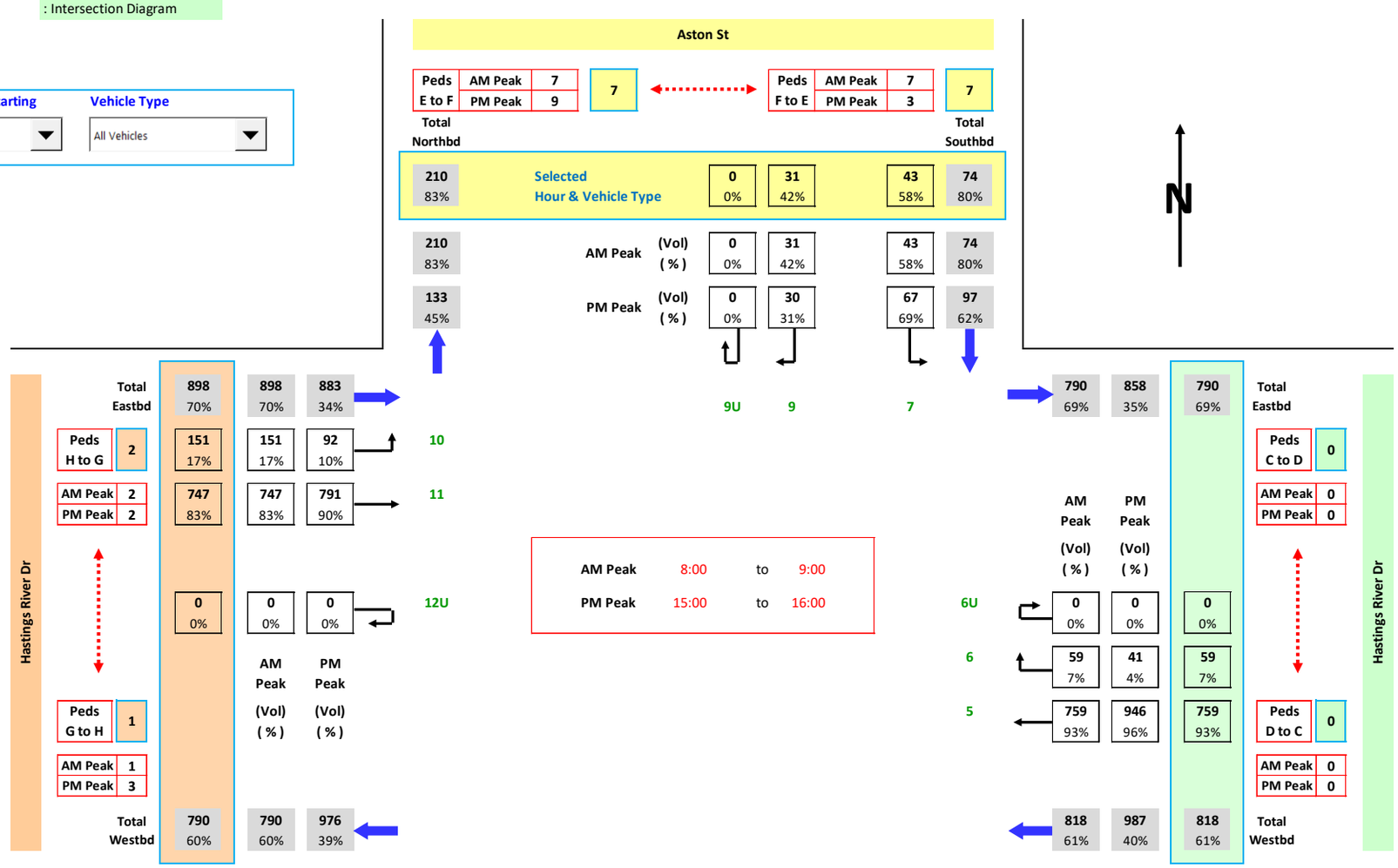
6. Hastings River Drive / Aston Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 6. Hastings River Dr / Aston St

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles



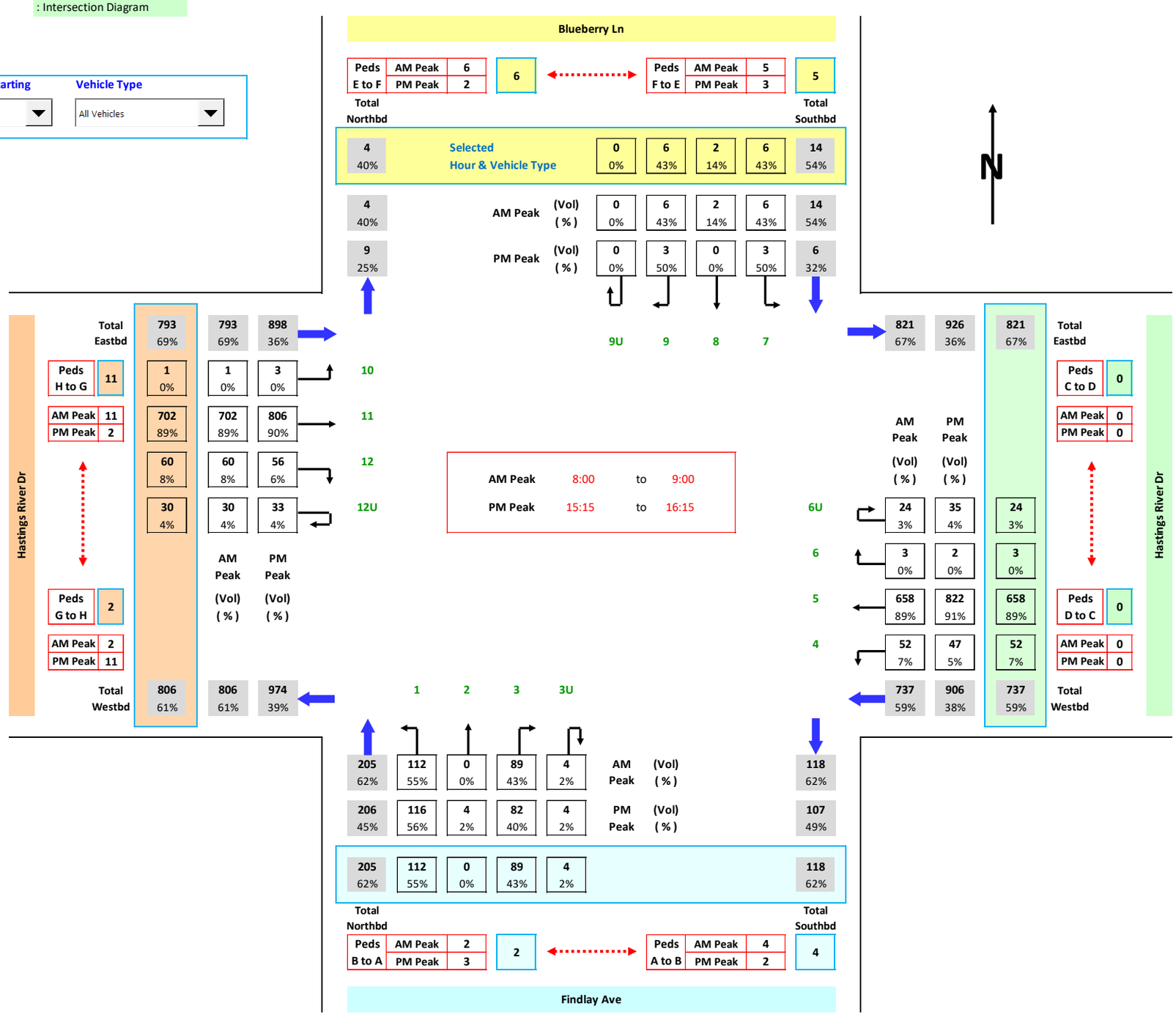
7. Hastings River Drive / Findlay Avenue / Blueberry Lane

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 7. Findlay Ave / Hastings River Dr / Blueberry Ln

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles

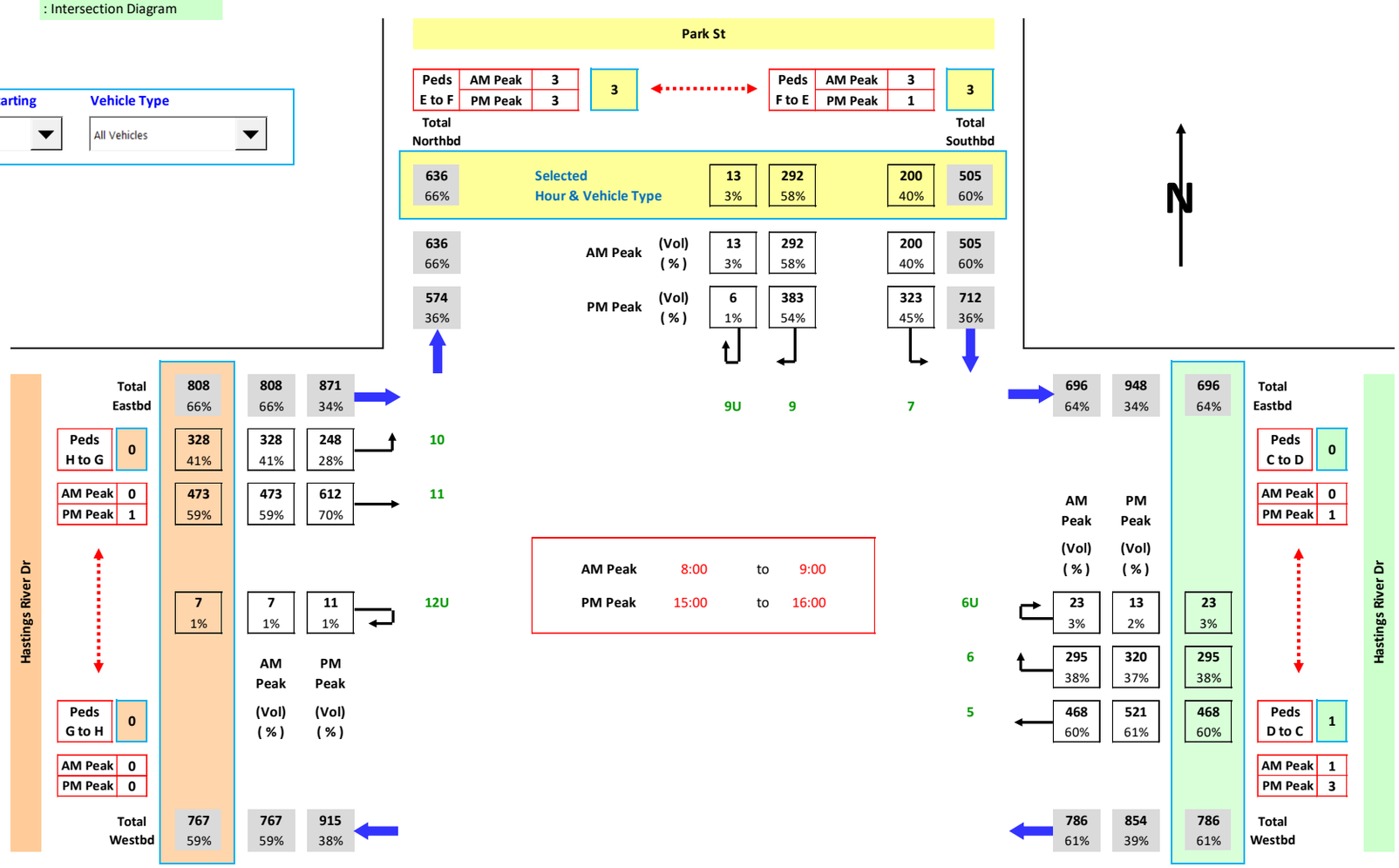


8. Hastings River Drive / Park Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 8. Hastings River Dr / Park St

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

Hour Starting: 8:00 — Vehicle Type: All Vehicles



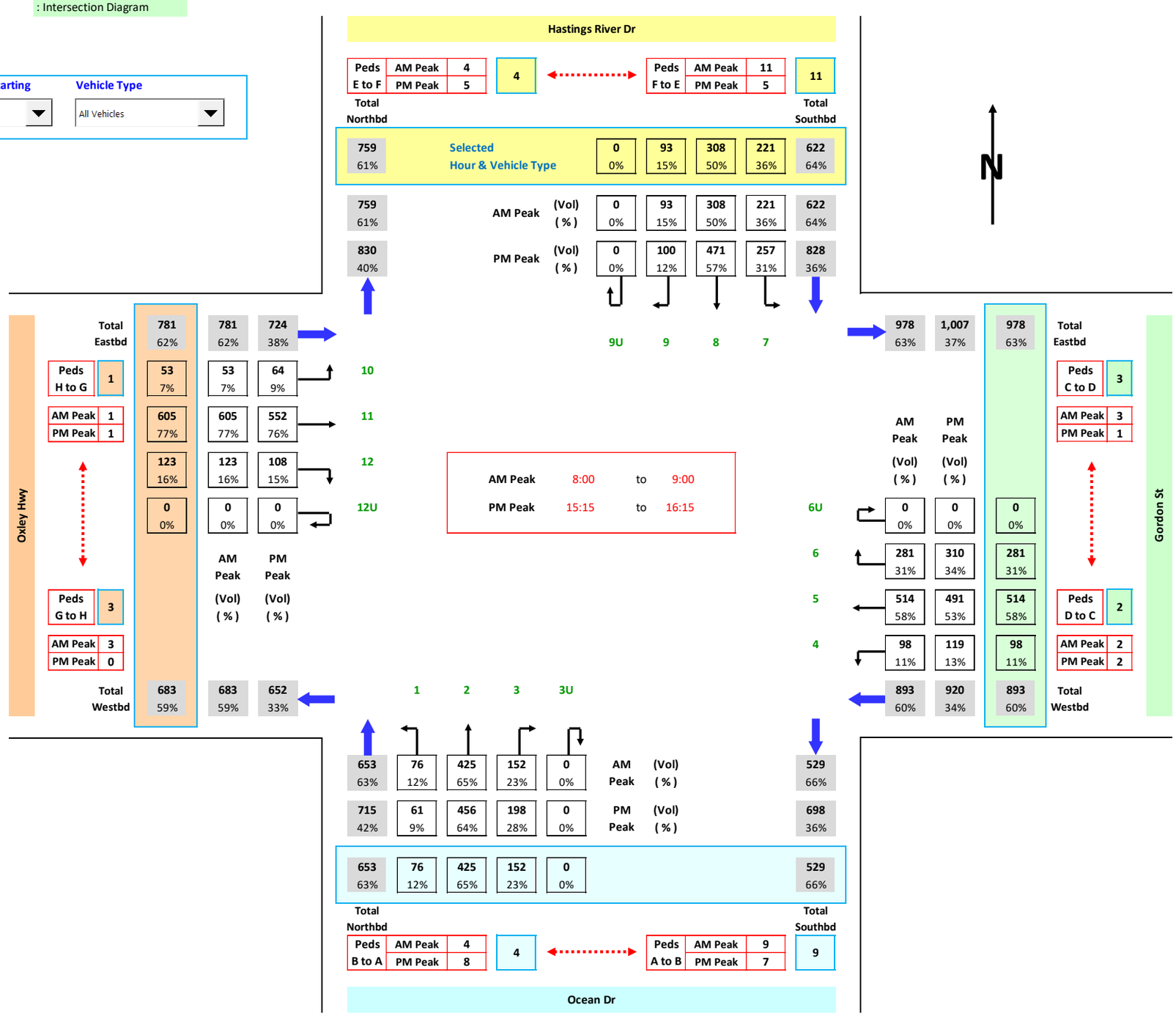
9. Hastings River Drive / Oxley Highway / Ocean Drive / Gordon Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 9. Gordon St / Hastings River Dr / Oxley Hwy / Ocean Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

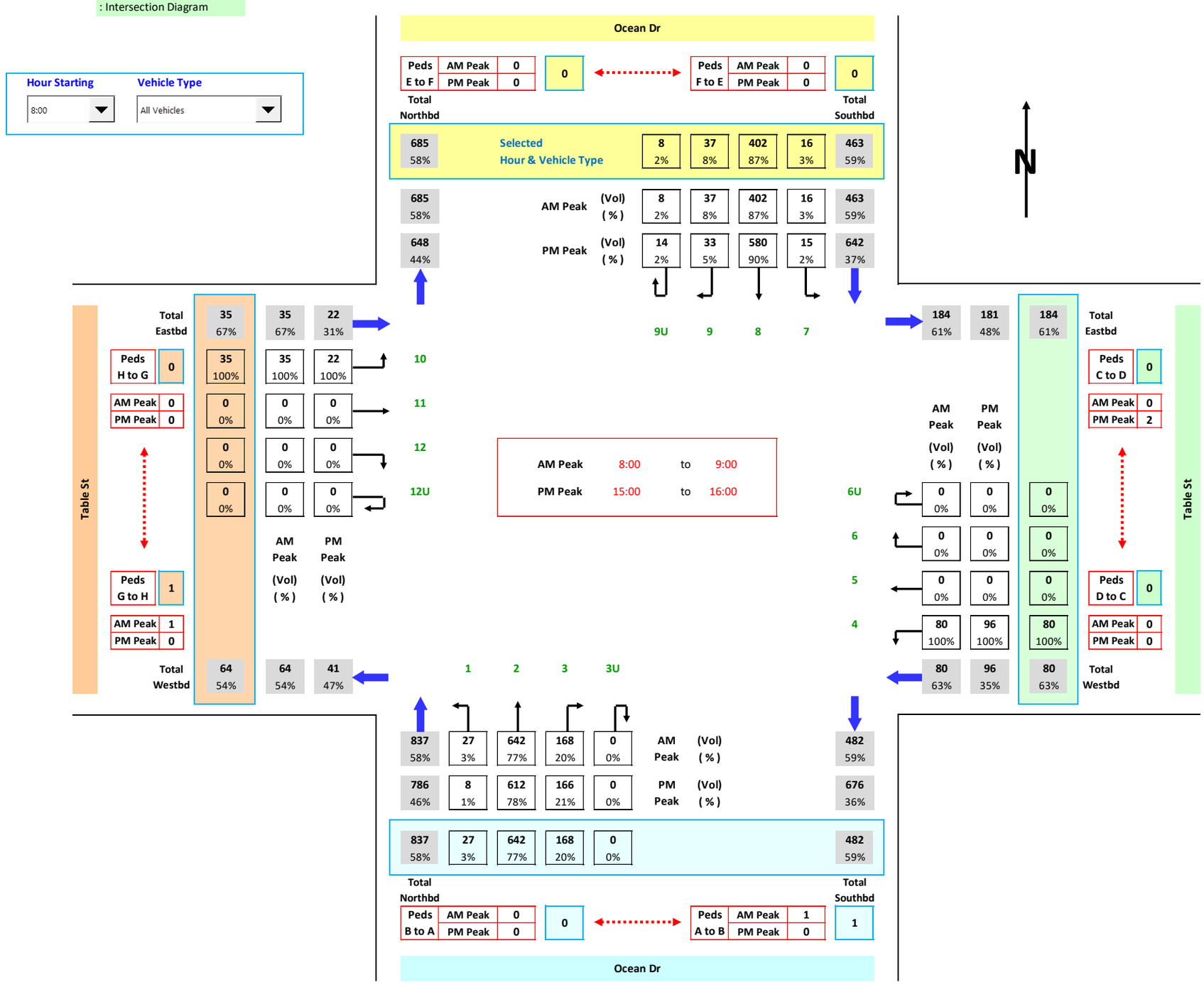
Hour Starting: 8:00 | Vehicle Type: All Vehicles



10. Ocean Drive / Table Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 10. Table St / Ocean Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



11. Ocean Drive / Hindman Street / Kooloonbung Close

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 11. Kooloonbung Cl / Ocean Dr / Hindman St

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles

Ocean Dr

Peds E to F	AM Peak	0	0	Peds F to E	AM Peak	0	0			
	PM Peak	3			PM Peak	0				
Total Northbd							Total Southbd			
972 65%	Selected Hour & Vehicle Type							10 2%	121 23%	393 75%	3 1%	527 68%
972 65%	AM Peak	(Vol)						10 2%	121 23%	393 75%	3 1%	527 68%
894 46%	PM Peak	(Vol)						9 1%	95 13%	639 86%	2 0%	745 33%

Total Eastbd		280 78%	280 78%	432 43%									7 64%	8 31%	7 64%	Total Eastbd
Peds H to G	0	146 52%	146 52%	197 46%	10	9U	9	8	7							Peds C to D 0
AM Peak 0 / PM Peak 1		1 0%	1 0%	5 1%	11											AM Peak 0 / PM Peak 0
		133 48%	133 48%	230 53%	12											
		0 0%	0 0%	0 0%	12U								0 0%	0 0%	0 0%	
			AM Peak (Vol) (%)	PM Peak (Vol) (%)									4 36%	5 33%	4 36%	
Peds G to H	0												4 36%	4 27%	4 36%	Peds D to C 0
AM Peak 0 / PM Peak 0													3 27%	6 40%	3 27%	AM Peak 0 / PM Peak 0
Total Westbd		384 66%	384 66%	208 44%		1	2	3	3U				11 52%	15 42%	11 52%	Total Westbd

Hindman St

Kooloonbung Cl

	AM Peak	PM Peak
	(Vol) (%)	(Vol) (%)
6U	0 0%	0 0%
6	4 36%	5 33%
5	4 36%	4 27%
4	3 27%	6 40%

AM Peak 8:00 to 9:00
PM Peak 15:00 to 16:00

1,075 63%	259 24%	812 76%	3 0%	1 0%	AM Peak	(Vol) (%)				530 70%
795 45%	109 14%	683 86%	1 0%	2 0%	PM Peak	(Vol) (%)				877 34%
1,075 63%	259 24%	812 76%	3 0%	1 0%						530 70%
Total Northbd										Total Southbd
Peds B to A	AM Peak 0 / PM Peak 0	0								Peds A to B AM Peak 1 / PM Peak 0 — 1
Ocean Dr										

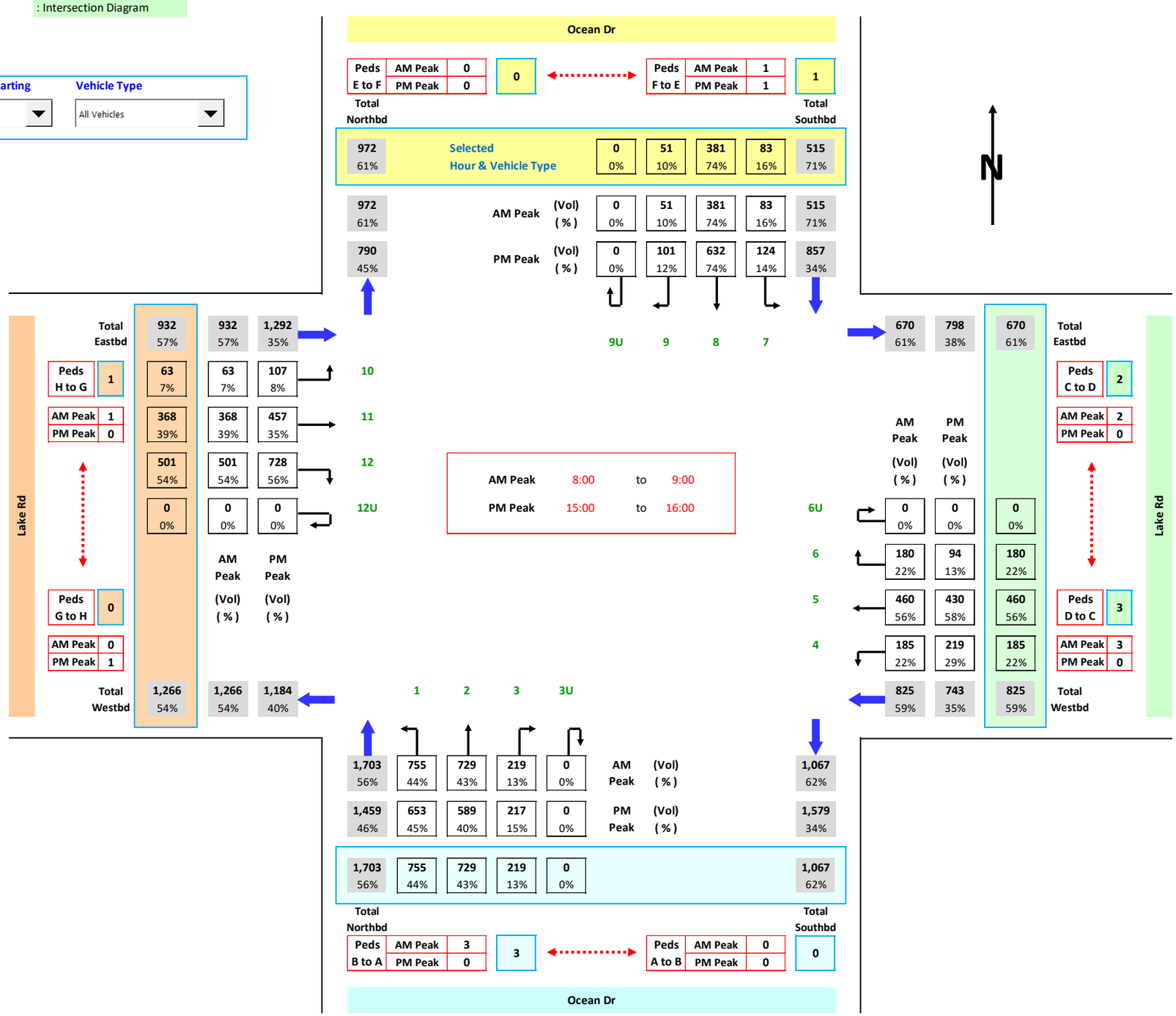
12. Ocean Drive / Lake Road

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 12. Lake Rd / Ocean Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles



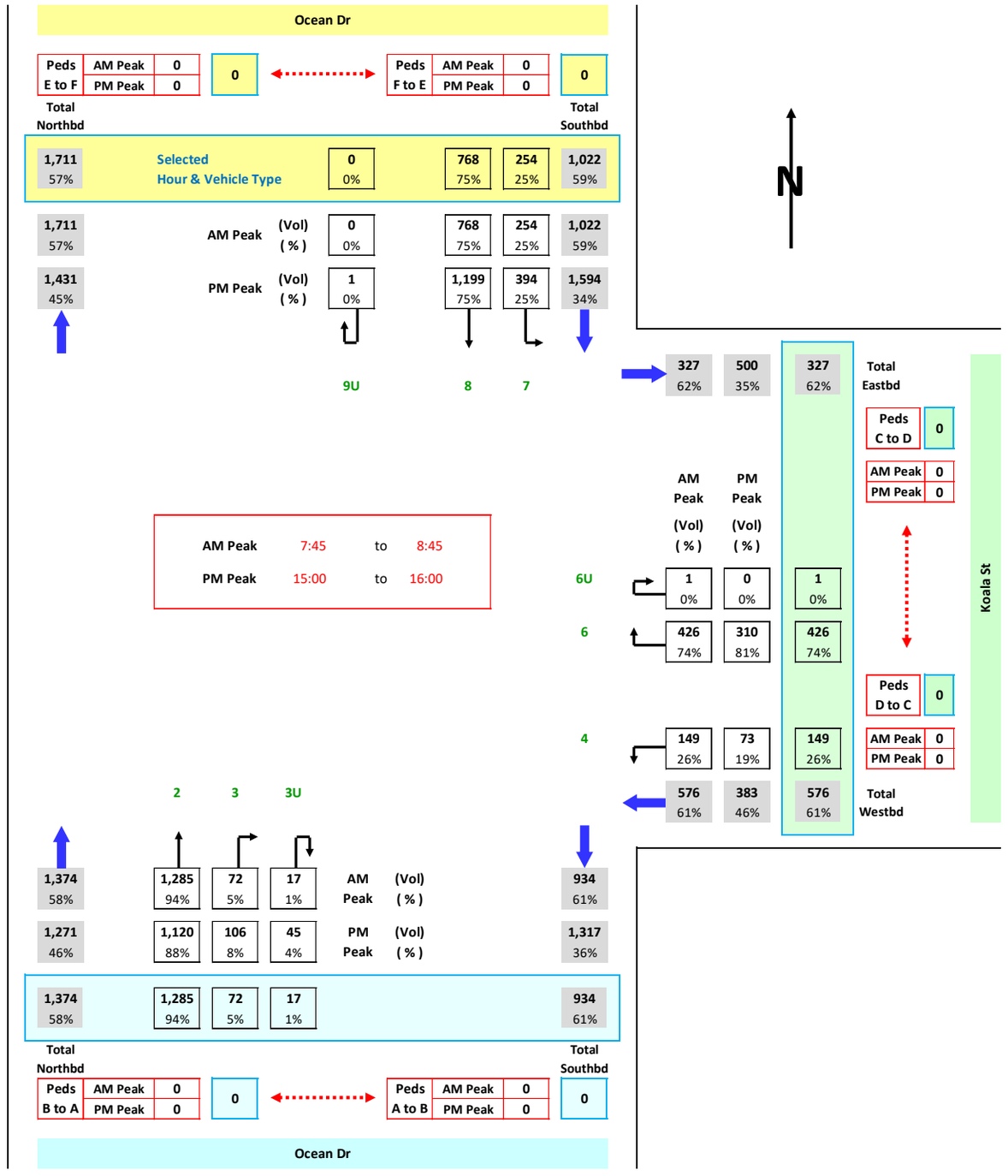
13. Ocean Drive / Koala Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 13. Koala St / Ocean Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

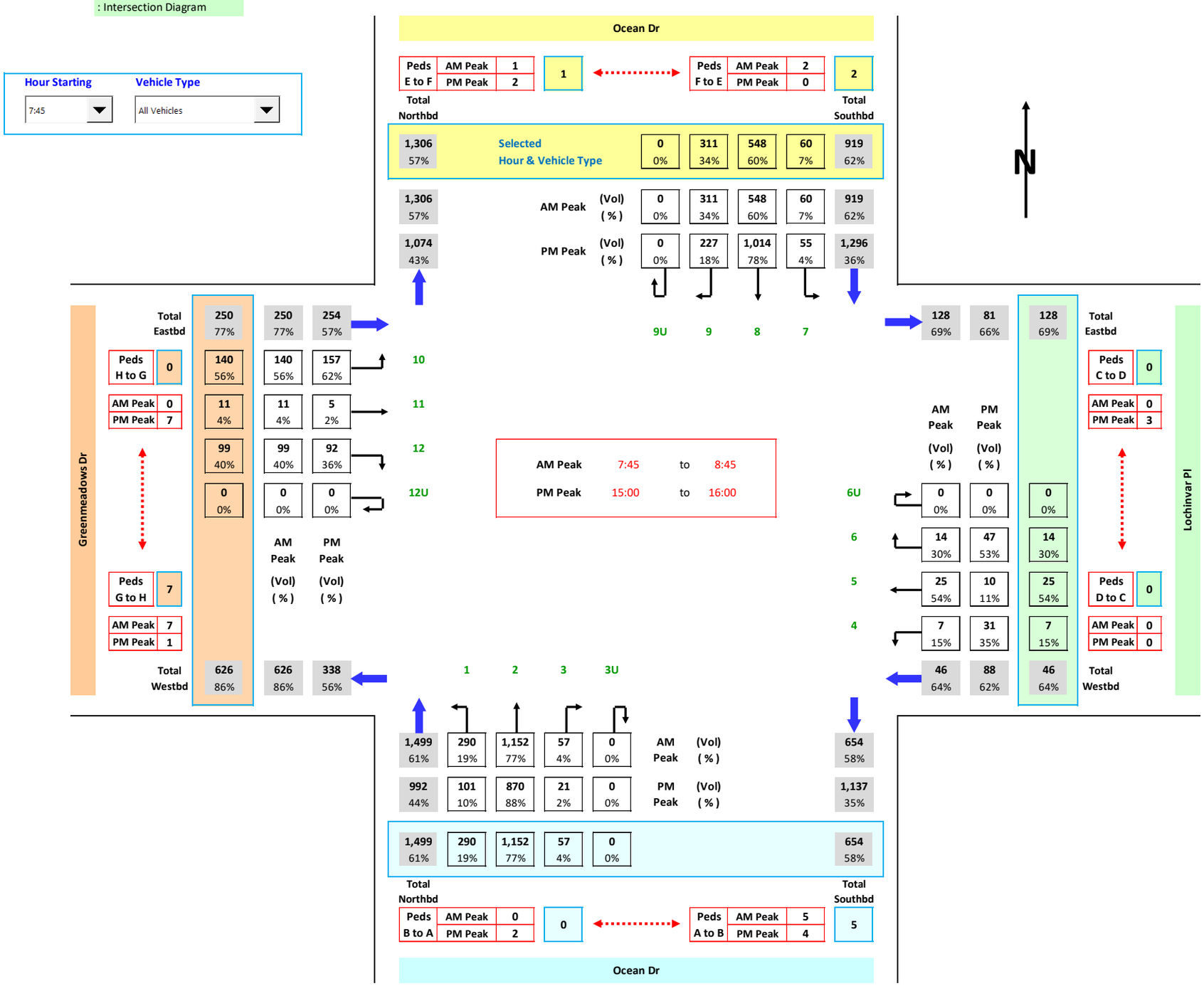
Hour Starting 7:45 **Vehicle Type** All Vehicles



14. Ocean Drive / Greenmeadows Drive / Lochinvar Place

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 14. Lochinvar Pl / Ocean Dr / Greenmeadows Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

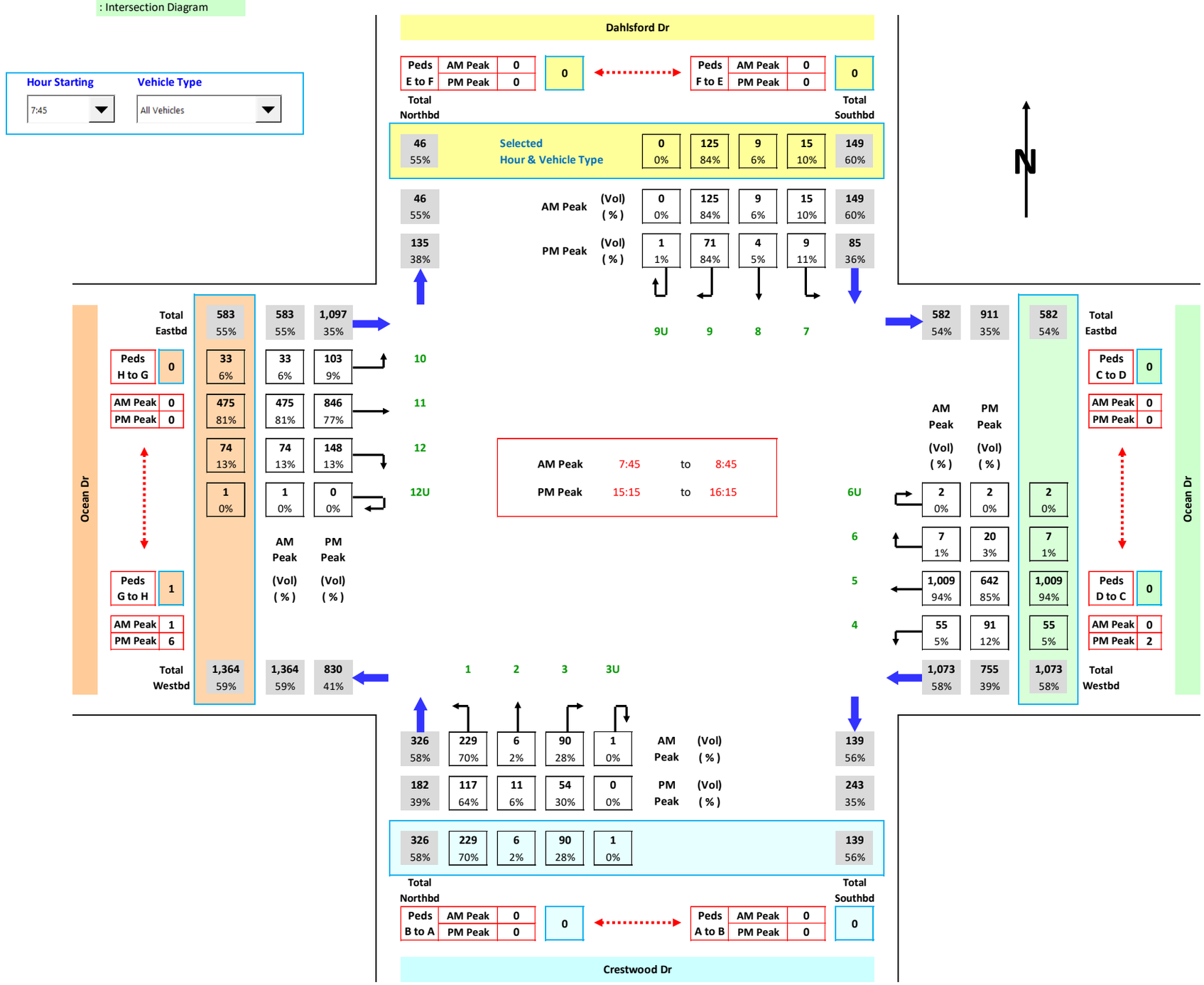


15. Ocean Drive / Crestwood Drive / Dahlsford Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 15. Crestwood Dr / Ocean Dr / Dahlsford Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data



16. Ocean Drive / Jonas Absalom Drive / Pacific Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 16. Pacific Dr / Ocean Dr / Jonas Absalom Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 7:45 | Vehicle Type: All Vehicles

Ocean Dr

Peds E to F	AM Peak	0	0	Peds F to E	AM Peak	0	0		
	PM Peak	0			PM Peak	0			
Total Northbd								Total Southbd	
1,040 58%	Selected Hour & Vehicle Type							563 53%	
					0 0%	29 5%	290 52%	244 43%	
1,040 58%	AM Peak	(Vol)			0 0%	29 5%	290 52%	244 43%	563 53%
778 40%	PM Peak	(Vol)			1 0%	94 10%	550 60%	273 30%	918 34%
					9U	9	8	7	

N

Total Eastbd		187 66%	187 66%	100 40%	10				518 62%	491 33%	518 62%
Peds H to G	0	126 67%	126 67%	63 63%							
AM Peak	0	60 32%	60 32%	35 35%	11						
PM Peak	0	1 1%	1 1%	2 2%	12						
		0 0%	0 0%	0 0%	12U				6U		
			AM Peak	PM Peak							
			(Vol) (%)	(Vol) (%)							
Peds G to H	0								6		
AM Peak	0								5		
PM Peak	0								4		
Total Westbd		60 48%	60 48%	144 35%	1	2	3	3U			

Jonas Absalom Dr

AM Peak 7:45 to 8:45
PM Peak 15:15 to 16:15

									AM Peak (Vol) (%)
730 56%	1 0%	514 70%	214 29%	1 0%				405 50%	
627 37%	2 0%	440 70%	183 29%	2 0%				742 34%	PM Peak (Vol) (%)
730 56%	1 0%	514 70%	214 29%	1 0%				405 50%	
Total Northbd								Total Southbd	
Peds B to A	AM Peak	0	0	Peds A to B	AM Peak	0	0		
	PM Peak	0			PM Peak	0			

Ocean Dr

Pacific Dr

Total Eastbd			
Peds C to D	0		
AM Peak	0		
PM Peak	0		
Peds D to C	0		
AM Peak	0		
PM Peak	0		
Total Westbd			

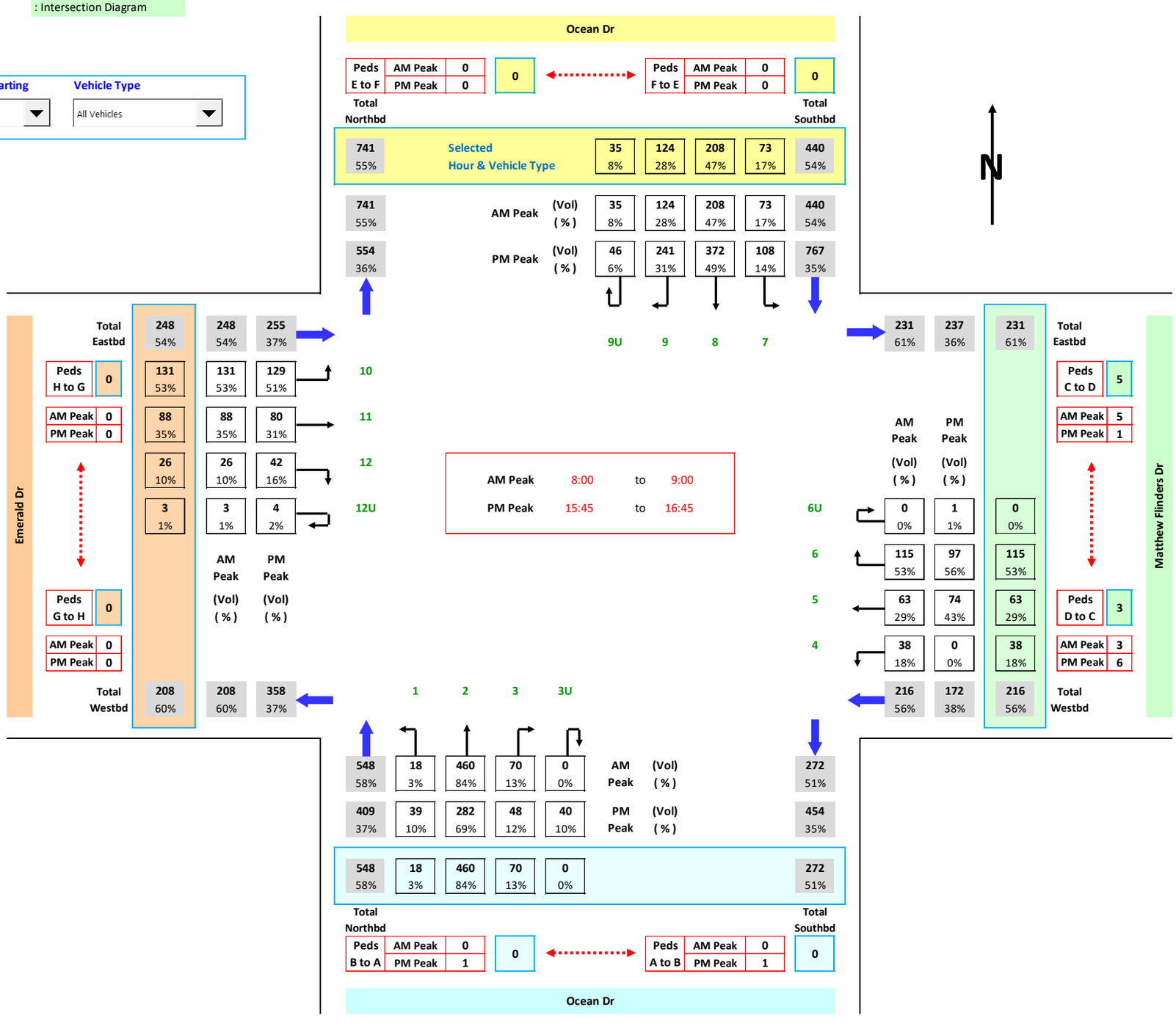
17. Ocean Drive / Matthew Flinders Drive / Emerald Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 17. Matthew Flinders Dr / Ocean Dr / Emerald Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

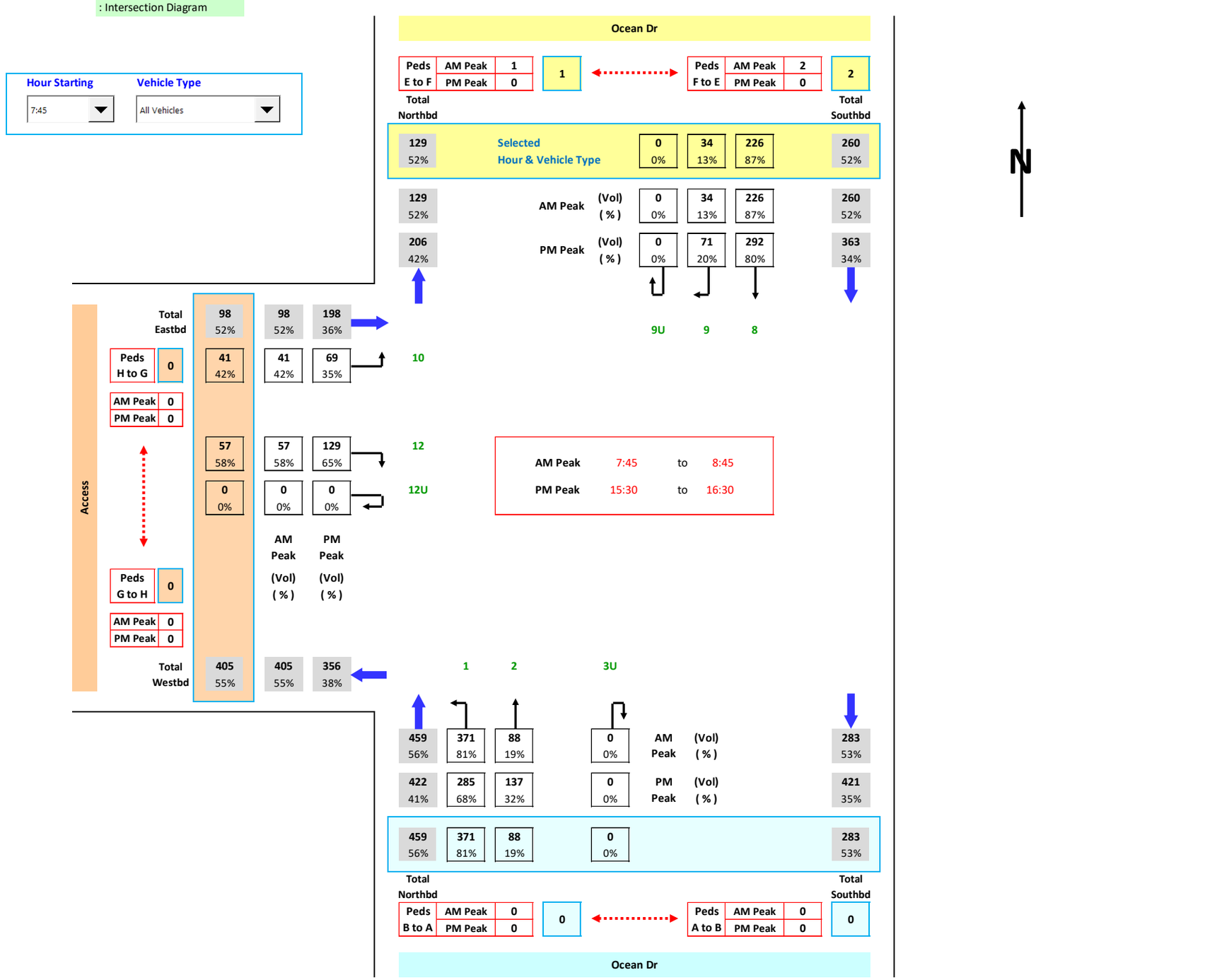
Hour Starting: 8:00 — Vehicle Type: All Vehicles



18. Ocean Drive / Woolworths Access

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 18. Ocean Dr / Woolworths Access

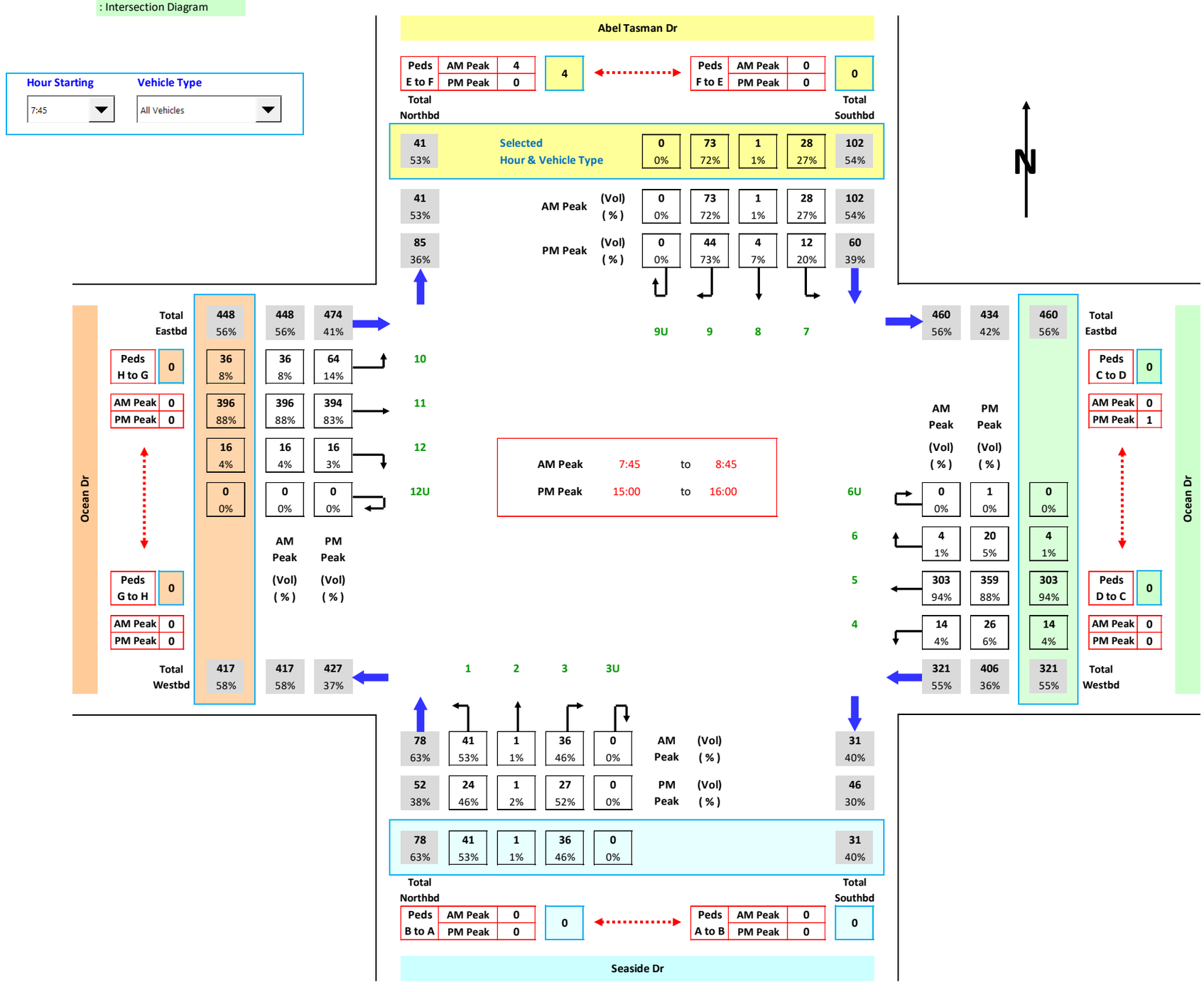
Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



19. Ocean Drive / Abel Tasman Drive / Seaside Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 19. Seaside Dr / Ocean Dr / Abel Tasman Dr

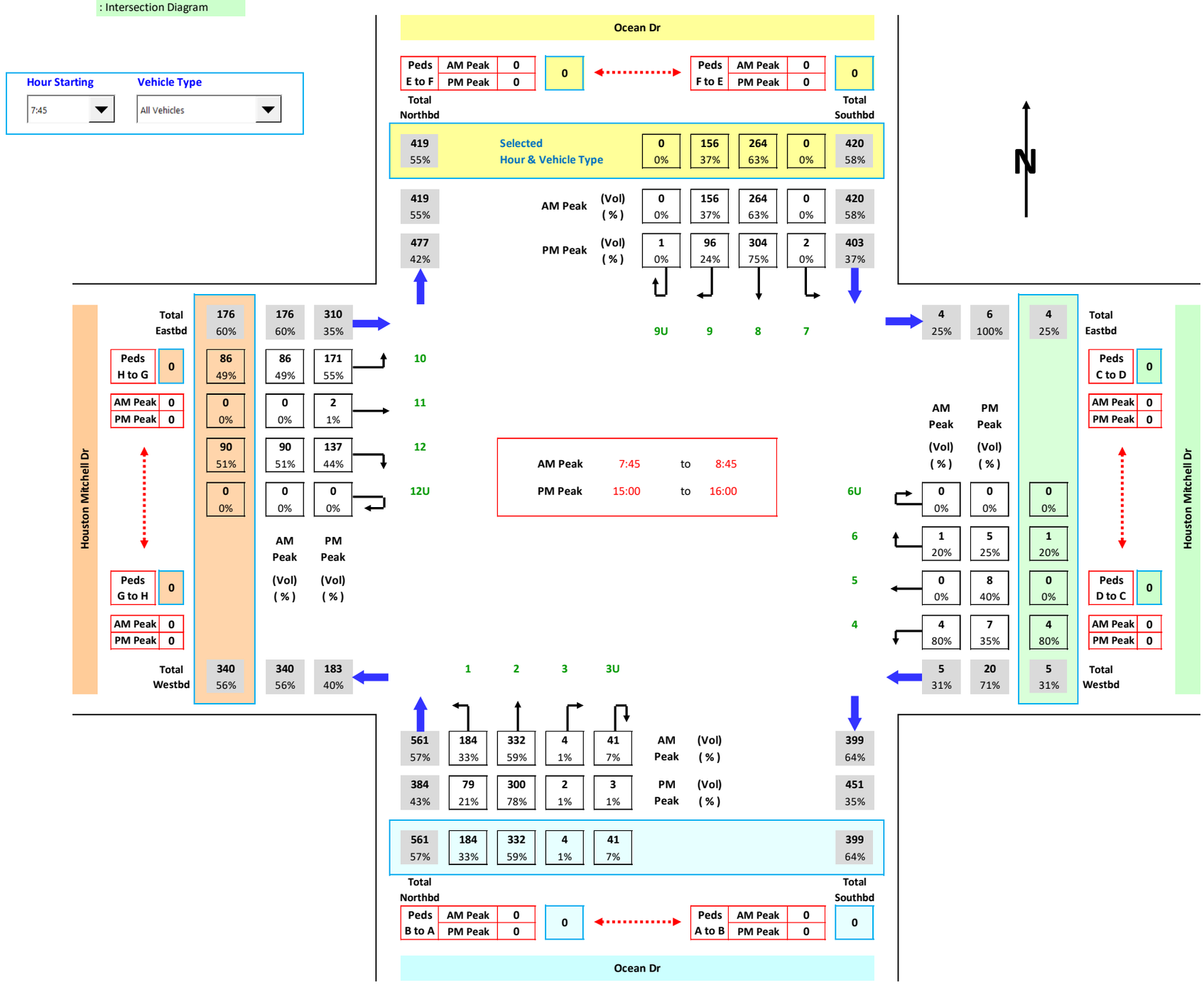
Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



20. Ocean Drive / Houston Mitchell Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 20. Houston Mitchell Dr / Ocean Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

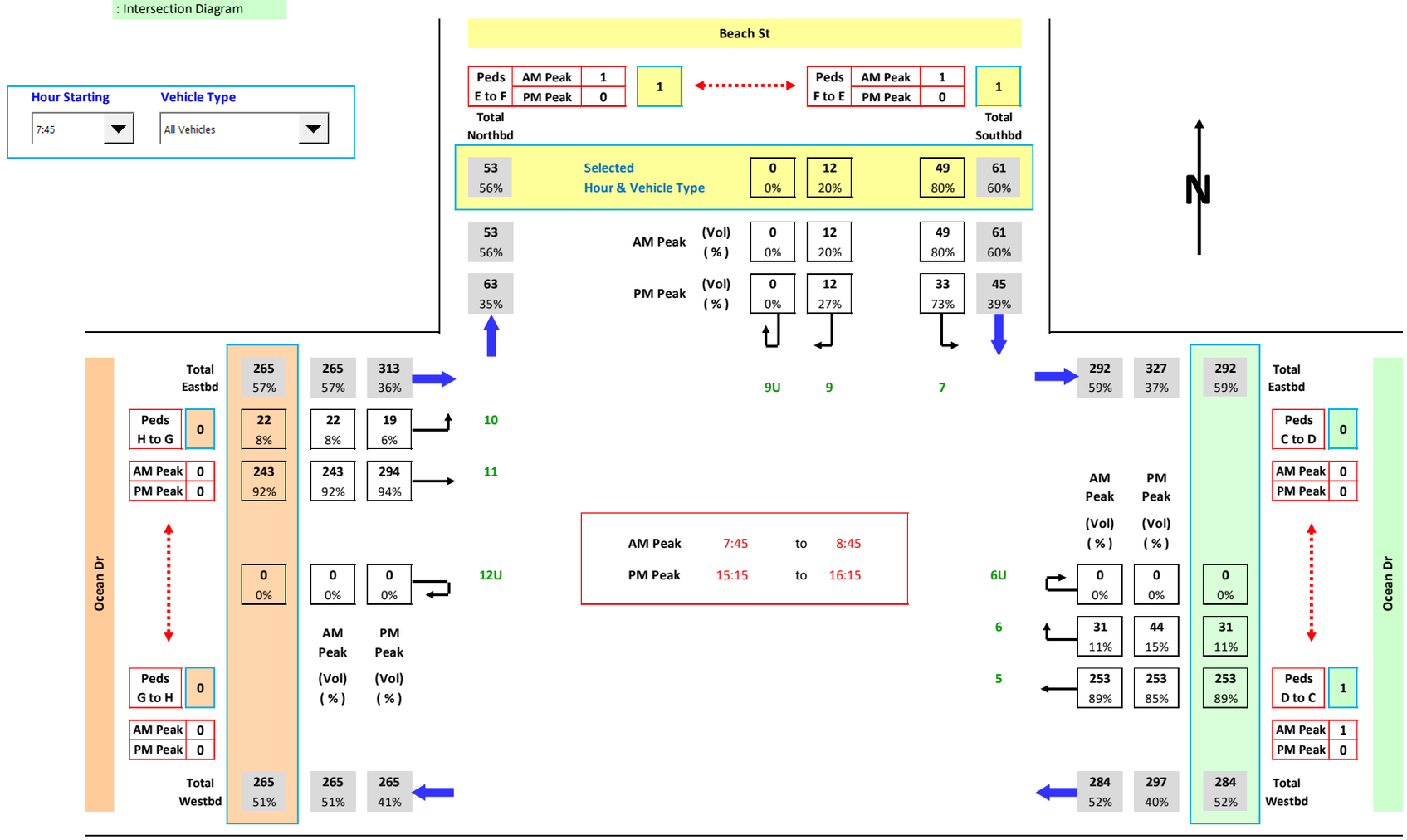


21. Ocean Drive / Beach Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 21. Ocean Dr / Beach St

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data



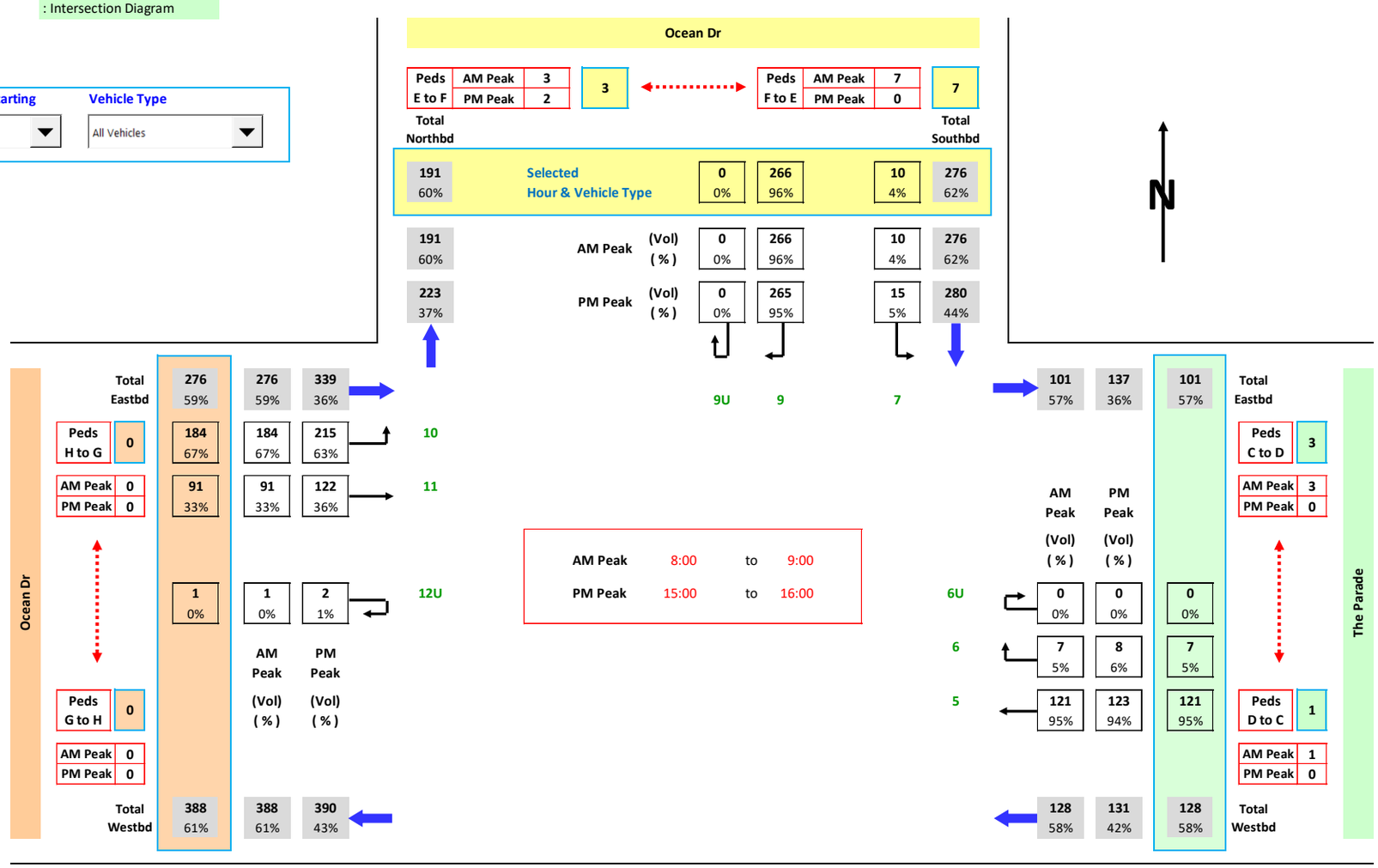
22. Ocean Drive / The Parade

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 22. Ocean Dr / The Parade

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: 8:00 | Vehicle Type: All Vehicles

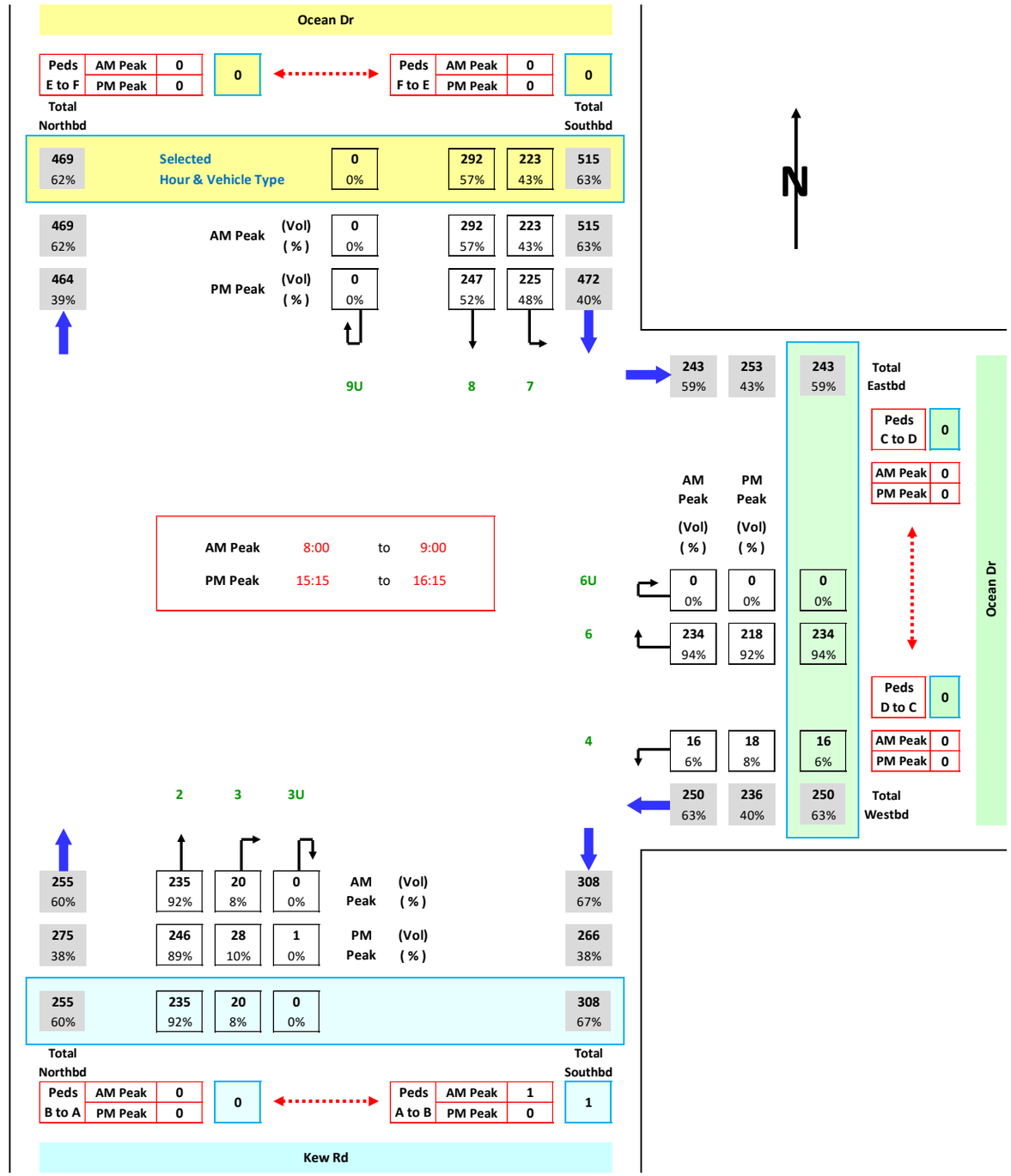


23. Ocean Drive / Kew Road

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 23. Kew Rd / Ocean Dr

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

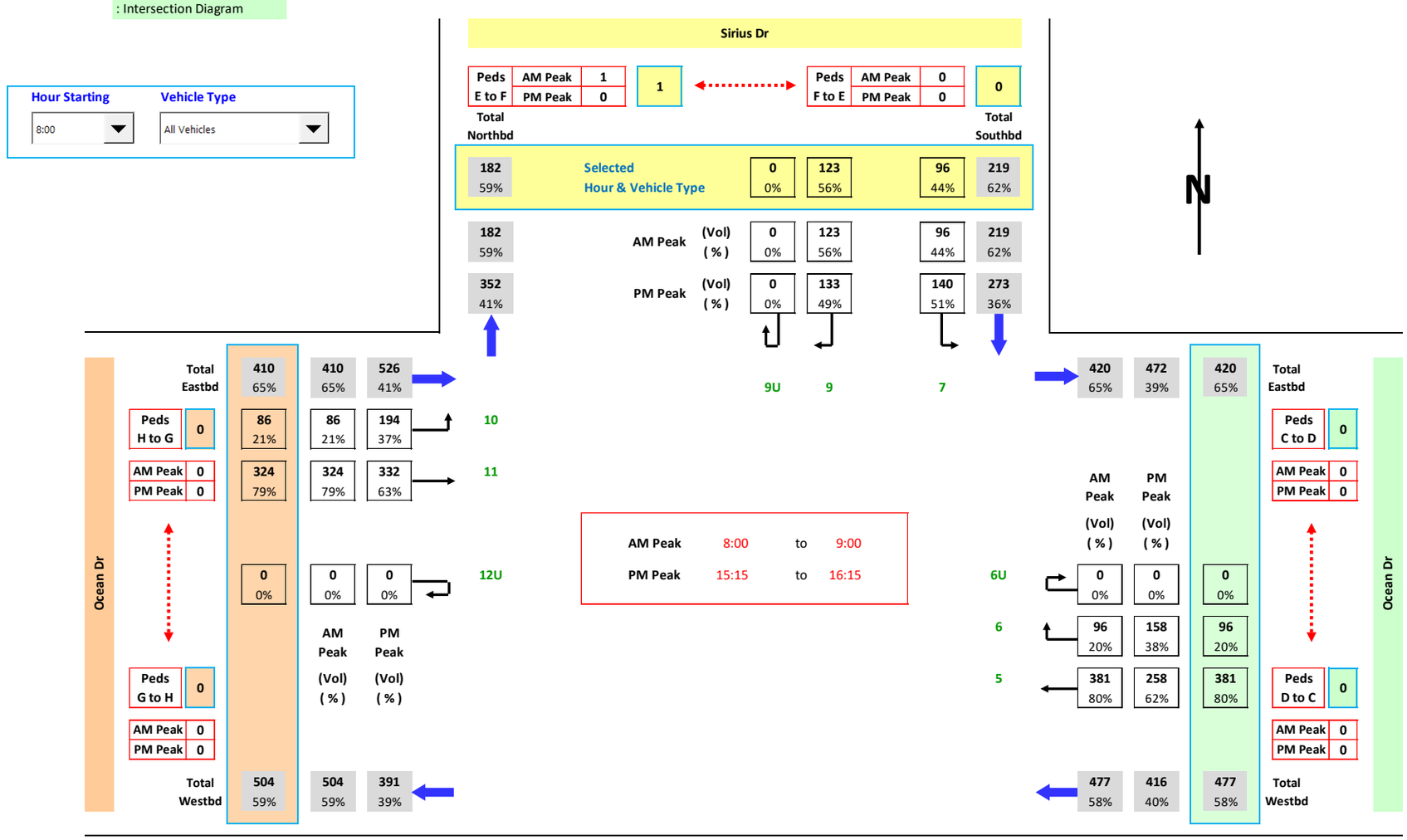
Hour Starting: 8:00 — Vehicle Type: All Vehicles



24. Ocean Drive / Sirius Drive

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 24. Ocean Dr / Sirius Dr

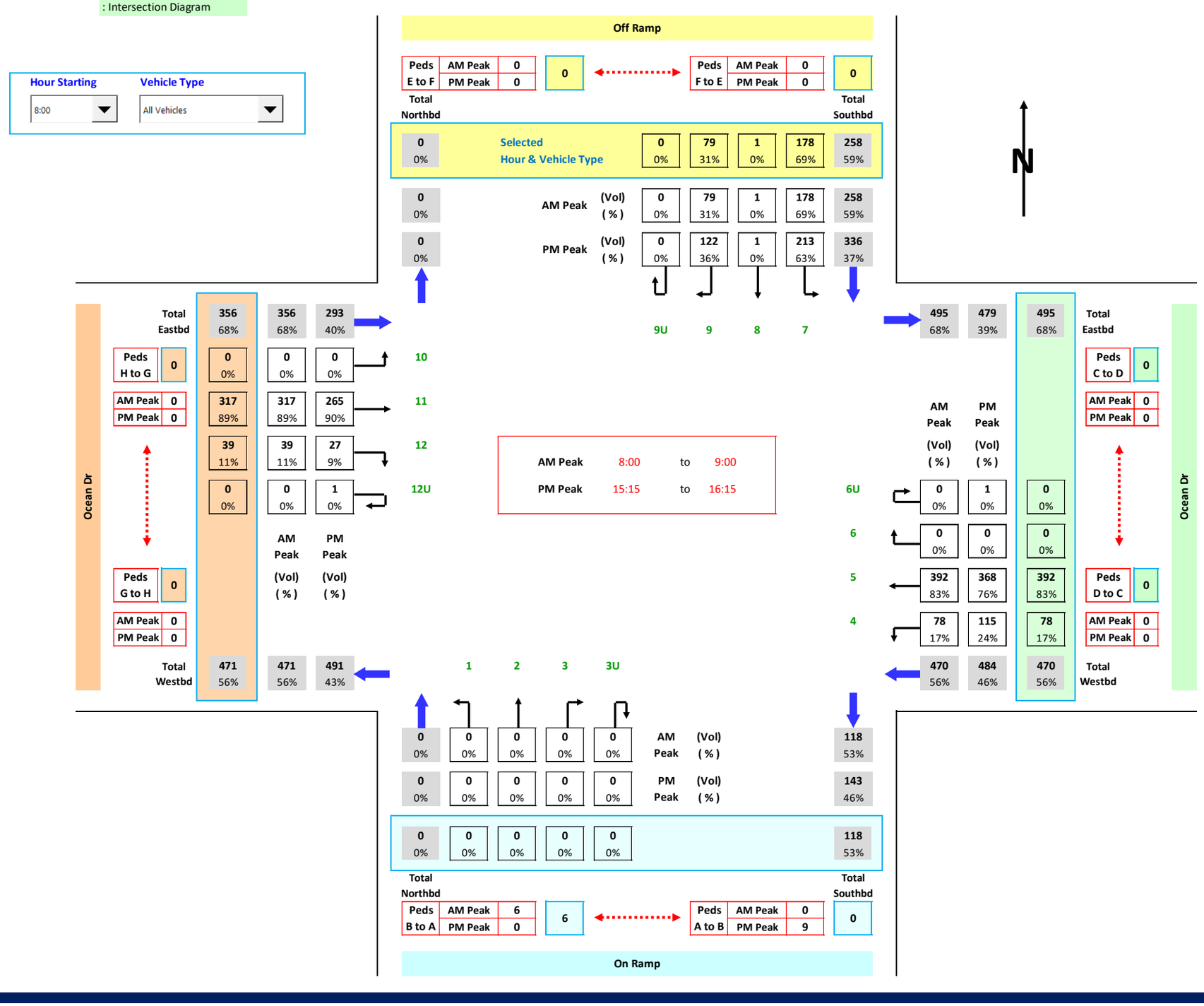
Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



25. Ocean Drive / Pacific Highway Ramp

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 25. Ocean Dr / Pacific Hwy Ramp

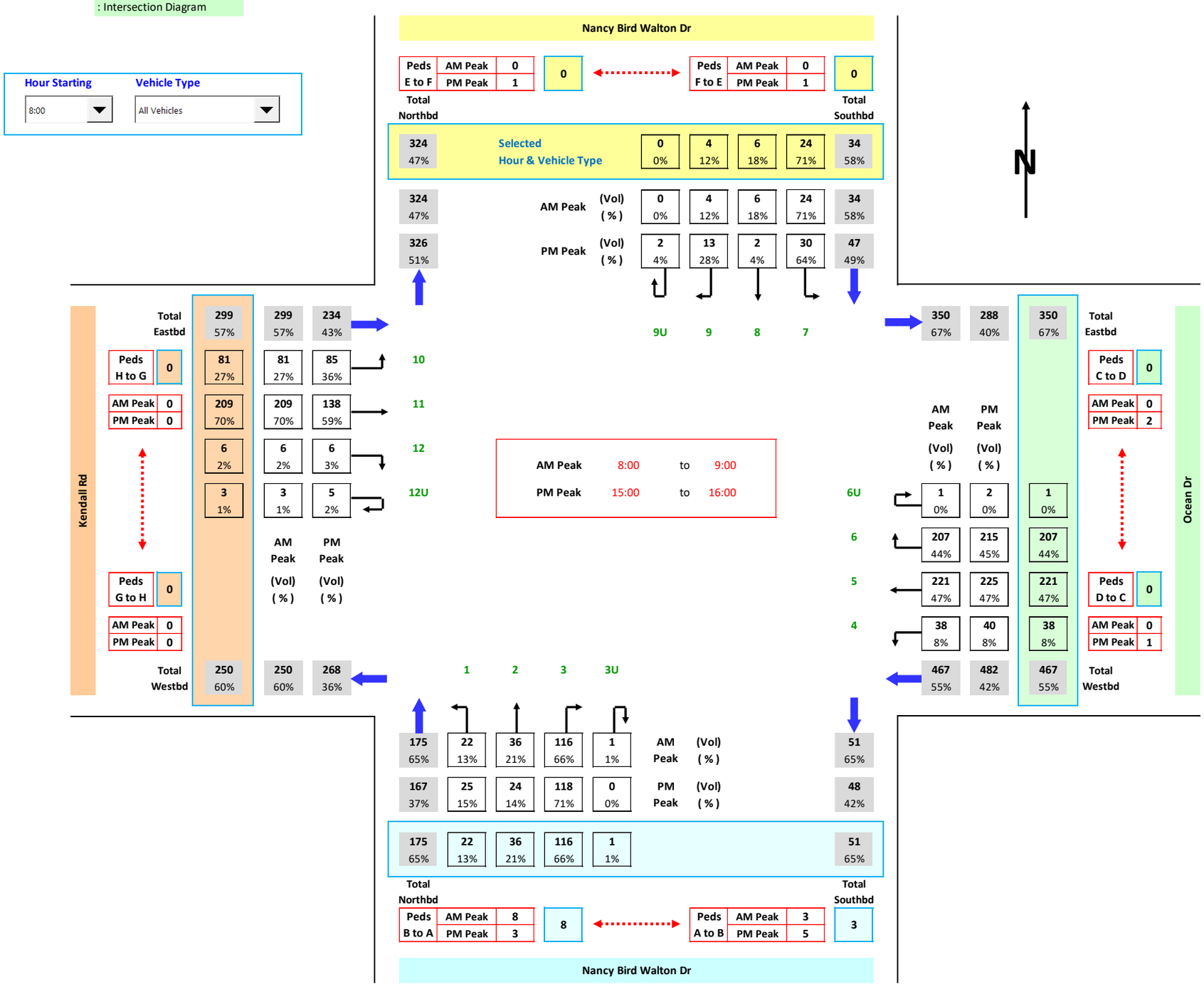
Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



26. Ocean Drive / Nancy Bird Walton Drive / Kendall Road

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 26. Ocean Dr / Nancy Bird Walton Dr / Kendall Rd

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram



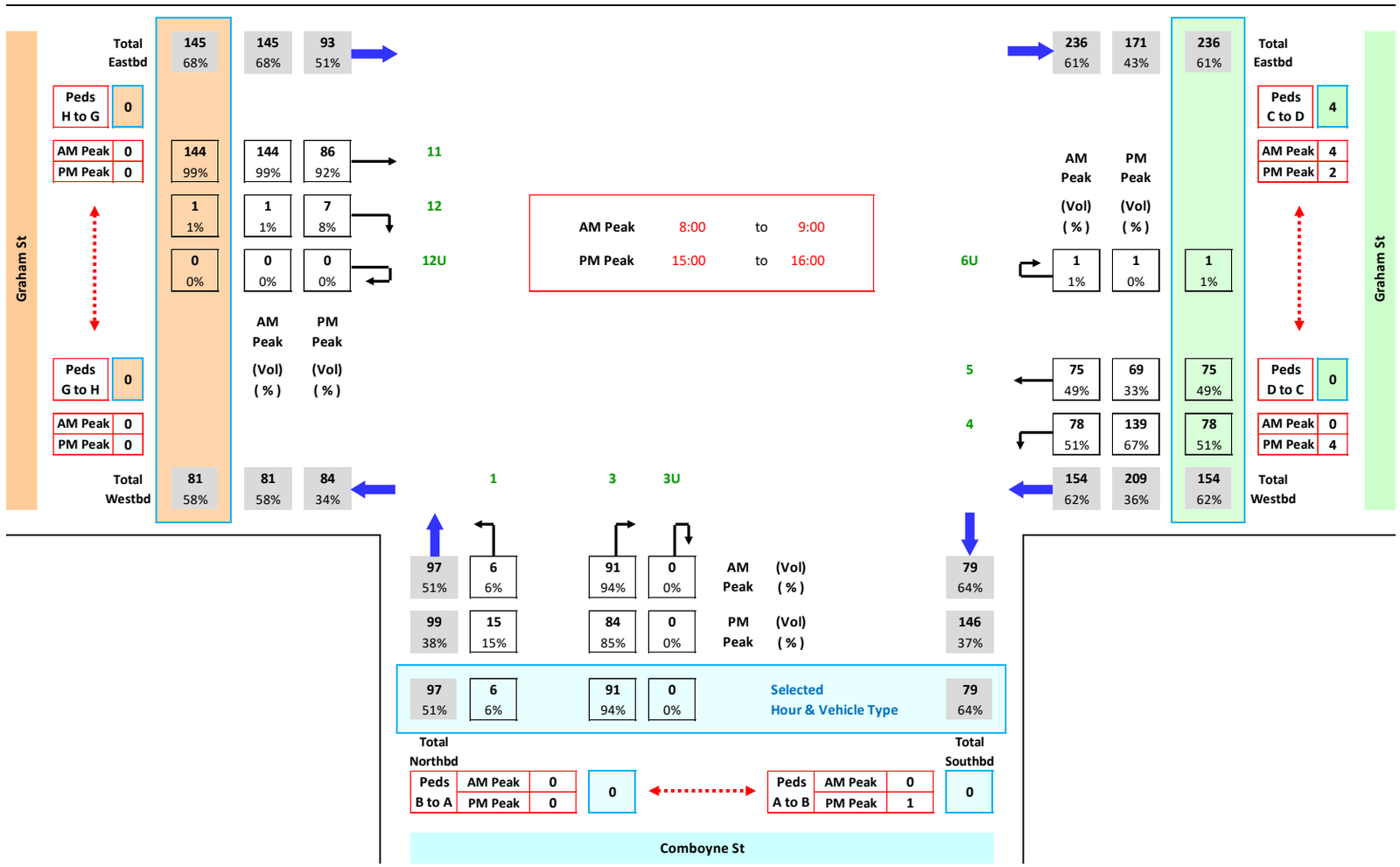
27. Comboyne Street / Graham Street

Job No. : N5997
Client : Bitzios
Suburb : Port Macquarie
Location : 27. Graham St / Comboyne St

Day/Date : Thu, 22nd Oct 2020
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting 8:00 **Vehicle Type** All Vehicles



Appendix D: Traffic Growth Rates

P4665 MR538 and MR600 Corridor Strategy

AIMSUN Intersection Results Comparison

AM Peak 0700-1000

ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	Volume (veh) 2016	Volume (veh) 2026	Volume (veh) 2036	Growth From 2016 (Veh) 2026	Growth From 2016 (Veh) 2036	Yearly Compounding Growth From 2016 2026	Yearly Compounding Growth From 2016 2036	Yearly Compounding Growth From 2016 By Approach 2026	Yearly Compounding Growth From 2016 By Approach 2036	Adopted Growth 2036	Comment
101	Boundary Street	101-1	1	101-1	Boundary Street (N)	Hastings River Drive (W)	R	13	20	18	7	5	4.40%	1.64%				
	Hastings River Drive	101-2	2	101-2		Boundary Street (S)	T	4	11	12	7	8	10.65%	5.65%	1.01%	0.63%	0.63%	Model results reasonable
	Boundary Street	101-3	3	101-3		Hastings River Drive (E)	L	191	199	206	8	15	0.41%	0.38%				
	Hastings River Drive	101-4	4	101-4	Hastings River Drive (E)	Boundary Street (N)	R	68	70	52	2	-16	0.29%	-1.33%				
		101-5	5	101-5		Hastings River Drive (W)	T	558	570	605	12	47	0.21%	0.41%	6.20%	3.14%	0.97%	Corridor sectional average growth adopted
		101-6	6	101-6		Boundary Street (S)	L	396	1,225	1,241	829	845	11.96%	5.88%				
		101-7	7	101-7	Boundary Street (S)	Hastings River Drive (E)	R	354	534	532	180	178	4.20%	2.06%				
		101-8	8	101-8		Boundary Street (N)	T	0	1	1	1	1	N/A	N/A	5.25%	2.44%	Abs.	High growth due to airport expansion. 2020 surveys may be low with limited flights and industrial development. Absolute model values adopted
		101-9	9	101-9		Hastings River Drive (W)	L	23	94	77	71	54	15.12%	6.23%				
		101-10	10	101-10	Hastings River Drive (W)	Boundary Street (S)	R	109	254	340	145	231	8.83%	5.85%				
		101-11	11	101-11		Hastings River Drive (E)	T	920	1,165	1,429	245	509	2.39%	2.23%	3.33%	2.79%	0.97%	Corridor sectional average growth adopted
		101-12	12	101-12		Boundary Street (N)	L	2	11	18	9	16	18.59%	11.61%				
					All			2,638	4,154	4,531	1,516	1,893	4.65%	2.74%				
102	Hastings River Drive	102-1	1	102-1	Hastings River Drive (E)	Hastings River Drive (W)	T	1,022	1,837	1,890	815	868	6.04%	3.12%				
	Hughes Place	102-2	2	102-2		Hughes Place (S)	L	632	430	391	-202	-241	-3.78%	-2.37%	3.20%	1.62%	0.97%	Corridor sectional average growth adopted
	Hastings River Drive	102-3	3	102-3	Hughes Place (S)	Hastings River Drive (E)	R	121	129	107	8	-14	0.64%	-0.61%				
		102-4	4	102-4		Hastings River Drive (W)	L	10	6	7	-4	-3	-4.98%	-1.77%	0.30%	-0.69%	0.30%	Closed catchment: 0.3% adopted based on 2026 growth
		102-5	5	102-5	Hastings River Drive (W)	Hughes Place (S)	R	37	51	58	14	21	3.26%	2.27%				
		102-6	6	102-6		Hastings River Drive (E)	T	1,413	1,800	2,089	387	676	2.45%	1.97%	2.47%	1.98%	0.97%	Corridor sectional average growth adopted
					All			3,235	4,253	4,542	1,018	1,307	2.77%	1.71%				
103	Newport Island Road	103-1	1	103-1	Newport Island Road (N)	Hastings River Drive (W)	R	247	273	282	26	35	1.01%	0.66%				
	Hastings River Drive	103-2	2	103-2		Hastings River Drive (E)	L	539	539	524	0	-15	0.00%	-0.14%	0.33%	0.13%	0.13%	Reasonable - closed residential catchment
	Hastings River Drive	103-3	3	103-3	Hastings River Drive (E)	Newport Island Road (N)	R	467	544	575	77	108	1.54%	1.05%				
		103-4	4	103-4		Hastings River Drive (W)	T	1,751	2,491	2,545	740	794	3.59%	1.89%	3.19%	1.72%	0.97%	Corridor sectional average growth adopted
		103-5	5	103-5	Hastings River Drive (W)	Hastings River Drive (E)	T	1,360	1,666	1,861	306	501	2.05%	1.58%				
		103-6	6	103-6		Newport Island Road (N)	L	172	258	329	86	157	4.14%	3.30%	2.30%	1.80%	0.97%	Corridor sectional average growth adopted
					All			4,536	5,771	6,116	1,235	1,580	2.44%	1.51%				
104	Hastings River Drive	104-1	1	104-1	Hastings River Drive (E)	Hastings River Drive (W)	T	1,479	1,896	2,021	417	542	2.51%	1.57%				
	Clifton Drive	104-2	2	104-2		Clifton Drive (S)	L	166	169	137	3	-29	0.18%	-0.96%	2.30%	1.37%	0.97%	Corridor sectional average growth adopted
	Hastings River Drive	104-3	3	104-3	Clifton Drive (S)	Hastings River Drive (E)	R	1,365	1,008	973	-357	-392	-2.99%	-1.68%				
		104-4	4	104-4		Hastings River Drive (W)	L	747	1,151	1,114	404	367	4.42%	2.02%	0.22%	-0.06%	1.40%	Clifton Dr is a through route/ rat run: 1.4% growth rate adopted in line with population growth
		104-5	5	104-5	Hastings River Drive (W)	Clifton Drive (S)	R	662	713	732	51	70	0.74%	0.50%				
		104-6	6	104-6		Hastings River Drive (E)	T	1,235	1,485	1,647	250	412	1.86%	1.45%	1.48%	1.14%	0.97%	Corridor sectional average growth adopted
					All			5,654	6,422	6,624	768	970	1.28%	0.79%				
105.1	Bellbowrie Street	105.1-1	1	105.1-1	Bellbowrie Street (N)	Hastings River Drive (W)	R	181	214	183	33	2	1.69%	0.05%				
	Hastings River Drive	105.1-2	2	105.1-2		Hastings River Drive (E)	L	597	568	617	-29	20	-0.50%	0.16%	0.05%	0.14%	0.14%	Reasonable - unlikely to attract high demand due to intersection form / operations
	Hastings River Drive	105.1-3	3	105.1-3	Hastings River Drive (E)	Bellbowrie Street (N)	R	898	1,040	934	142	36	1.48%	0.20%				
		105.1-4	4	105.1-4		Hastings River Drive (W)	T	1,576	1,966	2,082	390	506	2.24%	1.40%	1.97%	1.00%	0.97%	Corridor sectional average growth adopted
		105.1-5	5	105.1-5	Hastings River Drive (W)	Hastings River Drive (E)	T	1,915	1,862	1,855	-53	-60	-0.28%	-0.16%				
		105.1-6	6	105.1-6		Bellbowrie Street (N)	L	793	738	863	-55	70	-0.72%	0.42%	-0.41%	0.02%	0.97%	Corridor sectional average growth adopted
					All			5,960	6,388	6,534	428	574	0.70%	0.46%				
105.2	Hastings River Drive	105.2-1	1	105.2-1	Hastings River Drive (E)	Hastings River Drive (W)	T	1,727	2,057	2,222	330	495	1.76%	1.27%				
	Widderson Street	105.2-2	2	105.2-2		Widderson Street (S)	L	152	234	391	82	239	4.41%	4.84%	2.00%	1.66%	0.97%	Corridor sectional average growth adopted
	Hastings River Drive	105.2-3	3	105.2-3	Widderson Street (S)	Hastings River Drive (E)	R	539	437	492	-102	-47	-2.08%	-0.46%				
		105.2-4	4	105.2-4		Hastings River Drive (W)	L	748	950	797	202	49	2.42%	0.32%	0.75%	0.01%	0.75%	Widerson St is a through route/ rat run - 0.75% adopted based on growth to 2026
		105.2-5	5	105.2-5	Hastings River Drive (W)	Widderson Street (S)	R	318	392	485	74	167	2.11%	2.13%				
		105.2-6	6	105.2-6		Hastings River Drive (E)	T	2,194	2,038	1,986	-156	-208	-0.73%	-0.50%	-0.33%	-0.08%	0.97%	Corridor sectional average growth adopted
					All			5,678	6,108	6,373	430	695	0.73%	0.58%				
106	Aston Street	106-1	1	106-1	Aston Street (N)	Hastings River Drive (W)	R	111	167	235	56	124	4.17%	3.82%				
	Hastings River Drive	106-2	2	106-2		Hastings River Drive (E)	L	30	44	48	14	18	3.90%	2.38%	4.11%	3.54%	1.40%	Traffic to sports fields etc. likely to grow to grow consistent with population growth 1.4% growth rate adopted in line with population growth
	Hastings River Drive	106-3	3	106-3	Hastings River Drive (E)	Aston Street (N)	R	55	75	79	20	24	3.15%	1.83%				
		106-4	4	106-4		Hastings River Drive (W)	T	1,728	2,108	2,335	380	607	2.01%	1.52%	2.04%	1.53%	0.97%	Corridor sectional average growth adopted
		106-5	5	106-5	Hastings River Drive (W)	Hastings River Drive (E)	T	2,525	2,239	2,139	-286	-386	-1.19%	-0.83%				
		106-6	6	106-6		Aston Street (N)	L	190	232	328	42	138	2.02%	2.77%	-0.94%	-0.48%	0.97%	Corridor sectional average growth adopted
					All			4,639	4,865	5,164	226	525	0.48%	0.54%				
107	Blueberry Lane	107-1	1	107-1	Blueberry Lane (N)	Hastings River Drive (W)	R	1,783	2,183	2,415	400	632	2.04%	1.53%				
	Hastings River Drive	107-2	2	107-2		Findlay Avenue (S)	T	3	3	1	0	-2	0.00%	-5.34%	2.03%	1.52%	0.00%	No growth expected (closed catchment)
	Findlay Avenue	107-3	3	107-3		Hastings River Drive (E)	L	9	9	10	0	1	0.00%	0.53%				
	Hastings River Drive	107-4	4	107-4	Hastings River Drive (E)	Blueberry Lane (N)	R	11	13	10	2	-1	1.68%	-0.48%				
		107-5	5	107-5		Hastings River Drive (W)	T	1,307	1,572	1,774	265	467	1.86%	1.54%	1.56%	1.30%	0.97%	Corridor sectional average growth adopted
		107-6	6	107-6		Findlay Avenue (S)	L	155	134	125	-21	-30	-1.45%	-1.07%				
		107-7	7	107-7	Findlay Avenue (S)	Hastings River Drive (E)	R	140	139	535	-1	395	-0.07%	6.93%				
		107-8	8	107-8		Blueberry Lane (N)	T	9	11	14	2	5	2.03%	2.23%	2.58%	3.70%	1.40%	Mainly school traffic. 1.4% growth rate adopted in line with population growth
		107-9	9	107-9		Hastings River Drive (W)	L	392	548	570	156	178	3.41%	1.89%				
		107-10	10	107-10	Hastings River Drive (W)	Findlay Avenue (S)	R	206	226	190	20	-16	0.93%	-0.40%				
		107-11	11	107-11		Hastings River Drive (E)	T	2,212	1,959	1,907	-253	-305	-1.21%	-0.74%	-1.02%	-0.72%	0.97%	Corridor sectional average growth adopted
		107-12	12	107-12		Blueberry Lane (N)	L	54	46	41	-8	-13	-1.59%	-1.37%				
					All			6,281	6,843	7,592	562	1,311	0.86%	0.95%				
108	Park Street	108-1	1	108-1	Park Street (N)	Hastings River Drive (W)	R	445	573	651	128	206	2.56%	1.92%				
	Hastings River Drive	108-2	2	108-2		Hastings River Drive (E)	L	401	476	391	75	-10	1.73%	-0.13%	2.17%	1.05%	1.05%	Model rate is reasonable
	Hastings River Drive	108-3	3	108-3	Hastings River Drive (E)	Park Street (N)	R	592	800	917	208	325	3.06%	2.21%				
		108-4	4	108-4		Hastings River Drive (W)	T	1,017	1,151	1,240	134	223	1.25%	1.00%	1.95%	1.48%	0.97%	Corridor sectional average growth adopted
		108-5	5	108-5	Hastings River Drive (W)	Hastings River Drive (E)	T	1,554	1,392	1,535	-162	-19	-1.09%	-0.06%				
		108-6	6	108-6		Park Street (N)	L	923	867	1,109	-56	186	-0.62%	0.92%	-0.92%	0.33%	0.97%	Corridor sectional average growth adopted
					All			4,932	5,259	5,843	327	911	0.64%	0.85%				
109	Hastings River Drive	109-1	1	109-1	Hastings River Drive (N)	Oxley Highway (W)	R	175	247	135	72	-40	3.51%	-1.29%				
	Gordon Street	109-2	2	109-2		Ocean Drive (S)	T	842	888	934	46	92	0.53%	0.52%	-0.51%	-0.11%	0.97%	Corridor sectional average growth adopted
	Ocean Drive	109-3	3	109-3		Gordon Street (E)	L	939	724	846	-215	-93	-2.57%	-0.52%				
	Oxley Highway	109-4	4	109-4	Gordon Street (E)	Hastings River Drive (N)	R	435	433	491	-2	56	-0.05%	0.61%				
		109-5	5	109-5		Oxley Highway (W)	T	2,051	2,078	2,069	27	18	0.13%	0.04%	-0.49%	-0.06%	0.97%	Corridor sectional average growth adopted
		109-6	6	109-6		Ocean Drive (S)	L	820	638	709	-182	-111	-2.48%	-0.72%				
		109-7	7	109-7	Ocean Drive (S)	Gordon Street (E)	R	514	441	400	-73	-114	-1.52%	-1.25%				
		109-8	8	109-8		Hastings River Drive (N)	T	967	1,280	1,453	313	486	2.84%	2.06%	1.63%	1.26%	0.97%	Corridor sectional average growth adopted
		109-9	9	109-9		Oxley Highway (W)	L	167	216	263	49	96	2.61%	2.30%				
		109-10	10	109-10	Oxley Highway (W)	Ocean Drive (S)	R	71	185	202	114	131	10.05%	5.37%				
		109-11	11	109-11		Gordon Street (E)	T	1,043	2,047	2,084	1,004	1,041	6.98%	3.52%	6.44%	3.20%	0.97%	Corridor sectional average growth adopted
		109-12	12	109-12		Hastings River Drive (N)	L	203	226	187	23	-16	1.08%	-0.41%				
					All			8,227	9,403	9,773	1,176	1,546	1.35%	0.86%				

								Volume (veh)			Growth From 2016 (Veh)		Yearly Compounding Growth From 2016		Yearly Compounding Growth From 2016 By Approach		Adopted Growth	Comment
ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	2016	2026	2036	2026	2036	2026	2036	2026	2036	2036	
110	Ocean Drive	110-1	1	110-1	Ocean Drive (N)	Ocean Drive (S)	T	1,435	1,259	1,289	-176	-146	-1.30%	-0.54%	-0.13%	0.31%	0.82%	Corridor sectional average growth adopted
	Table Street	110-2	2	110-2		Table Street (E)	L	294	448	552	154	258	4.30%	3.20%				
	Ocean Drive	110-3	3	110-3	Table Street (E)	Ocean Drive (S)	L	41	42	85	1	44	0.24%	3.71%	0.24%	3.71%	0.75%	0.75% adopted - average of the Table Street approach growth in 2026
	Table Street	110-4	4	110-4	Ocean Drive (S)	Ocean Drive (N)	T	1,486	1,763	1,897	277	411	1.72%	1.23%	1.61%	1.27%	0.82%	Corridor sectional average growth adopted
		110-5	5	110-5		Table Street (W)	L	740	848	968	108	228	1.37%	1.35%				
		110-6	6	110-6	Table Street (W)	Ocean Drive (N)	L	162	174	219	12	57	0.72%	1.52%	1.26%	1.52%	0.75%	0.75% adopted - average of the Table Street approach growth in 2026
					All			4,158	4,534	5,010	376	852	0.87%	0.94%				
111	Ocean Drive	111-1	1	111-1	Ocean Drive (N)	Hindman Street (W)	R	658	576	645	-82	-13	-1.32%	-0.10%	-1.40%	-0.30%	0.82%	Corridor sectional average growth adopted
	Kooloonbung Close	111-2	2	111-2		Ocean Drive (S)	T	700	588	587	-112	-113	-1.73%	-0.88%				
	Ocean Drive	111-3	3	111-3		Kooloonbung Close (E)	L	6	21	53	15	47	13.35%	11.51%				
	Hindman Street	111-4	4	111-4	Kooloonbung Close (E)	Ocean Drive (N)	R	5	7	15	2	10	3.42%	5.65%	5.24%	4.33%	0.00%	No growth expected (closed catchment)
		111-5	5	111-5		Hindman Street (W)	T	5	13	9	8	4	10.03%	2.98%				
		111-6	6	111-6		Ocean Drive (S)	L	5	5	11	0	6	0.00%	4.02%				
		111-7	7	111-7	Ocean Drive (S)	Kooloonbung Close (E)	R	4	46	92	42	88	27.66%	16.97%	2.57%	1.81%	0.82%	Corridor sectional average growth adopted
		111-8	8	111-8		Ocean Drive (N)	T	1,704	2,202	2,410	498	706	2.60%	1.75%				
		111-9	9	111-9		Hindman Street (W)	L	355	410	449	55	94	1.45%	1.18%				
		111-10	10	111-10	Hindman Street (W)	Ocean Drive (S)	R	624	853	674	229	50	3.18%	0.39%	2.55%	0.95%	0.95%	Model results are reasonable
		111-11	11	111-11		Kooloonbung Close (E)	T	2	40	63	38	61	34.93%	18.83%				
		111-12	12	111-12		Ocean Drive (N)	L	491	544	613	53	122	1.03%	1.12%				
					All			4,559	5,305	5,621	746	1,062	1.53%	1.05%				
112	Ocean Drive	112-1	1	112-1	Ocean Drive (N)	Lake Road (W)	R	74	32	53	-42	-21	-8.04%	-1.66%	0.93%	-0.20%	0.82%	Corridor sectional average growth adopted
	Lake Road	112-2	2	112-2		Ocean Drive (S)	T	864	993	775	129	-89	1.40%	-0.54%				
	Ocean Drive	112-3	3	112-3		Lake Road (E)	L	378	418	437	40	59	1.01%	0.73%				
	Lake Road	112-4	4	112-4	Lake Road (E)	Ocean Drive (N)	R	245	385	457	140	212	4.62%	3.17%	4.55%	2.78%	2.78%	Model results adopted
		112-5	5	112-5		Lake Road (W)	T	535	912	1,029	377	494	5.48%	3.32%				
		112-6	6	112-6		Ocean Drive (S)	L	397	540	549	143	152	3.12%	1.63%				
		112-7	7	112-7	Ocean Drive (S)	Lake Road (E)	R	622	662	510	40	-112	0.63%	-0.99%	1.67%	0.98%	0.82%	Corridor sectional average growth adopted
		112-8	8	112-8		Ocean Drive (N)	T	1,684	2,096	2,304	412	620	2.21%	1.58%				
		112-9	9	112-9		Lake Road (W)	L	2,061	2,398	2,489	337	428	1.53%	0.95%				
		112-10	10	112-10	Lake Road (W)	Ocean Drive (S)	R	1,050	1,231	1,537	181	487	1.60%	1.92%	2.21%	2.07%	2.07%	Model results adopted
		112-11	11	112-11		Lake Road (E)	T	687	916	1,087	229	400	2.92%	2.32%				
		112-12	12	112-12		Ocean Drive (N)	L	134	180	194	46	60	3.00%	1.87%				
					All			8,731	10,763	11,421	2,032	2,690	2.11%	1.35%				
113	Ocean Drive	113-1	1	113-1	Ocean Drive (N)	Ocean Drive (S)	T	1,700	2,053	2,201	353	501	1.90%	1.30%	1.80%	1.15%	1.13%	Corridor sectional average growth adopted
	Koala Street	113-2	2	113-2		Koala Street (E)	L	476	548	533	72	57	1.42%	0.57%				
	Ocean Drive	113-3	3	113-3	Koala Street (E)	Ocean Drive (N)	R	1,155	1,385	1,384	230	229	1.83%	0.91%	1.46%	0.68%	0.68%	Model results are reasonable
		113-4	4	113-4		Ocean Drive (S)	L	238	226	211	-12	-27	-0.52%	-0.60%				
		113-5	5	113-5	Ocean Drive (S)	Koala Street (E)	R	132	118	125	-14	-7	-1.11%	-0.27%	1.51%	1.00%	1.13%	Corridor sectional average growth adopted
		113-6	6	113-6		Ocean Drive (N)	T	3,104	3,640	3,824	536	720	1.61%	1.05%				
					All			6,805	7,970	8,278	1,165	1,473	1.59%	0.98%				
114	Ocean Drive	114-1	1	114-1	Ocean Drive (N)	Greenmeadows Drive (W)	R	152	154	173	2	21	0.13%	0.65%	2.01%	1.27%	1.13%	Corridor sectional average growth adopted
	Ocean Drive	114-2	2	114-2		Ocean Drive (S)	T	1,447	1,798	1,886	351	439	2.20%	1.33%				
	Greenmeadows Drive	114-3	3	114-3	Ocean Drive (S)	Ocean Drive (N)	T	2,888	3,385	3,564	497	676	1.60%	1.06%	1.61%	1.07%	1.13%	Corridor sectional average growth adopted
		114-4	4	114-4		Greenmeadows Drive (W)	L	22	30	35	8	13	3.15%	2.35%				
		114-5	5	114-5	Greenmeadows Drive (W)	Ocean Drive (S)	R	19	25	14	6	-5	2.78%	-1.52%	3.18%	0.61%	0.61%	Model results are reasonable
		114-6	6	114-6		Ocean Drive (N)	L	136	187	161	51	25	3.24%	0.85%				
					All			4,664	5,579	5,833	915	1,169	1.81%	1.12%				
115	Dahlsford Drive	115-1	1	115-1	Dahlsford Drive (N)	Ocean Drive (W)	R	258	303	272	45	14	1.62%	0.26%				Model results are reasonable
	Ocean Drive	115-2	2	115-2		Crestwood Drive (S)	T	7	8	7	1	0	1.34%	0.00%	1.96%	0.52%	0.52%	
	Crestwood Drive	115-3	3	115-3		Ocean Drive (E)	L	86	115	110	29	24	2.95%	1.24%				
	Ocean Drive	115-4	4	115-4	Ocean Drive (E)	Dahlsford Drive (N)	R	53	57	49	4	-4	0.73%	-0.39%				Corridor sectional average growth adopted
		115-5	5	115-5		Ocean Drive (W)	T	2,314	2,674	2,878	360	564	1.46%	1.10%	1.32%	1.01%	1.13%	
		115-6	6	115-6		Crestwood Drive (S)	L	108	90	96	-18	-12	-1.81%	-0.59%				
		115-7	7	115-7	Crestwood Drive (S)	Ocean Drive (E)	R	150	139	140	-11	-10	-0.76%	-0.34%				Model results are reasonable
		115-8	8	115-8		Dahlsford Drive (N)	T	34	32	32	-2	-2	-0.60%	-0.30%	1.57%	0.88%	0.88%	
		115-9	9	115-9		Ocean Drive (W)	L	338	439	450	101	112	2.65%	1.44%				
		115-10	10	115-10	Ocean Drive (W)	Crestwood Drive (S)	R	141	231	216	90	75	5.06%	2.16%				Corridor sectional average growth adopted
		115-11	11	115-11		Ocean Drive (E)	T	1,211	1,448	1,543	237	332	1.80%	1.22%	2.23%	1.33%	1.13%	
		115-12	12	115-12		Dahlsford Drive (N)	L	105	138	138	33	33	2.77%	1.38%				
					All			4,805	5,674	5,931	869	1,126	1.68%	1.06%				
116	Ocean Drive	116-1	1	116-1	Ocean Drive (N)	Jonas Absalom Drive (W)	R	83	88	98	5	15	0.59%	0.83%				Corridor sectional average growth adopted
	Pacific Drive	116-2	2	116-2		Ocean Drive (S)	T	861	936	1,017	75	156	0.84%	0.84%	1.59%	1.07%	1.13%	
	Ocean Drive	116-3	3	116-3		Pacific Drive (E)	L	500	667	670	167	170	2.92%	1.47%				
	Jonas Absalom Drive	116-4	4	116-4	Pacific Drive (E)	Ocean Drive (N)	R	981	1,002	1,140	21	159	0.21%	0.75%				Model results are reasonable
		116-5	5	116-5		Jonas Absalom Drive (W)	T	28	35	30	7	2	2.26%	0.35%	0.26%	0.52%	0.52%	
		116-6	6	116-6		Ocean Drive (S)	L	417	426	412	9	-5	0.21%	-0.06%				
		116-7	7	116-7	Ocean Drive (S)	Pacific Drive (E)	R	706	831	871	125	165	1.64%	1.06%				Corridor sectional average growth adopted
		116-8	8	116-8		Ocean Drive (N)	T	1,325	1,644	1,684	319	359	2.18%	1.21%	1.97%	1.16%	1.13%	
		116-9	9	116-9		Jonas Absalom Drive (W)	L	24	22	32	-2	8	-0.87%	1.45%				
		116-10	10	116-10	Jonas Absalom Drive (W)	Ocean Drive (S)	R	45	50	43	5	-2	1.06%	-0.23%				Model results are reasonable
		116-11	11	116-11		Pacific Drive (E)	T	84	91	109	7	25	0.80%	1.31%	0.90%	0.82%	0.82%	
		116-12	12	116-12		Ocean Drive (N)	L	182	199	214	17	32	0.90%	0.81%				
					All			5,236	5,991	6,320	755	1,084	1.36%	0.95%				
117	Ocean Drive	117-1	1	117-1	Ocean Drive (N)	Emerald Drive (W)	R	950	1,002	1,071	52	121	0.53%	0.60%				Corridor sectional average growth adopted
	Matthew Flinders Drive	117-2	2	117-2		Ocean Drive (S)	T	206	234	220	28	14	1.28%	0.33%	0.66%	0.55%	1.13%	
	Ocean Drive	117-3	3	117-3		Matthew Flinders Drive (E)	L	160	169	177	9	17	0.55%	0.51%				
	Emerald Drive	117-4	4	117-4	Matthew Flinders Drive (E)	Ocean Drive (N)	R	394	438	482	44	88	1.06%	1.01%				Model results are reasonable
		117-5	5	117-5		Emerald Drive (W)	T	16	22	17	6	1	3.24%	0.30%	1.22%	0.97%	0.97%	
		117-6	6	117-6		Ocean Drive (S)	L	85	99	102	14	17	1.54%	0.92%				
		117-7	7	117-7	Ocean Drive (S)	Matthew Flinders Drive (E)	R	144	161	158	17	14	1.12%	0.46%				Corridor sectional average growth adopted
		117-8	8	117-8		Ocean Drive (N)	T	1,264	1,577	1,596	313	332	2.24%	1.17%	2.10%	1.11%	1.13%	
		117-9	9	117-9		Emerald Drive (W)	L	84	99	105	15	21	1.66%	1.12%				
		117-10	10	117-10	Emerald Drive (W)	Ocean Drive (S)	R	78	79	95	1	17	0.13%	0.99%				Model results are reasonable
		117-11	11	117-11		Matthew Flinders Drive (E)	T	215	232	210	17	-5	0.76%	-0.12%	1.47%	0.86%	0.86%	
		117-12	12	117-12		Ocean Drive (N)	L	399	490	517	91	118	2.08%	1.30%				
					All			3,995	4,602	4,750	607	755	1.42%	0.87%				
118	Ocean Drive	118-1	1	118-1	Ocean Drive (N)	Woolworths Access (W)	R	34	49	36	15	2	3.72%	0.29%	1.55%	1.01%	1.28%	Corridor sectional average growth adopted
	Ocean Drive	118-2	2	118-2		Ocean Drive (S)	T	316	359	392	43	76	1.28%	1.08%				
	Woolworths Access	118-3	3	118-3	Ocean Drive (S)	Ocean Drive (N)	T	390	649	675	259	285	5.22%	2.78%	2.95%	1.50%	1.28%	Corridor sectional average growth adopted
		118-4	4	118-4		Woolworths Access (W)	L	460	488	469	28	9	0.59%	0.10%				
		118-5	5	118-5	Woolworths Access (W)	Ocean Drive (S)	R	431	407	387	-24	-44	-0.57%	-0.54%	0.43%	0.22%	0.22%	Model results are reasonable
		118-6	6	118-6		Ocean Drive (N)	L	678	751	772	73	94	1.03%	0.65%				
					All			2,309	2,703	2,731	394	422	1.59%	0.84%				

ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	Volume (veh)			Growth From 2016 (Veh)		Yearly Compounding Growth From 2016		Yearly Compounding Growth From 2016 By Approach		Adopted Growth	Comment
								2016	2026	2036	2026	2036	2026	2036	2026	2036	2036	
119	Abel Tasman Drive	119-1	1	119-1	Abel Tasman Drive (N)	Ocean Drive (W)	R	39	60	71	21	32	4.40%	3.04%	6.23%	3.02%	1.40%	Adopt 1.4% based on population growth - limited catchment
	Ocean Drive	119-2	2	119-2		Seaside Drive (S)	T	0	2	0	2	0	N/A	N/A				
	Seaside Drive	119-3	3	119-3		Ocean Drive (E)	L	20	46	36	26	16	8.69%	2.98%				
	Ocean Drive	119-4	4	119-4	Ocean Drive (E)	Abel Tasman Drive (N)	R	10	11	16	1	6	0.96%	2.38%				
		119-5	5	119-5		Ocean Drive (W)	T	767	776	796	9	29	0.12%	0.19%	0.37%	0.25%	1.28%	Corridor sectional average growth adopted
		119-6	6	119-6		Seaside Drive (S)	L	0	19	5	19	5	N/A	N/A				
		119-7	7	119-7	Seaside Drive (S)	Ocean Drive (E)	R	0	129	118	129	118	N/A	N/A				Approximately 50% of lots on Seaside Drive are vacant - traffic estimated to double
		119-8	8	119-8		Abel Tasman Drive (N)	T	0	1	2	1	2	N/A	N/A	N/A	N/A	3.00%	
		119-9	9	119-9		Ocean Drive (W)	L	0	218	171	218	171	N/A	N/A				
		119-10	10	119-10	Ocean Drive (W)	Seaside Drive (S)	R	0	146	169	146	169	N/A	N/A				
		119-11	11	119-11		Ocean Drive (E)	T	837	976	1,011	139	174	1.55%	0.95%	2.97%	1.79%	1.28%	Corridor sectional average growth adopted
		119-12	12	119-12		Abel Tasman Drive (N)	L	36	48	64	12	28	2.92%	2.92%				
					All			1,709	2,432	2,459	723	750	3.59%	1.84%				
120	Ocean Drive	120-1	1	120-1	Ocean Drive (NE)	Houston Mitchell Drive (NW)	R	240	368	326	128	86	4.37%	1.54%				
	Public School Access	120-2	2	120-2		Ocean Drive (SW)	T	555	674	698	119	143	1.96%	1.15%	2.80%	1.31%	1.31%	Model result reasonable
	Ocean Drive	120-3	3	120-3		Public School Access (SE)	L	0	6	8	6	8	N/A	N/A				
	Houston Mitchell Drive	120-4	4	120-4	Public School Access (SE)	Ocean Drive (NE)	R	0	36	43	36	43	N/A	N/A				
		120-5	5	120-5		Houston Mitchell Drive (NW)	T	0	174	123	174	123	N/A	N/A	N/A	N/A	Abs.	Absolute values obtained from Area 14 and industrial development TIAs
		120-6	6	120-6		Ocean Drive (SW)	L	0	72	78	72	78	N/A	N/A				
		120-7	7	120-7	Ocean Drive (SW)	Public School Access (SE)	R	0	93	158	93	158	N/A	N/A				
		120-8	8	120-8		Ocean Drive (NE)	T	751	932	958	181	207	2.18%	1.22%	2.41%	1.58%	1.58%	Model result reasonable
		120-9	9	120-9		Houston Mitchell Drive (NW)	L	389	422	445	33	56	0.82%	0.67%				
		120-10	10	120-10	Houston Mitchell Drive (NW)	Ocean Drive (SW)	R	140	152	184	12	44	0.83%	1.38%				
		120-11	11	120-11		Public School Access (SE)	T	0	47	36	47	36	N/A	N/A	4.52%	2.99%	Abs.	Absolute values obtained from Area 14 and industrial development TIAs
		120-12	12	120-12		Ocean Drive (NE)	L	128	218	263	90	135	5.47%	3.67%				
					All			2,203	3,194	3,320	991	1,117	3.78%	2.07%				
121	Beach Street	121-1	1	121-1	Beach Street (N)	Ocean Drive (W)	R	128	191	171	63	43	4.08%	1.46%	3.41%	1.38%	1.38%	Model results are reasonable
	Ocean Drive	121-2	2	121-2		Ocean Drive (E)	L	30	30	37	0	7	0.00%	1.05%				
	Ocean Drive	121-3	3	121-3	Ocean Drive (E)	Beach Street (N)	R	5	1	6	-4	1	-14.87%	0.92%				
		121-4	4	121-4		Ocean Drive (W)	T	716	873	925	157	209	2.00%	1.29%	1.94%	1.29%	1.28%	Corridor sectional average growth adopted
		121-5	5	121-5	Ocean Drive (W)	Ocean Drive (E)	T	605	773	807	168	202	2.48%	1.45%				
		121-6	6	121-6		Beach Street (N)	L	37	39	40	2	3	0.53%	0.39%	2.38%	1.40%	1.28%	Corridor sectional average growth adopted
					All			1,521	1,907	1,986	386	465	2.29%	1.34%				
122	Ocean Drive	122-1	1	122-1	Ocean Drive (N)	Ocean Drive (W)	R	467	530	555	63	88	1.27%	0.87%				
	The Parade	122-2	2	122-2		The Parade (E)	L	148	196	221	48	73	2.85%	2.02%	1.67%	1.17%	0.45%	Corridor sectional average growth adopted
	Ocean Drive	122-3	3	122-3	The Parade (E)	Ocean Drive (N)	R	0	0	2	0	2	N/A	N/A				
		122-4	4	122-4		Ocean Drive (W)	T	86	70	56	-16	-30	-2.04%	-2.12%	-2.04%	-1.95%	0.00%	No growth expected (closed catchment)
		122-5	5	122-5	Ocean Drive (W)	The Parade (E)	T	422	438	439	16	17	0.37%	0.20%				
		122-6	6	122-6		Ocean Drive (N)	L	321	365	368	44	47	1.29%	0.69%	0.78%	0.41%	0.45%	Corridor sectional average growth adopted
					All			1,444	1,599	1,641	155	197	1.02%	0.64%				
123	Kew Road	123-1	1	123-1	Kew Road (N)	Kew Road (S)	T	764	811	822	47	58	0.60%	0.37%				
	Ocean Drive	123-2	2	123-2		Ocean Drive (E)	L	487	467	499	-20	12	-0.42%	0.12%	0.21%	0.27%	0.45%	Corridor sectional average growth adopted
	Kew Road	123-3	3	123-3	Ocean Drive (E)	Kew Road (N)	R	419	463	431	44	12	1.00%	0.14%				
		123-4	4	123-4		Kew Road (S)	L	0	0	0	0	0	N/A	N/A	1.00%	0.14%	0.45%	Corridor sectional average growth adopted
		123-5	5	123-5	Kew Road (S)	Ocean Drive (E)	R	19	73	34	54	15	14.41%	2.95%				
		123-6	6	123-6		Kew Road (N)	T	651	706	678	55	27	0.81%	0.20%	1.52%	0.30%	0.30%	Model results are reasonable
					All			2,340	2,520	2,464	180	124	0.74%	0.26%				
124	Sirius Drive	124-1	1	124-1	Sirius Drive (N)	Ocean Drive (W)	R	210	296	374	86	164	3.49%	2.93%				
	Ocean Drive	124-2	2	124-2		Ocean Drive (E)	L	263	276	296	13	33	0.48%	0.59%	1.92%	1.76%	1.76%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
	Ocean Drive	124-3	3	124-3	Ocean Drive (E)	Sirius Drive (N)	R	273	259	261	-14	-12	-0.53%	-0.22%				
		124-4	4	124-4		Ocean Drive (W)	T	884	971	943	87	59	0.94%	0.32%	0.61%	0.20%	0.79%	Corridor sectional average growth adopted
		124-5	5	124-5	Ocean Drive (W)	Ocean Drive (E)	T	620	643	667	23	47	0.36%	0.37%				
		124-6	6	124-6		Sirius Drive (N)	L	141	234	303	93	162	5.20%	3.90%	1.43%	1.22%	0.79%	Corridor sectional average growth adopted
					All			2,391	2,679	2,844	288	453	1.14%	0.87%				
125	Pacific Highway Off-ramp	125-1	1	125-1	Pacific Highway Off-ramp (N)	Ocean Drive (W)	R	130	172	217	42	87	2.84%	2.59%				
	Ocean Drive	125-2	2	125-2		Pacific Highway On-ramp (S)	T	0	0	0	0	0	N/A	N/A	2.44%	2.30%	2.30%	Model results are reasonable - growth likely with Area 15 (relative to typical corridor section)
	Pacific Highway On-ramp	125-3	3	125-3		Ocean Drive (E)	L	339	425	522	86	183	2.29%	2.18%				
	Ocean Drive	125-4	4	125-4	Ocean Drive (E)	Ocean Drive (W)	T	856	990	1,054	134	198	1.46%	1.05%				
		125-5	5	125-5		Pacific Highway On-ramp (S)	L	95	105	100	10	5	1.01%	0.26%	1.42%	0.97%	0.97%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
		125-6	6	125-6	Ocean Drive (W)	Pacific Highway On-ramp (S)	R	25	34	32	9	7	3.12%	1.24%				
		125-7	7	125-7		Ocean Drive (E)	T	521	556	603	35	82	0.65%	0.73%	0.78%	0.76%	0.79%	Corridor sectional average growth adopted
					All			1,836	2,110	2,311	274	475	1.40%	1.16%				
126	Nancy Bird Walton Drive	126-1	1	126-1	Nancy Bird Walton Drive (N)	Kendall Road (W)	R	16	13	14	-3	-2	-2.05%	-0.67%				
	Ocean Drive	126-2	2	126-2		Nancy Bird Walton Drive (S)	T	3	3	3	0	0	0.00%	0.00%	0.69%	0.98%	0.98%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
	Nancy Bird Walton Drive	126-3	3	126-3		Ocean Drive (E)	L	9	14	17	5	8	4.52%	3.23%				
	Kendall Road	126-4	4	126-4	Ocean Drive (E)	Nancy Bird Walton Drive (N)	R	603	688	734	85	131	1.33%	0.99%				
		126-5	5	126-5		Kendall Road (W)	T	355	452	507	97	152	2.45%	1.80%	1.64%	1.27%	1.27%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
		126-6	6	126-6		Nancy Bird Walton Drive (S)	L	25	17	24	-8	-1	-3.78%	-0.20%				
		126-7	7	126-7	Nancy Bird Walton Drive (S)	Ocean Drive (E)	R	286	296	314	10	28	0.34%	0.47%				
		126-8	8	126-8		Nancy Bird Walton Drive (N)	T	0	0	0	0	0	N/A	N/A	0.45%	0.48%	0.79%	Corridor sectional average growth adopted
		126-9	9	126-9		Kendall Road (W)	L	61	67	68	6	7	0.94%	0.54%				
		126-10	10	126-10	Kendall Road (W)	Nancy Bird Walton Drive (S)	R	3	5	6	2	3	5.24%	3.53%				
		126-11	11	126-11		Ocean Drive (E)	T	251	281	305	30	54	1.14%	0.98%	2.31%	1.61%	0.79%	Corridor sectional average growth adopted
		126-12	12	126-12		Nancy Bird Walton Drive (N)	L	269	371	409	102	140	3.27%	2.12%				
					All			1,881	2,207	2,401	326	520	1.61%	1.23%				

Section 1	Boundary Street to Oxley Highway				Boundary Street	Oxley	T	16,170	16,494	17,382	324	1,212	0.20%	0.36%	0.20%	0.36%	
	Oxley Highway to Boundary Street				Boundary Street	Oxley	T	13,132	16,928	18,167	3,796	5,035	2.57%	1.64%	2.57%	1.64%	
					All			29,302	33,422	35,549	4,120	6,247	1.32%	0.97%	1.32%	0.97%	
Section 2	Table St to Lake Road				Table Street	Lake Road	T	2,999	2,840	2,651	-159	-348	-0.54%	-0.61%	-0.54%	-0.61%	
	Lake Road to Table St				Lake Road	Table Street	T	4,874	6,061	6,611	1,187	1,737	2.20%	1.54%	2.20%	1.54%	
					All			7,873	8,901	9,262	1,028	1,389	1.23%	0.82%	1.23%	0.82%	
Section 3	Koala St to Mathew Flinders				Koala Street	Mathew Flinders	T	5,425	6,469	6,867	1,044	1,442	1.78%	1.19%	1.78%	1.19%	
	Lake Road to Table St				Mathew Flinders	Koala Street	T	10,895	12,920	13,546	2,025	2,651	1.72%	1.09%	1.72%	1.09%	
					All			16,320	19,389	20,413	3,069	4,093	1.74%	1.13%	1.74%	1.13%	
Section 4	Woolworths Access (Lake Cathie) to Beach St				Woolworths Access	Beach Street	T	2,424	2,882	3,026	458	602	1.75%	1.12%	1.75%	1.12%	
	Beach St Woolworths Access				Beach Street	Woolworths Access	T	2,694	3,430	3,569	736	875	2.44%	1.42%	2.44%	1.42%	
					All			5,118	6,312	6,595	1,194	1,477	2.12%	1.28%	2.12%	1.28%	
Section 5	The Parade to Kew Road				The Parade	Kew Road	T	886	993	986	107	100	1.15%	0.54%	1.15%	0.54%	
	Beach St Woolworths Access				Kew Road	The Parade	T	808	832	867	24	59	0.29%	0.35%	0.29%	0.35%	
					All			1,694	1,825	1,853	131	159	0.75%	0.45%	0.75%	0.45%	
Section 6	Sirus Drive to Nancy Bird				Sirus Drive	Nancy Bird	T	2,095	2,413	2,504	318	409	1.42%	0.90%	1.42%	0.90%	
	Nancy Bird to Sirus Drive to				Nancy Bird	Sirus Drive	T	1,392	1,480	1,575	88	183	0.61%	0.62%	0.61%	0.62%	
					All			3,487	3,893	4,079	406	592	1.11%	0.79%	1.11%	0.79%	

P4665 MR538 and MR600 Corridor Strategy

AIMSUN Intersection Results Comparison

PM Peak 1400-1600

ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	Volume (veh)			Growth From 2016 (Veh)		Yearly Compounding Growth From 2016		Yearly Compounding Growth From 2016 By Approach		Adopted Growth	Comment
								2016	2026	2036	2026	2036	2026	2036	2026	2036	2036	
101	Boundary Street	101-1	1	101-1	Boundary Street (N)	Hastings River Drive (W)	R	7	12	19	5	12	5.54%	5.12%	0.33%	-0.02%	0.33%	2026 growth adopted
	Hastings River Drive	101-2	2	101-2		Roundary Street (S)	T	0	0	0	0	0	N/A	N/A				
	Roundary Street	101-3	3	101-3		Hastings River Drive (E)	L	200	202	187	2	-13	0.10%	-0.34%				
	Hastings River Drive	101-4	4	101-4	Hastings River Drive (E)	Boundary Street (N)	R	167	161	179	-6	12	-0.37%	0.35%	1.95%	1.57%	0.78%	Corridor sectional average growth adopted
		101-5	5	101-5		Hastings River Drive (W)	T	1,321	1,472	1,775	151	454	1.09%	1.49%				
		101-6	6	101-6		Roundary Street (S)	L	516	797	780	281	264	4.44%	2.09%				
		101-7	7	101-7	Roundary Street (S)	Hastings River Drive (E)	R	796	941	984	145	188	1.69%	1.07%	7.27%	3.84%	Abs.	High growth due to airport expansion. 2020 surveys may be low with limited flights and industrial development. Absolute model values adopted
		101-8	8	101-8		Boundary Street (N)	T	2	5	9	3	7	9.60%	7.81%				
		101-9	9	101-9		Hastings River Drive (W)	L	133	932	986	799	853	21.49%	10.54%				
		101-10	10	101-10	Hastings River Drive (W)	Roundary Street (S)	R	43	60	96	17	53	3.39%	4.10%	0.48%	0.38%	0.78%	Corridor sectional average growth adopted
		101-11	11	101-11		Hastings River Drive (E)	T	1,356	1,408	1,407	52	51	0.38%	0.18%				
		101-12	12	101-12		Boundary Street (N)	L	9	9	15	0	6	0.00%	2.59%				
					All			4,550	5,999	6,437	1,449	1,887	2.80%	1.75%				
102	Hastings River Drive	102-1	1	102-1	Hastings River Drive (E)	Hastings River Drive (W)	T	1,695	2,119	2,404	424	709	2.26%	1.76%	1.26%	1.26%	0.78%	Corridor sectional average growth adopted
	Hughes Place	102-2	2	102-2		Hughes Place (S)	L	482	349	395	-133	-87	-3.18%	-0.99%				
	Hastings River Drive	102-3	3	102-3	Hughes Place (S)	Hastings River Drive (E)	R	557	573	558	16	1	0.28%	0.01%	0.24%	0.04%	0.30%	Model rate is reasonable
		102-4	4	102-4		Hastings River Drive (W)	L	320	325	326	5	6	0.16%	0.09%				
		102-5	5	102-5	Hastings River Drive (W)	Hughes Place (S)	R	51	69	76	18	25	3.07%	2.01%	0.83%	0.46%	0.78%	Corridor sectional average growth adopted
		102-6	6	102-6		Hastings River Drive (E)	T	2,295	2,479	2,494	184	199	0.77%	0.42%				
					All			5,400	5,914	6,253	514	853	0.91%	0.74%				
103	Newport Island Road	103-1	1	103-1	Newport Island Road (N)	Hastings River Drive (W)	R	346	351	366	5	20	0.14%	0.28%	1.86%	1.27%	1.27%	Model rate is reasonable
	Hastings River Drive	103-2	2	103-2		Hastings River Drive (E)	L	778	1,000	1,081	222	303	2.54%	1.66%				
	Hastings River Drive	103-3	3	103-3	Hastings River Drive (E)	Newport Island Road (N)	R	297	471	536	174	239	4.72%	3.00%	2.33%	1.62%	0.78%	Corridor sectional average growth adopted
		103-4	4	103-4		Hastings River Drive (W)	T	2,289	2,785	3,031	496	742	1.98%	1.41%				
		103-5	5	103-5	Hastings River Drive (W)	Hastings River Drive (E)	T	2,201	2,477	2,403	276	202	1.19%	0.44%	0.67%	0.33%	0.78%	Corridor sectional average growth adopted
		103-6	6	103-6		Newport Island Road (N)	L	651	571	645	-80	-6	-1.30%	-0.05%				
					All			6,562	7,655	8,062	1,093	1,500	1.55%	1.03%				
104	Hastings River Drive	104-1	1	104-1	Hastings River Drive (E)	Hastings River Drive (W)	T	1,649	1,884	2,119	235	470	1.34%	1.26%	1.32%	1.10%	0.78%	Corridor sectional average growth adopted
	Clifton Drive	104-2	2	104-2		Clifton Drive (S)	L	285	320	288	35	3	1.17%	0.05%				
	Hastings River Drive	104-3	3	104-3	Clifton Drive (S)	Hastings River Drive (E)	R	905	1,138	1,155	233	250	2.32%	1.23%	3.15%	1.76%	1.40%	1.4% growth rate adopted in line with population growth
		104-4	4	104-4		Hastings River Drive (W)	L	942	1,380	1,462	438	520	3.89%	2.22%				
		104-5	5	104-5	Hastings River Drive (W)	Clifton Drive (S)	R	793	1,089	1,096	296	303	3.22%	1.63%	1.55%	0.79%	0.78%	Corridor sectional average growth adopted
		104-6	6	104-6		Hastings River Drive (E)	T	2,183	2,381	2,386	198	203	0.87%	0.45%				
					All			6,757	8,192	8,506	1,435	1,749	1.94%	1.16%				
105.1	Bellbowrie Street	105.1-1	1	105.1-1	Bellbowrie Street (N)	Hastings River Drive (W)	R	160	180	177	20	17	1.18%	0.51%	0.05%	0.11%	0.11%	Reasonable - unlikely to attract high demand due to intersection form / operations
	Hastings River Drive	105.1-2	2	105.1-2		Hastings River Drive (E)	L	624	608	625	-16	1	-0.26%	0.01%				
	Hastings River Drive	105.1-3	3	105.1-3	Hastings River Drive (E)	Bellbowrie Street (N)	R	729	617	617	-112	-112	-1.65%	-0.83%	0.45%	0.61%	0.78%	Corridor sectional average growth adopted
		105.1-4	4	105.1-4		Hastings River Drive (W)	T	1,811	2,039	2,252	228	441	1.19%	1.10%				
		105.1-5	5	105.1-5	Hastings River Drive (W)	Hastings River Drive (E)	T	2,569	2,754	2,750	185	181	0.70%	0.34%	1.24%	0.65%	0.78%	Corridor sectional average growth adopted
		105.1-6	6	105.1-6		Bellbowrie Street (N)	L	553	777	807	224	254	3.46%	1.91%				
					All			6,446	6,975	7,228	529	782	0.79%	0.57%				
105.2	Hastings River Drive	105.2-1	1	105.2-1	Hastings River Drive (E)	Hastings River Drive (W)	T	1,649	1,834	2,019	185	370	1.07%	1.02%	2.53%	2.20%	0.78%	Corridor sectional average growth adopted
	Widderson Street	105.2-2	2	105.2-2		Widderson Street (S)	L	244	597	908	353	664	9.36%	6.79%				
	Hastings River Drive	105.2-3	3	105.2-3	Widderson Street (S)	Hastings River Drive (E)	R	72	201	233	129	161	10.81%	6.05%	0.62%	0.59%	0.62%	Reasonable
		105.2-4	4	105.2-4		Hastings River Drive (W)	L	891	823	851	-68	-40	-0.79%	-0.23%				
		105.2-5	5	105.2-5	Hastings River Drive (W)	Widderson Street (S)	R	842	938	1,012	96	170	1.09%	0.92%	0.52%	0.28%	0.78%	Corridor sectional average growth adopted
		105.2-6	6	105.2-6		Hastings River Drive (E)	T	2,349	2,424	2,361	75	12	0.31%	0.03%				
					All			6,047	6,817	7,384	770	1,337	1.21%	1.00%				
106	Aston Street	106-1	1	106-1	Aston Street (N)	Hastings River Drive (W)	R	155	237	258	82	103	4.34%	2.58%	3.28%	1.83%	1.40%	Traffic to sports fields etc. likely to grow to grow consistent with population growth 1.4% growth rate adopted in line with population
	Hastings River Drive	106-2	2	106-2		Hastings River Drive (E)	L	26	13	2	-13	-24	-6.70%	-12.04%				
	Hastings River Drive	106-3	3	106-3	Hastings River Drive (E)	Aston Street (N)	R	147	72	48	-75	-99	-6.89%	-5.44%	1.99%	1.94%	0.78%	Corridor sectional average growth adopted
		106-4	4	106-4		Hastings River Drive (W)	T	1,689	2,163	2,648	474	959	2.50%	2.27%				
		106-5	5	106-5	Hastings River Drive (W)	Hastings River Drive (E)	T	2,348	2,429	2,349	81	1	0.34%	0.00%	0.81%	0.35%	0.78%	Corridor sectional average growth adopted
		106-6	6	106-6		Aston Street (N)	L	68	191	240	123	172	10.88%	6.51%				
					All			4,433	5,105	5,545	672	1,112	1.42%	1.13%				
107	Blueberry Lane	107-1	1	107-1	Blueberry Lane (N)	Hastings River Drive (W)	R	1,836	2,235	2,697	399	861	1.99%	1.94%	1.87%	1.87%	0.00%	No growth expected (closed catchment)
	Hastings River Drive	107-2	2	107-2		Findlay Avenue (S)	T	26	5	5	-21	-21	-15.20%	-7.91%				
	Findlay Avenue	107-3	3	107-3		Hastings River Drive (E)	L	32	39	44	7	12	2.00%	1.61%				
	Hastings River Drive	107-4	4	107-4	Hastings River Drive (E)	Blueberry Lane (N)	R	10	11	7	1	-3	0.96%	-1.77%	2.56%	2.41%	0.78%	Corridor sectional average growth adopted
		107-5	5	107-5		Hastings River Drive (W)	T	1,314	1,730	2,167	416	853	2.79%	2.53%				
		107-6	6	107-6		Findlay Avenue (S)	L	83	70	92	-13	9	-1.69%	0.52%				
		107-7	7	107-7	Findlay Avenue (S)	Hastings River Drive (E)	R	165	223	365	58	200	3.06%	4.05%	-0.09%	1.03%	1.03%	Model rate is reasonable
		107-8	8	107-8		Blueberry Lane (N)	T	10	5	6	-5	-4	-6.70%	-2.52%				
		107-9	9	107-9		Hastings River Drive (W)	L	486	427	441	-59	-45	-1.29%	-0.48%				
		107-10	10	107-10	Hastings River Drive (W)	Findlay Avenue (S)	R	158	128	128	-30	-30	-2.08%	-1.05%	0.28%	-0.04%	0.78%	Corridor sectional average growth adopted
		107-11	11	107-11		Hastings River Drive (E)	T	2,173	2,267	2,184	94	11	0.42%	0.03%				
		107-12	12	107-12		Blueberry Lane (N)	L	30	32	29	2	-1	0.65%	-0.17%				
					All			6,323	7,172	8,165	849	1,842	1.27%	1.29%				
108	Park Street	108-1	1	108-1	Park Street (N)	Hastings River Drive (W)	R	434	1,068	1,406	634	972	9.42%	6.05%	2.85%	2.37%	1.40%	1.4% adopted in line with population growth
	Hastings River Drive	108-2	2	108-2		Hastings River Drive (E)	L	902	702	728	-200	-174	-2.48%	-1.07%				
	Hastings River Drive	108-3	3	108-3	Hastings River Drive (E)	Park Street (N)	R	1,508	1,428	1,529	-80	21	-0.54%	0.07%	-1.61%	-0.37%	0.78%	Corridor sectional average growth adopted
		108-4	4	108-4		Hastings River Drive (W)	T	901	620	709	-281	-192	-3.67%	-1.19%				
		108-5	5	108-5	Hastings River Drive (W)	Hastings River Drive (E)	T	1,625	1,696	1,823	71	198	0.43%	0.58%	0.47%	0.45%	0.78%	Corridor sectional average growth adopted
		108-6	6	108-6		Park Street (N)	L	919	970	960	51	41	0.54%	0.22%				
					All			6,289	6,484	7,155	195	866	0.31%	0.65%				

								Volume (veh)			Growth From 2016 (Veh)		Yearly Compounding Growth From 2016		Yearly Compounding Growth From 2016 By Approach		Adopted Growth	Comment
ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	2016	2026	2036	2026	2036	2026	2036	2026	2036	2036	
109	Hastings River Drive	109-1	1	109-1	Hastings River Drive (N)	Oxley Highway (W)	R	461	289	374	-172	-87	-4.56%	-1.04%				Corridor sectional average growth adopted
	Gordon Street	109-2	2	109-2		Ocean Drive (S)	T	1,040	978	975	-62	-65	-0.61%	-0.32%	-0.58%	0.00%	0.78%	
	Ocean Drive	109-3	3	109-3		Gordon Street (E)	L	1,061	1,151	1,212	90	151	0.82%	0.67%				
	Oxley Highway	109-4	4	109-4	Gordon Street (E)	Hastings River Drive (N)	R	911	511	631	-400	-280	-5.62%	-1.82%				Corridor sectional average growth adopted
		109-5	5	109-5		Oxley Highway (W)	T	2,882	3,263	3,417	381	535	1.25%	0.86%	-0.09%	0.33%	0.78%	
		109-6	6	109-6		Ocean Drive (S)	L	897	875	957	-22	60	-0.25%	0.32%				
		109-7	7	109-7	Ocean Drive (S)	Gordon Street (E)	R	1,091	893	1,039	-198	-52	-1.98%	-0.24%				Corridor sectional average growth adopted
		109-8	8	109-8		Hastings River Drive (N)	T	1,227	1,330	1,412	103	185	0.81%	0.70%	-0.33%	0.37%	0.78%	
		109-9	9	109-9		Oxley Highway (W)	L	342	350	412	8	70	0.23%	0.94%				
		109-10	10	109-10	Oxley Highway (W)	Ocean Drive (S)	R	334	283	419	-51	85	-1.64%	1.14%				Corridor sectional average growth adopted
		109-11	11	109-11		Gordon Street (E)	T	1,602	2,220	2,271	618	669	3.32%	1.76%	2.05%	1.34%	0.78%	
		109-12	12	109-12		Hastings River Drive (N)	L	215	132	116	-83	-99	-4.76%	-3.04%				
					All			12,063	12,275	13,235	212	1,172	0.17%	0.46%				
110	Ocean Drive	110-1	1	110-1	Ocean Drive (N)	Ocean Drive (S)	T	2,094	1,890	1,940	-204	-154	-1.02%	-0.38%	-0.59%	0.18%	0.78%	Corridor sectional average growth adopted for the previous section
	Table Street	110-2	2	110-2		Table Street (E)	L	164	239	400	75	236	3.84%	4.56%				
	Ocean Drive	110-3	3	110-3	Table Street (E)	Ocean Drive (S)	L	694	829	982	135	288	1.79%	1.75%	1.79%	1.75%	0.75%	Limited growth expected. Based on AM peak
	Table Street	110-4	4	110-4	Ocean Drive (S)	Ocean Drive (N)	T	2,265	2,111	2,326	-154	61	-0.70%	0.13%	-0.70%	0.13%	0.78%	Corridor sectional average growth adopted for the previous section
		110-5	5	110-5		Table Street (W)	L	640	781	896	141	256	2.01%	1.70%	1.82%	1.62%		
		110-6	6	110-6	Table Street (W)	Ocean Drive (N)	L	400	464	538	64	138	1.50%	1.49%			0.75%	Limited growth expected. Based on AM peak
					All			6,257	6,314	7,082	57	825	0.09%	0.62%				
111	Ocean Drive	111-1	1	111-1	Ocean Drive (N)	Hindman Street (W)	R	456	625	667	169	211	3.20%	1.92%				Corridor sectional average growth adopted for the previous section
	Kooloonbung Close	111-2	2	111-2		Ocean Drive (S)	T	1,863	1,735	1,704	-128	-159	-0.71%	-0.45%	0.24%	0.16%	0.78%	
	Ocean Drive	111-3	3	111-3		Kooloonbung Close (E)	L	4	20	29	16	25	17.46%	10.41%				
	Hindman Street	111-4	4	111-4	Kooloonbung Close (E)	Ocean Drive (N)	R	17	48	66	31	49	10.94%	7.02%				Adopt 0% - no growth anticipated.
		111-5	5	111-5		Hindman Street (W)	T	4	31	32	27	28	22.72%	10.96%	9.37%	5.12%	0.00%	
		111-6	6	111-6		Ocean Drive (S)	L	28	41	35	13	7	3.89%	1.12%				
		111-7	7	111-7	Ocean Drive (S)	Kooloonbung Close (E)	R	9	40	46	31	37	16.09%	8.50%				Corridor sectional average growth adopted for the previous section
		111-8	8	111-8		Ocean Drive (N)	T	2,189	1,736	1,802	-453	-387	-2.29%	-0.97%	-1.48%	-0.05%	0.78%	
		111-9	9	111-9		Hindman Street (W)	L	211	300	535	89	324	3.58%	4.76%				
		111-10	10	111-10	Hindman Street (W)	Ocean Drive (S)	R	811	1,329	1,805	518	994	5.06%	4.08%				1.4% growth rate adopted in line with population growth
		111-11	11	111-11		Kooloonbung Close (E)	T	3	45	96	42	93	31.10%	18.92%	7.14%	4.80%	1.40%	
		111-12	12	111-12		Ocean Drive (N)	L	392	1,030	1,180	638	788	10.14%	5.66%				
					All			5,987	6,980	7,997	993	2,010	1.55%	1.46%				
112	Ocean Drive	112-1	1	112-1	Ocean Drive (N)	Lake Road (W)	R	130	41	24	-89	-106	-10.90%	-8.10%				Model rate is reasonable
	Lake Road	112-2	2	112-2		Ocean Drive (S)	T	2,246	2,446	2,666	200	420	0.86%	0.86%	1.38%	1.36%	1.36%	
	Ocean Drive	112-3	3	112-3		Lake Road (E)	L	320	606	844	286	524	6.59%	4.97%				
	Lake Road	112-4	4	112-4	Lake Road (E)	Ocean Drive (N)	R	214	167	237	-47	23	-2.45%	0.51%				Model rate is reasonable
		112-5	5	112-5		Lake Road (W)	T	1,178	1,482	1,510	304	332	2.32%	1.25%	2.22%	1.12%	1.12%	
		112-6	6	112-6		Ocean Drive (S)	L	771	1,045	954	274	183	3.09%	1.07%				
		112-7	7	112-7	Ocean Drive (S)	Lake Road (E)	R	718	787	869	69	151	0.92%	0.96%				Model rate is reasonable
		112-8	8	112-8		Ocean Drive (N)	T	1,670	1,596	1,821	-74	151	-0.45%	0.43%	1.00%	0.78%	0.78%	
		112-9	9	112-9		Lake Road (W)	L	1,645	2,072	2,020	427	375	2.33%	1.03%				
		112-10	10	112-10	Lake Road (W)	Ocean Drive (S)	R	3,001	3,021	2,821	20	-180	0.07%	-0.31%				Adopt 1.12% consistent with Lake Road (W)
		112-11	11	112-11		Lake Road (E)	T	1,051	1,158	1,166	107	115	0.97%	0.52%	-0.17%	-0.29%	1.12%	
		112-12	12	112-12		Ocean Drive (N)	L	532	329	339	-203	-193	-4.69%	-2.23%				
					All			13,476	14,750	15,271	1,274	1,795	0.91%	0.63%				
113	Ocean Drive	113-1	1	113-1	Ocean Drive (N)	Ocean Drive (S)	T	4,608	5,055	5,022	447	414	0.93%	0.43%	0.73%	0.29%	0.57%	Corridor sectional average growth adopted
	Koala Street	113-2	2	113-2		Koala Street (E)	L	1,394	1,397	1,344	3	-50	0.02%	-0.18%				
	Ocean Drive	113-3	3	113-3	Koala Street (E)	Ocean Drive (N)	R	1,033	1,067	1,132	34	99	0.32%	0.46%	0.49%	0.50%	0.50%	Model rate is reasonable
		113-4	4	113-4		Ocean Drive (S)	L	278	310	316	32	38	1.10%	0.64%				
		113-5	5	113-5	Ocean Drive (S)	Koala Street (E)	R	46	72	58	26	12	4.58%	1.17%	1.17%	0.84%	0.57%	Corridor sectional average growth adopted
		113-6	6	113-6		Ocean Drive (N)	T	3,002	3,353	3,548	351	546	1.11%	0.84%				
					All			10,361	11,254	11,420	893	1,059	0.83%	0.49%				
114	Ocean Drive	114-1	1	114-1	Ocean Drive (N)	Greenmeadows Drive (W)	R	390	419	415	29	25	0.72%	0.31%	0.98%	0.45%	0.57%	Corridor sectional average growth adopted
	Ocean Drive	114-2	2	114-2		Ocean Drive (S)	T	4,205	4,647	4,615	442	410	1.00%	0.47%				
	Greenmeadows Drive	114-3	3	114-3	Ocean Drive (S)	Ocean Drive (N)	T	2,965	3,325	3,495	360	530	1.15%	0.83%	1.17%	0.84%	0.57%	Corridor sectional average growth adopted
		114-4	4	114-4		Greenmeadows Drive (W)	L	25	34	40	9	15	3.12%	2.38%				
		114-5	5	114-5	Greenmeadows Drive (W)	Ocean Drive (S)	R	9	8	16	-1	7	-1.17%	2.92%	2.23%	1.57%	1.57%	Model rate is reasonable
		114-6	6	114-6		Ocean Drive (N)	L	76	98	100	22	24	2.57%	1.38%				
					All			7,670	8,531	8,681	861	1,011	1.07%	0.62%				
115	Dahlsford Drive	115-1	1	115-1	Dahlsford Drive (N)	Ocean Drive (W)	R	327	369	397	42	70	1.22%	0.97%				Model rate is reasonable
	Ocean Drive	115-2	2	115-2		Crestwood Drive (S)	T	15	15	14	0	-1	0.00%	-0.34%	1.40%	0.79%	0.79%	
	Crestwood Drive	115-3	3	115-3		Ocean Drive (E)	L	55	72	54	17	-1	2.73%	-0.09%				
	Ocean Drive	115-4	4	115-4	Ocean Drive (E)	Dahlsford Drive (N)	R	38	52	68	14	30	3.19%	2.95%				Corridor sectional average growth adopted
		115-5	5	115-5		Ocean Drive (W)	T	2,216	2,518	2,661	302	445	1.29%	0.92%	1.24%	0.91%	0.57%	
		115-6	6	115-6		Crestwood Drive (S)	L	241	252	261	11	20	0.45%	0.40%				
		115-7	7	115-7	Crestwood Drive (S)	Ocean Drive (E)	R	211	211	199	0	-12	0.00%	-0.29%				Reasonable
		115-8	8	115-8		Dahlsford Drive (N)	T	20	20	20	0	0	0.00%	0.00%	0.35%	0.11%	0.11%	
		115-9	9	115-9		Ocean Drive (W)	L	450	474	477	24	27	0.52%	0.29%				
		115-10	10	115-10	Ocean Drive (W)	Crestwood Drive (S)	R	456	529	580	73	124	1.50%	1.21%				Corridor sectional average growth adopted
		115-11	11	115-11		Ocean Drive (E)	T	3,313	3,651	3,560	338	247	0.98%	0.36%	1.01%	0.47%	0.57%	
		115-12	12	115-12		Dahlsford Drive (N)	L	438	471	482	33	44	0.73%	0.48%				
					All			7,780	8,634	8,773	854	993	1.05%	0.60%				
116	Ocean Drive	116-1	1	116-1	Ocean Drive (N)	Jonas Absalom Drive (W)	R	434	464	449	30	15	0.67%	0.17%				Corridor sectional average growth adopted
	Pacific Drive	116-2	2	116-2		Ocean Drive (S)	T	2,221	2,413	2,398	192	177	0.83%	0.38%	0.94%	0.30%	0.57%	
	Ocean Drive	116-3	3	116-3		Pacific Drive (E)	L	922	1,051	949	129	27	1.32%	0.14%				
	Jonas Absalom Drive	116-4	4	116-4	Pacific Drive (E)	Ocean Drive (N)	R	988	1,207	1,258	219	270	2.02%	1.22%				Model rate is reasonable
		116-5	5	116-5		Jonas Absalom Drive (W)	T	70	61	73	-9	3	-1.37%	0.21%	1.46%	1.05%	1.05%	
		116-6	6	116-6		Ocean Drive (S)	L	735	804	879	69	144	0.90%	0.90%				
		116-7	7	116-7	Ocean Drive (S)	Pacific Drive (E)	R	776	1,023	1,042	247	266	2.80%	1.48%				Corridor sectional average growth adopted
		116-8	8	116-8		Ocean Drive (N)	T	1,339	1,410	1,510	71	171	0.52%	0.60%	1.46%	0.93%	0.57%	
		116-9	9	116-9		Jonas Absalom Drive (W)	L	38	56	39	18	1	3.95%	0.13%				
		116-10	10	116-10	Jonas Absalom Drive (W)	Ocean Drive (S)	R	13	24	20	11	7	6.32%	2.18%				Model rate is reasonable
		116-11	11	116-11		Pacific Drive (E)	T	59	65	61	6	2	0.97%	0.17%	2.08%	1.27%	1.27%	
		116-12	12	116-12		Ocean Drive (N)	L	178	218	241	40	63	2.05%	1.53%				

								Volume (veh)			Growth From 2016 (Veh)		Yearly Compounding Growth From 2016		Yearly Compounding Growth From 2016 By Approach		Adopted Growth	Comment
ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	2016	2026	2036	2026	2036	2026	2036	2026	2036	2036	
117	Ocean Drive	117-1	1	117-1	Ocean Drive (N)	Emerald Drive (W)	R	1,938	2,185	2,241	247	303	1.21%	0.73%				
	Matthew Flinders Drive	117-2	2	117-2		Ocean Drive (S)	T	555	620	609	65	54	1.11%	0.47%	0.87%	0.53%	0.57%	Corridor sectional average growth adopted
	Ocean Drive	117-3	3	117-3		Matthew Flinders Drive (E)	L	470	427	445	-43	-25	-0.95%	-0.27%				
	Emerald Drive	117-4	4	117-4	Matthew Flinders Drive (E)	Ocean Drive (N)	R	461	553	550	92	89	1.84%	0.89%				
		117-5	5	117-5		Emerald Drive (W)	T	20	23	24	3	4	1.41%	0.92%	2.36%	1.02%	1.02%	Model rate is reasonable
		117-6	6	117-6		Ocean Drive (S)	L	165	240	218	75	53	3.82%	1.40%				
		117-7	7	117-7	Ocean Drive (S)	Matthew Flinders Drive (E)	R	143	148	174	5	31	0.34%	0.99%				
		117-8	8	117-8		Ocean Drive (N)	T	1,219	1,294	1,317	75	98	0.60%	0.39%	0.51%	0.44%	0.57%	Corridor sectional average growth adopted
		117-9	9	117-9		Emerald Drive (W)	L	112	109	117	-3	5	-0.27%	0.22%				
		117-10	10	117-10	Emerald Drive (W)	Ocean Drive (S)	R	152	224	213	72	61	3.95%	1.70%				
		117-11	11	117-11		Matthew Flinders Drive (E)	T	246	283	268	37	22	1.41%	0.43%	2.83%	1.63%	1.63%	Model rate is reasonable
		117-12	12	117-12		Ocean Drive (N)	L	475	647	726	172	251	3.14%	2.14%				
					All			5,956	6,753	6,902	797	946	1.26%	0.74%				
118	Ocean Drive	118-1	1	118-1	Ocean Drive (N)	Woolworths Access (W)	R	536	535	525	-1	-11	-0.02%	-0.10%				
	Ocean Drive	118-2	2	118-2		Ocean Drive (S)	T	254	453	430	199	176	5.96%	2.67%	2.26%	0.95%	0.93%	Corridor sectional average growth adopted
	Woolworths Access	118-3	3	118-3	Ocean Drive (S)	Ocean Drive (N)	T	529	601	652	72	123	1.28%	1.05%				
		118-4	4	118-4		Woolworths Access (W)	L	734	774	778	40	44	0.53%	0.29%	0.85%	0.62%	0.93%	Corridor sectional average growth adopted
		118-5	5	118-5	Woolworths Access (W)	Ocean Drive (S)	R	928	926	953	-2	25	-0.02%	0.13%				
		118-6	6	118-6		Ocean Drive (N)	L	888	910	910	22	22	0.25%	0.12%	0.11%	0.13%	0.13%	Model rate is reasonable
					All			3,869	4,199	4,248	330	379	0.82%	0.47%				
119	Abel Tasman Drive	119-1	1	119-1	Abel Tasman Drive (N)	Ocean Drive (W)	R	12	5	10	-7	-2	-8.38%	-0.91%				
	Ocean Drive	119-2	2	119-2		Seaside Drive (S)	T	0	0	1	0	1	N/A	N/A	-2.34%	0.26%	0.26%	Model rate is reasonable
	Seaside Drive	119-3	3	119-3		Ocean Drive (E)	L	7	10	9	3	2	3.63%	1.26%				
	Ocean Drive	119-4	4	119-4	Ocean Drive (E)	Abel Tasman Drive (N)	R	10	8	14	-2	4	-2.21%	1.70%				
		119-5	5	119-5		Ocean Drive (W)	T	1,169	1,188	1,222	19	53	0.16%	0.22%	1.63%	0.76%	0.93%	Corridor sectional average growth adopted
		119-6	6	119-6		Seaside Drive (S)	L	0	190	135	190	135	N/A	N/A				
		119-7	7	119-7	Seaside Drive (S)	Ocean Drive (E)	R	0	14	27	14	27	N/A	N/A				
		119-8	8	119-8		Abel Tasman Drive (N)	T	0	2	1	2	1	N/A	N/A	N/A	N/A	3.00%	Approximately 50% of lots on Seaside Drive are vacant - traffic estimated to double
		119-9	9	119-9		Ocean Drive (W)	L	0	279	355	279	355	N/A	N/A				
		119-10	10	119-10	Ocean Drive (W)	Seaside Drive (S)	R	0	420	453	420	453	N/A	N/A				
		119-11	11	119-11		Ocean Drive (E)	T	1,285	1,383	1,428	98	143	0.74%	0.53%	3.47%	1.96%	0.93%	Corridor sectional average growth adopted
		119-12	12	119-12		Abel Tasman Drive (N)	L	18	30	40	12	22	5.24%	4.07%				
					All			2,501	3,529	3,695	1,028	1,194	3.50%	1.97%				
120	Ocean Drive	120-1	1	120-1	Ocean Drive (NE)	Houston Mitchell Drive (NW)	R	151	261	229	110	78	5.62%	2.10%				
	Public School Access	120-2	2	120-2		Ocean Drive (SW)	T	1,024	1,186	1,331	162	307	1.48%	1.32%	2.21%	1.46%	1.46%	Model result reasonable
	Ocean Drive	120-3	3	120-3		Public School Access (SE)	L	0	15	11	15	11	N/A	N/A				
	Houston Mitchell Drive	120-4	4	120-4	Public School Access (SE)	Ocean Drive (NE)	R	0	7	6	7	6	N/A	N/A				
		120-5	5	120-5		Houston Mitchell Drive (NW)	T	0	148	71	148	71	N/A	N/A	N/A	N/A	Abs.	Absolute values obtained from Area 14 and industrial development TIAs
		120-6	6	120-6		Ocean Drive (SW)	L	0	181	227	181	227	N/A	N/A				
		120-7	7	120-7	Ocean Drive (SW)	Public School Access (SE)	R	0	55	60	55	60	N/A	N/A				
		120-8	8	120-8		Ocean Drive (NE)	T	793	897	910	104	117	1.24%	0.69%	1.50%	1.07%	1.07%	Model result reasonable
		120-9	9	120-9		Houston Mitchell Drive (NW)	L	187	185	242	-2	55	-0.11%	1.30%				
		120-10	10	120-10	Houston Mitchell Drive (NW)	Ocean Drive (SW)	R	366	456	524	90	158	2.22%	1.81%				
		120-11	11	120-11		Public School Access (SE)	T	0	397	368	397	368	N/A	N/A	7.29%	3.89%	Abs.	Absolute values obtained from Area 14 and industrial development TIAs
		120-12	12	120-12		Ocean Drive (NE)	L	524	945	1,018	421	494	6.07%	3.38%				
					All			3,045	4,733	4,997	1,688	1,952	4.51%	2.51%				
121	Beach Street	121-1	1	121-1	Beach Street (N)	Ocean Drive (W)	R	84	94	104	10	20	1.13%	1.07%				
	Ocean Drive	121-2	2	121-2		Ocean Drive (E)	L	34	32	42	-2	8	-0.60%	1.06%	0.66%	1.07%	1.07%	Model result reasonable
	Ocean Drive	121-3	3	121-3	Ocean Drive (E)	Beach Street (N)	R	7	4	9	-3	2	-5.44%	1.26%				
		121-4	4	121-4		Ocean Drive (W)	T	740	848	908	108	168	1.37%	1.03%	1.32%	1.03%	0.93%	Corridor sectional average growth adopted
		121-5	5	121-5	Ocean Drive (W)	Ocean Drive (E)	T	1,037	1,340	1,478	303	441	2.60%	1.79%				
		121-6	6	121-6		Beach Street (N)	L	119	151	188	32	69	2.41%	2.31%	2.58%	1.84%	0.93%	Corridor sectional average growth adopted
					All			2,021	2,469	2,729	448	708	2.02%	1.51%				
122	Ocean Drive	122-1	1	122-1	Ocean Drive (N)	Ocean Drive (W)	R	396	482	487	86	91	1.98%	1.04%				
	The Parade	122-2	2	122-2		The Parade (E)	L	349	444	456	95	107	2.44%	1.35%	2.20%	1.19%	0.89%	Corridor sectional average growth adopted
	Ocean Drive	122-3	3	122-3	The Parade (E)	Ocean Drive (N)	R	0	0	3	0	3	N/A	N/A				
		122-4	4	122-4		Ocean Drive (W)	T	63	36	45	-27	-18	-5.44%	-1.67%	-5.44%	-1.35%	0.00%	No growth expected (closed catchment)
		122-5	5	122-5	Ocean Drive (W)	The Parade (E)	T	625	669	669	44	44	0.68%	0.34%				
		122-6	6	122-6		Ocean Drive (N)	L	563	684	702	121	139	1.97%	1.11%	1.31%	0.72%	0.89%	Corridor sectional average growth adopted
					All			1,996	2,315	2,362	319	366	1.49%	0.85%				
123	Kew Road	123-1	1	123-1	Kew Road (N)	Kew Road (S)	T	830	882	858	52	28	0.61%	0.17%				
	Ocean Drive	123-2	2	123-2		Ocean Drive (E)	L	686	729	778	43	92	0.61%	0.63%	0.61%	0.38%	0.89%	Corridor sectional average growth adopted
	Kew Road	123-3	3	123-3	Ocean Drive (E)	Kew Road (N)	R	707	754	842	47	135	0.65%	0.88%				
		123-4	4	123-4		Kew Road (S)	L	0	0	0	0	0	N/A	N/A	0.65%	0.88%	0.89%	Corridor sectional average growth adopted
		123-5	5	123-5	Kew Road (S)	Ocean Drive (E)	R	4	18	9	14	5	16.23%	4.14%				
		123-6	6	123-6		Kew Road (N)	T	672	718	715	46	43	0.66%	0.31%	0.85%	0.34%	0.34%	Model result reasonable
					All			2,899	3,101	3,202	202	303	0.68%	0.50%				
124	Sirius Drive	124-1	1	124-1	Sirius Drive (N)	Ocean Drive (W)	R	424	639	732	215	308	4.19%	2.77%				
	Ocean Drive	124-2	2	124-2		Ocean Drive (E)	L	458	450	458	-8	0	-0.18%	0.00%	2.13%	1.51%	1.51%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
	Ocean Drive	124-3	3	124-3	Ocean Drive (E)	Sirius Drive (N)	R	543	565	579	22	36	0.40%	0.32%				
		124-4	4	124-4		Ocean Drive (W)	T	842	905	977	63	135	0.72%	0.75%	0.60%	0.58%	1.10%	Corridor sectional average growth adopted
		124-5	5	124-5	Ocean Drive (W)	Ocean Drive (E)	T	993	1,084	1,112	91	119	0.88%	0.57%				
		124-6	6	124-6		Sirius Drive (N)	L	327	496	620	169	293	4.25%	3.25%	1.81%	1.37%	1.10%	Corridor sectional average growth adopted
					All			3,587	4,139	4,478	552	891	1.44%	1.12%				
125	Pacific Highway Off-ramp	125-1	1	125-1	Pacific Highway Off-ramp (N)	Ocean Drive (W)	R	212	331	433	119	221	4.56%	3.64%				
	Ocean Drive	125-2	2	125-2		Pacific Highway On-ramp (S)	T	0	0	0	0	0	N/A	N/A	3.24%	2.53%	2.53%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
	Pacific Highway On-ramp	125-3	3	125-3		Ocean Drive (E)	L	597	782	901	185	304	2.74%	2.08%				
	Ocean Drive	125-4	4	125-4	Ocean Drive (E)	Ocean Drive (W)	T	1,135	1,400	1,549	265	414	2.12%	1.57%				
		125-5	5	125-5		Pacific Highway On-ramp (S)	L	129	136	149	7	20	0.53%	0.72%	1.97%	1.49%	1.49%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
		125-6	6	125-6	Ocean Drive (W)	Pacific Highway On-ramp (S)	R	64	66	71	2	7	0.31%	0.52%				
		125-7	7	125-7		Ocean Drive (E)	T	778	853	889	75	111	0.92%	0.67%	0.88%	0.66%	1.10%	Corridor sectional average growth adopted

								Volume (veh)			Growth From 2016 (Veh)		Yearly Compounding Growth From 2016		Yearly Compounding Growth From 2016 By Approach		Adopted Growth	Comment
ID	Intersection	Aimsun Code	Turn Number	Movement Code	From	To	Turn	2016	2026	2036	2026	2036	2026	2036	2026	2036	2036	
126	Nancy Bird Walton Drive	126-1	1	126-1	Nancy Bird Walton Drive (N)	Kendall Road (W)	R	10	12	13	2	3	1.84%	1.32%				
	Ocean Drive	126-2	2	126-2		Nancy Bird Walton Drive (S)	T	9	9	8	0	-1	0.00%	-0.59%	1.66%	0.60%	0.60%	Model results reasonable
	Nancy Bird Walton Drive	126-3	3	126-3		Ocean Drive (E)	L	20	25	23	5	3	2.26%	0.70%				
	Kendall Road	126-4	4	126-4	Ocean Drive (E)	Nancy Bird Walton Drive (N)	R	778	1,032	1,108	254	330	2.87%	1.78%				
		126-5	5	126-5		Kendall Road (W)	T	532	654	827	122	295	2.09%	2.23%	2.57%	1.96%	1.96%	Model results are reasonable - additional growth likely with Area 15 (relative to typical corridor section)
		126-6	6	126-6		Nancy Bird Walton Drive (S)	L	32	44	43	12	11	3.24%	1.49%				
		126-7	7	126-7	Nancy Bird Walton Drive (S)	Ocean Drive (E)	R	402	419	445	17	43	0.42%	0.51%				
		126-8	8	126-8		Nancy Bird Walton Drive (N)	T	0	0	0	0	0	N/A	N/A	0.42%	0.53%	1.10%	Corridor sectional average growth adopted
		126-9	9	126-9		Kendall Road (W)	L	87	91	99	4	12	0.45%	0.65%				
		126-10	10	126-10	Kendall Road (W)	Nancy Bird Walton Drive (S)	R	16	13	10	-3	-6	-2.05%	-2.32%				
		126-11	11	126-11		Ocean Drive (E)	T	420	477	494	57	74	1.28%	0.81%	2.04%	1.27%	1.27%	Model results reasonable
		126-12	12	126-12		Nancy Bird Walton Drive (N)	L	203	292	319	89	116	3.70%	2.29%				
					All			2,509	3,068	3,389	559	880	2.03%	1.51%				

Section 1	Boundary Street				Boundary Street	Oxley	T	20,139	21,293	21,132	1,154	993	0.56%	0.24%	0.56%	0.24%		
	to Oxley Highway																	
	Oxley Highway				Boundary Street	Oxley	T	15,545	17,976	20,536	2,431	4,991	1.46%	1.40%	1.46%	1.40%		
	to Boundary Street																	
					All			35,684	39,269	41,668	3,585	5,984	0.96%	0.78%	0.96%	0.78%		

Section 2	Table St				Table Street	Lake Road	T	6,203	6,071	6,310	-132	107	-0.21%	0.09%	-0.21%	0.09%		
	to Lake Road																	
	Lake Road				Lake Road	Table Street	T	6,124	5,443	5,949			-1.17%	-0.14%	-1.17%	-0.14%		
	to Table St																	
					All			12,327	11,514	12,259	-813	-68	-0.68%	-0.03%	-0.68%	-0.03%		

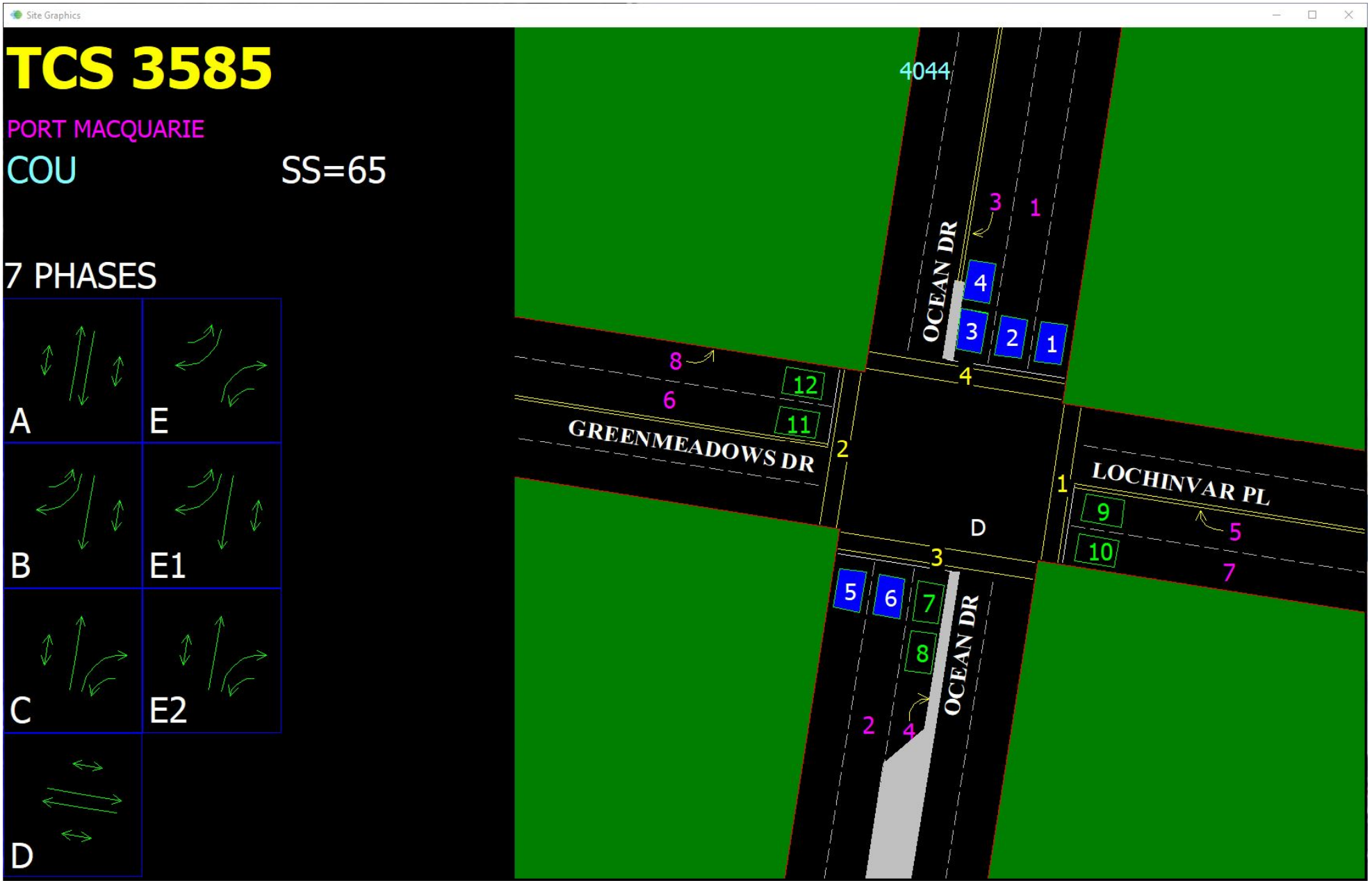
Section 3	Koala St				Koala Street	Mathew Flinders	T	14,902	16,386	16,204	1,484	1,302	0.95%	0.42%	0.95%	0.42%		
	to Mathew Flinders																	
	Lake Road				Mathew Flinders	Koala Street	T	10,741	11,900	12,531	1,159	1,790	1.03%	0.77%	1.03%	0.77%		
	to Table St																	
					All			25,643	28,286	28,735	2,643	3,092	0.99%	0.57%	0.99%	0.57%		

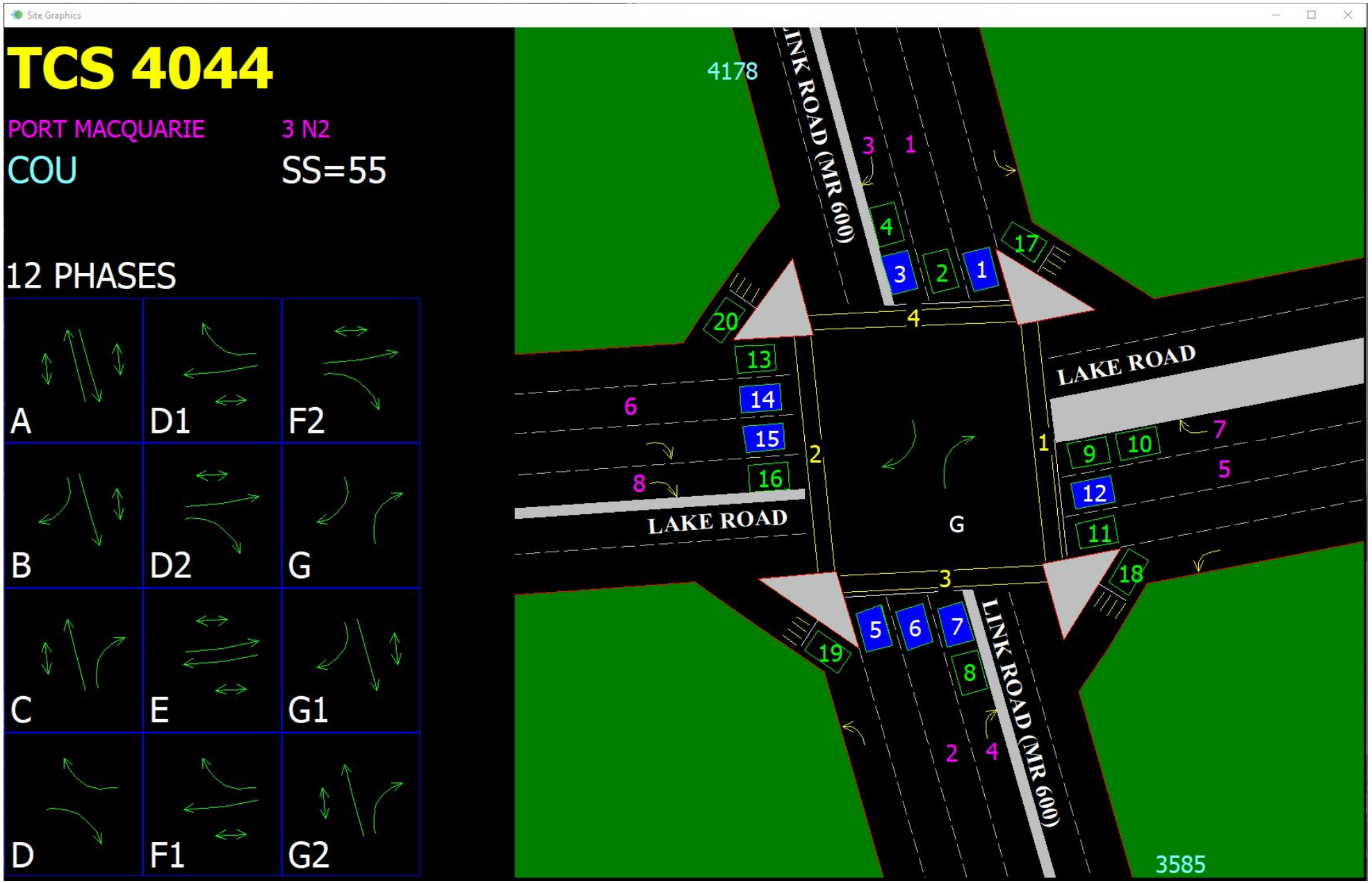
Section 4	Woolworths Access (Lake Cathie)				Woolworths Access	Beach Street	T	3,303	3,870	4,097	567	794	1.60%	1.08%	1.60%	1.08%		
	to Beach St																	
	Beach St				Beach Street	Woolworths Access	T	3,347	3,729	3,898	382	551	1.09%	0.76%	1.09%	0.76%		
	Woolworths Access																	
					All			6,650	7,599	7,995	949	1,345	1.34%	0.93%	1.34%	0.93%		

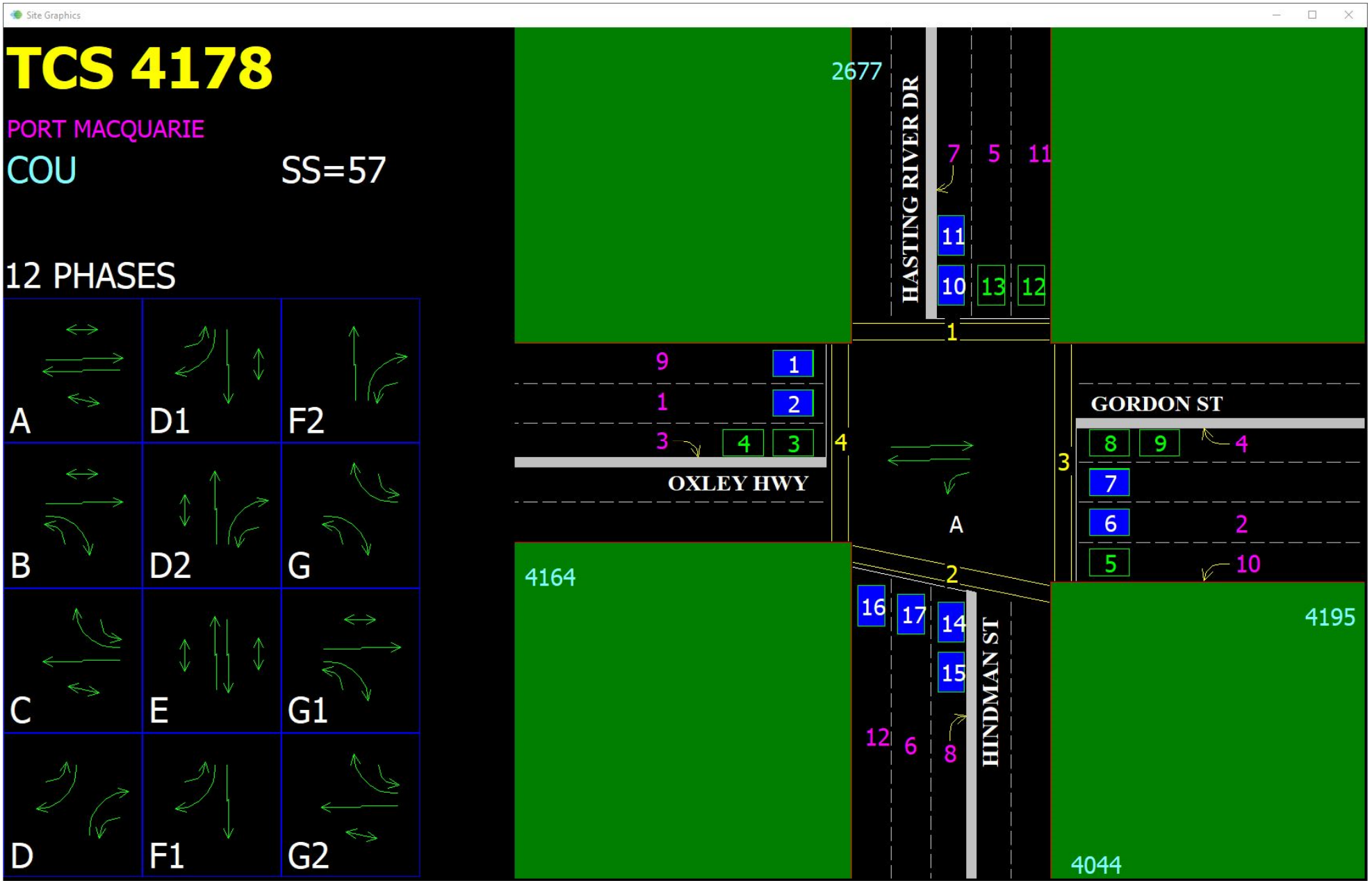
Section 5	The Parade				The Parade	Kew Road	T	1,103	1,236	1,329	133	226	1.14%	0.94%	1.14%	0.94%		
	to Kew Road																	
	Beach St				Kew Road	The Parade	T	1,249	1,413	1,480	164	231	1.24%	0.85%	1.24%	0.85%		
	Woolworths Access																	
					All			2,352	2,649	2,809	297	457	1.20%	0.89%	1.20%	0.89%		

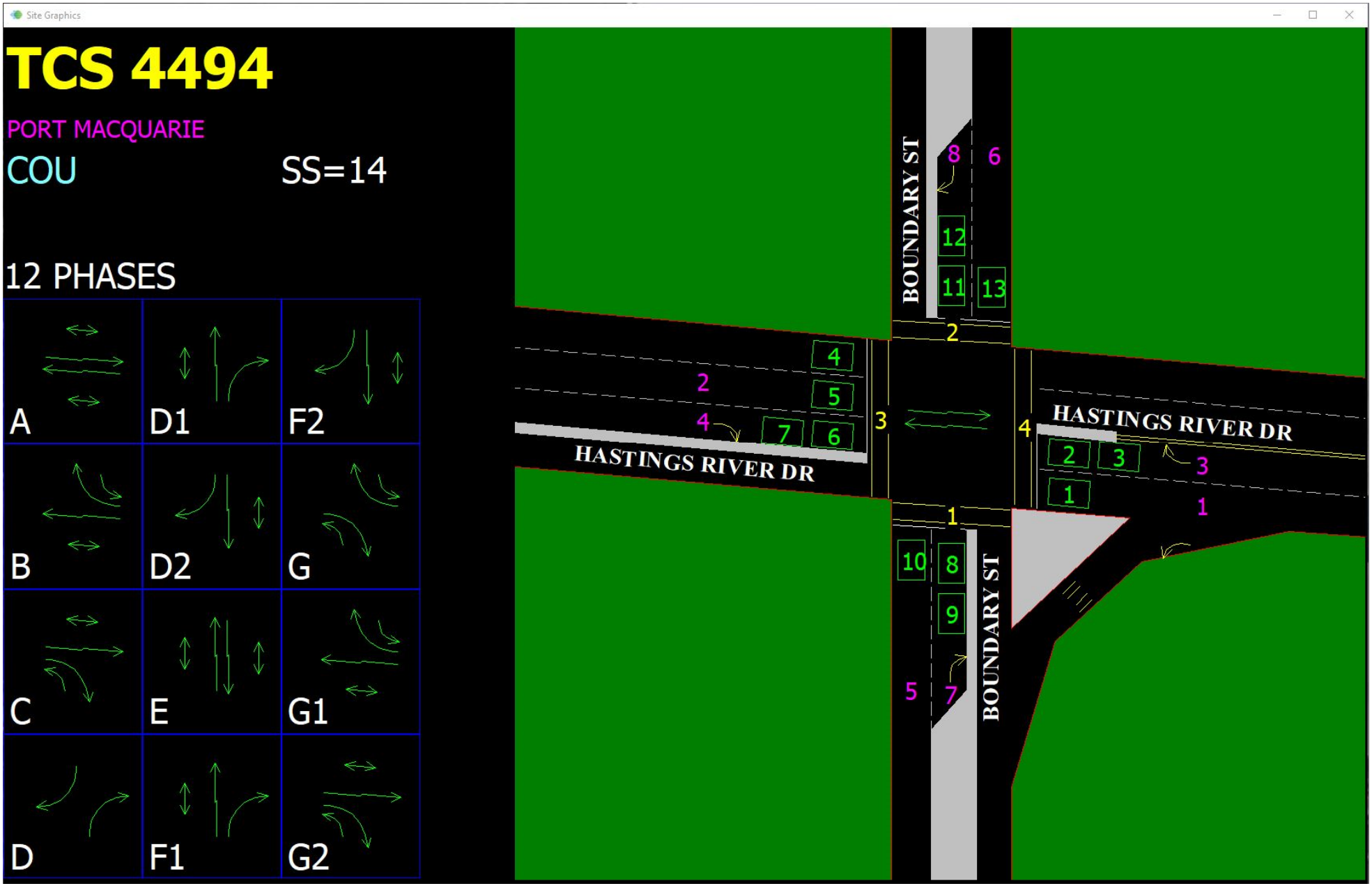
Section 6	Sirus Drive to				Sirus Drive	Nancy Bird	T	2,509	2,959	3,353	450	844	1.66%	1.46%	1.66%	1.46%		
	Nancy Bird																	
	Nancy Bird to				Nancy Bird	Sirus Drive	T	2,191	2,414	2,495	223	304	0.97%	0.65%	0.97%	0.65%		
	Sirus Drive to																	
					All			4,700	5,373	5,848	673	1,148	1.35%	1.10%	1.35%	1.10%		

Appendix E: SCATS Phasing


Site Graphics
TCS 3585
PORT MACQUARIE
COU
SS=65
7 PHASES
A
E
B
E1
C
E2
D
4044
OCEAN DR
GREENMEADOWS DR
LOCHINVAR PL
OCEAN DR
D


Site Graphics
TCS 4044
PORT MACQUARIE
3 N2
COU
SS=55
12 PHASES
A
D1
F2
B
D2
G
C
E
G1
D
F1
G2
4178
LINK ROAD (MR 600)
LAKE ROAD
LAKE ROAD
LINK ROAD (MR 600)
G
3585

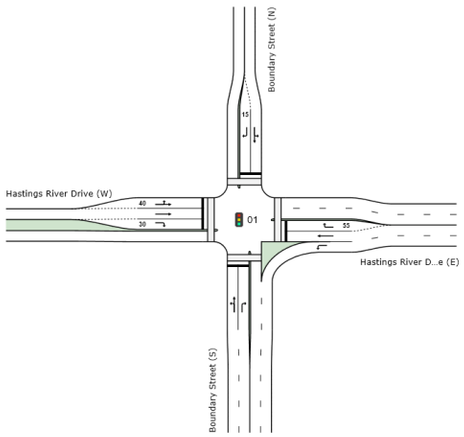
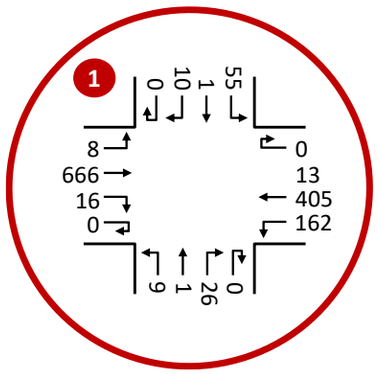
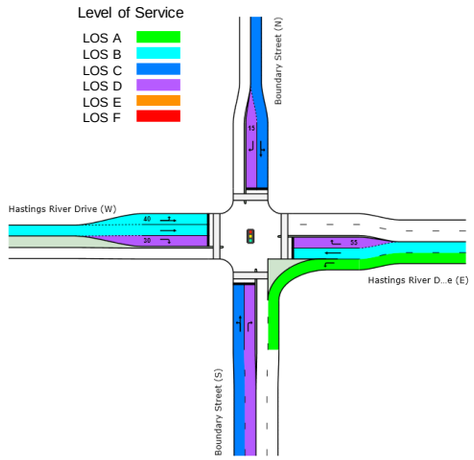
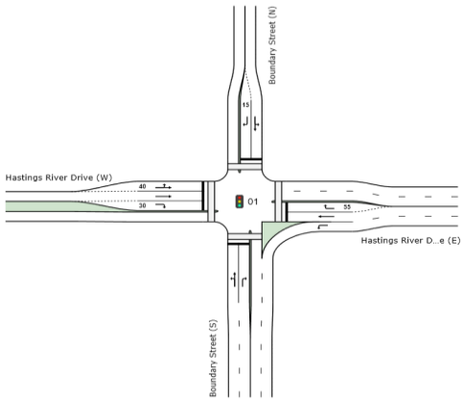
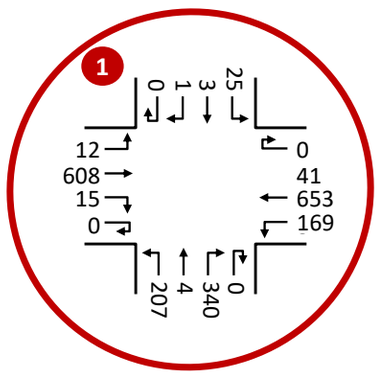
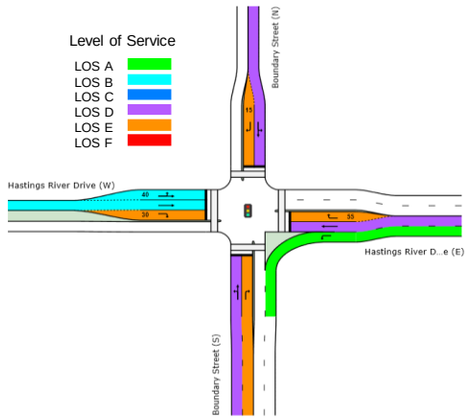

Site Graphics
TCS 4178
PORT MACQUARIE
COU
SS=57
12 PHASES
A
D1
F2
B
D2
G
C
E
G1
D
F1
G2
2677
HASTING RIVER DR
7
5
11
11
10
13
12
1
9
1
1
2
3
4
3
4
OXLEY HWY
A
GORDON ST
8
9
4
7
6
2
5
10
3
4164
2
16
17
14
15
12
6
8
HINDMAN ST
4195
4044


Site Graphics
TCS 4494
PORT MACQUARIE
COU
SS=14
12 PHASES
A
D1
F2
B
D2
G
C
E
G1
D
F1
G2
BOUNDARY ST
HASTINGS RIVER DR
HASTINGS RIVER DR
BOUNDARY ST

Appendix F: Intersection Performance Summaries

1. Boundary Street / Hastings River Drive

2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS B and the degree of saturation is 0.48 , which is within the acceptable limit of 0.9.The right-turns present as LOS D, this is due to relatively high delays for these movements. However the volumes are low and queues are contained in the right-turn pockets. The average delay across the intersection is 18 seconds.
PM Peak		PM Peak 16:15 - 17:15 			Overall the intersection has LOS C and the degree of saturation is 0.91 , which is just **outside** the acceptable limit of 0.9. The average delay across the intersection is 41 seconds. The right turn for the southern approach operates at LOS E and is the worst performing movement.

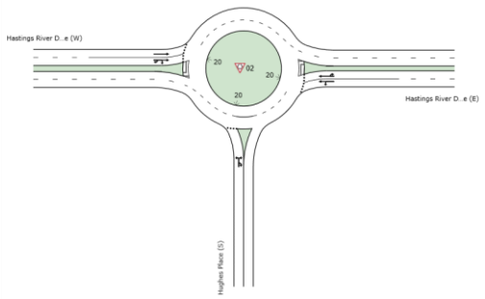
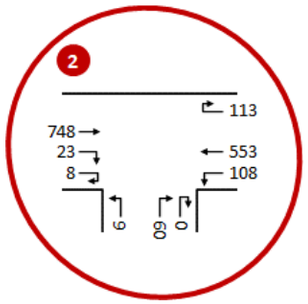
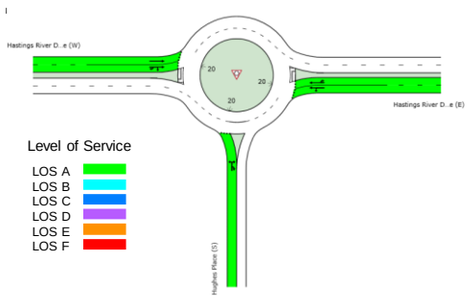
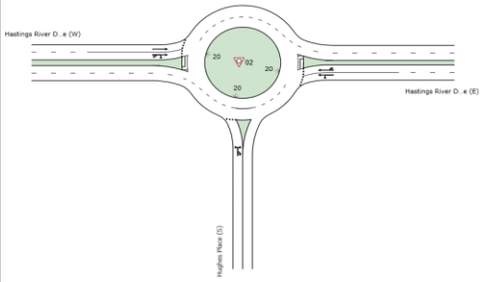
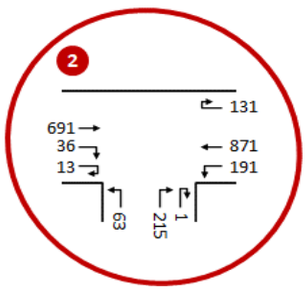
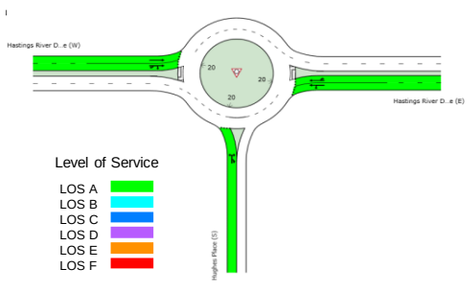
Intersection Performance

Movement II OD Movement		HV%	DOS	Avg. Delay (S)	LOS	95th Percentile BoQ (m)
South: Boundary Street (S)						
1	L2	0	0.03	34	LOS C	2.5
2	T1	0	0.03	29.5	LOS C	2.5
3	R2	21.7	0.26	51.1	LOS D	10.2
Approach		15.7	0.26	46.2	LOS D	10.2
East: Hastings River Drive (E)						
4	L2	8.5	0.1	5.7	LOS A	0
5	T1	5.7	0.48	17	LOS B	92.5
6	R2	0	0.11	50.5	LOS D	4.2
Approach		6.4	0.48	14.6	LOS B	92.5
North: Boundary Street (N)						
7	L2	1.9	0.13	32.6	LOS C	14.3
8	T1	0	0.13	28	LOS B	14.3
9	R2	0	0.09	49.3	LOS D	3.2
Approach		1.6	0.13	35	LOS C	14.3
West: Hastings River Drive (W)						
10	L2	42.9	0.41	22.2	LOS B	71.9
11	T1	2.8	0.41	16.1	LOS B	71.9
12	R2	21.4	0.16	51.5	LOS D	6.2
Approach		3.7	0.41	17	LOS B	71.9
All Vehicles		5	0.48	17.6	LOS B	92.5

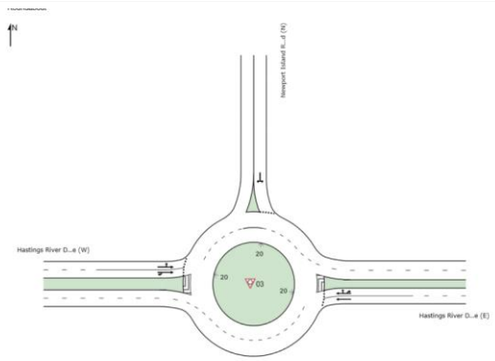
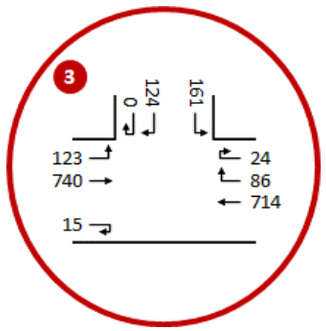
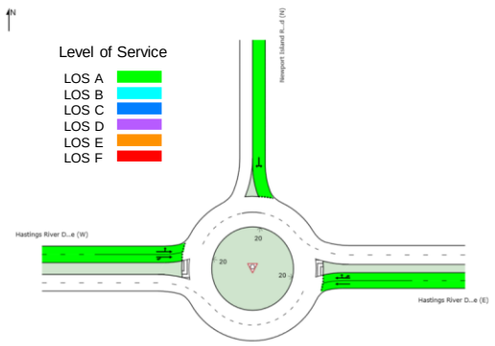
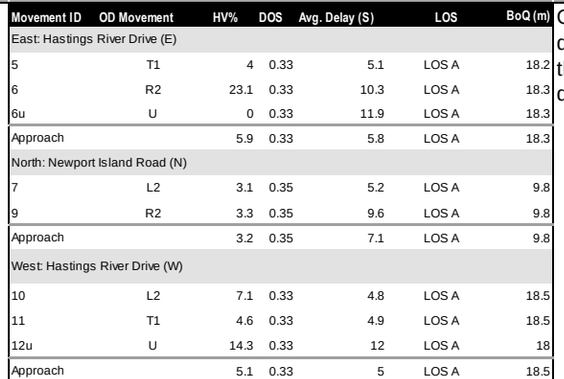
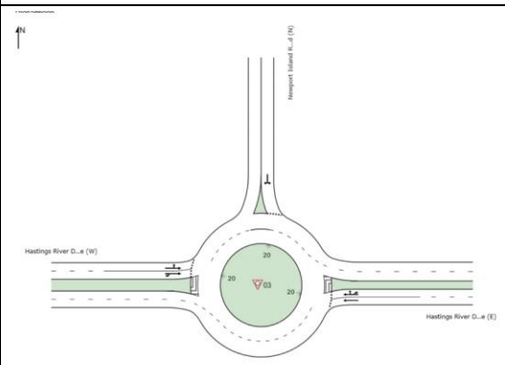
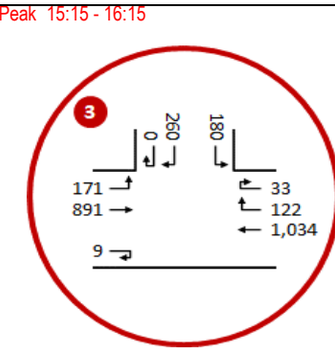
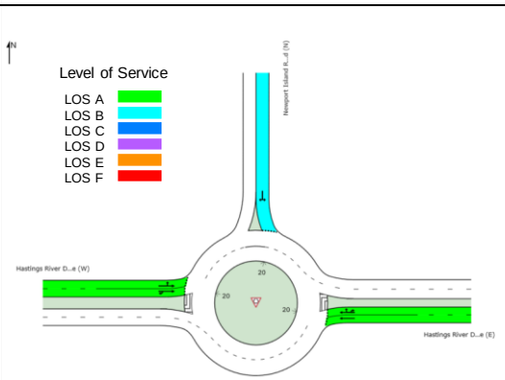
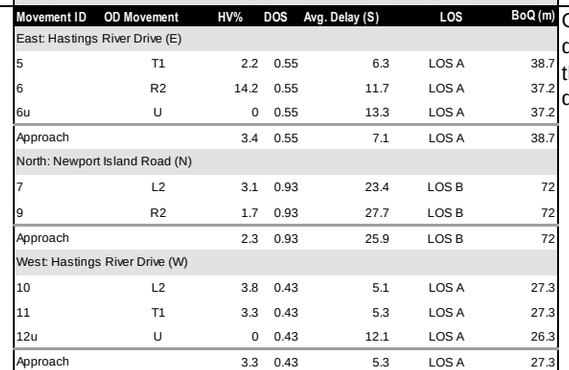
Intersection Performance

Movement II OD Movement		HV%	DOS	Avg. Delay (S)	LOS	95th Percentile BoQ (m)
South: Boundary Street (S)						
1	L2	6.7	0.62	51.2	LOS D	88.4
2	T1	0	0.62	46.5	LOS D	88.4
3	R2	2.9	0.91	69.7	LOS E	175.7
Approach		4.3	0.91	62.6	LOS E	175.7
East: Hastings River Drive (E)						
4	L2	11.7	0.1	5.7	LOS A	0
5	T1	4.6	0.89	45.1	LOS D	308.6
6	R2	0	0.47	69.6	LOS E	18.5
Approach		5.8	0.89	38.5	LOS C	308.6
North: Boundary Street (N)						
7	L2	5.3	0.09	48.6	LOS D	10.5
8	T1	0	0.09	44	LOS D	10.5
9	R2	0	0.01	64.6	LOS E	0.4
Approach		4.5	0.09	48.7	LOS D	10.5
West: Hastings River Drive (W)						
10	L2	0	0.52	31	LOS C	93.3
11	T1	2.3	0.52	25.4	LOS B	93.4
12	R2	16.7	0.19	68.6	LOS E	7.6
Approach		2.6	0.52	26.6	LOS B	93.4
All Vehicles		4.4	0.91	41.4	LOS C	308.6

2. Hastings River Drive / Hughes Place
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / 95th Percentile BoQ (m) South: Hughes Place (S) 1 L2 11.1 0.09 5.5 LOS A 2.5 3 R2 3.4 0.09 9.7 LOS A 2.5 3u U 0 0.09 13.2 LOS A 2.5 Approach 4.4 0.09 9.2 LOS A 2.5 East: Hastings River Drive (E) 4 L2 0 0.26 4.2 LOS A 14.1 5 T1 5.6 0.26 4.4 LOS A 14.1 6u U 2.9 0.26 11.2 LOS A 14 Approach 4.4 0.26 5.4 LOS A 14.1 West: Hastings River Drive (W) 11 T1 3.8 0.31 5.3 LOS A 15.7 12 R2 0 0.31 10 LOS A 15.4 12u U 14.3 0.31 12.5 LOS A 15.4 Approach 3.8 0.31 5.5 LOS A 15.7 All Vehicles 4.1 0.31 5.6 LOS A 15.7	Overall the intersection has LOS A and the degree of saturation is 0.31 , which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / 95th Percentile BoQ (m) South: Hughes Place (S) 1 L2 0 0.42 7.6 LOS A 15 3 R2 1 0.42 12.1 LOS A 15 3u U 0 0.42 15.7 LOS B 15 Approach 0.7 0.42 11.1 LOS A 15 East: Hastings River Drive (E) 4 L2 0.6 0.41 4.4 LOS A 27.1 5 T1 3 0.41 4.5 LOS A 27.1 6u U 2.5 0.41 11.4 LOS A 26.7 Approach 2.5 0.41 5.3 LOS A 27.1 West: Hastings River Drive (W) 11 T1 4.4 0.35 6.5 LOS A 19.5 12 R2 0 0.35 11.4 LOS A 18.4 12u U 0 0.35 13.5 LOS A 18.4 Approach 4.1 0.35 6.9 LOS A 19.5 All Vehicles 2.8 0.42 6.6 LOS A 27.1	Overall intersection has LOS A and the degree of saturation is 0.42 , which is within the acceptable limit of 0.85.The average delay across the intersection is 7 seconds.

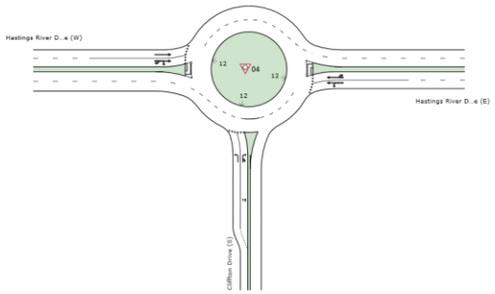
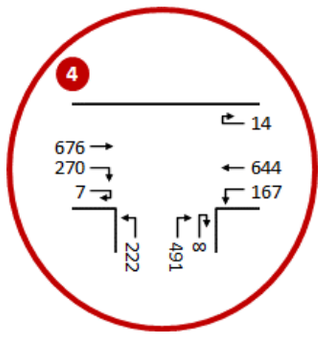
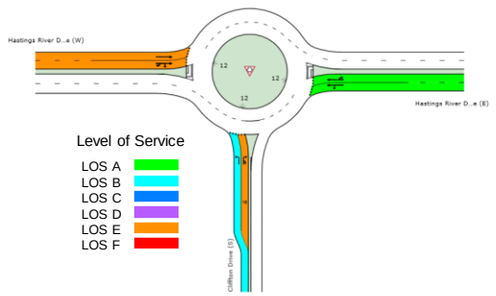
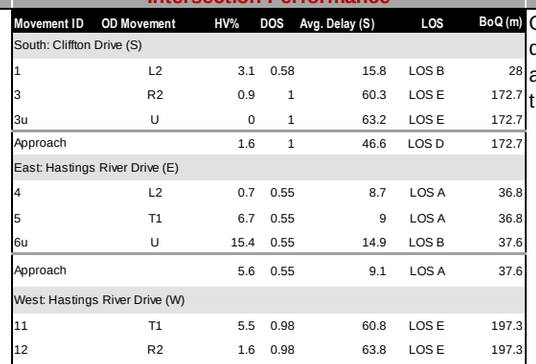
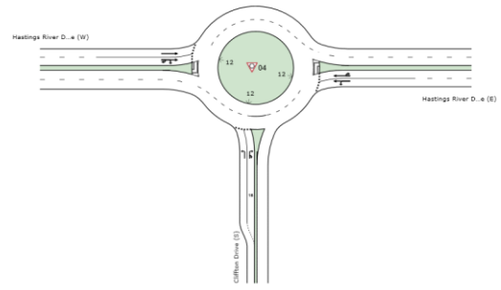
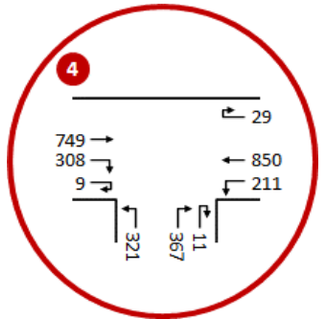
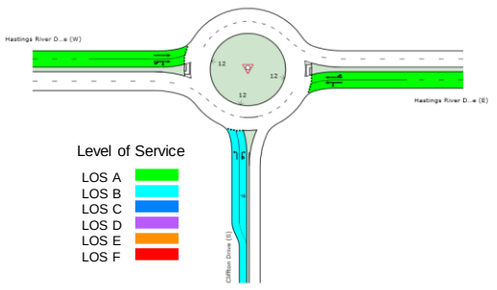
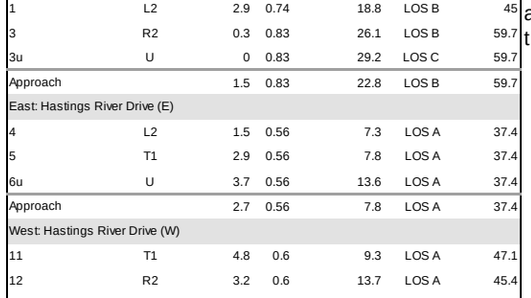
3. Hastings River Drive / Newport Island Road
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS A and the degree of saturation is 0.35, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.
PM Peak		PM Peak 15:15 - 16:15 			Overall the intersection has LOS B and the degree of saturation is 0.93 , which is **above** the acceptable limit of 0.85.The average delay across the intersection is 10 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	4	0.33	5.1	LOS A	18.2
6	R2	23.1	0.33	10.3	LOS A	18.3
6u	U	0	0.33	11.9	LOS A	18.3
Approach		5.9	0.33	5.8	LOS A	18.3
North: Newport Island Road (N)						
7	L2	3.1	0.35	5.2	LOS A	9.8
9	R2	3.3	0.35	9.6	LOS A	9.8
Approach		3.2	0.35	7.1	LOS A	9.8
West: Hastings River Drive (W)						
10	L2	7.1	0.33	4.8	LOS A	18.5
11	T1	4.6	0.33	4.9	LOS A	18.5
12u	U	14.3	0.33	12	LOS A	18
Approach		5.1	0.33	5	LOS A	18.5
All Vehicles		5.2	0.35	5.7	LOS A	18.5

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	2.2	0.55	6.3	LOS A	38.7
6	R2	14.2	0.55	11.7	LOS A	37.2
6u	U	0	0.55	13.3	LOS A	37.2
Approach		3.4	0.55	7.1	LOS A	38.7
North: Newport Island Road (N)						
7	L2	3.1	0.93	23.4	LOS B	72
9	R2	1.7	0.93	27.7	LOS B	72
Approach		2.3	0.93	25.9	LOS B	72
West: Hastings River Drive (W)						
10	L2	3.8	0.43	5.1	LOS A	27.3
11	T1	3.3	0.43	5.3	LOS A	27.3
12u	U	0	0.43	12.1	LOS A	26.3
Approach		3.3	0.43	5.3	LOS A	27.3
All Vehicles		3.2	0.93	9.5	LOS A	72

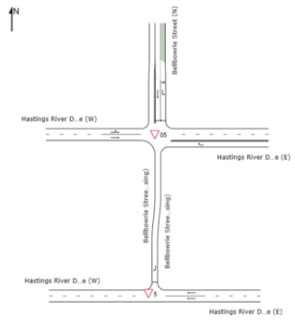
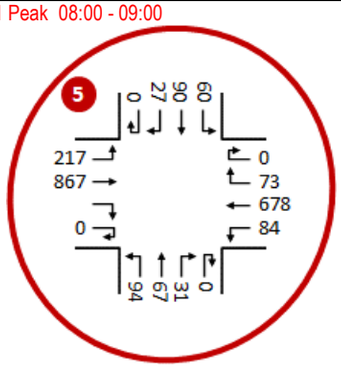
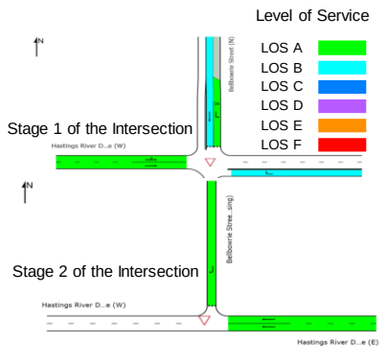
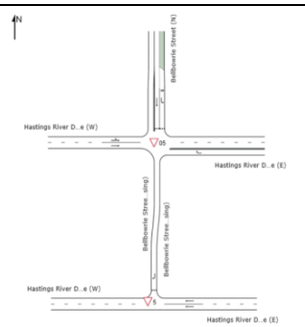
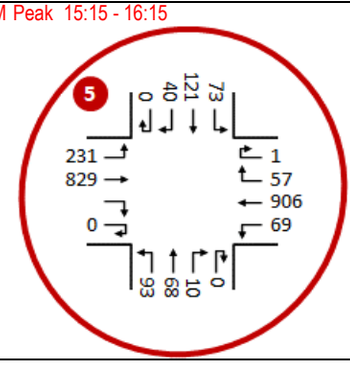
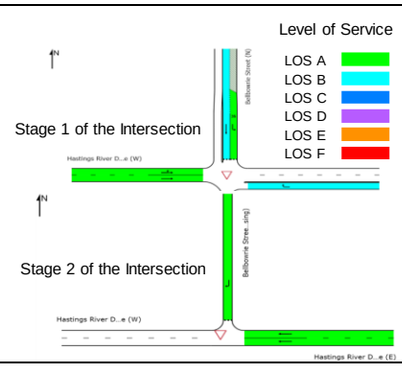
4. Street Hastings River Drive / Clifton Drive
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS E and the degree of saturation is 1.00, which is **above** the acceptable limit of 0.85.The average delay across the intersection is 40 seconds.
PM Peak		PM Peak 15:00 - 16:00 			Overall the intersection has LOS B and the degree of saturation is 0.83, which is within the acceptable limit of 0.85.The average delay across the intersection is 13 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Cliffton Drive (S)						
1	L2	3.1	0.58	15.8	LOS B	28
3	R2	0.9	1	60.3	LOS E	172.7
3u	U	0	1	63.2	LOS E	172.7
Approach		1.6	1	46.6	LOS D	172.7
East: Hastings River Drive (E)						
4	L2	0.7	0.55	8.7	LOS A	36.8
5	T1	6.7	0.55	9	LOS A	36.8
6u	U	15.4	0.55	14.9	LOS B	37.6
Approach		5.6	0.55	9.1	LOS A	37.6
West: Hastings River Drive (W)						
11	T1	5.5	0.98	60.8	LOS E	197.3
12	R2	1.6	0.98	63.8	LOS E	197.3
12u	U	0	0.98	65.5	LOS E	197.3
Approach		4.4	0.98	61.7	LOS E	199
All Vehicles		4	1.00	40	LOS C	199

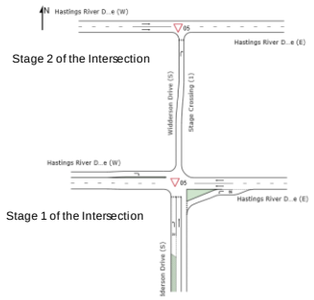
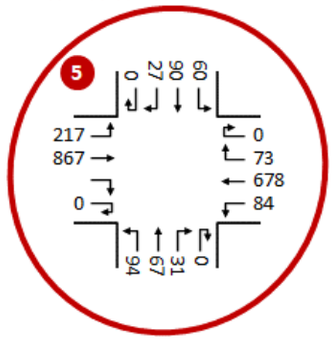
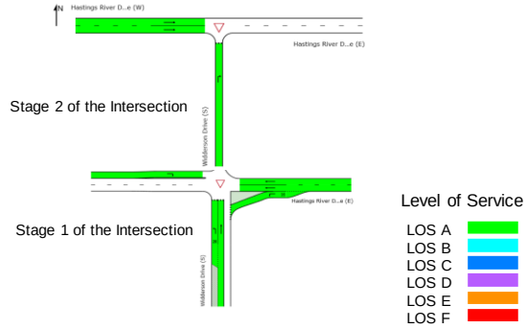
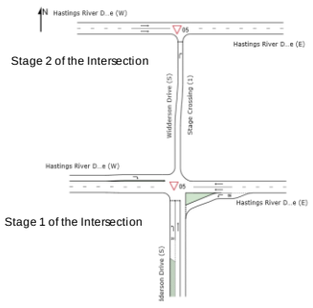
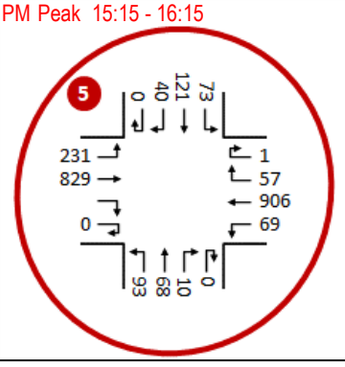
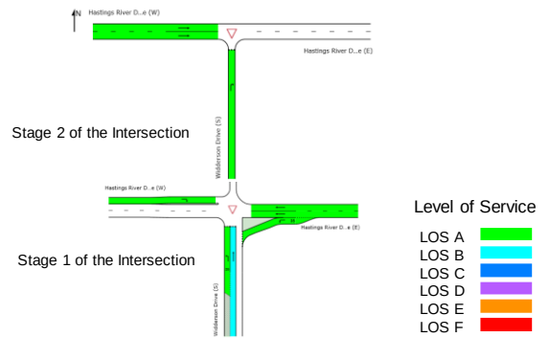
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Cliffton Drive (S)						
1	L2	2.9	0.74	18.8	LOS B	45
3	R2	0.3	0.83	26.1	LOS B	59.7
3u	U	0	0.83	29.2	LOS C	59.7
Approach		1.5	0.83	22.8	LOS B	59.7
East: Hastings River Drive (E)						
4	L2	1.5	0.56	7.3	LOS A	37.4
5	T1	2.9	0.56	7.8	LOS A	37.4
6u	U	3.7	0.56	13.6	LOS A	37.4
Approach		2.7	0.56	7.8	LOS A	37.4
West: Hastings River Drive (W)						
11	T1	4.8	0.6	9.3	LOS A	47.1
12	R2	3.2	0.6	13.7	LOS A	45.4
12u	U	0	0.6	15.3	LOS B	45.4
Approach		4.3	0.6	10.6	LOS A	47.1
All Vehicles		3	0.83	12.5	LOS A	59.7

5.1. Hastings River Drive / Bellbowrie Street / Widderson Street
2030

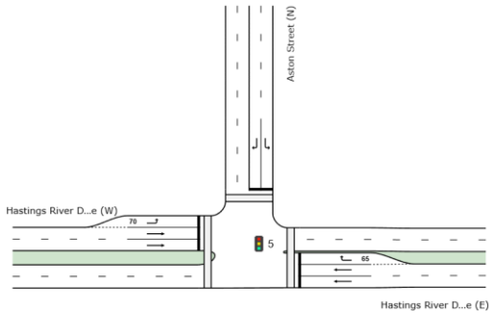
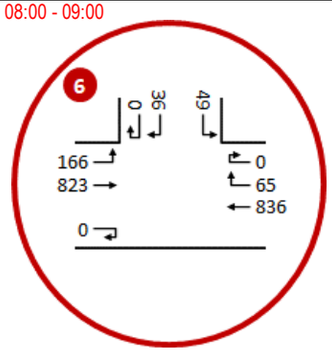
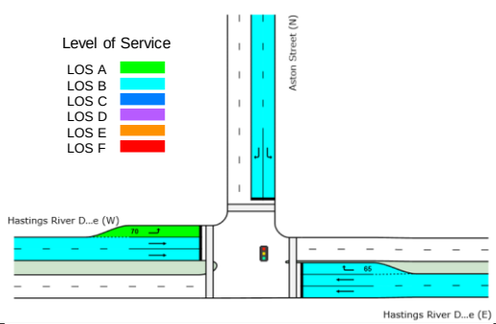
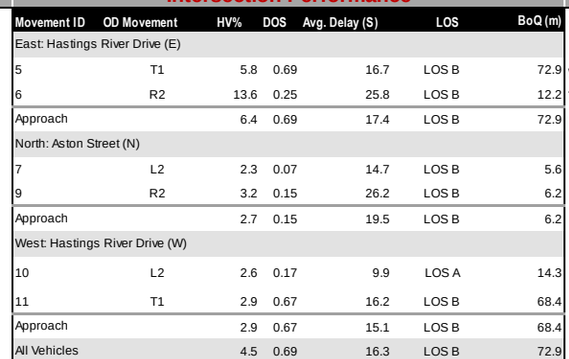
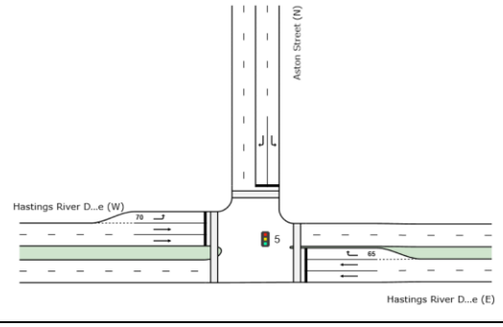
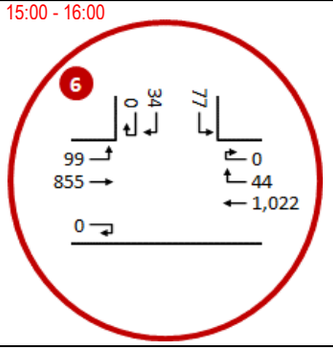
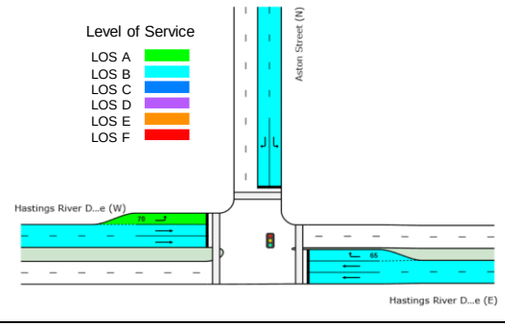
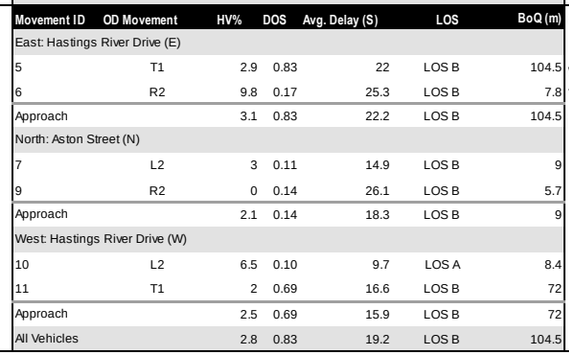
Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S / LOS / BoQ (m) East: Hastings River Drive (E) 6 R2 10.2 0.65 29.7 LOS C 8.2 7 T1 10.2 0.19 0 LOS A 0 Approach 10.2 0.65 29.7 NA 8.2 North: Bellbowrie Street (N) 8 L2 7.3 0.14 6.1 LOS A 1.7 9 T1 0 0.13 20.1 LOS B 1.2 Approach 6.2 0.14 8.2 LOS A 1.7 West: Hastings River Drive (W) 10 L2 2.5 0.3 5.6 LOS A 0 11 T1 3.4 0.3 0 LOS A 0 Approach 3.2 0.3 1 NA 0 All Vehicles 4.3 0.65 4.7 NA 5.6	Overall the intersection has a LOS C and the degree of saturation is 0.65, which is within the acceptable limit of 0.80.The average delay across the intersection is 5 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S / LOS / BoQ (m) East: Hastings River Drive (E) 6 R2 11.1 0.39 18.7 LOS B 5 7 T1 11.1 0.25 0 LOS A 0 Approach 11.1 0.39 18.7 NA 5 North: Bellbowrie Street (N) 8 L2 5.7 0.18 6 LOS A 2.2 9 T1 0 0.18 19.8 LOS B 1.8 Approach 4.7 0.18 8.3 LOS A 2.2 West: Hastings River Drive (W) 10 L2 2.3 0.29 5.6 LOS A 0 11 T1 3.5 0.29 0 LOS A 0 Approach 3.2 0.29 1.1 NA 0 All Vehicles 4.1 0.39 3.8 NA 5	Overall the intersection has a LOS B and the degree of saturation is 0.39, which is within the acceptable limit of 0.80.The average delay across the intersection is 4 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.

5.2. Hastings River Drive / Bellbowrie Street / Widderson Street

2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (s / LOS / BoQ (m) South: Widderson Drive (S) 1 L2 12.8 0.14 6.1 LOS A 1.8 2 R2 0 0.08 12.3 LOS A 0.8 Approach 10.7 0.14 7.1 LOS A 1.8 East: Hastings River Drive (E) 4 L2 5.3 0.06 6.3 LOS A 0.7 5 T1 5.7 0.17 0 LOS A 0 Approach 5.6 0.17 0.7 LOS A 0.7 West: Hastings River Drive (W) 12 R2 10.3 0.27 9 LOS A 3.6 Approach 10.3 0.27 9 NA 3.6 All Vehicles 7.2 0.27 3.1 NA 3.6	Overall the intersection has LOS A and the degree of saturation is 0.27, which is within the acceptable limit of 0.80.The average delay across the intersection is 3 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (s / LOS / BoQ (m) South: Widderson Drive (S) 1 L2 12.6 0.16 6.8 LOS A 2.1 2 R2 0 0.04 17.9 LOS B 0.4 Approach 11.9 0.16 7.4 LOS A 2.1 East: Hastings River Drive (E) 4 L2 6.3 0.05 6.4 LOS A 0.6 5 T1 4.2 0.23 0 LOS A 0 Approach 4.3 0.23 0.5 LOS A 0.6 West: Hastings River Drive (W) 12 R2 8.8 0.43 13.8 LOS A 6.5 Approach 8.8 0.43 13.8 NA 6.5 All Vehicles 6 0.43 3.4 NA 6.5	Overall the intersection has a LOS B and the degree of saturation is 0.43, which is within the acceptable limit of 0.80.The average delay across the intersection is 4 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.

6. Hastings River Drive / Aston Street
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Generally the intersection performs at LOS B and the degree of saturation is 0.69, which is above the acceptable limit of 0.90. The average delay across the intersection is 16 seconds.
PM Peak		PM Peak 15:00 - 16:00 			Generally the intersection performs at LOS B and the degree of saturation is 0.83, which is within the acceptable limit of 0.90. The average delay across the intersection is 19 seconds.

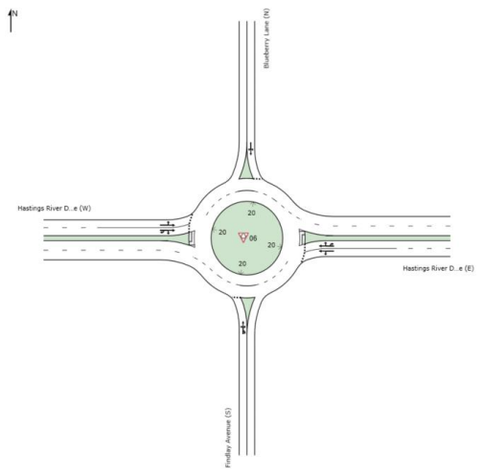
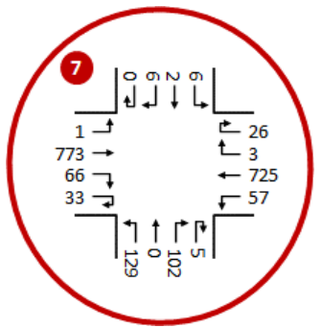
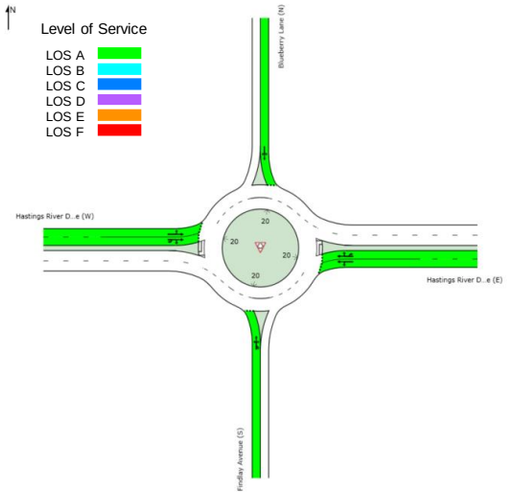
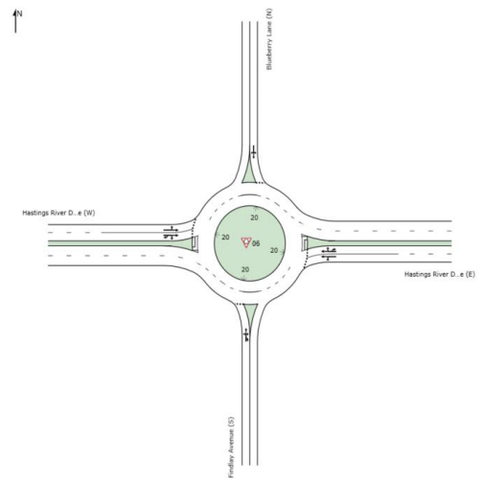
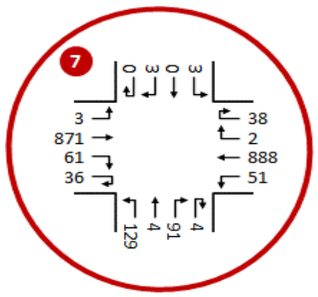
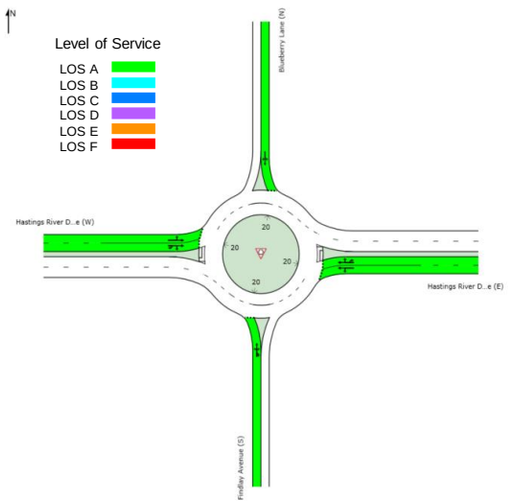
Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	5.8	0.69	16.7	LOS B	72.9
6	R2	13.6	0.25	25.8	LOS B	12.2
Approach		6.4	0.69	17.4	LOS B	72.9
North: Aston Street (N)						
7	L2	2.3	0.07	14.7	LOS B	5.6
9	R2	3.2	0.15	26.2	LOS B	6.2
Approach		2.7	0.15	19.5	LOS B	6.2
West: Hastings River Drive (W)						
10	L2	2.6	0.17	9.9	LOS A	14.3
11	T1	2.9	0.67	16.2	LOS B	68.4
Approach		2.9	0.67	15.1	LOS B	68.4
All Vehicles		4.5	0.69	16.3	LOS B	72.9

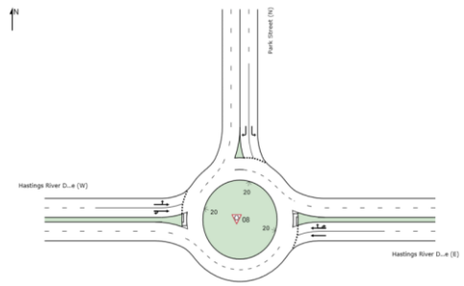
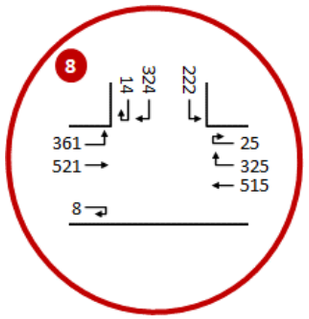
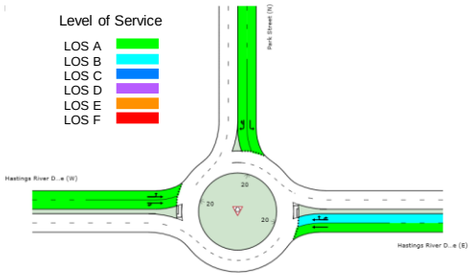
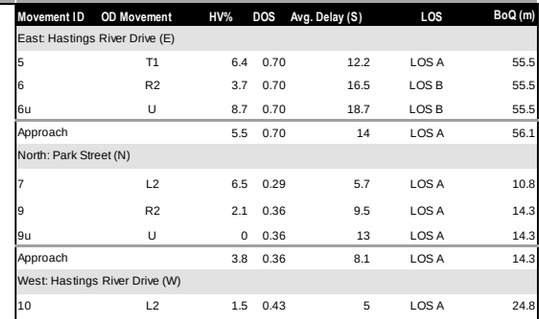
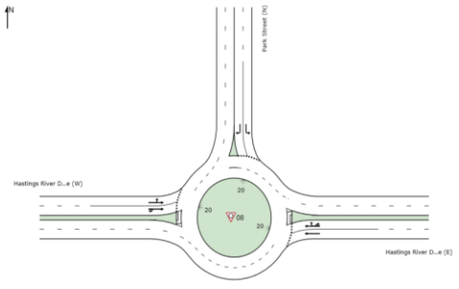
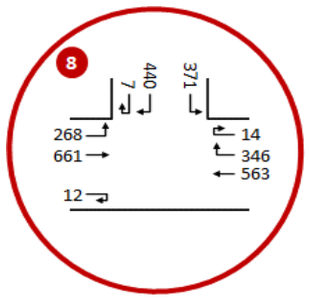
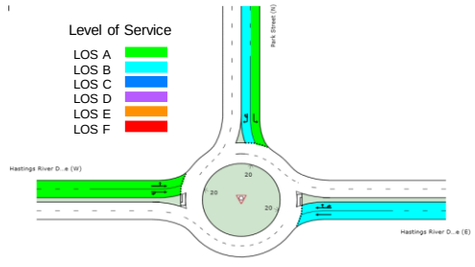
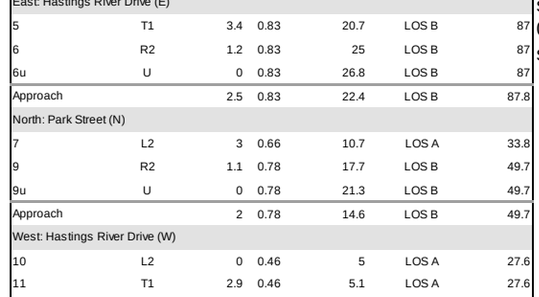
Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	2.9	0.83	22	LOS B	104.5
6	R2	9.8	0.17	25.3	LOS B	7.8
Approach		3.1	0.83	22.2	LOS B	104.5
North: Aston Street (N)						
7	L2	3	0.11	14.9	LOS B	9
9	R2	0	0.14	26.1	LOS B	5.7
Approach		2.1	0.14	18.3	LOS B	9
West: Hastings River Drive (W)						
10	L2	6.5	0.10	9.7	LOS A	8.4
11	T1	2	0.69	16.6	LOS B	72
Approach		2.5	0.69	15.9	LOS B	72
All Vehicles		2.8	0.83	19.2	LOS B	104.5

7. Hastings River Drive / Findlay Avenue / Blueberry Lane
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Findlay Avenue (S) 1 L2 14.3 0.39 8.3 LOS A 15.5 2 T1 0 0.39 7.6 LOS A 15.5 3 R2 2.2 0.39 12.3 LOS A 15.5 3u U 0 0.39 15.8 LOS B 15.5 Approach 8.7 0.39 10.2 LOS A 15.5 East: Hastings River Drive (E) 4 L2 1.9 0.30 3.6 LOS A 16.6 5 T1 5 0.30 3.5 LOS A 16.6 6 R2 0 0.30 8.1 LOS A 16.3 6u U 4.2 0.30 10 LOS A 16.3 Approach 4.8 0.30 3.8 LOS A 16.6 North: Blueberry Lane (N) 7 L2 0 0.03 6.8 LOS A 0.7 8 T1 0 0.03 6.8 LOS A 0.7 9 R2 0 0.03 11.3 LOS A 0.7 Approach 0 0.03 8.7 LOS A 0.7 West: Hastings River Drive (W) 10 L2 0 0.33 3.8 LOS A 19.1 11 T1 2.4 0.33 3.7 LOS A 19.1 12 R2 1.7 0.33 8.3 LOS A 18.6 12u U 3.3 0.33 10.2 LOS A 18.6 Approach 2.4 0.33 4.3 LOS A 19.1 All Vehicles 4.1 0.39 4.8 LOS A 19.1	Overall the intersection has LOS A and the degree of saturation is 0.39, which is within the acceptable limit of 0.85.The average delay across the intersection is 5 seconds.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Findlay Avenue (S) 1 L2 7.8 0.41 8.9 LOS A 15.6 2 T1 0 0.41 8.5 LOS A 15.6 3 R2 1.2 0.41 13.1 LOS A 15.6 3u U 0 0.41 16.6 LOS B 15.6 Approach 4.9 0.41 10.7 LOS A 15.6 East: Hastings River Drive (E) 4 L2 2.1 0.36 3.6 LOS A 21 5 T1 3.8 0.36 3.5 LOS A 21 6 R2 0 0.36 8.1 LOS A 20.5 6u U 0 0.36 10 LOS A 20.5 Approach 3.5 0.36 3.8 LOS A 21 North: Blueberry Lane (N) 7 L2 0 0.01 7 LOS A 0.4 8 T1 0 0.01 7.1 LOS A 0.4 9 R2 0 0.01 11.6 LOS A 0.4 Approach 0 0.01 9 LOS A 0.4 West: Hastings River Drive (W) 10 L2 0 0.37 3.8 LOS A 21.8 11 T1 2.1 0.37 3.7 LOS A 21.8 12 R2 1.8 0.37 8.4 LOS A 21.2 12u U 3 0.37 10.3 LOS A 21.2 Approach 2.1 0.37 4.3 LOS A 21.8 All Vehicles 3 0.41 4.7 LOS A 21.8	Overall the intersection has LOS A and the degree of saturation is 0.41, which is within the acceptable limit of 0.85.The average delay across the intersection is 5 seconds.

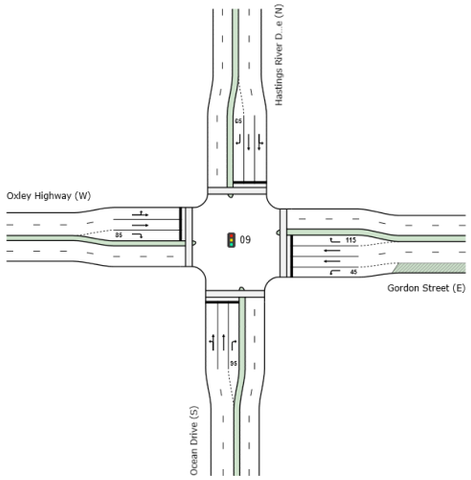
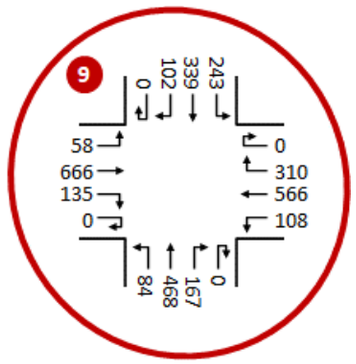
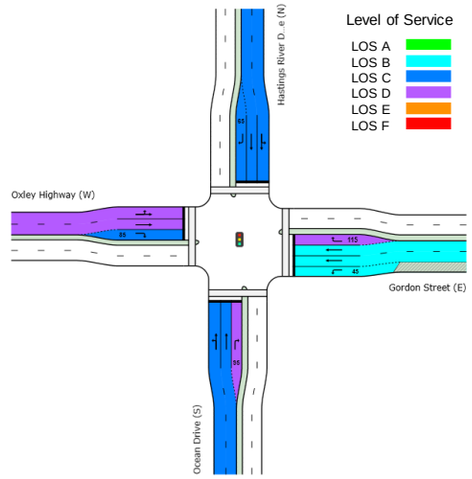
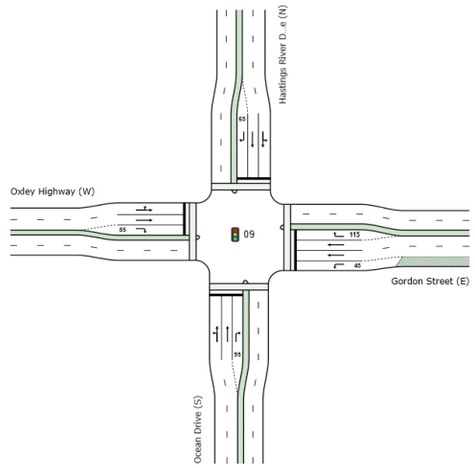
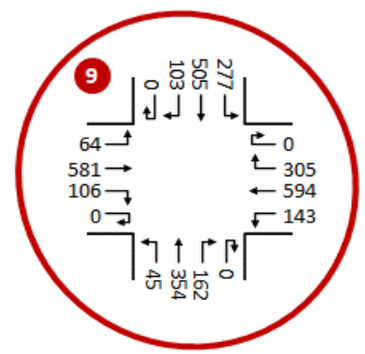
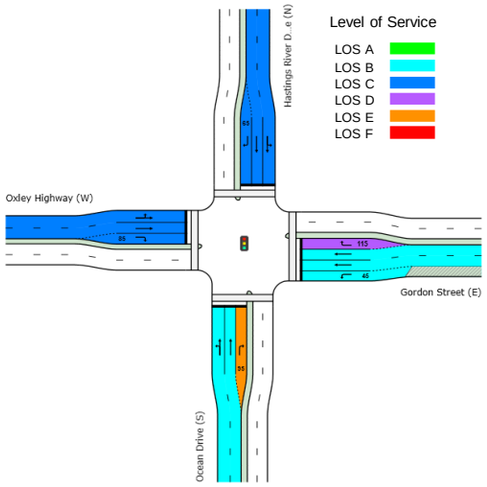
8. Hastings River Drive / Park Street
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS B and the degree of saturation is 0.70, which is within the acceptable limit of 0.85.The average delay across the intersection is 9 seconds.
PM Peak		PM Peak 15:00 - 16:00 			Overall the intersection has LOS B and the degree of saturation is 0.83, which is within the acceptable limit of 0.85.The average delay across the intersection is 14 seconds.

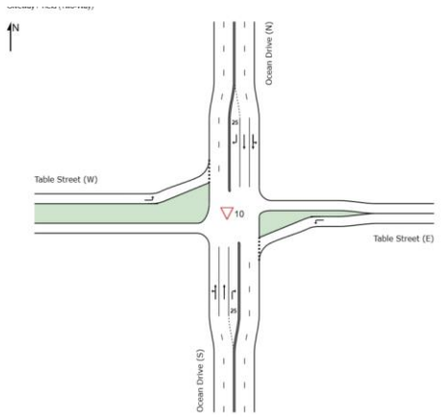
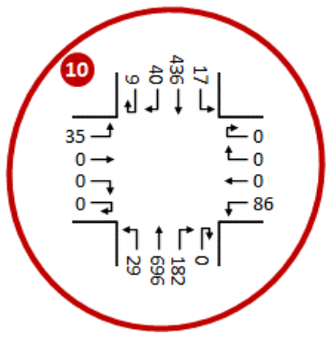
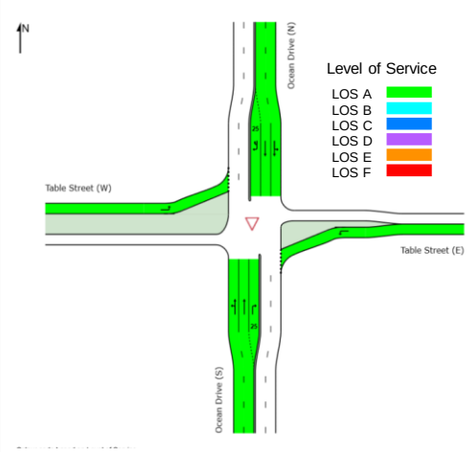
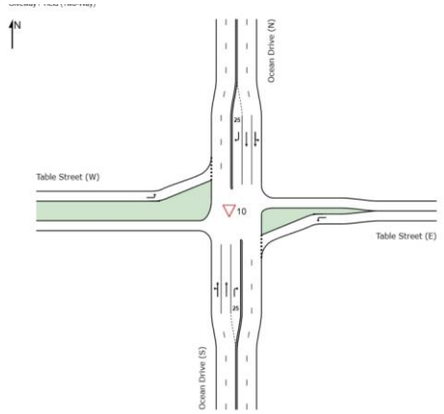
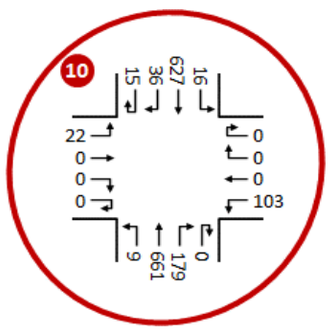
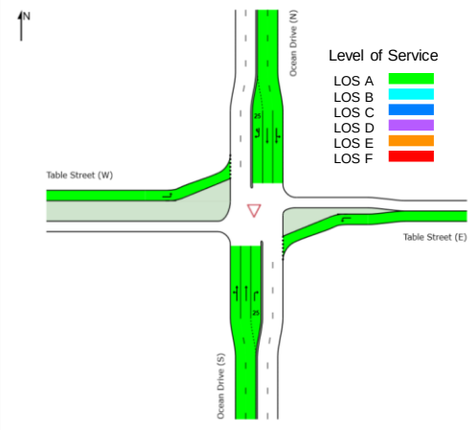
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	6.4	0.70	12.2	LOS A	55.5
6	R2	3.7	0.70	16.5	LOS B	55.5
6u	U	8.7	0.70	18.7	LOS B	55.5
Approach		5.5	0.70	14	LOS A	56.1
North: Park Street (N)						
7	L2	6.5	0.29	5.7	LOS A	10.8
9	R2	2.1	0.36	9.5	LOS A	14.3
9u	U	0	0.36	13	LOS A	14.3
Approach		3.8	0.36	8.1	LOS A	14.3
West: Hastings River Drive (W)						
10	L2	1.5	0.43	5	LOS A	24.8
11	T1	3	0.43	5.2	LOS A	24.8
12u	U	0	0.43	11.6	LOS A	23.3
Approach		2.4	0.43	5.2	LOS A	24.8
All Vehicles		3.9	0.70	9.2	LOS A	56.1

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	3.4	0.83	20.7	LOS B	87
6	R2	1.2	0.83	25	LOS B	87
6u	U	0	0.83	26.8	LOS B	87
Approach		2.5	0.83	22.4	LOS B	87.8
North: Park Street (N)						
7	L2	3	0.66	10.7	LOS A	33.8
9	R2	1.1	0.78	17.7	LOS B	49.7
9u	U	0	0.78	21.3	LOS B	49.7
Approach		2	0.78	14.6	LOS B	49.7
West: Hastings River Drive (W)						
10	L2	0	0.46	5	LOS A	27.6
11	T1	2.9	0.46	5.1	LOS A	27.6
12u	U	0	0.46	11.6	LOS A	26
Approach		2	0.46	5.2	LOS A	27.6
All Vehicles		2.2	0.83	14	LOS A	87.8

9. Hastings River Drive / Oxley Highway / Ocean Drive / Gordon Street
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay / LOS / BoQ (m)** South: Ocean Drive (S) 1 L2 3.9 0.88 44.7 LOS D 88.4 2 T1 3.3 0.88 40.4 LOS C 88.4 3 R2 2.6 0.87 46.3 LOS D 50.7 Approach 3.2 0.88 42.3 LOS C 88.4 East: Gordon Street (E) 4 L2 5.1 0.13 17.9 LOS B 16.7 5 T1 3.5 0.54 24.7 LOS B 64.7 6 R2 8.5 0.89 46.6 LOS D 101.2 Approach 5.3 0.89 30.8 LOS C 101.2 North: Hastings River Drive (N) 7 L2 6.3 0.80 37 LOS C 94.1 8 T1 4.2 0.80 34.8 LOS C 94.1 9 R2 2.2 0.57 40.3 LOS C 27.1 Approach 4.7 0.80 36.4 LOS C 94.1 West: Oxley Highway (W) 10 L2 5.7 0.91 48.8 LOS D 120.1 11 T1 1.5 0.91 43.2 LOS D 120.1 12 R2 4.9 0.56 37.5 LOS C 34.9 Approach 2.3 0.91 42.7 LOS D 120.1 All Vehicles 3.9 0.91 37.7 LOS C 120.1	Overall the intersection has LOS C and the degree of saturation is 0.91 , which is just outside the practical limit of 0.9.The right-turns presented a LOS C and D, this is due to a relatively high delays for these movements. The average delay across the intersection is 38 seconds.
PM Peak		PM Peak 16:15 - 17:15 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay / LOS / BoQ (m)** South: Ocean Drive (S) 1 L2 3.3 0.56 32 LOS C 49.4 2 T1 4.6 0.56 27.9 LOS B 49.4 3 R2 1 0.95 57.8 LOS E 55.5 Approach 3.5 0.95 36.8 LOS C 55.5 East: Gordon Street (E) 4 L2 2.5 0.17 18.8 LOS B 22.7 5 T1 1.2 0.56 24.8 LOS B 66.9 6 R2 4.2 0.92 51.3 LOS D 101.8 Approach 2.3 0.92 31.7 LOS C 101.8 North: Hastings River Drive (N) 7 L2 1.9 0.88 41.2 LOS C 126.7 8 T1 2.3 0.88 37.8 LOS C 126.7 9 R2 3 0.58 40.4 LOS C 27.6 Approach 2.3 0.88 39.1 LOS C 126.7 West: Oxley Highway (W) 10 L2 0 0.87 43.2 LOS D 98.1 11 T1 2 0.87 37.9 LOS C 98.1 12 R2 2.8 0.54 39.3 LOS C 27.6 Approach 1.9 0.87 38.5 LOS C 98.1 All Vehicles 2.4 0.95 36.2 LOS C 126.7	Overall the intersection has LOS C and the degree of saturation is 0.95 , which is just **outside** the practical limit of 0.9.The right-turns presented a LOS C, D and E, this is due to a relative high delays for these movements. The average delay across the intersection is 36 seconds.

10. Ocean Drive / Table Street
2030

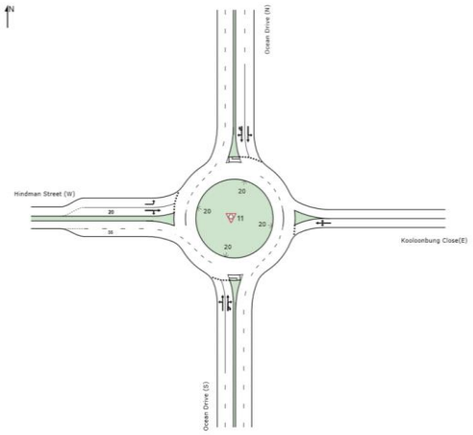
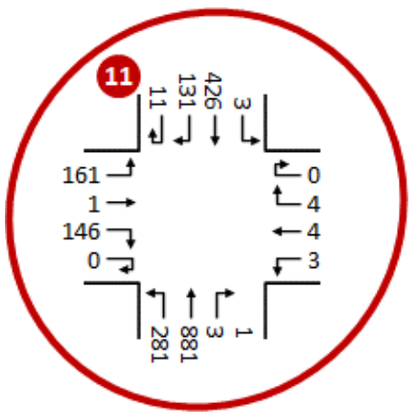
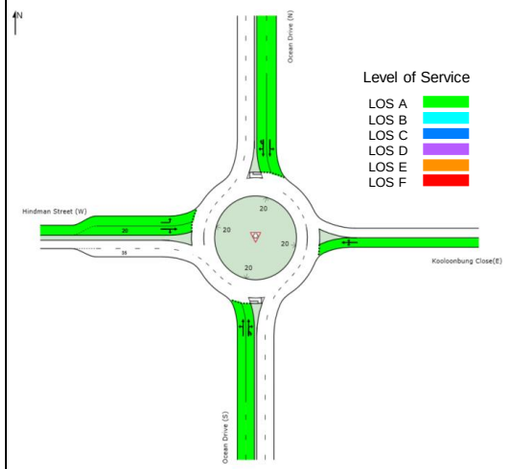
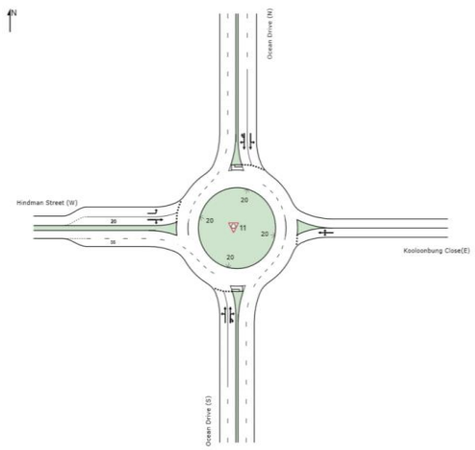
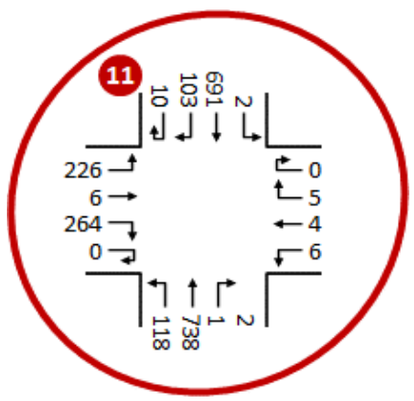
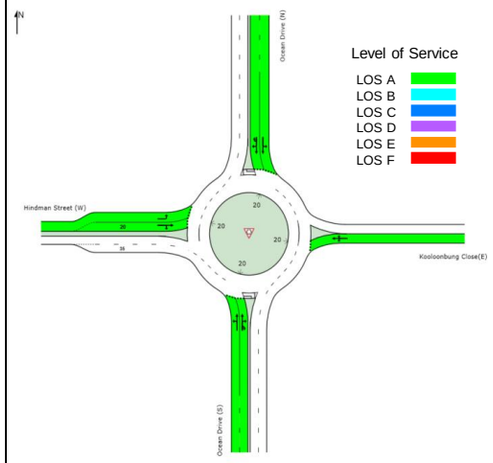
Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 			Overall the intersection has a LOS A and the degree of saturation is 0.22, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.
PM Peak		PM Peal 15:00 - 16:00 			Overall the intersection has a LOS A and the degree of saturation is 0.19, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.

Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	0	0.20	4.6	LOS A	0
2	T1	3.7	0.20	0	LOS A	0
3	R2	0	0.22	7.2	LOS A	6.4
Approach		2.9	0.22	1.6	NA	6.4
East: Table Street (E)						
4	L2	0	0.09	5.5	LOS A	2.2
Approach		0	0.09	5.5	LOS A	2.2
North: Ocean Drive (N)						
7	L2	0	0.13	4.6	LOS A	0
8	T1	4.2	0.13	0	LOS A	0
9	R2	2.7	0.10	9.4	LOS A	2.5
9u	U	0	0.10	15.7	LOS B	2.5
Approach		3.9	0.13	1.2	NA	2.5
West: Table Street (W)						
10	L2	5.7	0.04	6.2	LOS A	1.1
Approach		5.7	0.04	6.2	LOS A	1.1
All Vehicles		3.1	0.22	1.8	NA	6.4

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	0	0.19	4.6	LOS A	0
2	T1	4.1	0.19	0	LOS A	0
3	R2	1.8	0.19	6.4	LOS A	5.8
Approach		3.6	0.19	1.4	NA	5.8
East: Table Street (E)						
4	L2	2.1	0.10	5.2	LOS A	2.6
Approach		2.1	0.10	5.2	LOS A	2.6
North: Ocean Drive (N)						
7	L2	0	0.10	4.6	LOS A	0
8	T1	2.8	0.10	0	LOS A	0
9	R2	3	0.10	8.8	LOS A	2.6
9u	U	0	0.10	14.9	LOS B	2.6
Approach		2.6	0.10	1.6	NA	2.6
West: Table Street (W)						
10	L2	0	0.03	6	LOS A	0.6
Approach		0	0.03	6	LOS A	0.6
All Vehicles		3.1	0.19	1.8	NA	5.8

11. Ocean Drive / Hindman Street / Kooloonbung Close
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 			Overall the intersection has a LOS A and the degree of saturation is 0.46, which is within the acceptable limit of 0.80.The average delay across the intersection is 5 seconds.
PM Peak		PM Peal 15:00 - 16:00 			Overall the intersection has a LOS A and the degree of saturation is 0.37, which is within the acceptable limit of 0.80.The average delay across the intersection is 5 seconds.

AM Peak

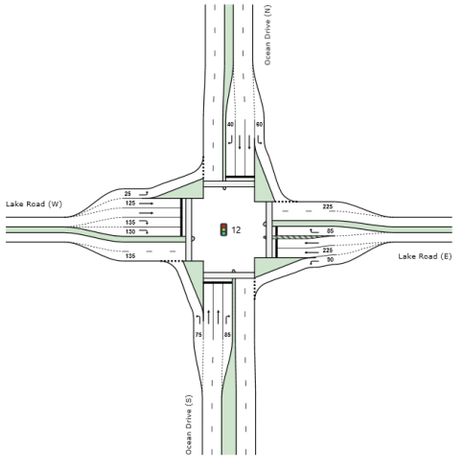
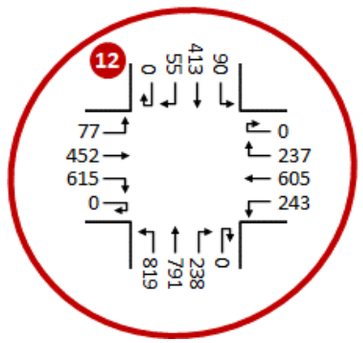
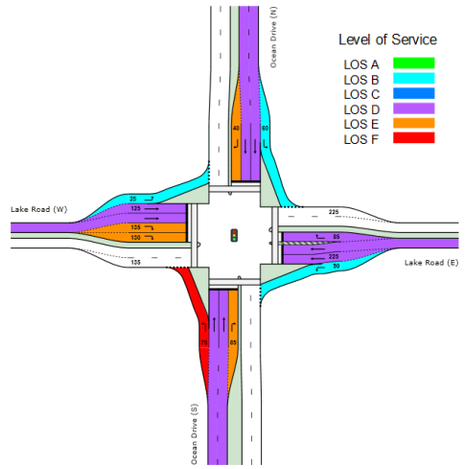
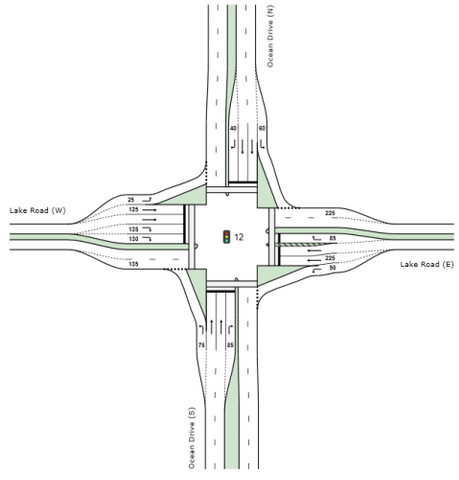
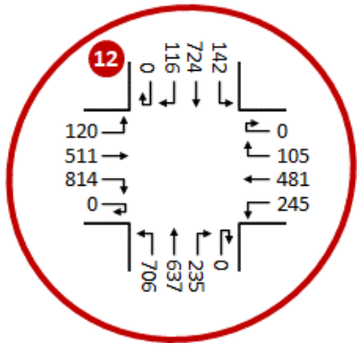
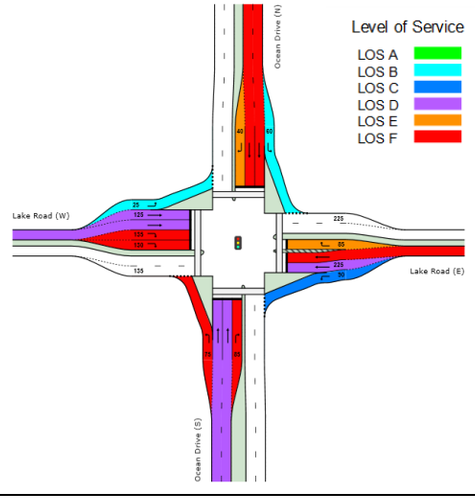
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	0.4	0.46	4.1	LOS A	27.8
2	T1	2.3	0.46	4	LOS A	27.8
3	R2	0	0.46	8.5	LOS A	27.5
3u	U	100	0.46	12.3	LOS A	27.5
Approach		1.9	0.46	4	LOS A	27.8
East: Kooloonbung Close(E)						
4	L2	0	0.02	5.3	LOS A	0.4
5	T1	0	0.02	5.3	LOS A	0.4
6	R2	0	0.02	9.8	LOS A	0.4
Approach		0	0.02	6.9	LOS A	0.4
North: Ocean Drive (N)						
7	L2	0	0.23	3.8	LOS A	10.8
8	T1	3.1	0.23	3.5	LOS A	10.8
9	R2	1.7	0.23	8.1	LOS A	10.5
9u	U	0	0.23	9.9	LOS A	10.5
Approach		2.7	0.23	4.7	LOS A	10.8
West: Hindman Street (W)						
10	L2	6.8	0.22	6.1	LOS A	7.6
11	T1	0	0.22	6.1	LOS A	7.3
12	R2	2.3	0.22	10.7	LOS A	7.3
Approach		4.6	0.22	8.3	LOS A	7.6
All Vehicles		2.5	0.46	4.9	LOS A	27.8

PM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	0.9	0.31	3.8	LOS A	16.7
2	T1	2.8	0.31	3.6	LOS A	16.7
3	R2	0	0.31	8.1	LOS A	16.4
3u	U	0	0.31	9.9	LOS A	16.4
Approach		2.5	0.31	3.6	LOS A	16.7
East: Kooloonbung Close(E)						
4	L2	0	0.03	6.6	LOS A	0.8
5	T1	0	0.03	6.5	LOS A	0.8
6	R2	0	0.03	11.1	LOS A	0.8
Approach		0	0.03	8.1	LOS A	0.8
North: Ocean Drive (N)						
7	L2	0	0.37	4.6	LOS A	18.8
8	T1	1.9	0.37	4.3	LOS A	18.8
9	R2	4.2	0.37	9.1	LOS A	18.2
9u	U	0	0.37	10.8	LOS A	18.2
Approach		2.1	0.37	5	LOS A	18.8
West: Hindman Street (W)						
10	L2	3.6	0.3	6	LOS A	9.8
11	T1	0	0.31	5.1	LOS A	10.3
12	R2	1.7	0.31	9.7	LOS A	10.3
Approach		2.5	0.31	7.9	LOS A	10.3
All Vehicles		2.4	0.37	5.2	LOS A	18.8

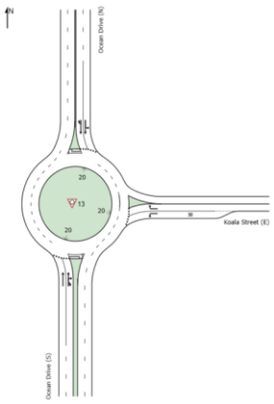
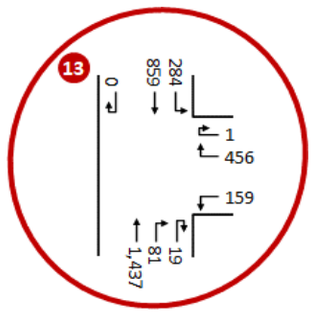
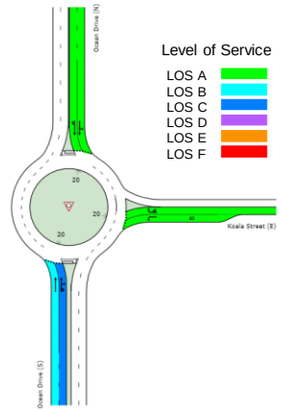
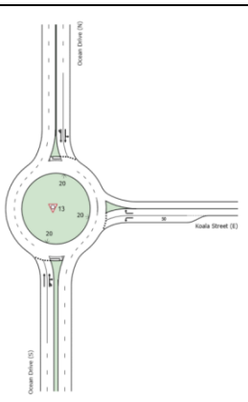
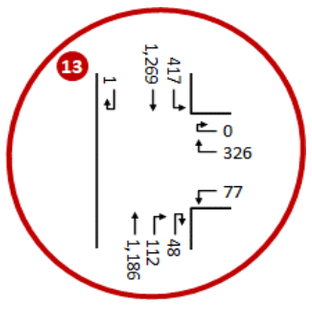
12. Ocean Drive / Lake Road
2030

BITZIOS consulting
traffic engineering ▪ transport planning

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 3.6 1.27 294 LOS F 390 2 T1 2.1 0.83 45.4 LOS D 82.2 3 R2 3.7 0.87 62.1 LOS E 54.1 Approach 2.9 1.27 157.7 LOS F 390 East: Lake Road (E) 4 L2 5.4 0.28 12.5 LOS B 23.8 5 T1 3.7 0.89 45.9 LOS D 92.4 6 R2 0.6 0.66 41.3 LOS D 48.4 Approach 3.4 0.89 37.4 LOS D 92.4 North: Ocean Drive (N) 7 L2 0 0.08 12.1 LOS B 6.6 8 T1 3.7 0.77 48.1 LOS D 49.3 9 R2 7.8 0.55 60.1 LOS E 13.7 Approach 3.5 0.77 43.5 LOS D 49.3 West: Lake Road (W) 10 L2 9.5 0.1 16.8 LOS B 9.1 11 T1 3.3 0.64 39.2 LOS D 51 12 R2 4.6 0.9 60.7 LOS E 83.4 Approach 4.4 0.9 49.2 LOS D 83.4 All Vehicles 3.5 1.27 85.6 LOS F 390	The intersection performs **outside** of acceptable performance levels with LOS F and DOS 1.27. This is however predominantly as a result of downstream impacts at the Lake Road / Central Street intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. It is expected the intersection would perform significantly better if the downstream constraints were resolved. The right-turns on approaches operate at LOS D and E, due to relatively high delays for these movement. Queues for some of the movements are not contained within the turn pockets and will block the through movements. Overall the intersection delay is 86 seconds
PM Peak		PM Peal15:00 - 16:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 4.9 1.26 294.8 LOS F 390 2 T1 2.7 0.75 47.9 LOS D 82.8 3 R2 2.8 1.02 117 LOS F 95.3 Approach 3.7 1.26 168.7 LOS F 390 East: Lake Road (E) 4 L2 0.5 0.33 22.6 LOS C 37.9 5 T1 4.4 1 82.9 LOS F 111.6 6 R2 1.1 0.54 58.1 LOS E 27 Approach 2.8 1 62 LOS E 111.6 North: Ocean Drive (N) 7 L2 0.8 0.15 14.4 LOS B 14.2 8 T1 2.1 0.99 91.3 LOS F 137.8 9 R2 0 0.49 59.9 LOS E 29.2 Approach 1.6 0.99 76.5 LOS E 137.8 West: Lake Road (W) 10 L2 1.9 0.11 10.4 LOS B 10.1 11 T1 3.1 0.55 37.8 LOS D 66.5 12 R2 2.3 0.97 87.4 LOS F 148.1 Approach 2.6 0.97 63.5 LOS E 148.1 All Vehicles 2.8 1.26 100.2 LOS F 390	The intersection performs **outside** of acceptable performance levels with LOS F and DOS 1.26. This is however predominantly as a result of downstream impacts at the Lake Road / Central Street intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. It is expected the intersection would perform within acceptable limits if the downstream constraints were resolved. The right-turns on approaches operate at LOS E and F, due to relatively high delays for these movement. Queues for some of the movements are not contained within the turn pockets and will block the through movements. Overall the intersection delay is 100 seconds

13. Ocean Drive / Koala Street

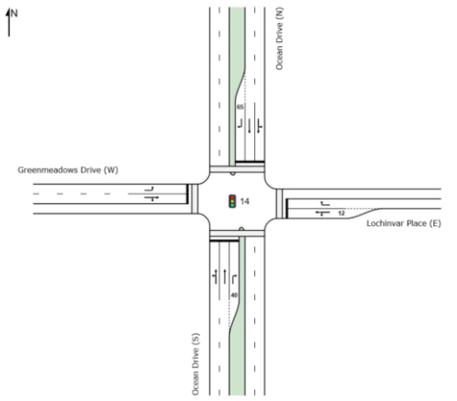
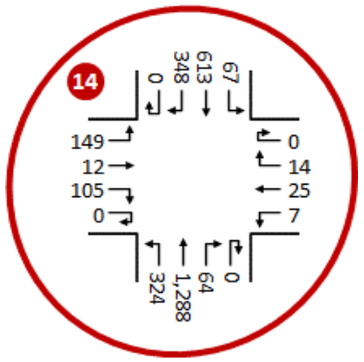
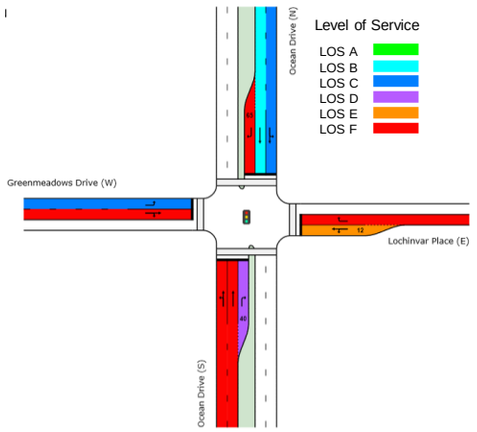
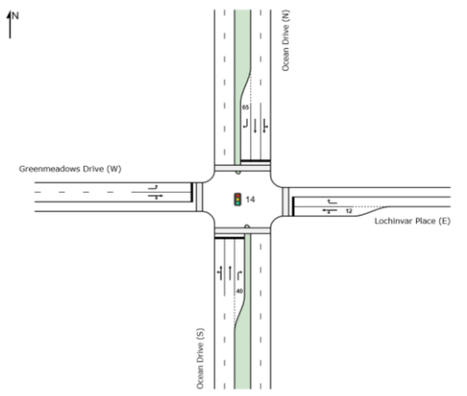
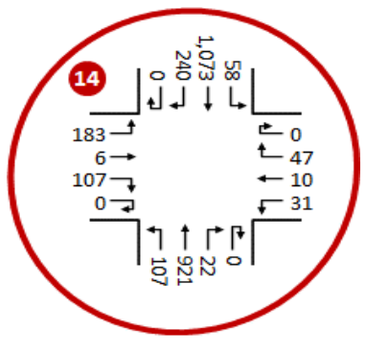
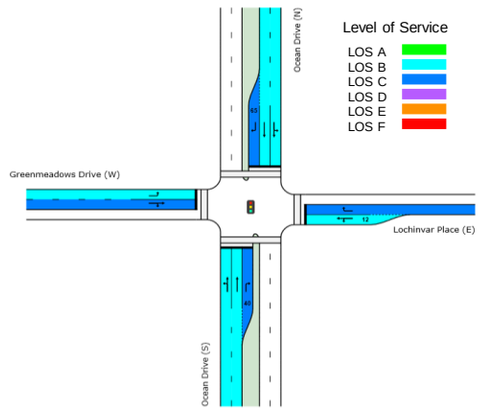
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 07:45 - 08:45 			Overall the intersection has LOS C and the degree of saturation is 0.92. The intersection performs **outside** the acceptable thresholds due to delays on the southern approach. This is as a result of the downstream impacts at the Lake Road / Central Street intersection with queues extending south on Ocean Drive and through to Koala Street.
PM Peak		PM Peal 15:00 - 16:00 			Overall the intersection has LOS B and the degree of saturation is 0.71, which is within the acceptable limit of 0.85.The average delay across the intersection is 10 seconds.

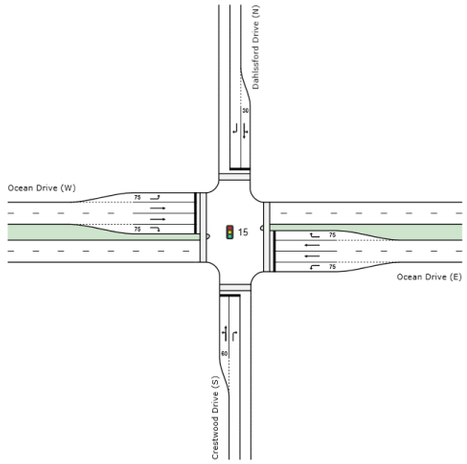
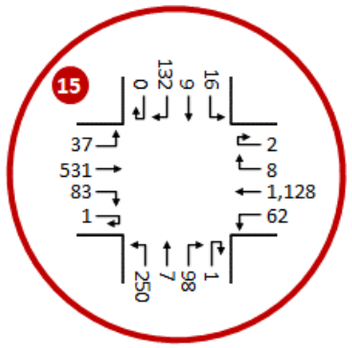
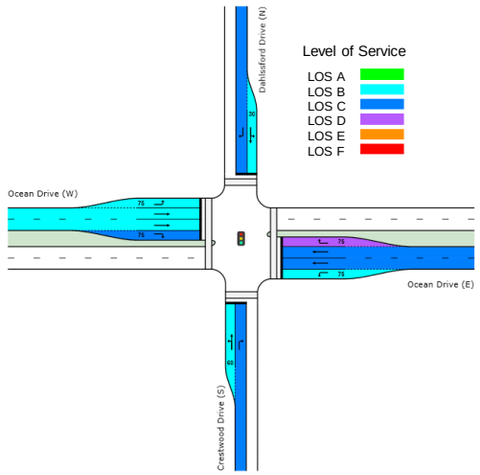
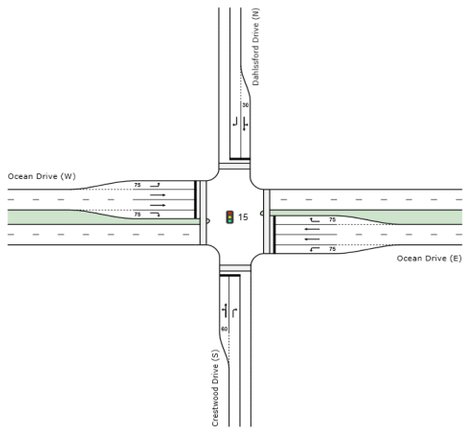
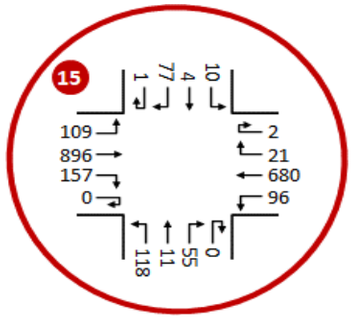
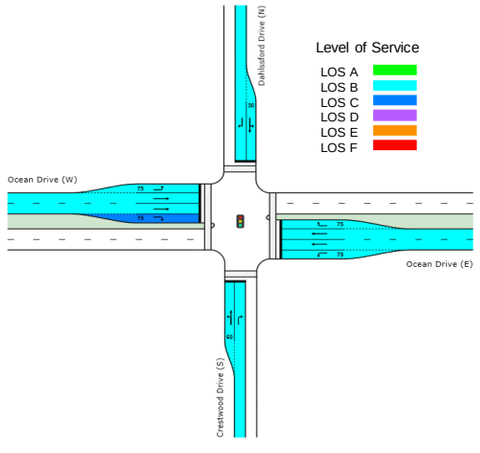
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
2	T1	3	0.92	29.1	LOS C	189.5
3	R2	9.7	0.92	36.8	LOS C	177.5
3u	U	35.3	0.92	40.9	LOS C	177.5
Approach		3.8	0.92	29.6	LOS C	189.5
East: Koala Street (E)						
4	L2	4.7	0.34	9.5	LOS A	12.3
6	R2	2.8	0.63	14.2	LOS A	36
6u	U	100	0.63	23.4	LOS B	36
Approach		3.5	0.63	13	LOS A	36
North: Ocean Drive (N)						
7	L2	5.9	0.45	5.8	LOS A	33.1
8	T1	5.2	0.45	6.2	LOS A	33.1
9u	U	0	0.45	13	LOS A	32.1
Approach		5.4	0.45	6.1	LOS A	33.1
All Vehicles		4.3	0.92	18.4	LOS B	189.5

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
2	T1	4.6	0.71	10.7	LOS A	70.6
3	R2	3.8	0.71	16.3	LOS B	70
3u	U	31.1	0.71	20	LOS B	70
Approach		5.4	0.71	11.5	LOS A	70.6
East: Koala Street (E)						
4	L2	11	0.29	13.1	LOS A	10.7
6	R2	2.6	0.67	18.9	LOS B	38.8
6u	U	0	0.67	22.2	LOS B	38.8
Approach		4.2	0.67	17.8	LOS B	38.8
North: Ocean Drive (N)						
7	L2	1.5	0.71	6.7	LOS A	65.3
8	T1	2.1	0.71	7.2	LOS A	65.3
9u	U	100	0.71	17.4	LOS B	63.3
Approach		2	0.71	7.1	LOS A	65.3
All Vehicles		3.6	0.71	10.1	LOS A	70.6

14. Ocean Drive / Greenmeadows Drive / Lochinvar Place
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 07:45 - 08:45 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 1 0.97 83.6 LOS F 602.7 2 T1 2.5 0.97 76.7 LOS F 602.7 3 R2 5.3 0.13 50.4 LOS D 27.8 Approach 2.3 0.97 77.1 LOS F 602.7 East: Lochinvar Place (E) 4 L2 28.6 0.16 72.9 LOS F 19.3 5 T1 16 0.16 68 LOS E 19.3 6 R2 0 0.14 82.7 LOS F 7.9 Approach 13 0.16 73.3 LOS F 19.3 North: Ocean Drive (N) 7 L2 6.7 0.44 35.8 LOS C 143 8 T1 6.6 0.44 28.8 LOS C 143 9 R2 2.6 0.96 99.8 LOS F 244 Approach 5.2 0.96 53.3 LOS D 244 West: Greenmeadows Drive (W) 10 L2 4.3 0.19 30.9 LOS C 52.3 11 T1 0 0.76 80.2 LOS F 71.1 12 R2 2 0.76 83.2 LOS F 71.1 Approach 3.2 0.76 53.7 LOS D 71.1 All Vehicles 3.6 0.97 66.8 LOS E 602.7	The intersection operates **outside** the acceptable performance limits. Overall the intersection has LOS E and the degree of saturation is 0.97, which is above the acceptable limit of 0.9. All of the right-turns presented a LOS D and F, with relatively high delays for these movements. The right turn on the northern approach has queuing in the order 244m, almost four times the available queuing distance within the turn pocket. This will impact through movements in the adjacent lane. Right turn queues on the western approach are in the order of 71m, which is greater than the separation distance from the roundabout to the west. It is likely that right turn queues are queuing into the roundabout and may be blocking other movements at the roundabout. The left turn queues on the western approach also exceed the available spacing from the roundabout to the west. Queues are contained in the right turn pocket on the southern approach. The average delay across the intersection is 67 seconds.
PM Peak		PM Peal 15:00 - 16:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 2 0.79 28.4 LOS B 115.9 2 T1 4 0.79 21.9 LOS B 115.9 3 R2 4.8 0.13 34.7 LOS C 4.8 Approach 3.8 0.79 22.8 LOS B 115.9 East: Lochinvar Place (E) 4 L2 9.7 0.11 23.8 LOS B 7.9 5 T1 30 0.11 19.2 LOS B 7.9 6 R2 4.3 0.29 33.8 LOS C 10.6 Approach 9.1 0.29 28.7 LOS C 10.6 North: Ocean Drive (N) 7 L2 12.7 0.77 27.4 LOS B 109.6 8 T1 2.8 0.77 18.9 LOS B 126.7 9 R2 5.3 0.77 35.7 LOS C 58.3 Approach 3.6 0.77 22.2 LOS B 126.7 West: Greenmeadows Drive (W) 10 L2 0.6 0.24 14.7 LOS B 25.4 11 T1 20 0.5 27.1 LOS B 24.3 12 R2 0 0.5 30.1 LOS C 24.3 Approach 0.8 0.5 20.5 LOS B 25.4 All Vehicles 3.6 0.79 22.5 LOS B 126.7	Overall the intersection has LOS B and the degree of saturation is 0.79 , which is just below acceptable limit of 0.9.The average delay across the intersection is 23 seconds.

15. Ocean Drive / Crestwood Drive / Dahlsford Drive
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary
AM Peak		AM Peal 07:45 - 08:45 	
PM Peak		PM Peal 15:15 - 16:15 	

Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Crestwood Drive (S)						
1	L2	3.5	0.45	22.1	LOS B	54.1
2	T1	0	0.45	17.5	LOS B	54.1
3	R2	1.1	0.26	33.5	LOS C	24.5
Approach		2.8	0.45	25.2	LOS B	54.1
East: Ocean Drive (E)						
4	L2	10.9	0.11	26.3	LOS B	13.5
5	T1	3	0.86	33.3	LOS C	181.8
6	R2	28.6	0.09	46.5	LOS D	3.6
Approach		3.6	0.86	33	LOS C	181.8
North: Dahlssford Drive (N)						
7	L2	6.7	0.07	25.3	LOS B	5.6
8	T1	22.2	0.07	20.6	LOS B	5.6
9	R2	3.2	0.36	34.2	LOS C	34.1
Approach		4.6	0.36	32.5	LOS C	34.1
West: Ocean Drive (W)						
10	L2	9.1	0.05	20.3	LOS B	6.5
11	T1	5.9	0.32	14.6	LOS B	50.5
12	R2	12.2	0.3	38.6	LOS C	24.1
Approach		6.9	0.32	18	LOS B	50.5
All Vehicles		4.4	0.86	27.7	LOS B	181.8

Intersection Performance Summary

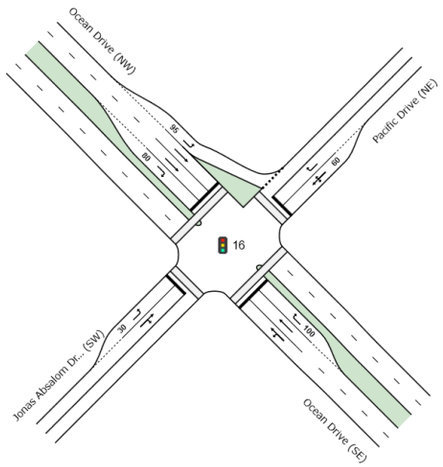
Overall the intersection has LOS B and the degree of saturation is 0.86 , which is within the acceptable limit of 0.90. The intersection has high through volumes on Ocean Drive, which are unbalanced with the side streets. The average delay across the intersection is 28 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Crestwood Drive (S)						
1	L2	4.3	0.28	16.4	LOS B	16.9
2	T1	9.1	0.28	11.8	LOS A	16.9
3	R2	9.3	0.24	26.7	LOS B	10.2
Approach		6.1	0.28	19.2	LOS B	16.9
East: Ocean Drive (E)						
4	L2	3.3	0.18	20	LOS B	13.1
5	T1	5.3	0.55	14.9	LOS B	53.7
6	R2	5	0.1	27.8	LOS B	4
Approach		5	0.55	15.9	LOS B	53.7
North: Dahlssford Drive (N)						
7	L2	22.2	0.04	16.9	LOS B	1.9
8	T1	0	0.04	12.1	LOS A	1.9
9	R2	4.2	0.32	27	LOS B	14.1
Approach		6	0.32	25.2	LOS B	14.1
West: Ocean Drive (W)						
10	L2	2.9	0.2	20.1	LOS B	15
11	T1	1.8	0.71	17.2	LOS B	77.2
12	R2	4.7	0.67	31.2	LOS C	31.2
Approach		2.3	0.71	19.3	LOS B	77.2
All Vehicles		3.7	0.71	18.3	LOS B	77.2

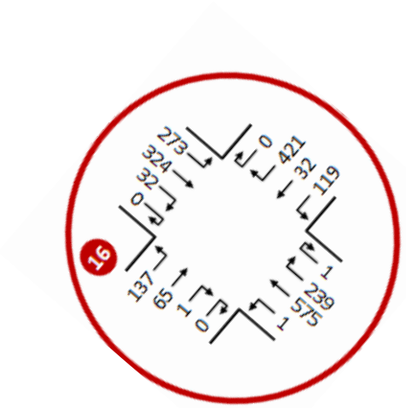
Overall the intersection has LOS B and the degree of saturation is 0.71 , which is within the acceptable limit of 0.90. The intersection has high through volumes on Ocean Drive, which are unbalanced with the side streets. The average delay across the intersection is 18 seconds.

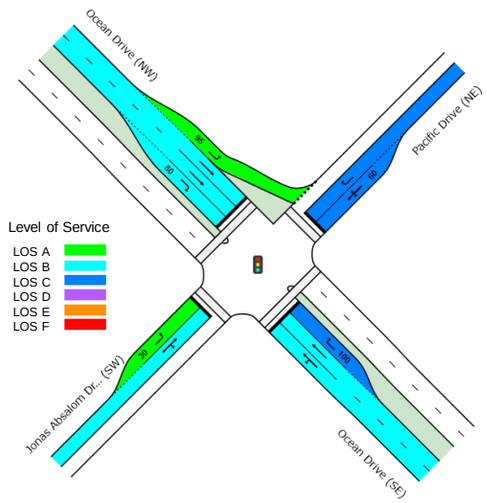
16. Ocean Drive / Jonas Absalom Drive / Pacific Drive
2030

Period: AM Peak



AM Peak 07:45 - 08:45

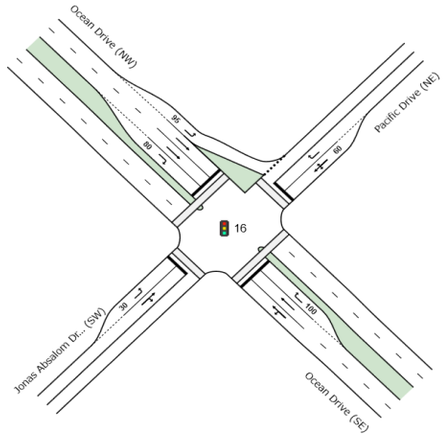




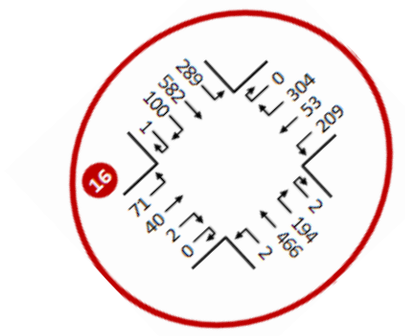
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Ocean Drive (SE)						
1	L2	0	0.72	28.4	LOS B	55.5
2	T1	4.7	0.72	22.1	LOS B	55.5
3	R2	1.9	0.76	31.1	LOS C	47.6
Approach		3.8	0.76	24.7	LOS B	55.5
NorthEast: Pacific Drive (NE)						
4	L2	3.5	0.8	29.1	LOS C	62.9
5	T1	3.3	0.8	24.8	LOS B	62.9
6	R2	2.3	0.8	30.1	LOS C	62.9
Approach		2.6	0.8	29.6	LOS C	62.9
NorthWest: Ocean Drive (NW)						
7	L2	4.5	0.29	9.4	LOS A	16.9
8	T1	5.5	0.41	18.9	LOS B	27.4
9	R2	13.8	0.11	26	LOS B	5.7
Approach		5.5	0.41	15.1	LOS B	27.4
SouthWest: Jonas Absalom Drive (SW)						
10	L2	4.8	0.15	11.4	LOS A	13.5
11	T1	1.7	0.15	16.7	LOS B	9.8
12	R2	0	0.15	21.2	LOS B	9.8
Approach		3.7	0.15	13.1	LOS A	13.5
All Vehicles		4	0.8	22.2	LOS B	62.9

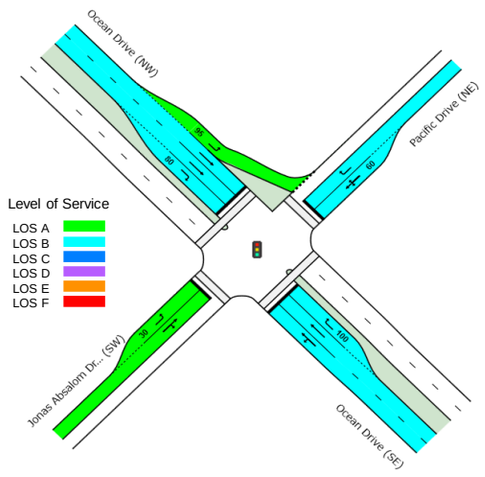
Overall the intersection has LOS B and the degree of saturation is 0.80, which is within the acceptable limit of 0.90. The average delay across the intersection is 22 seconds.

Period: PM Peak



PM Peak 15:15 - 16:15

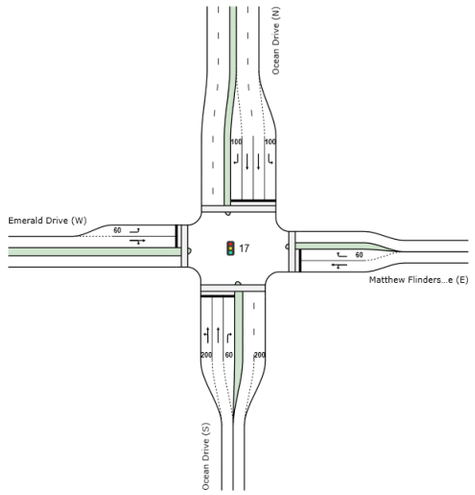
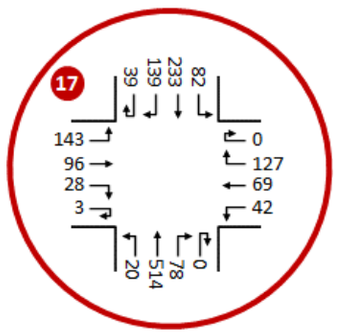
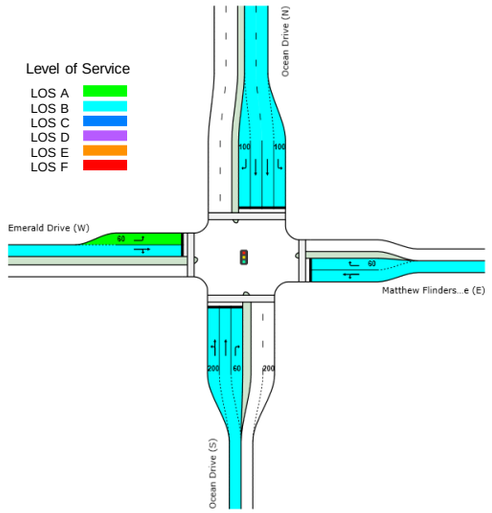
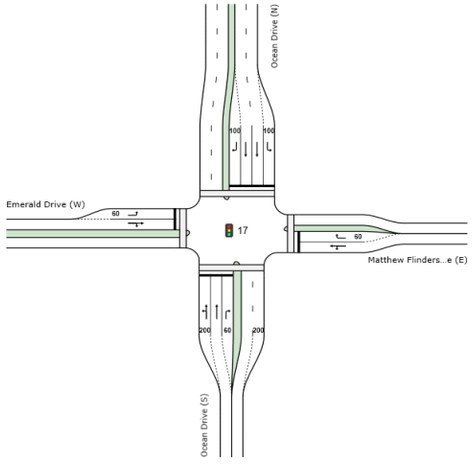
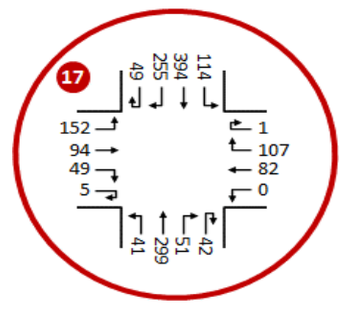
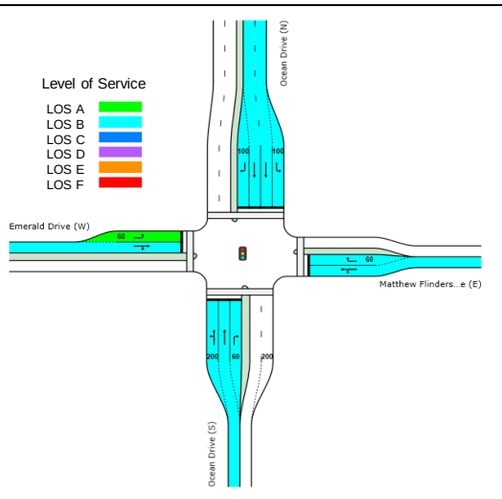




Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Ocean Drive (SE)						
1	L2	0	0.74	26.3	LOS B	38
2	T1	4.3	0.74	19.9	LOS B	38.1
3	R2	1.1	0.74	27.3	LOS B	31.6
Approach		3.4	0.74	22.1	LOS B	38.1
NorthEast: Pacific Drive (NE)						
4	L2	1.1	0.74	22.2	LOS B	52.7
5	T1	12.5	0.74	17.9	LOS B	52.7
6	R2	6.2	0.74	24.5	LOS B	52.7
Approach		4.9	0.74	23	LOS B	52.7
NorthWest: Ocean Drive (NW)						
7	L2	1.5	0.3	8.9	LOS A	13.5
8	T1	2.5	0.9	27.9	LOS B	57.3
9	R2	6.4	0.4	24.5	LOS B	15.1
Approach		2.6	0.9	21.9	LOS B	57.3
SouthWest: Jonas Absalom Drive (SW)						
10	L2	3.2	0.08	10.3	LOS A	5.5
11	T1	5.7	0.11	13.9	LOS A	5.3
12	R2	0	0.11	18.4	LOS B	5.3
Approach		4	0.11	11.7	LOS A	5.5
All Vehicles		3.5	0.9	21.7	LOS B	57.3

Overall the intersection has LOS B and the degree of saturation is 0.90, which is the acceptable limit for a signalised intersection. The average delay across the intersection is 22 seconds.

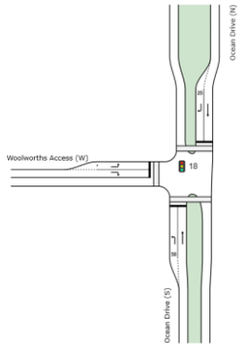
17. Ocean Drive / Matthew Flinders Drive / Emerald Drive
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 5.6 0.65 23.3 LOS B 39.4 2 T1 3.5 0.65 16.9 LOS B 39.8 3 R2 2.9 0.3 24.1 LOS B 11.1 Approach 3.5 0.65 18 LOS B 39.8 East: Matthew Flinders Drive (E) 4 L2 0 0.31 19.4 LOS B 14.6 5 T1 4.8 0.31 14.9 LOS B 14.6 6 R2 4.3 0.52 23.2 LOS B 19.3 Approach 3.7 0.52 20.1 LOS B 19.3 North: Ocean Drive (N) 7 L2 2.7 0.23 21.8 LOS B 10.8 8 T1 4.3 0.28 14.6 LOS B 15.2 9 R2 4 0.69 26.5 LOS B 28.6 Approach 4 0.69 20.1 LOS B 28.6 West: Emerald Drive (W) 10 L2 2.3 0.18 11.8 LOS A 12.9 11 T1 6.8 0.45 17.3 LOS B 18.6 12 R2 0 0.45 21.9 LOS B 18.6 Approach 3.6 0.45 14.9 LOS B 18.6 All Vehicles 3.7 0.69 18.4 LOS B 39.8	Overall the intersection has LOS B and the degree of saturation is 0.69, which is within the acceptable limit of 0.90.The average delay across the intersection is 18 seconds.
PM Peak		PM Peal 15:45 - 16:45 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 2.6 0.64 25.9 LOS B 26.4 2 T1 5.7 0.64 19.5 LOS B 27.6 3 R2 4.2 0.36 24.3 LOS B 13.5 Approach 5.1 0.64 21.1 LOS B 27.6 East: Matthew Flinders Drive (E) 4 L2 0 0.26 20.1 LOS B 10.9 5 T1 1.4 0.26 15.5 LOS B 10.9 6 R2 6.2 0.45 22.9 LOS B 16.3 Approach 4.1 0.45 19.7 LOS B 16.3 North: Ocean Drive (N) 7 L2 1.9 0.32 22.1 LOS B 15.2 8 T1 1.9 0.47 15.4 LOS B 26.6 9 R2 1.2 0.77 25.6 LOS B 48.4 Approach 1.6 0.77 20.1 LOS B 48.4 West: Emerald Drive (W) 10 L2 1.6 0.19 11.9 LOS A 13.7 11 T1 7.5 0.56 18 LOS B 22.6 12 R2 2.4 0.56 22.6 LOS B 22.6 Approach 3.6 0.56 15.7 LOS B 22.6 All Vehicles 3.1 0.77 19.6 LOS B 48.4	Overall the intersection has LOS B and the degree of saturation is 0.77, which is within the acceptable limit of 0.90.The average delay across the intersection is 20 seconds.

18. Ocean Drive / Woolworths Access
2030

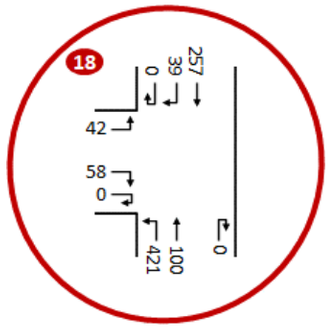
Period: AM Peak

SIDRA Geometry

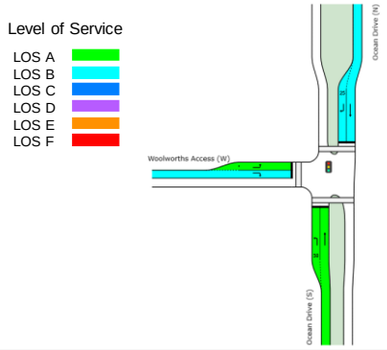


Year 2030 Volumes

AM Peak 07:45 - 08:45



Lane LOS Summary



Intersection Performance

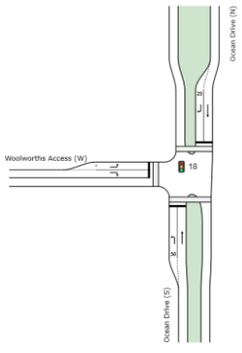
Movement ID	OD Movement	HV%	DOS	Avg. Delay (s	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	5.1	0.48	11.3	LOS A	41.3
2	T1	2.3	0.22	13.4	LOS A	12.2
Approach		4.6	0.48	11.7	LOS A	41.3
North: Ocean Drive (N)						
8	T1	5.3	0.57	15.1	LOS B	36.1
9	R2	0	0.15	21.6	LOS B	5.2
Approach		4.6	0.57	16	LOS B	36.1
West: Woolworths Access (W)						
10	L2	2.4	0.06	9.4	LOS A	3.7
12	R2	1.8	0.23	19.5	LOS B	8.1
Approach		2	0.23	15.3	LOS B	8.1
All Vehicles		4.3	0.57	13.5	LOS A	41.3

Intersection Performance Summary

Overall the intersection has LOS A and the degree of saturation is 0.57, which is within the acceptable limit of 0.90.The average delay across the intersection is 14 seconds.

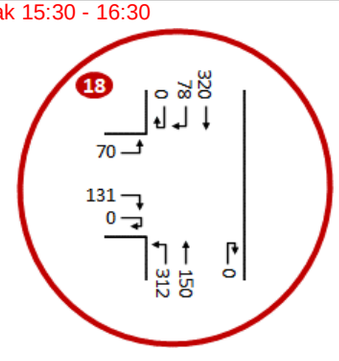
Period: PM Peak

SIDRA Geometry

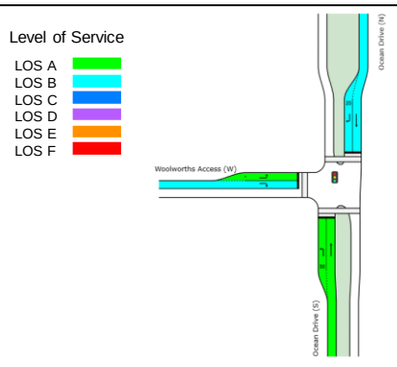


Year 2030 Volumes

PM Peak 15:30 - 16:30



Lane LOS Summary



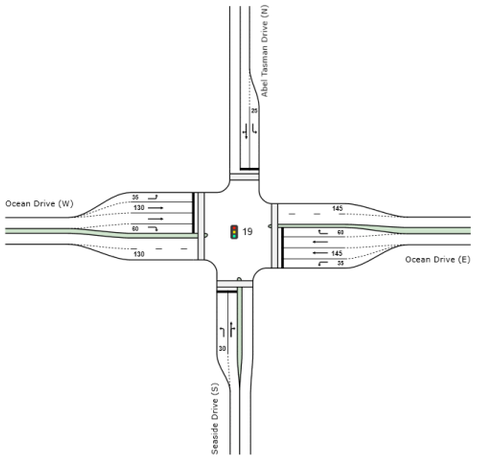
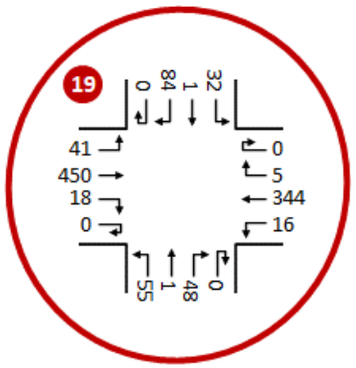
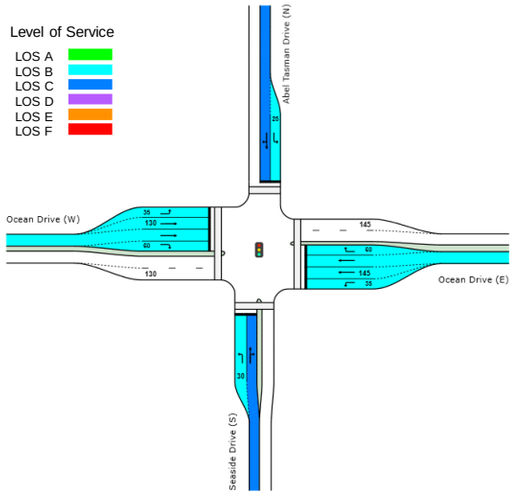
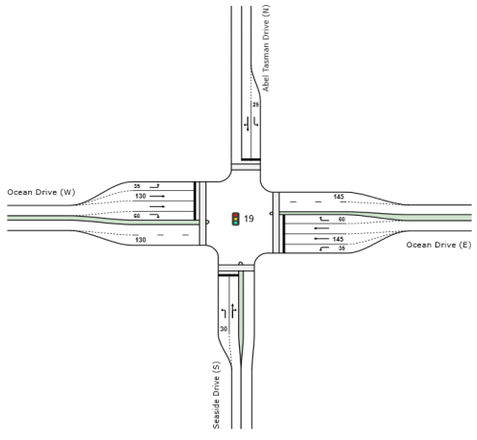
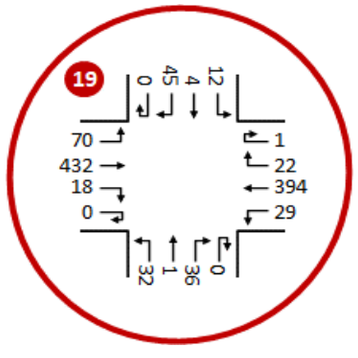
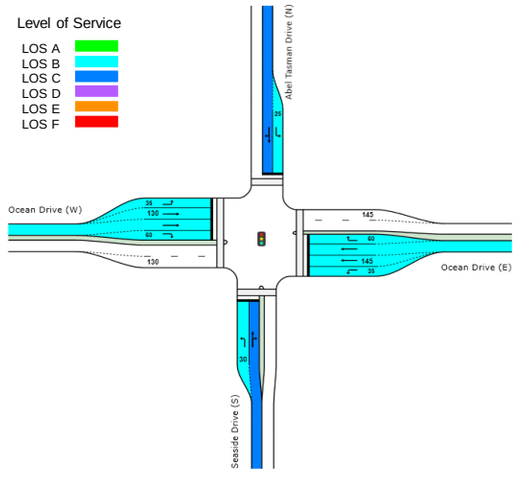
Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (s	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	5.1	0.36	10.7	LOS A	28.1
2	T1	2.3	0.33	13.9	LOS A	18.9
Approach		4.2	0.36	11.8	LOS A	28.1
North: Ocean Drive (N)						
8	T1	5.3	0.72	17.1	LOS B	49.7
9	R2	0	0.3	22.2	LOS B	10.8
Approach		4.3	0.72	18.1	LOS B	49.7
West: Woolworths Access (W)						
10	L2	2.4	0.1	9.5	LOS A	6.3
12	R2	1.8	0.63	21.2	LOS B	19.8
Approach		2	0.63	17.2	LOS B	19.8
All Vehicles		3.8	0.72	15.2	LOS B	49.7

Intersection Performance Summary

Overall the intersection has LOS B and the degree of saturation is 0.72, which is within the acceptable limit of 0.90.The average delay across the intersection is 15 seconds.

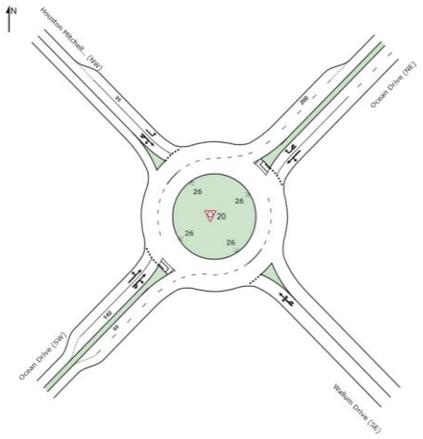
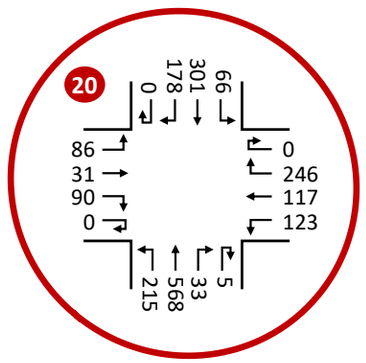
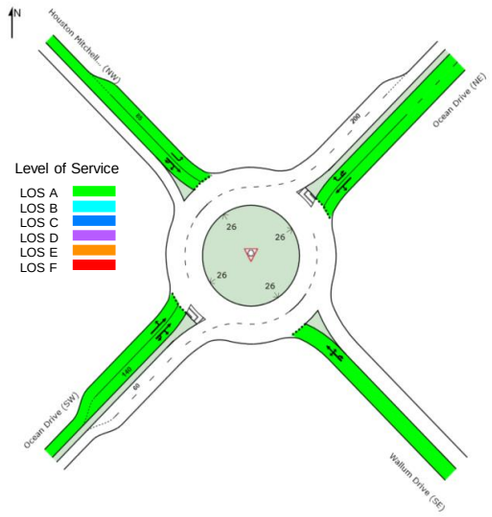
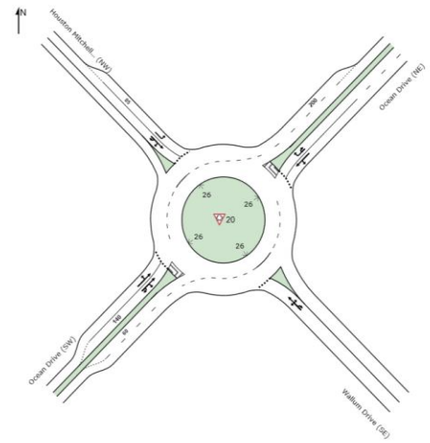
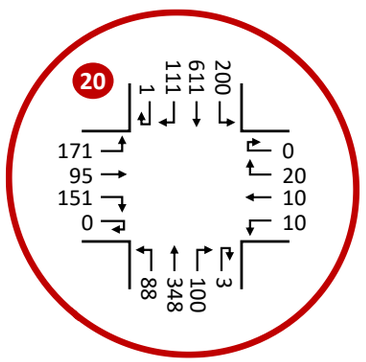
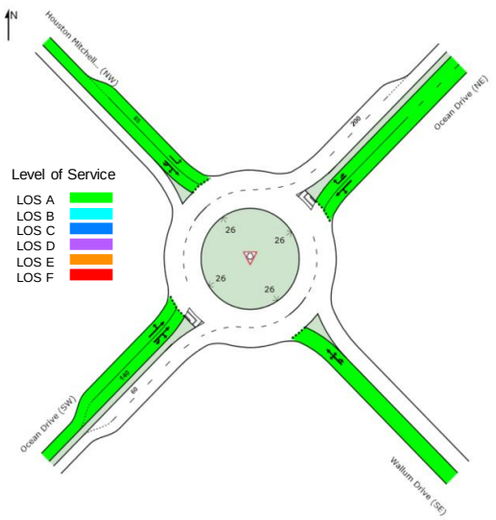
19. Ocean Drive / Abel Tasman Drive / Seaside Drive
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 07:45 - 08:45 			Overall the intersection has LOS B and the degree of saturation is 0.77, which is within the acceptable limit of 0.90.The average delay across the intersection is 21 seconds.
PM Peak		PM Peal 15:00 - 16:00 			Overall the intersection has LOS B and the degree of saturation is 0.73, which is within the acceptable limit of 0.90.The average delay across the intersection is 21 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Seaside Drive (S)						
1	L2	9.8	0.1	21.1	LOS B	9.8
2	T1	0	0.22	27	LOS B	11.4
3	R2	8.3	0.22	31.6	LOS C	11.4
Approach		9	0.22	26	LOS B	11.4
East: Ocean Drive (E)						
4	L2	14.3	0.04	25.6	LOS B	3.3
5	T1	4.3	0.41	21.3	LOS B	42
6	R2	0	0.02	18.4	LOS B	0.7
Approach		4.7	0.41	21.5	LOS B	42
North: Abel Tasman Drive (N)						
7	L2	3.6	0.06	20.8	LOS B	5.3
8	T1	0	0.35	27.8	LOS B	19.1
9	R2	1.4	0.35	32.3	LOS C	19.1
Approach		2	0.35	29.1	LOS C	19.1
West: Ocean Drive (W)						
10	L2	0	0.2	21.6	LOS B	6.4
11	T1	4.3	0.77	18.1	LOS B	47.4
12	R2	5	0.04	23.8	LOS B	3.3
Approach		4	0.77	18.6	LOS B	47.4
All Vehicles		4.5	0.77	21.4	LOS B	47.4

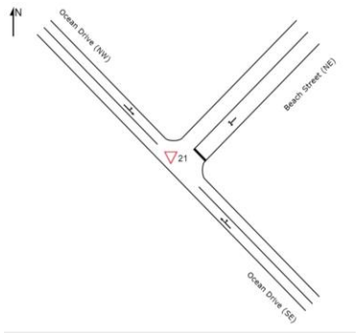
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Seaside Drive (S)						
1	L2	4.2	0.06	20.7	LOS B	5.4
2	T1	0	0.16	26.6	LOS B	8.4
3	R2	7.4	0.16	31.2	LOS C	8.4
Approach		5.8	0.16	26.3	LOS B	8.4
East: Ocean Drive (E)						
4	L2	0	0.07	25.6	LOS B	5.4
5	T1	4.2	0.47	21.7	LOS B	49
6	R2	0	0.07	18.9	LOS B	3.2
Approach		3.7	0.47	21.8	LOS B	49
North: Abel Tasman Drive (N)						
7	L2	0	0.02	20.4	LOS B	1.9
8	T1	0	0.21	26.9	LOS B	10.8
9	R2	2.3	0.21	31.5	LOS C	10.8
Approach		1.7	0.21	29	LOS C	10.8
West: Ocean Drive (W)						
10	L2	1.6	0.34	22.1	LOS B	11.3
11	T1	3.3	0.73	17.4	LOS B	43.7
12	R2	0	0.04	23.7	LOS B	3.2
Approach		3	0.73	18.3	LOS B	43.7
All Vehicles		3.4	0.73	20.8	LOS B	49

20. Ocean Drive / Houston Mitchell Drive
2030

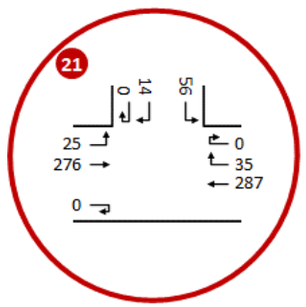
Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 07:45 - 08:45 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** SouthEast: Wallum Drive (SE) 1 L2 3.3 0.53 4.9 LOS A 19 2 T1 5 0.53 4.7 LOS A 19 3 R2 5 0.53 9.9 LOS A 19 3u U 0 0.53 11.7 LOS A 19 Approach 4.5 0.53 7.4 LOS A 19 NorthEast: Ocean Drive (NE) 4 L2 5 0.29 5.9 LOS A 14.5 5 T1 3.5 0.29 6.2 LOS A 14.5 6 R2 2.5 0.18 11.8 LOS A 7.8 6u U 0 0.18 14.3 LOS A 7.8 Approach 3.3 0.29 8 LOS A 14.5 NorthWest: Houston Mitchell Drive (NW) 7 L2 4 0.15 9.9 LOS A 5.5 8 T1 0 0.17 9.2 LOS A 7 9 R2 10 0.17 15 LOS B 7 9u U 0 0.17 17.2 LOS B 7 Approach 6 0.17 12.1 LOS A 7 SouthWest: Ocean Drive (SW) 10 L2 2 0.49 5.5 LOS A 30.1 11 T1 1.6 0.49 5.4 LOS A 30.1 12 R2 5 0.49 11 LOS A 29.3 12u U 5.4 0.49 12.5 LOS A 29.3 Approach 2.1 0.49 6.1 LOS A 30.1 All Vehicles 3.4 0.53 7.5 LOS A 30.1	Overall the intersection has LOS A and the degree of saturation is 0.53, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.
PM Peak		PM Peak 15:00 - 16:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** SouthEast: Wallum Drive (SE) 1 L2 5 0.06 4.6 LOS A 1.6 2 T1 5 0.06 4.4 LOS A 1.6 3 R2 5 0.06 9.5 LOS A 1.6 3u U 0 0.06 11.3 LOS A 1.6 Approach 4.9 0.06 7.1 LOS A 1.6 NorthEast: Ocean Drive (NE) 4 L2 5 0.71 10 LOS A 66.7 5 T1 1.4 0.71 10.2 LOS A 66.7 6 R2 6.6 0.16 13.6 LOS A 6.7 6u U 0 0.16 15.9 LOS B 6.7 Approach 2.8 0.71 10.6 LOS A 66.7 NorthWest: Houston Mitchell Drive (NW) 7 L2 4.7 0.21 8.1 LOS A 7.3 8 T1 0 0.27 7.8 LOS A 9.8 9 R2 2.3 0.27 13.3 LOS A 9.8 9u U 0 0.27 15.9 LOS B 9.8 Approach 2.7 0.27 10.1 LOS A 9.8 SouthWest: Ocean Drive (SW) 10 L2 1 0.21 2.1 LOS A 10 11 T1 1.5 0.21 1.4 LOS A 10 12 R2 2 0.21 6.2 LOS A 9.7 12u U 5 0.21 7.7 LOS A 9.7 Approach 1.5 0.21 2.4 LOS A 10 All Vehicles 2.5 0.71 8.1 LOS A 66.7	Overall the intersection has LOS A and the degree of saturation is 0.71, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.

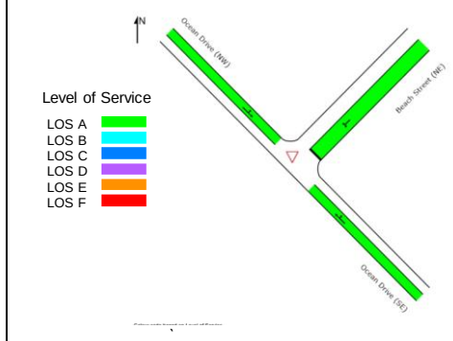
21. Ocean Drive / Beach Street
2030

AM Peak



AM Peak 07:45 - 08:45

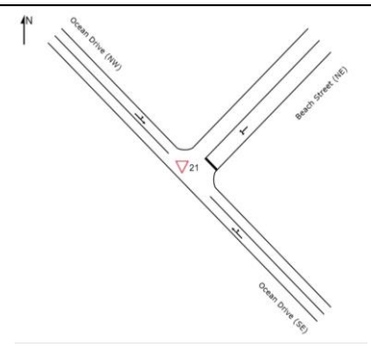




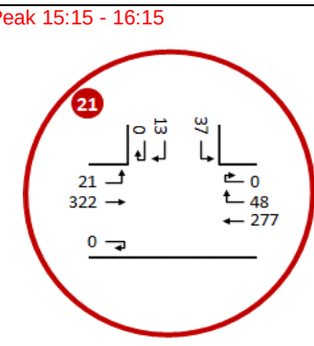
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Ocean Drive (SE)						
5	T1	7.9	0.19	0.2	LOS A	2.5
6	R2	3.2	0.19	6	LOS A	2.5
Approach		7.4	0.19	0.9	NA	2.5
NorthEast: Beach Street (NE)						
7	L2	0	0.08	8.7	LOS A	2.2
9	R2	8.3	0.08	12.4	LOS A	2.2
Approach		1.7	0.08	9.5	LOS A	2.2
NorthWest: Ocean Drive (NW)						
10	L2	9.1	0.17	4.7	LOS A	0
11	T1	6.6	0.17	0	LOS A	0
Approach		6.8	0.17	0.4	NA	0
All Vehicles		6.6	0.19	1.5	NA	2.5

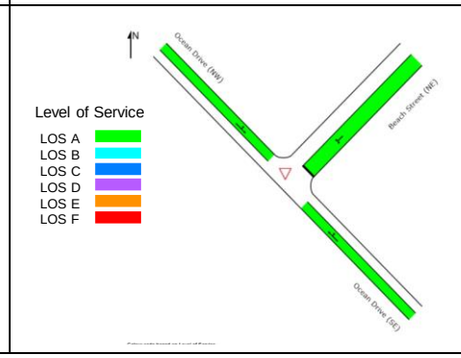
Overall the intersection has LOS A and the degree of saturation is 0.19, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.

PM Peak



PM Peak 15:15 - 16:15

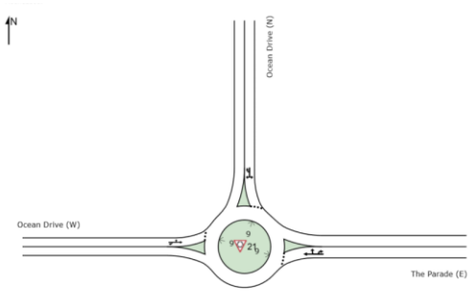
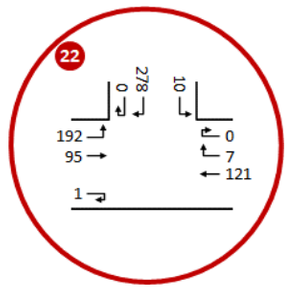
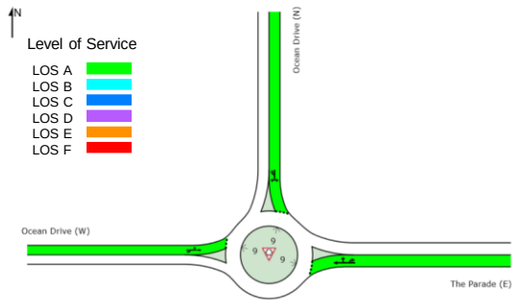
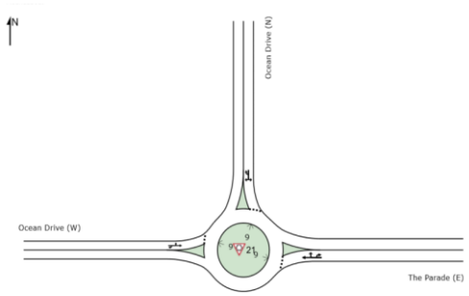
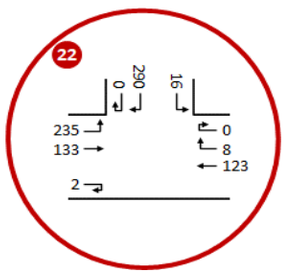
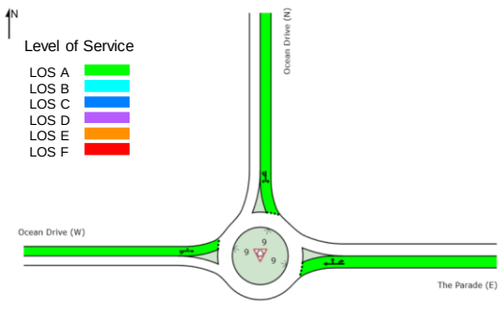




Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Ocean Drive (SE)						
5	T1	2.9	0.19	0.4	LOS A	3.3
6	R2	0	0.19	6.2	LOS A	3.3
Approach		2.5	0.19	1.2	NA	3.3
NorthEast: Beach Street (NE)						
7	L2	0	0.07	9	LOS A	1.6
9	R2	0	0.07	11.9	LOS A	1.6
Approach		0	0.07	9.8	LOS A	1.6
NorthWest: Ocean Drive (NW)						
10	L2	0	0.19	4.6	LOS A	0
11	T1	5.6	0.19	0	LOS A	0
Approach		5.2	0.19	0.3	NA	0
All Vehicles		3.6	0.19	1.4	NA	3.3

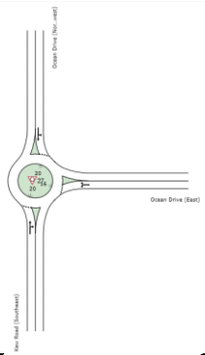
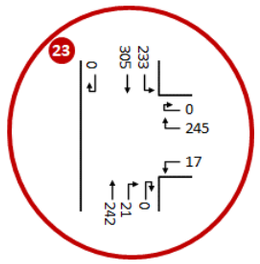
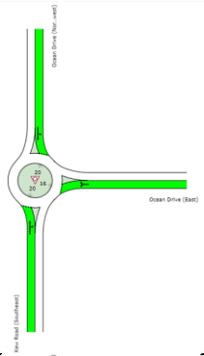
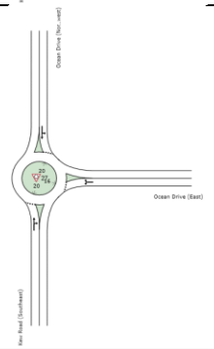
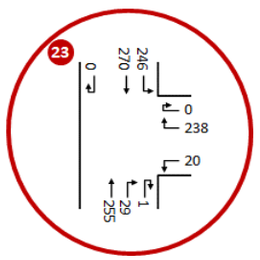
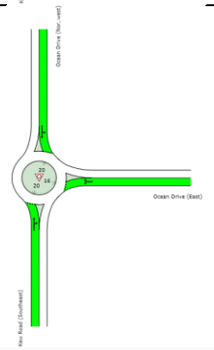
Overall the intersection has LOS A and the degree of saturation is 0.19, which is within the acceptable limit of 0.80.The average delay across the intersection is 1 second.

22. Ocean Drive / The Parade
2030

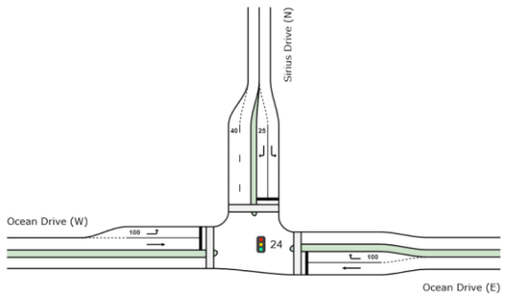
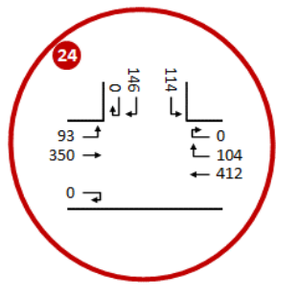
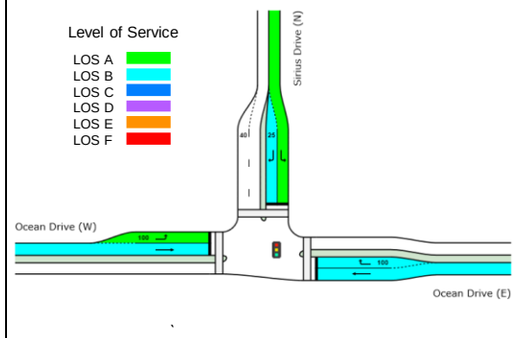
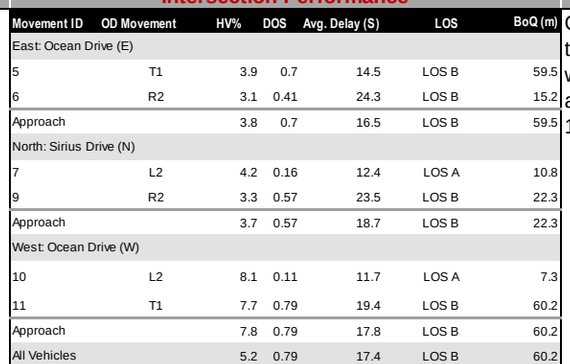
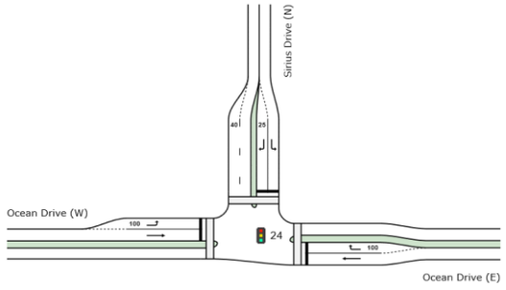
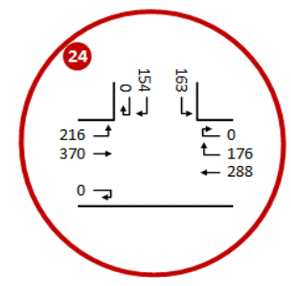
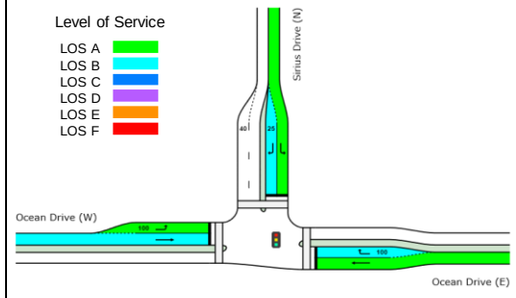
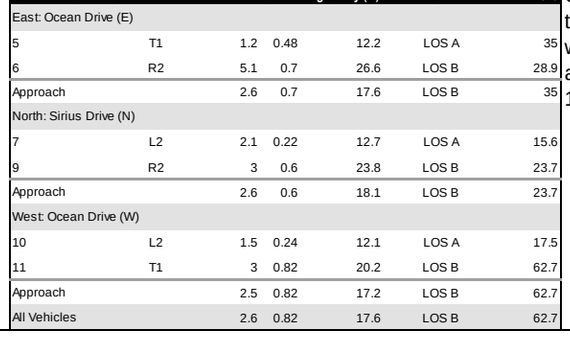
Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) East: The Parade (E) 5 T1 1.7 0.14 5.6 LOS A 5.7 6 R2 14.3 0.14 9 LOS A 5.7 6u U 0 0.14 10 LOS A 5.7 Approach 2.3 0.14 5.8 LOS A 5.7 North: Ocean Drive (N) 7 L2 0 0.26 4.6 LOS A 11.5 9 R2 3.4 0.26 7.5 LOS A 11.5 9u U 0 0.26 8.9 LOS A 11.5 Approach 3.3 0.26 7.4 LOS A 11.5 West: Ocean Drive (W) 10 L2 2.2 0.2 3.8 LOS A 10.6 11 T1 4.4 0.2 3.7 LOS A 10.6 12u U 0 0.2 8.2 LOS A 10.6 Approach 2.9 0.2 3.8 LOS A 10.6 All Vehicles 2.9 0.26 5.6 LOS A 11.5	Overall the intersection has LOS A and the degree of saturation is 0.26, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.
PM Peak		PM Peak 15:00 - 16:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) East: The Parade (E) 5 T1 3.3 0.15 5.7 LOS A 6.1 6 R2 0 0.15 8.7 LOS A 6.1 6u U 0 0.15 10.1 LOS A 6.1 Approach 3 0.15 5.9 LOS A 6.1 North: Ocean Drive (N) 7 L2 0 0.28 4.9 LOS A 12.9 9 R2 1.9 0.28 7.8 LOS A 12.9 9u U 0 0.28 9.2 LOS A 12.9 Approach 1.8 0.28 7.7 LOS A 12.9 West: Ocean Drive (W) 10 L2 1.9 0.25 3.8 LOS A 14.1 11 T1 0.8 0.25 3.7 LOS A 14.1 12u U 0 0.25 8.2 LOS A 14.1 Approach 1.5 0.25 3.8 LOS A 14.1 All Vehicles 1.8 0.28 5.6 LOS A 14.1	Overall the intersection has LOS A and the degree of saturation is 0.26, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

23. Ocean Drive / Kew Road

2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 	**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** South: Kew Road (Southeast) 2 T1 6 0.26 4.3 LOS A 11.8 3 R2 5 0.26 8.8 LOS A 11.8 Approach 5.9 0.26 4.7 LOS A 11.8 East: Ocean Drive (East) 4 L2 6.3 0.27 5.2 LOS A 11.3 6 R2 4.3 0.27 9.3 LOS A 11.3 Approach 4.4 0.27 9 LOS A 11.3 North: Ocean Drive (Northwest) 7 L2 6.3 0.36 1.8 LOS A 20.2 8 T1 5.1 0.36 1.5 LOS A 20.2 Approach 5.6 0.36 1.6 LOS A 20.2 All Vehicles 5.4 0.36 4.2 LOS A 20.2	Overall the intersection has LOS A and the degree of saturation is 0.36, which is within the acceptable limit of 0.85.The average delay across the intersection is 4 seconds.
PM Peak		PM Peak 15:15 - 16:15 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 	**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** South: Kew Road (Southeast) 2 T1 5.7 0.27 4.3 LOS A 12.6 3 R2 0 0.27 8.7 LOS A 12.6 Approach 5.1 0.27 4.8 LOS A 12.6 East: Ocean Drive (East) 4 L2 0 0.26 4.7 LOS A 10.7 6 R2 4.1 0.26 9 LOS A 10.7 Approach 3.8 0.26 8.7 LOS A 10.7 North: Ocean Drive (Northwest) 7 L2 3.1 0.35 1.8 LOS A 18.7 8 T1 2 0.35 1.6 LOS A 18.7 Approach 2.5 0.35 1.7 LOS A 18.7 All Vehicles 3.5 0.35 4.2 LOS A 18.7	Overall the intersection has LOS A and the degree of saturation is 0.35, which is within the acceptable limit of 0.85.The average delay across the intersection is 4 seconds.

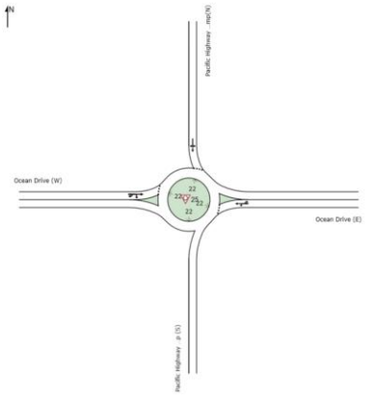
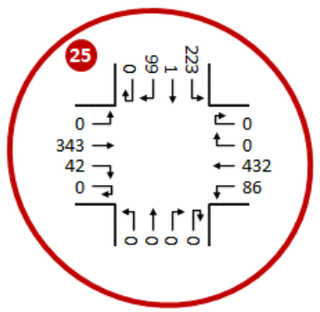
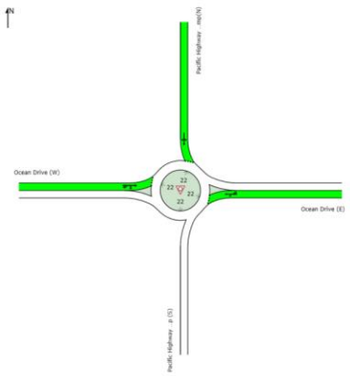
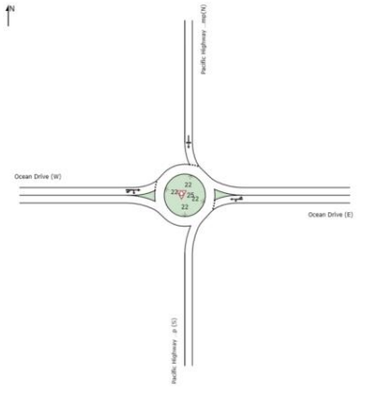
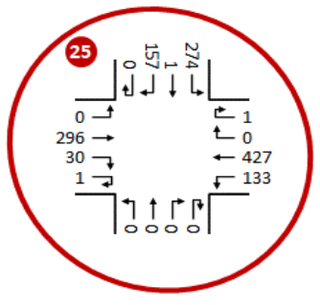
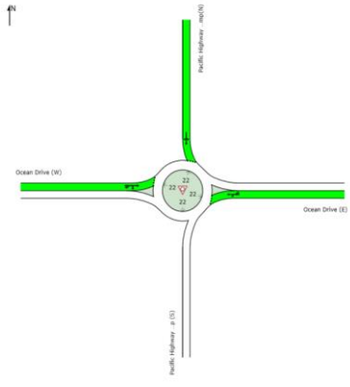
24. Ocean Drive / Sirius Drive
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 			Overall the intersection has LOS B and the degree of saturation is 0.79, which is within the acceptable limit of 0.90.The average delay across the intersection is 17 seconds.
PM Peak		PM Peal 15:15 - 16:15 			Overall the intersection has LOS B and the degree of saturation is 0.82, which is within the acceptable limit of 0.90.The average delay across the intersection is 18 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
5	T1	3.9	0.7	14.5	LOS B	59.5
6	R2	3.1	0.41	24.3	LOS B	15.2
Approach		3.8	0.7	16.5	LOS B	59.5
North: Sirius Drive (N)						
7	L2	4.2	0.16	12.4	LOS A	10.8
9	R2	3.3	0.57	23.5	LOS B	22.3
Approach		3.7	0.57	18.7	LOS B	22.3
West: Ocean Drive (W)						
10	L2	8.1	0.11	11.7	LOS A	7.3
11	T1	7.7	0.79	19.4	LOS B	60.2
Approach		7.8	0.79	17.8	LOS B	60.2
All Vehicles		5.2	0.79	17.4	LOS B	60.2

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
5	T1	1.2	0.48	12.2	LOS A	35
6	R2	5.1	0.7	26.6	LOS B	28.9
Approach		2.6	0.7	17.6	LOS B	35
North: Sirius Drive (N)						
7	L2	2.1	0.22	12.7	LOS A	15.6
9	R2	3	0.6	23.8	LOS B	23.7
Approach		2.6	0.6	18.1	LOS B	23.7
West: Ocean Drive (W)						
10	L2	1.5	0.24	12.1	LOS A	17.5
11	T1	3	0.82	20.2	LOS B	62.7
Approach		2.5	0.82	17.2	LOS B	62.7
All Vehicles		2.6	0.82	17.6	LOS B	62.7

25. Ocean Drive / Pacific Highway Ramp
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary
AM Peak		AM Peak 08:00 - 09:00 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 
PM Peak		PM Peak 15:15 - 16:15 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 

Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
4	L2	3.8	0.43	5	LOS A	25.5
5	T1	3.8	0.43	5.2	LOS A	25.5
6u	U	0	0.43	12.2	LOS A	25.5
Approach		3.8	0.43	5.2	LOS A	25.5
North: Pacific Highway Off Ramp(N)						
7	L2	9.6	0.36	7	LOS A	17.6
8	T1	0	0.36	6.9	LOS A	17.6
9	R2	11.4	0.36	12.2	LOS A	17.6
Approach		10.1	0.36	8.6	LOS A	17.6
West: Ocean Drive (W)						
11	T1	4.7	0.24	4.1	LOS A	12.5
12	R2	10.3	0.24	9	LOS A	12.5
12u	U	0	0.24	11	LOS A	12.5
Approach		5.3	0.24	4.6	LOS A	12.5
All Vehicles		5.9	0.43	5.9	LOS A	25.5

Intersection Performance Summary

Overall the intersection has LOS A and the degree of saturation is 0.43, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

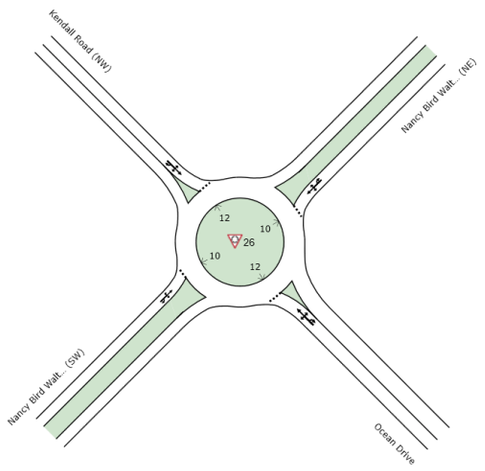
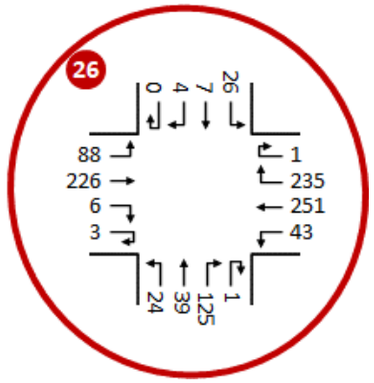
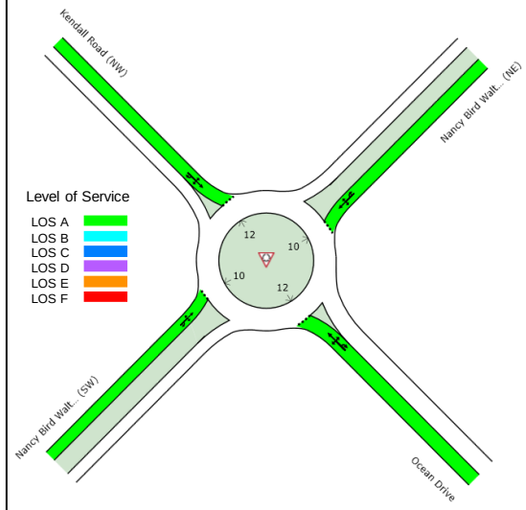
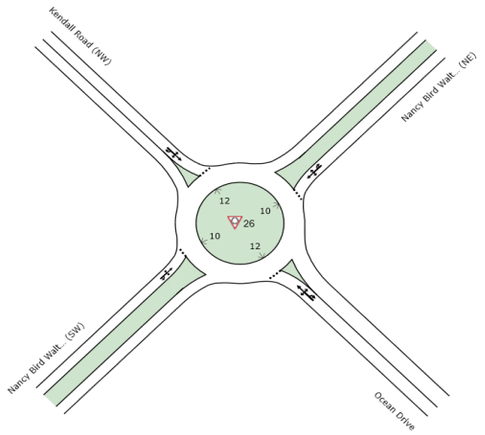
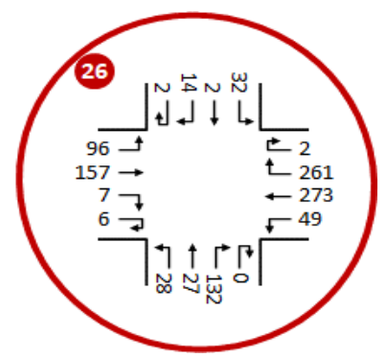
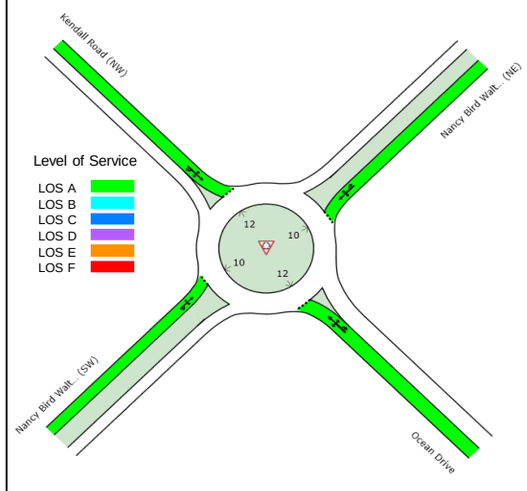
Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
4	L2	5.2	0.49	5.5	LOS A	30.5
5	T1	2.2	0.49	5.7	LOS A	30.5
6u	U	0	0.49	12.6	LOS A	30.5
Approach		2.9	0.49	5.6	LOS A	30.5
North: Pacific Highway Off Ramp(N)						
7	L2	2.3	0.44	6.5	LOS A	22.3
8	T1	100	0.44	10	LOS A	22.3
9	R2	7.4	0.44	11.8	LOS A	22.3
Approach		4.4	0.44	8.4	LOS A	22.3
West: Ocean Drive (W)						
11	T1	3.8	0.2	4	LOS A	10.5
12	R2	3.7	0.2	8.9	LOS A	10.5
12u	U	0	0.2	11	LOS A	10.5
Approach		3.8	0.2	4.5	LOS A	10.5
All Vehicles		3.6	0.49	6.3	LOS A	30.5

Intersection Performance Summary

Overall the intersection has LOS A and the degree of saturation is 0.49, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

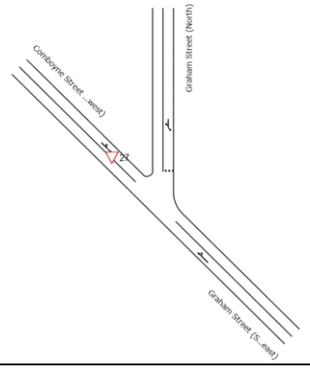
26. Ocean Drive / Nancy Bird Walton Drive / Kendall Road
2030

Period	SIDRA Geometry	Year 2030 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** SouthEast: Ocean Drive 4 L2 13.2 0.37 4.6 LOS A 19.2 5 T1 4.1 0.37 4.7 LOS A 19.2 6 R2 4.8 0.37 8.4 LOS A 19.2 6u U 0 0.37 10 LOS A 19.2 Approach 5.1 0.37 6.3 LOS A 19.2 NorthEast: Nancy Bird Walton Drive (NE) 7 L2 8.3 0.05 7.3 LOS A 2 8 T1 16.7 0.05 7.6 LOS A 2 9 R2 0 0.05 10.4 LOS A 2 9u U 0 0.05 12.2 LOS A 2 Approach 8.8 0.05 7.8 LOS A 2 NorthWest: Kendall Road (NW) 10 L2 12.3 0.4 7.3 LOS A 20.1 11 T1 4.3 0.4 7.2 LOS A 20.1 12 R2 0 0.4 10.4 LOS A 20.1 12u U 0 0.4 13.3 LOS A 20.1 Approach 6.4 0.4 7.4 LOS A 20.1 SouthWest: Nancy Bird Walton Drive (SW) 1 L2 13.6 0.27 9.4 LOS A 12.6 2 T1 8.3 0.27 9.5 LOS A 12.6 3 R2 5.2 0.27 12.8 LOS A 12.6 3u U 0 0.27 14.4 LOS A 12.6 Approach 6.9 0.27 11.7 LOS A 12.6 All Vehicles 5.9 0.4 7.6 LOS A 20.1	Overall the intersection has LOS A and the degree of saturation is 0.4, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.
PM Peak		PM Peak 15:00 - 16:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** SouthEast: Ocean Drive 4 L2 3.6 0.41 4.5 LOS A 22.6 5 T1 4.1 0.41 4.8 LOS A 22.6 6 R2 5.6 0.41 8.5 LOS A 22.6 6u U 0 0.41 10.1 LOS A 22.6 Approach 4.7 0.41 6.4 LOS A 22.6 NorthEast: Nancy Bird Walton Drive (NE) 7 L2 0 0.06 6.7 LOS A 2.2 8 T1 0 0.06 6.7 LOS A 2.2 9 R2 0 0.06 10.1 LOS A 2.2 9u U 0 0.06 11.8 LOS A 2.2 Approach 0 0.06 7.8 LOS A 2.2 NorthWest: Kendall Road (NW) 10 L2 18.8 0.34 7.6 LOS A 16.9 11 T1 4.5 0.34 7.2 LOS A 16.9 12 R2 0 0.34 10.4 LOS A 16.9 12u U 0 0.34 13.4 LOS A 16.9 Approach 9.4 0.34 7.6 LOS A 16.9 SouthWest: Nancy Bird Walton Drive (SW) 1 L2 0 0.28 9.4 LOS A 13.1 2 T1 11.5 0.28 10.4 LOS A 13.1 3 R2 3.2 0.28 13.5 LOS A 13.1 3u U 0 0.28 15.1 LOS B 13.1 Approach 3.9 0.28 12.4 LOS A 13.1 All Vehicles 5.5 0.41 7.8 LOS A 22.6	Overall the intersection has LOS A and the degree of saturation is 0.41, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.

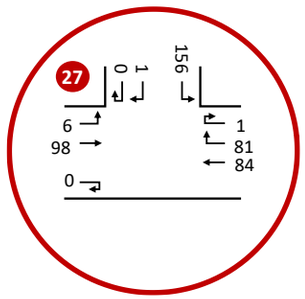
27. Comboyne Street / Graham Street

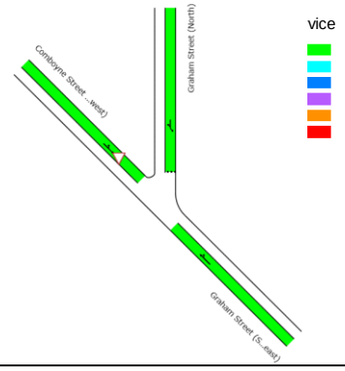
2030

AM Peak



AM Peak 08:00 - 09:00

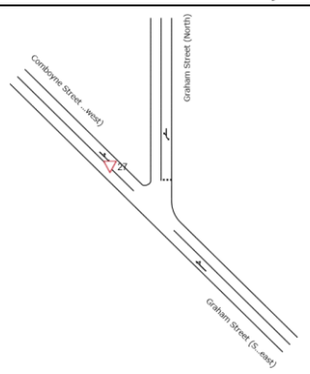




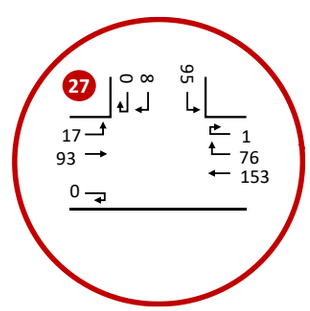
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Graham Street (Southeast)						
2	T1	7.7	0.1	0.3	LOS A	3.4
23a	R1	6.7	0.1	4	LOS A	3.4
Approach		7.2	0.1	2.1	NA	3.4
North: Graham Street (North)						
7a	L1	4.9	0.11	4.8	LOS A	3.5
9b	R3	0	0.11	6.4	LOS A	3.5
Approach		4.8	0.11	4.8	LOS A	3.5
NorthWest: Comboyne Street (Northwest)						
27b	L3	16.7	0.06	5.6	LOS A	0
8	T1	8.8	0.06	0	LOS A	0
Approach		9.2	0.06	0.3	NA	0
All Vehicles		6.8	0.11	2.7	NA	3.5

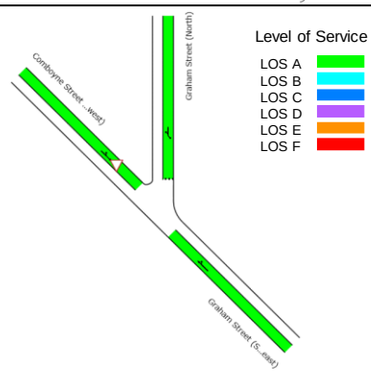
Overall the intersection has LOS A and the degree of saturation is 0.11, which is within the acceptable limit of 0.80.The average delay across the intersection is 3 seconds.

PM Peak



PM Peak 15:00 - 16:00



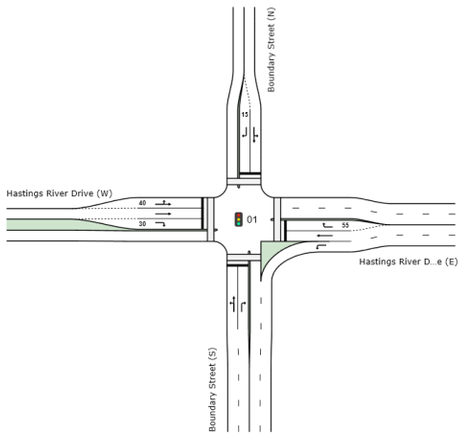
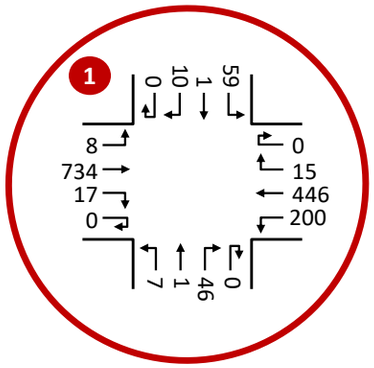
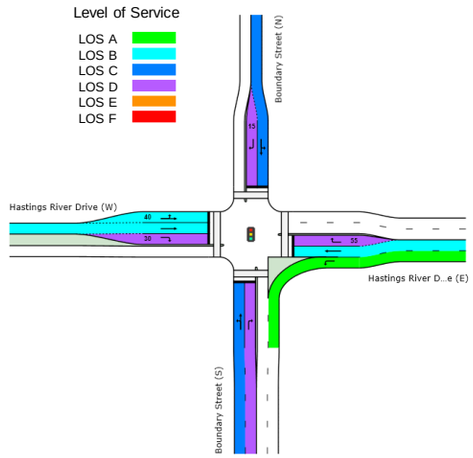
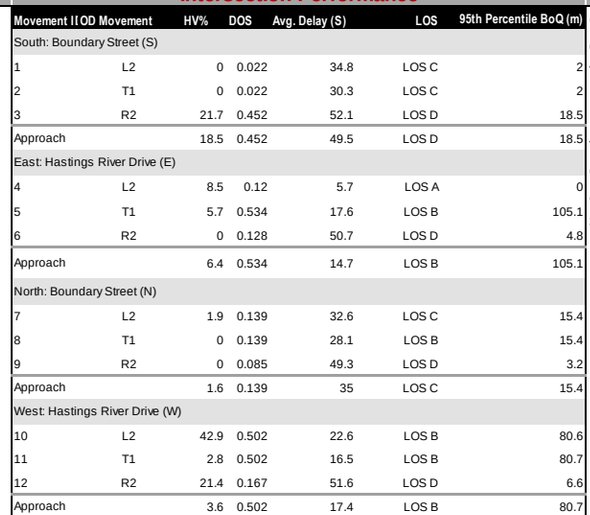
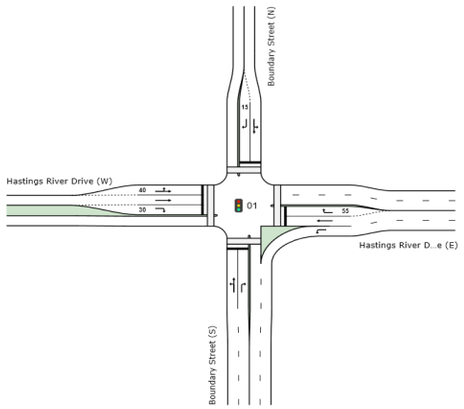
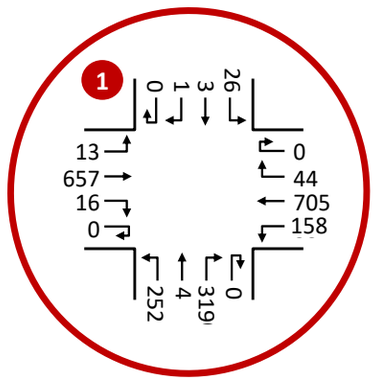
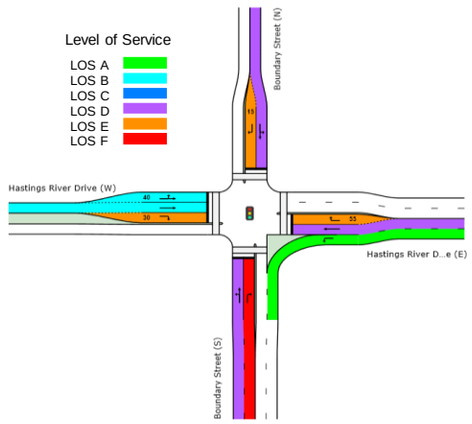
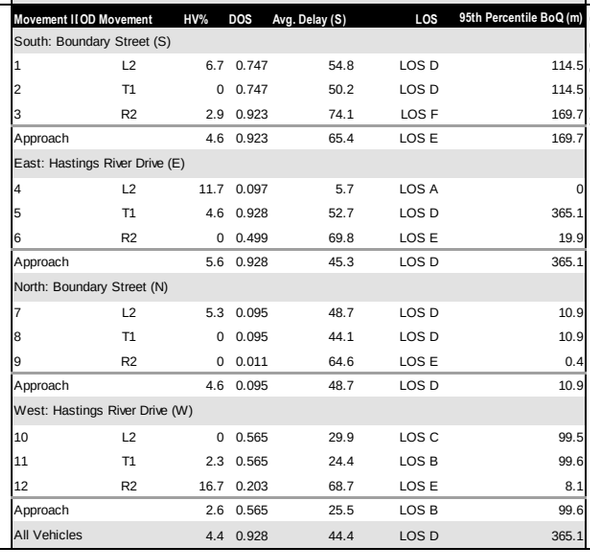


Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Graham Street (Southeast)						
2	T1	4.3	0.14	0.2	LOS A	3.8
23a	R1	7.2	0.14	4.1	LOS A	3.8
Approach		5.3	0.14	1.5	NA	3.8
North: Graham Street (North)						
7a	L1	14	0.08	4.9	LOS A	2.5
9b	R3	0	0.08	6.7	LOS A	2.5
Approach		12.9	0.08	5	LOS A	2.5
NorthWest: Comboyne Street (Northwest)						
27b	L3	0	0.06	5.4	LOS A	0
8	T1	4.8	0.06	0	LOS A	0
Approach		4	0.06	0.8	NA	0
All Vehicles		6.7	0.14	2.2	NA	3.8

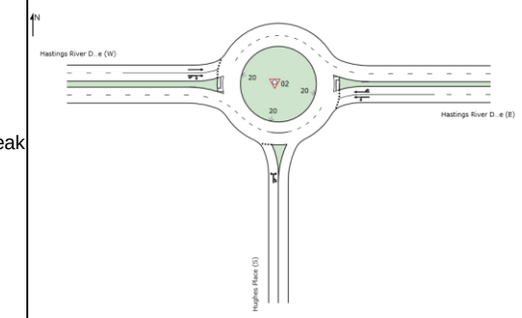
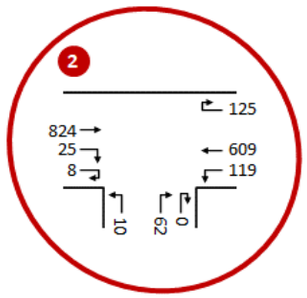
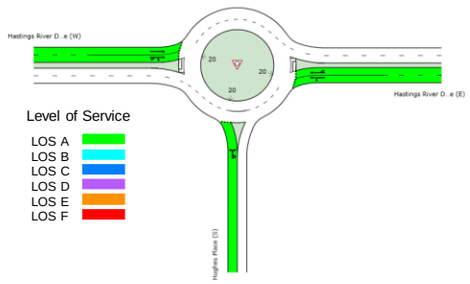
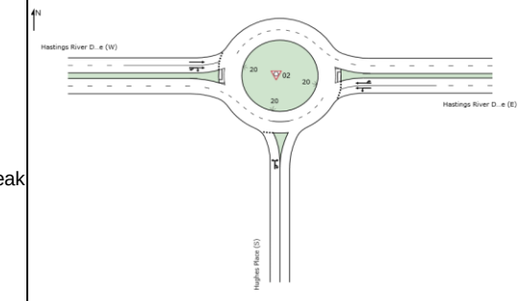
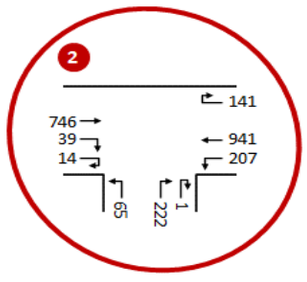
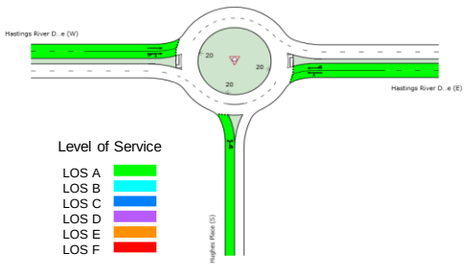
Overall the intersection has LOS A and the degree of saturation is 0.14, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.

1. Boundary Street / Hastings River Drive

2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS B and the degree of saturation is 0.53 , which is within the acceptable limit of 0.9.The right-turns present as LOS D, this is due to relatively high delays for these movements. However the volumes are low and queues are contained in the right-turn pockets. The average delay across the intersection is 18 seconds.
PM Peak		PM Peak 16:15 - 17:15 			Overall the intersection has LOS D and the degree of saturation is 0.93 , which is just **outside** the acceptable limit of 0.9. The average delay across the intersection is 44 seconds

2. Hastings River Drive / Hughes Place
2040

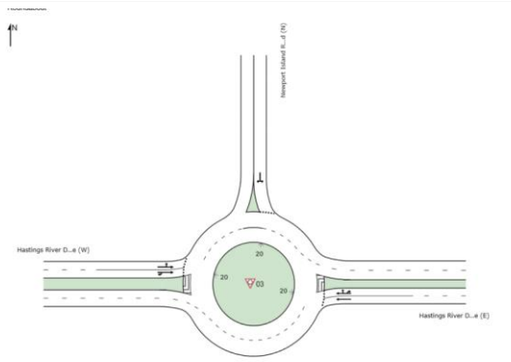
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / 95th Percentile BoQ (m) South: Hughes Place (S) 1 L2 11.1 0.10 5.7 LOS A 2.7 3 R2 3.4 0.10 9.9 LOS A 2.7 3u U 0 0.10 13.4 LOS A 2.7 Approach 4.5 0.10 9.4 LOS A 2.7 East: Hastings River Drive (E) 4 L2 0 0.29 4.2 LOS A 16.2 5 T1 5.6 0.29 4.4 LOS A 16.2 6u U 2.9 0.29 11.2 LOS A 16.1 Approach 4.4 0.29 5.4 LOS A 16.2 West: Hastings River Drive (W) 11 T1 3.8 0.34 5.5 LOS A 18 12 R2 0 0.34 10.2 LOS A 17.7 12u U 14.3 0.34 12.7 LOS A 17.7 Approach 3.8 0.34 5.7 LOS A 18 All Vehicles 4.1 0.34 5.7 LOS A 18	Overall the intersection has LOS A and the degree of saturation is 0.34 , which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / 95th Percentile BoQ (m) South: Hughes Place (S) 1 L2 0 0.46 8.2 LOS A 17 3 R2 1 0.46 12.8 LOS A 17 3u U 0 0.46 16.4 LOS B 17 Approach 0.7 0.46 11.8 LOS A 17 East: Hastings River Drive (E) 4 L2 0.6 0.44 4.4 LOS A 30.9 5 T1 3 0.44 4.6 LOS A 30.9 6u U 2.5 0.44 11.4 LOS A 30.5 Approach 2.5 0.44 5.3 LOS A 30.9 West: Hastings River Drive (W) 11 T1 4.4 0.39 6.7 LOS A 22 12 R2 0 0.39 11.6 LOS A 20.8 12u U 0 0.39 13.7 LOS A 20.8 Approach 4.1 0.39 7.1 LOS A 22 All Vehicles 2.8 0.46 6.7 LOS A 30.9	Overall intersection has LOS A and the degree of saturation is 0.46 , which is within the acceptable limit of 0.85.The average delay across the intersection is 7 seconds.

3. Hastings River Drive / Newport Island Road

2040

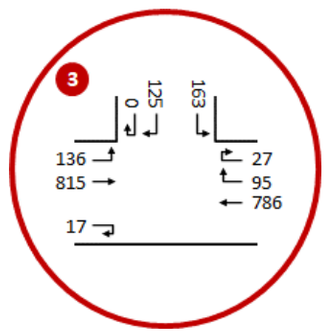
AM Peak

SIDRA Geometry

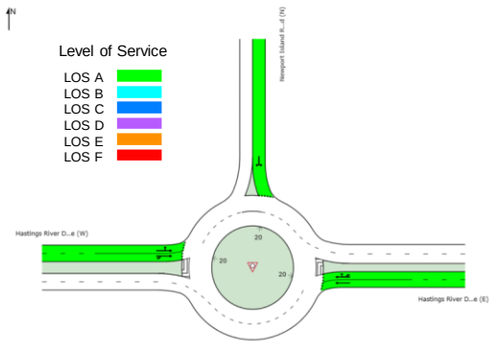


Year 2040 Volumes

AM Peak 08:00 - 09:00



Lane LOS Summary



Intersection Performance

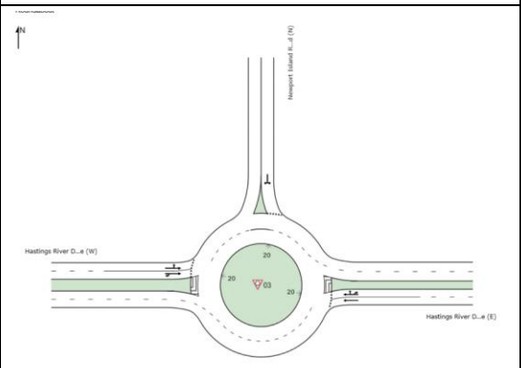
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	4	0.36	5.1	LOS A	21
6	R2	23.1	0.36	10.4	LOS A	21
6u	U	0	0.36	12	LOS A	21
Approach		5.9	0.36	5.9	LOS A	21
North: Newport Island Road (N)						
7	L2	3.1	0.37	5.5	LOS A	11.1
9	R2	3.3	0.37	9.9	LOS A	11.1
Approach		3.2	0.37	7.4	LOS A	11.1
West: Hastings River Drive (W)						
10	L2	7.1	0.37	4.9	LOS A	21.6
11	T1	4.6	0.37	5.1	LOS A	21.6
12u	U	14.3	0.37	12.1	LOS A	21
Approach		5.1	0.37	5.2	LOS A	21.6
All Vehicles		5.2	0.37	5.8	LOS A	21.6

Intersection Performance Summary

Overall the intersection has LOS A and the degree of saturation is 0.37, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

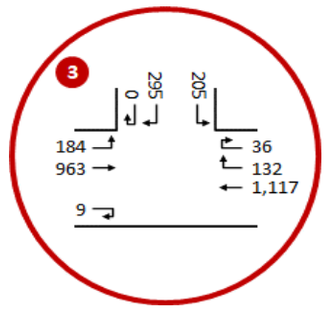
PM Peak

SIDRA Geometry

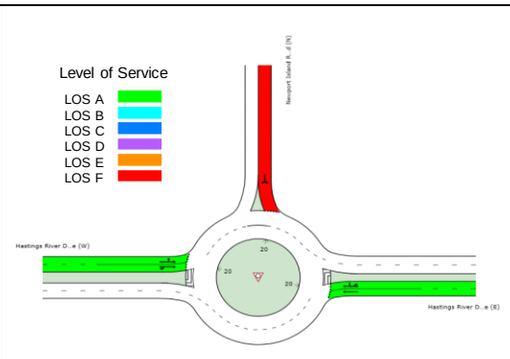


Year 2040 Volumes

PM Peak 15:15 - 16:15



Lane LOS Summary



Intersection Performance

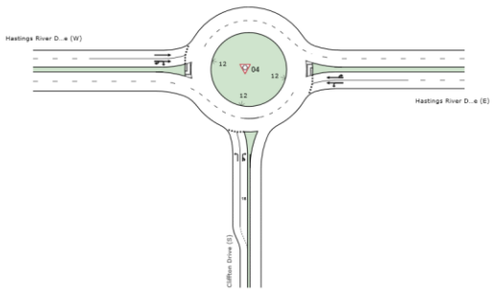
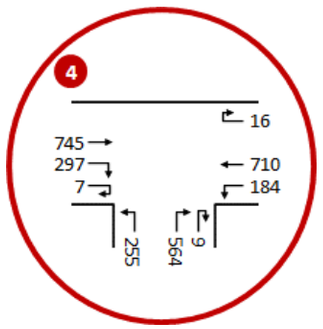
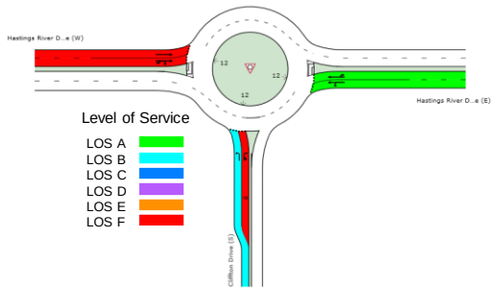
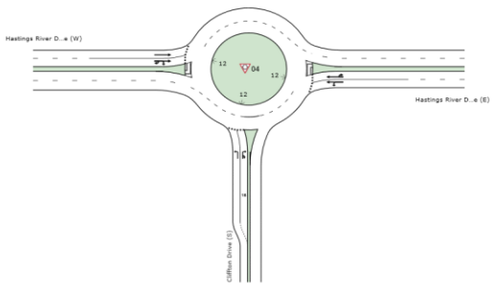
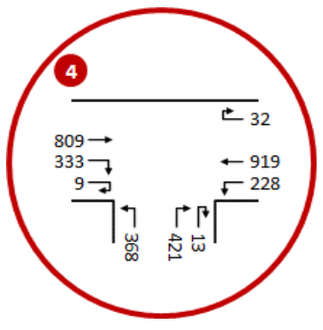
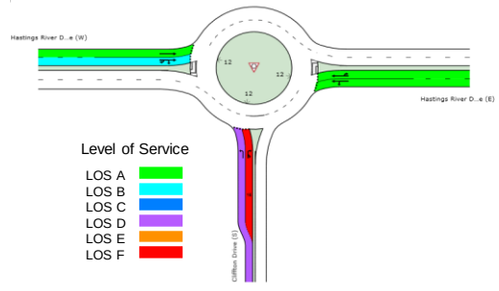
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	2.2	0.60	6.6	LOS A	44.4
6	R2	14.2	0.60	12.2	LOS A	44.7
6u	U	0	0.60	13.8	LOS A	44.7
Approach		3.4	0.60	7.4	LOS A	44.7
North: Newport Island Road (N)						
7	L2	3.1	1.13	139.1	LOS F	345.6
9	R2	1.7	1.13	143.4	LOS F	345.6
Approach		2.3	1.13	141.6	LOS F	345.6
West: Hastings River Drive (W)						
10	L2	3.8	0.47	5.3	LOS A	31.3
11	T1	3.3	0.47	5.5	LOS A	31.3
12u	U	0	0.47	12.3	LOS A	30.1
Approach		3.3	0.47	5.5	LOS A	31.3
All Vehicles		3.2	1.13	29.5	LOS C	345.6

Intersection Performance Summary

Overall the intersection has LOS F and the degree of saturation is 1.13 , which is **above** the acceptable limit of 0.85.The average delay across the intersection is 30 seconds.

4. Street Hastings River Drive / Clifton Drive

2040

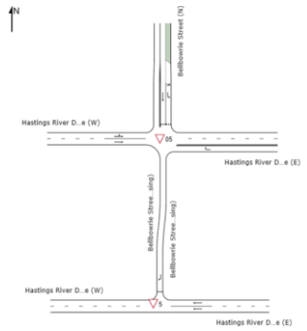
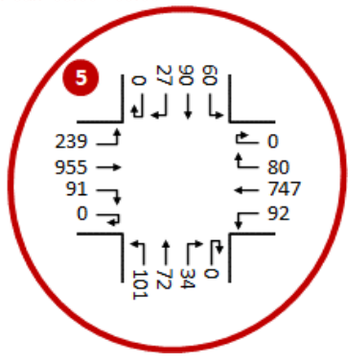
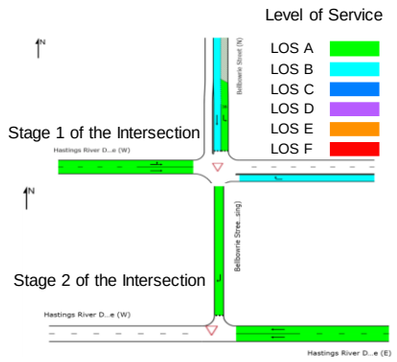
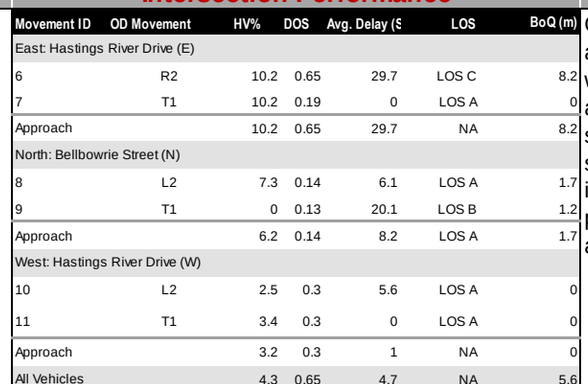
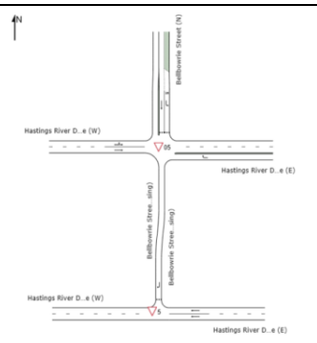
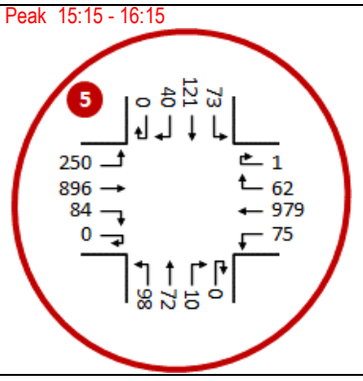
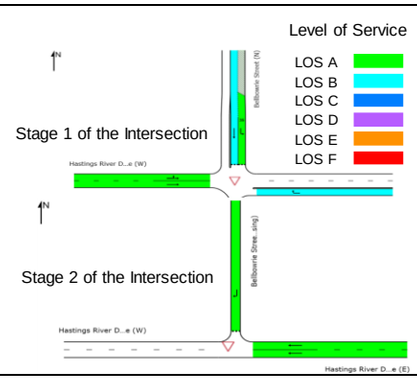
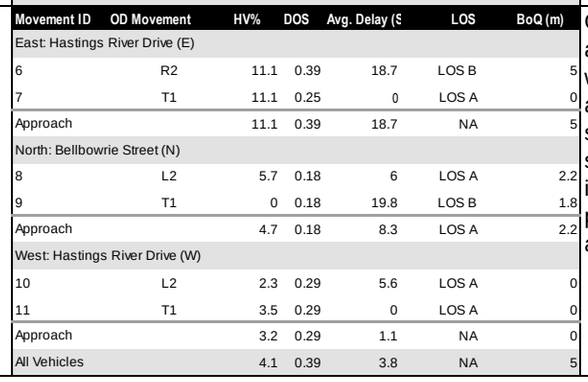
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS F and the degree of saturation is 1.22, which is **above** the acceptable limit of 0.85.The average delay across the intersection is 88.7 seconds.
PM Peak		PM Peak 15:00 - 16:00 			Overall the intersection has LOS F and the degree of saturation is 1.08, which is **above** the acceptable limit of 0.85.The average delay across the intersection is 29 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Cliffton Drive (S)						
1	L2	3.1	0.73	21.7	LOS B	41.3
3	R2	0.9	1.22	225.4	LOS F	575.7
3u	U	0	1.22	228.4	LOS F	575.7
Approach		1.6	1.22	162.7	LOS F	575.7
East: Hastings River Drive (E)						
4	L2	0.7	0.61	9.9	LOS A	46.3
5	T1	6.7	0.61	10.1	LOS A	46.3
6u	U	15.4	0.61	16	LOS B	47.2
Approach		5.6	0.61	10.2	LOS A	47.2
West: Hastings River Drive (W)						
11	T1	5.5	1.05	97.5	LOS F	310.7
12	R2	1.6	1.05	100.5	LOS F	310.7
12u	U	0	1.05	102.2	LOS F	310.7
Approach		4.4	1.05	98.4	LOS F	312.7
All Vehicles		4	1.22	88.7	LOS F	575.7

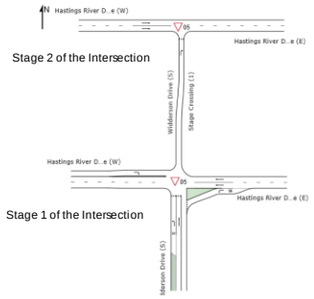
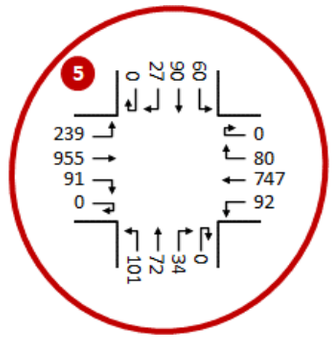
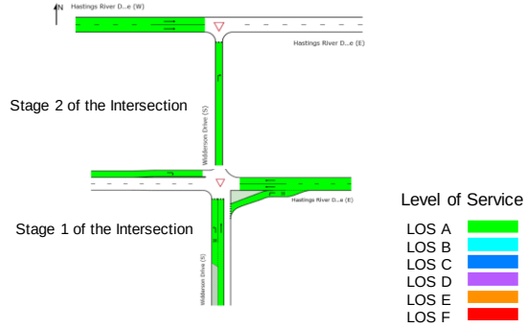
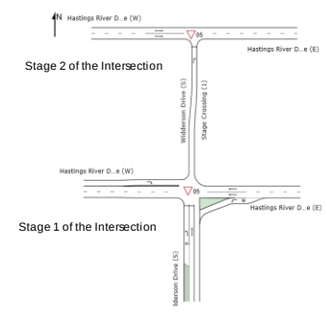
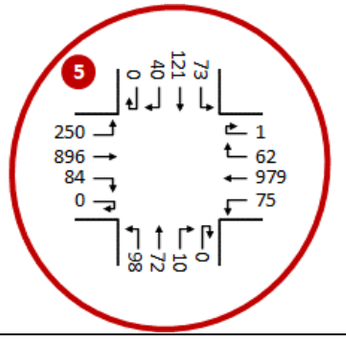
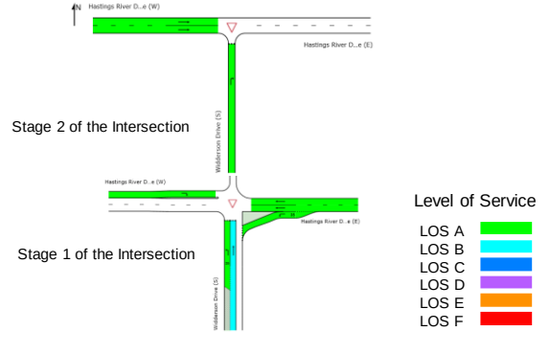
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Cliffton Drive (S)						
1	L2	2.9	0.94	43.9	LOS D	98.6
3	R2	0.3	1.08	114.9	LOS F	250
3u	U	0	1.08	118	LOS F	250
Approach		1.5	1.08	82.4	LOS F	250
East: Hastings River Drive (E)						
4	L2	1.5	0.62	8.5	LOS A	49.8
5	T1	2.9	0.62	9.1	LOS A	49.8
6u	U	3.7	0.62	15.1	LOS B	48.9
Approach		2.7	0.62	9.2	LOS A	49.8
West: Hastings River Drive (W)						
11	T1	4.8	0.68	11.2	LOS A	62.5
12	R2	3.2	0.68	15.9	LOS B	59.3
12u	U	0	0.68	17.5	LOS B	59.3
Approach		4.3	0.68	12.6	LOS A	62.5
All Vehicles		3	1.08	29.2	LOS C	250

5.1. Hastings River Drive / Bellbowrie Street / Widderson Street

2040

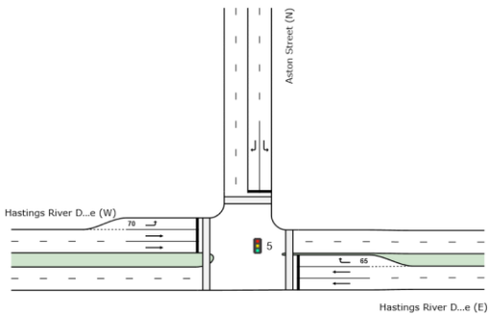
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has a LOS between A and C and the degree of saturation is 0.65, which is within the acceptable limit of 0.80.The average delay across the intersection is 5 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.
PM Peak		PM Peak 15:15 - 16:15 			Overall the intersection has a LOS between A and B and the degree of saturation is 0.39, which is within the acceptable limit of 0.80.The average delay across the intersection is 4 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.

5.2. Hastings River Drive / Bellbowrie Street / Widderson Street
2040

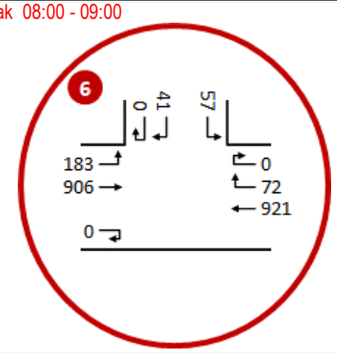
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (s / LOS / BoQ (m) South: Widderson Drive (S) 1 L2 12.8 0.14 6.1 LOS A 1.8 2 R2 0 0.08 12.3 LOS A 0.8 Approach 10.7 0.14 7.1 LOS A 1.8 East: Hastings River Drive (E) 4 L2 5.3 0.06 6.3 LOS A 0.7 5 T1 5.7 0.17 0 LOS A 0 Approach 5.6 0.17 0.7 LOS A 0.7 West: Hastings River Drive (W) 12 R2 10.3 0.27 9 LOS A 3.6 Approach 10.3 0.27 9 NA 3.6 All Vehicles 7.2 0.27 3.1 NA 3.6	Overall the intersection has LOS A and the degree of saturation is 0.27, which is within the acceptable limit of 0.80.The average delay across the intersection is 3 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (s / LOS / BoQ (m) South: Widderson Drive (S) 1 L2 12.6 0.16 6.8 LOS A 2.1 2 R2 0 0.04 17.9 LOS B 0.4 Approach 11.9 0.16 7.4 LOS A 2.1 East: Hastings River Drive (E) 4 L2 6.3 0.05 6.4 LOS A 0.6 5 T1 4.2 0.23 0 LOS A 0 Approach 4.3 0.23 0.5 LOS A 0.6 West: Hastings River Drive (W) 12 R2 8.8 0.43 13.8 LOS A 6.5 Approach 8.8 0.43 13.8 NA 6.5 All Vehicles 6 0.43 3.4 NA 6.5	Overall the intersection has a LOS between A and B and the degree of saturation is 0.43, which is within the acceptable limit of 0.80.The average delay across the intersection is 4 seconds. The intersection was modelled with a staged crossing for the right turn movement. It is expected that the right turn is only performing within acceptable limits due to the ability for vehicles to stage in the median.

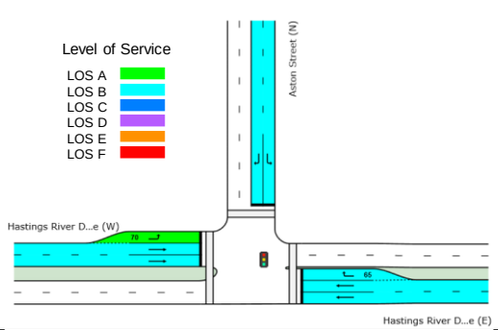
6. Hastings River Drive / Aston Street
2040

AM Peak



AM Peak 08:00 - 09:00

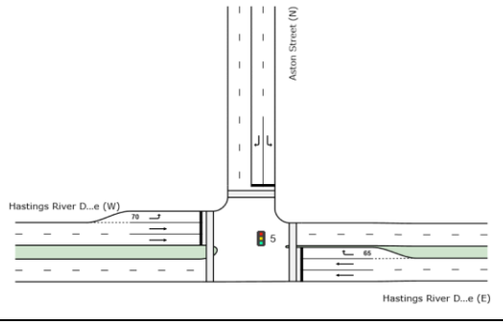




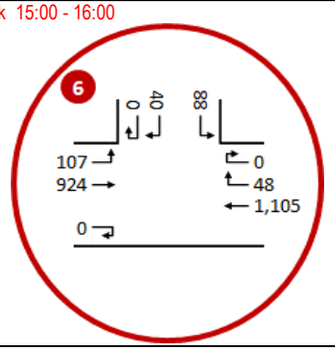
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	5.8	0.76	18.7	LOS B	87.1
6	R2	13.6	0.28	25.9	LOS B	13.6
Approach		6.4	0.76	19.3	LOS B	87.1
North: Aston Street (N)						
7	L2	2.3	0.08	14.7	LOS B	6.6
9	R2	3.2	0.17	26.3	LOS B	7.1
Approach		2.7	0.17	19.6	LOS B	7.1
West: Hastings River Drive (W)						
10	L2	2.6	0.18	9.9	LOS A	15.9
11	T1	2.9	0.73	17.8	LOS B	80.9
Approach		2.9	0.73	16.5	LOS B	80.9
All Vehicles		4.5	0.76	17.9	LOS B	87.1

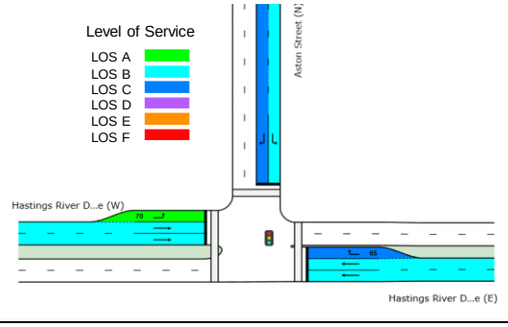
Generally the intersection performs at LOS B and the degree of saturation is 0.76, which is above the acceptable limit of 0.90. The average delay across the intersection is 18 seconds.

PM Peak



PM Peak 15:00 - 16:00

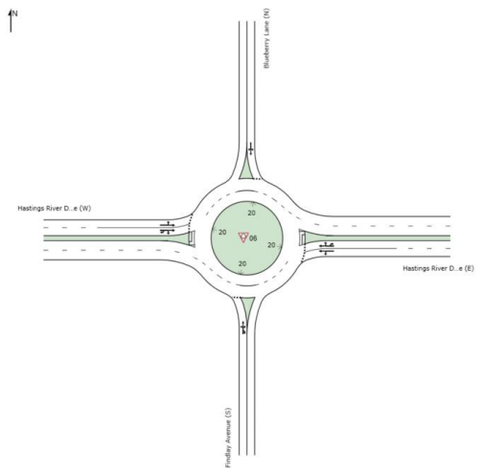
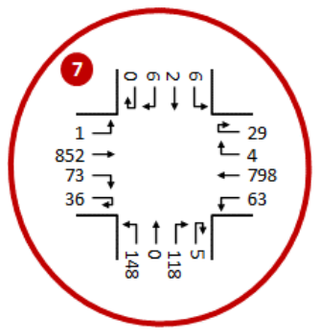
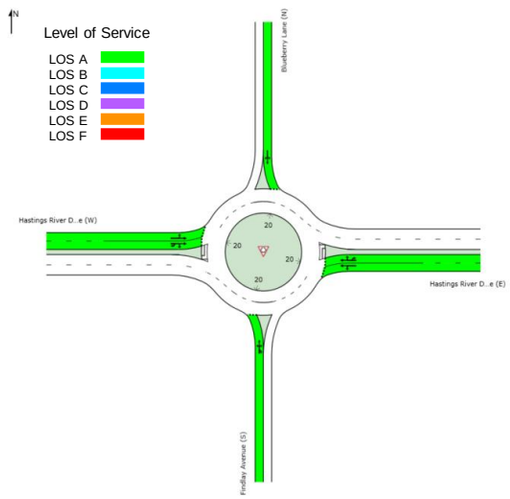
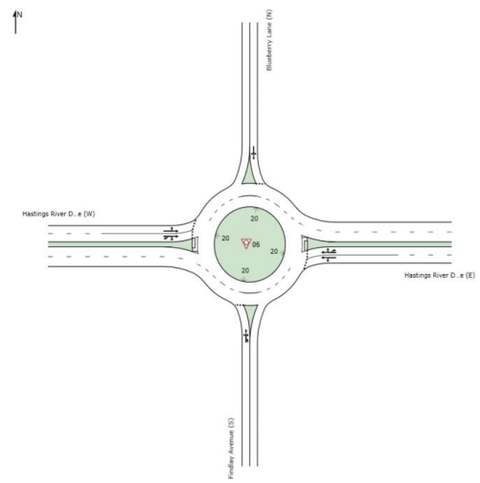
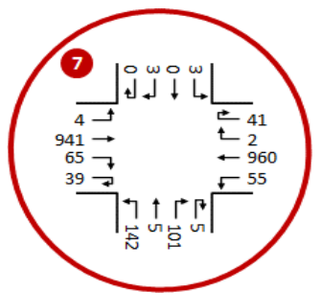
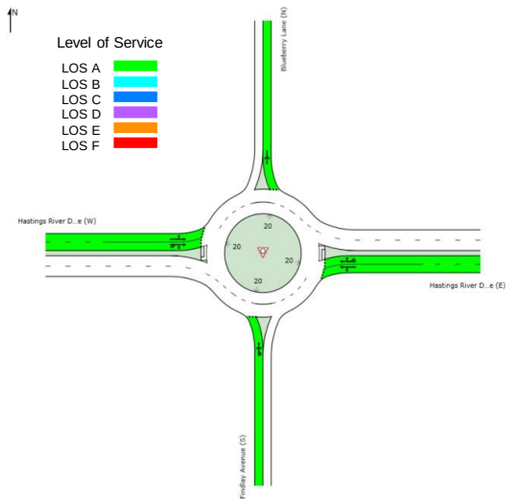




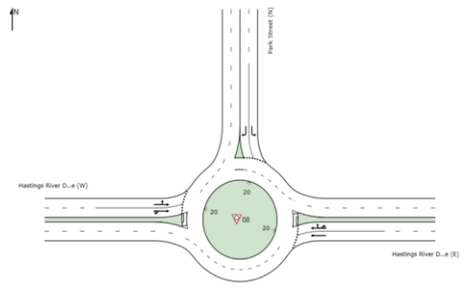
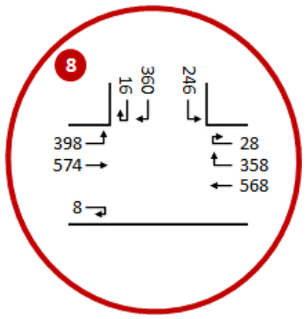
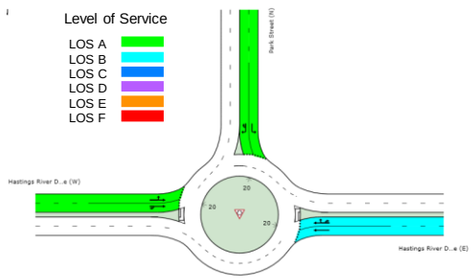
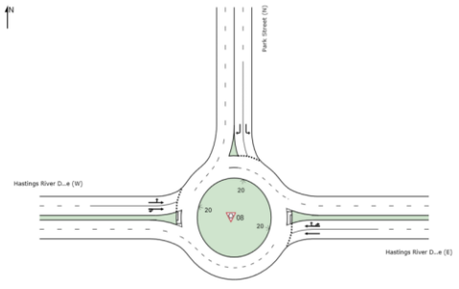
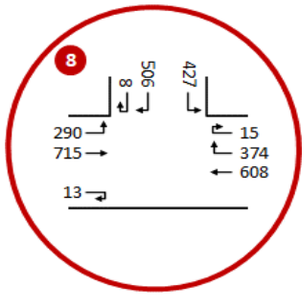
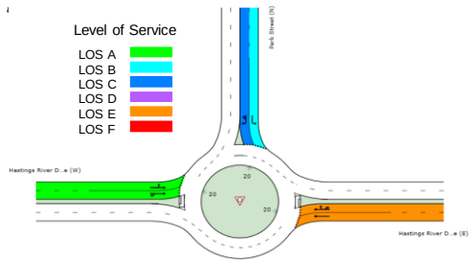
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Hastings River Drive (E)						
5	T1	2.9	0.76	19.1	LOS B	114.9
6	R2	9.8	0.18	28.9	LOS C	10.1
Approach		3.1	0.76	19.5	LOS B	114.9
North: Aston Street (N)						
7	L2	3	0.14	18.4	LOS B	13.1
9	R2	0	0.17	30.7	LOS C	8.1
Approach		2.1	0.17	22.2	LOS B	13.1
West: Hastings River Drive (W)						
10	L2	6.5	0.11	10.1	LOS A	10.4
11	T1	2	0.63	15.9	LOS B	83
Approach		2.5	0.63	15.3	LOS B	83
All Vehicles		2.8	0.76	17.8	LOS B	114.9

Generally the intersection performs at LOS B and the degree of saturation is 0.76, which is within the acceptable limit of 0.90. The average delay across the intersection is 18 seconds.

7. Hastings River Drive / Findlay Avenue / Blueberry Lane
2040

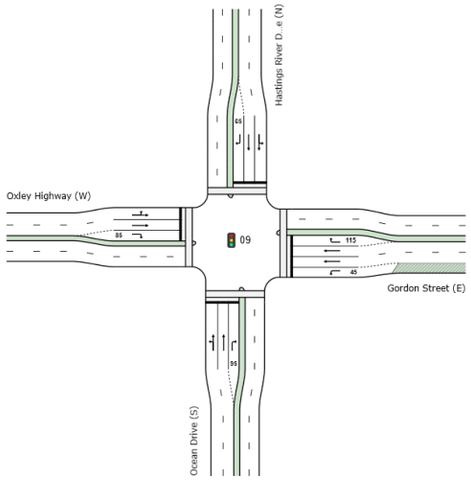
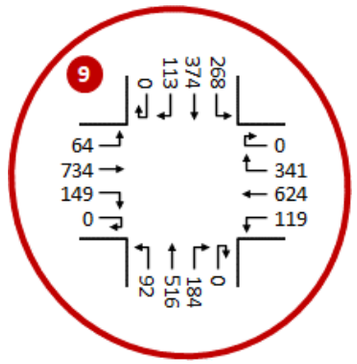
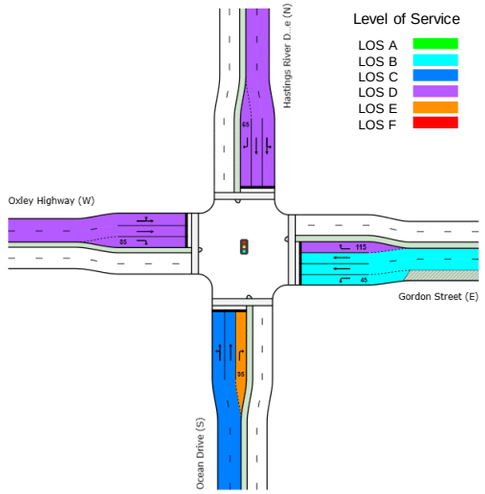
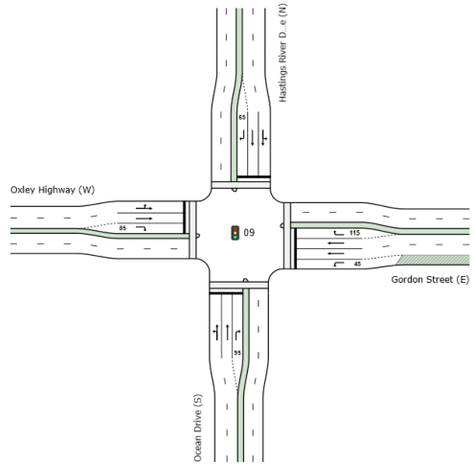
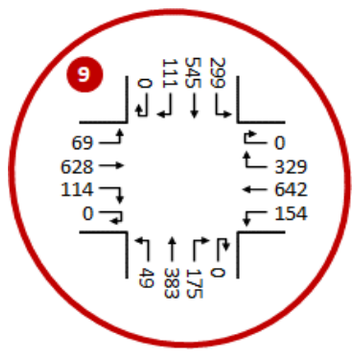
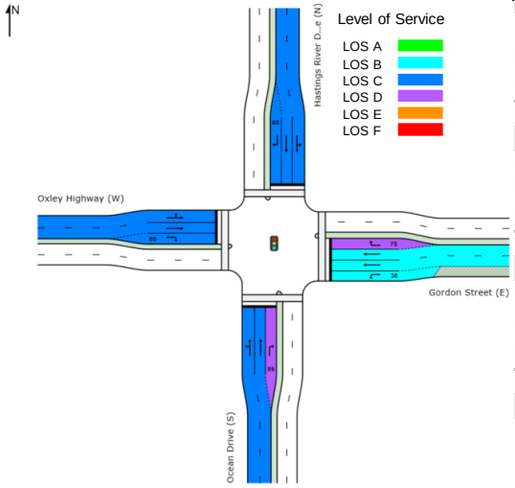
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Findlay Avenue (S) 1 L2 14.3 0.48 9.7 LOS A 20.8 2 T1 0 0.48 8.9 LOS A 20.8 3 R2 2.2 0.48 13.6 LOS A 20.8 3u U 0 0.48 17.1 LOS B 20.8 Approach 8.7 0.48 11.5 LOS A 20.8 East: Hastings River Drive (E) 4 L2 1.9 0.34 3.7 LOS A 19.4 5 T1 5 0.34 3.6 LOS A 19.4 6 R2 0 0.34 8.2 LOS A 19 6u U 4.2 0.34 10.1 LOS A 19 Approach 4.7 0.34 3.9 LOS A 19.4 North: Blueberry Lane (N) 7 L2 0 0.03 7.2 LOS A 0.8 8 T1 0 0.03 7.2 LOS A 0.8 9 R2 0 0.03 11.8 LOS A 0.8 Approach 0 0.03 9.2 LOS A 0.8 West: Hastings River Drive (W) 10 L2 0 0.38 3.9 LOS A 22.5 11 T1 2.4 0.38 3.9 LOS A 22.5 12 R2 1.7 0.38 8.5 LOS A 21.8 12u U 3.3 0.38 10.5 LOS A 21.8 Approach 2.4 0.38 4.5 LOS A 22.5 All Vehicles 4.2 0.48 5.2 LOS A 22.5	Overall the intersection has LOS A and the degree of saturation is 0.48, which is within the acceptable limit of 0.85.The average delay across the intersection is 5 seconds.
PM Peak		PM Peak 15:15 - 16:15 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Findlay Avenue (S) 1 L2 7.8 0.48 10.1 LOS A 19.6 2 T1 0 0.48 9.7 LOS A 19.6 3 R2 1.2 0.48 14.3 LOS A 19.6 3u U 0 0.48 17.8 LOS B 19.6 Approach 4.8 0.48 11.9 LOS A 19.6 East: Hastings River Drive (E) 4 L2 2.1 0.39 3.7 LOS A 23.9 5 T1 3.8 0.39 3.6 LOS A 23.9 6 R2 0 0.39 8.2 LOS A 23.3 6u U 0 0.39 10.1 LOS A 23.3 Approach 3.5 0.39 3.9 LOS A 23.9 North: Blueberry Lane (N) 7 L2 0 0.01 7.4 LOS A 0.4 8 T1 0 0.01 7.4 LOS A 0.4 9 R2 0 0.01 11.9 LOS A 0.4 Approach 0 0.01 9.4 LOS A 0.4 West: Hastings River Drive (W) 10 L2 0 0.41 3.9 LOS A 24.9 11 T1 2.1 0.41 3.9 LOS A 24.9 12 R2 1.8 0.41 8.6 LOS A 24.1 12u U 3 0.41 10.5 LOS A 24.1 Approach 2.1 0.41 4.4 LOS A 24.9 All Vehicles 3 0.48 5 LOS A 24.9	Overall the intersection has LOS A and the degree of saturation is 0.48, which is within the acceptable limit of 0.85.The average delay across the intersection is 5 seconds.

8. Hastings River Drive / Park Street
2040

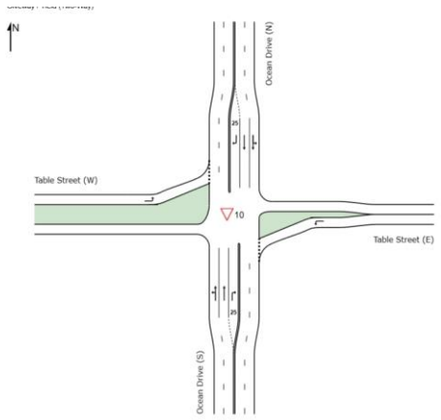
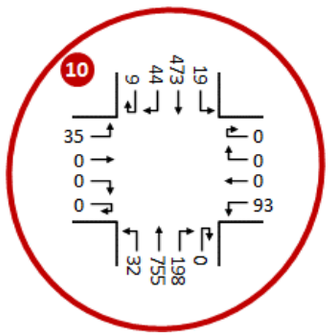
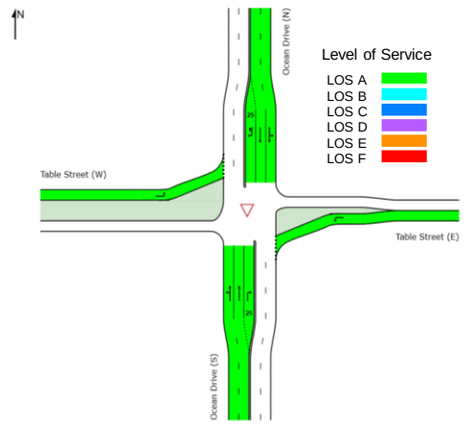
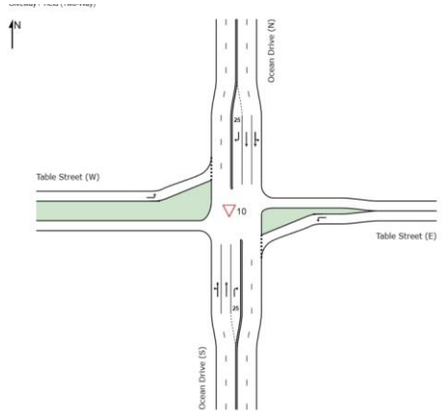
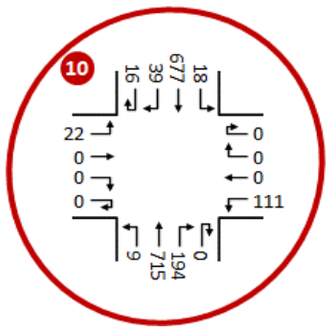
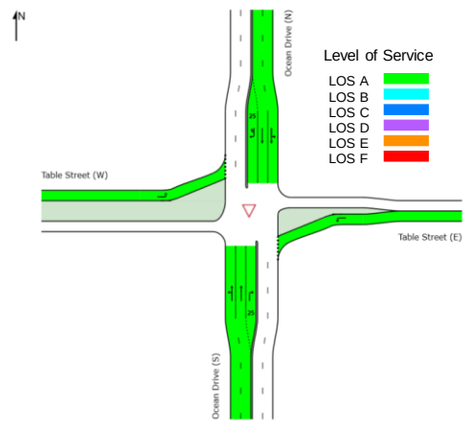
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** East: Hastings River Drive (E) 5 T1 6.4 0.81 18 LOS B 84.1 6 R2 3.7 0.81 22.2 LOS B 84.1 6u U 8.7 0.81 24.4 LOS B 84.1 Approach 5.5 0.81 19.8 LOS B 85 North: Park Street (N) 7 L2 6.5 0.34 6.1 LOS A 13.2 9 R2 2.1 0.42 9.9 LOS A 18.2 9u U 0 0.42 13.5 LOS A 18.2 Approach 3.8 0.42 8.5 LOS A 18.2 West: Hastings River Drive (W) 10 L2 1.5 0.49 5.4 LOS A 30.9 11 T1 3 0.49 5.7 LOS A 30.9 12u U 0 0.49 12.2 LOS A 29.4 Approach 2.4 0.49 5.6 LOS A 30.9 All Vehicles 3.9 0.81 11.6 LOS A 85	Overall the intersection has LOS B and the degree of saturation is 0.81, which is within the acceptable limit of 0.85.The average delay across the intersection is 12 seconds.
PM Peak		PM Peak 15:00 - 16:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** East: Hastings River Drive (E) 5 T1 3.4 1.00 62.7 LOS E 211.8 6 R2 1.2 1.00 66.8 LOS E 211.8 6u U 0 1.00 68.6 LOS E 211.8 Approach 2.5 1.00 64.3 LOS E 213.1 North: Park Street (N) 7 L2 3 0.80 14.9 LOS B 52 9 R2 1.1 0.95 33.6 LOS C 107.8 9u U 0 0.95 37.2 LOS C 107.8 Approach 2 0.95 25.2 LOS B 107.8 West: Hastings River Drive (W) 10 L2 0 0.51 5.3 LOS A 32.2 11 T1 2.9 0.51 5.6 LOS A 32.2 12u U 0 0.51 12.2 LOS A 31.1 Approach 2 0.51 5.6 LOS A 32.2 All Vehicles 2.2 1.00 31.6 LOS C 213.1	Overall the intersection has LOS E and the degree of saturation is 1.00, which is **above** the acceptable limit of 0.85.The average delay across the intersection is 32 seconds.

9. Hastings River Drive / Oxley Highway / Ocean Drive / Gordon Street

2040

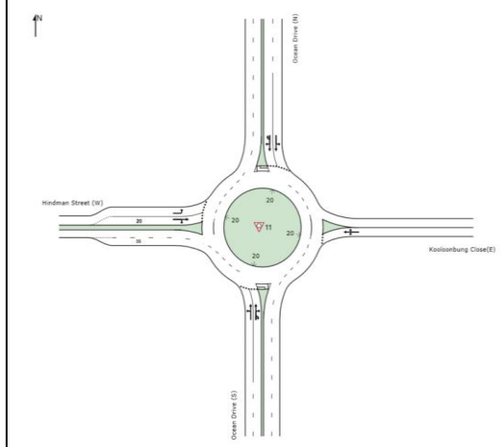
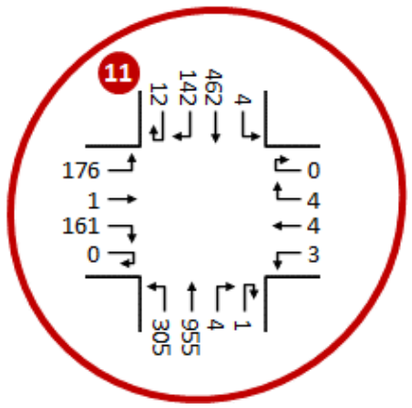
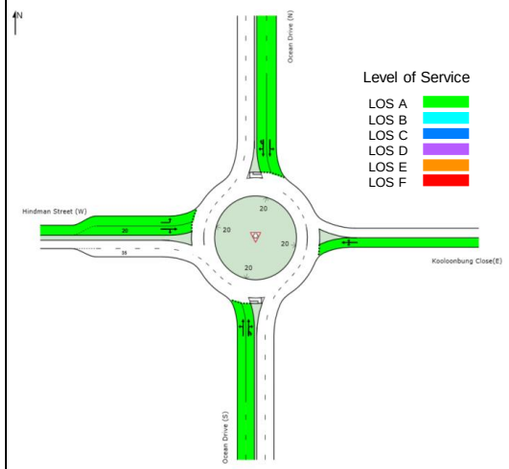
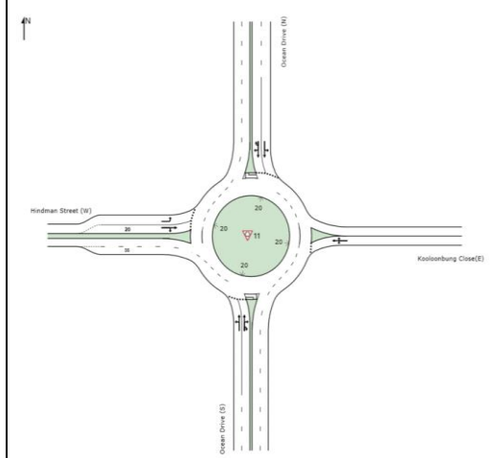
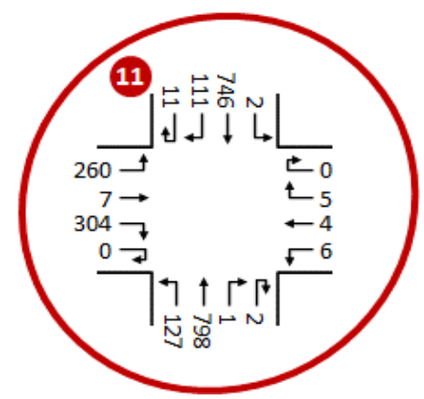
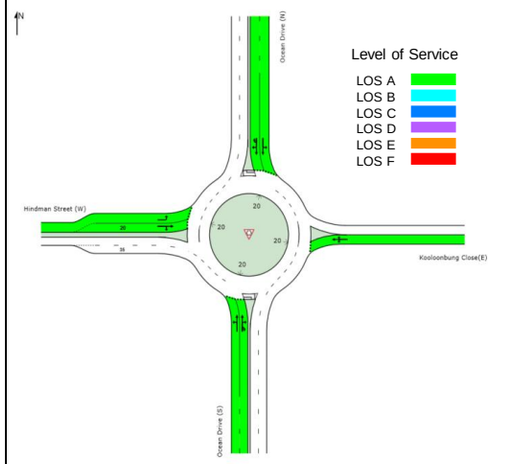
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay / LOS / BoQ (m)** South: Ocean Drive (S) 1 L2 3.9 0.80 44.8 LOS D 107.5 2 T1 3.3 0.80 40.7 LOS C 107.5 3 R2 2.6 0.89 58.6 LOS E 72.1 Approach 3.2 0.89 45.3 LOS D 107.5 East: Gordon Street (E) 4 L2 5.1 0.13 19.5 LOS B 22.1 5 T1 3.5 0.52 28.2 LOS B 88.1 6 R2 8.5 0.86 51.1 LOS D 132.2 Approach 5.3 0.86 34.4 LOS C 132.2 North: Hastings River Drive (N) 7 L2 6.3 0.84 47.2 LOS D 131.6 8 T1 4.2 0.84 45 LOS D 131.6 9 R2 2.2 0.82 55.7 LOS D 41.3 Approach 4.7 0.84 47.4 LOS D 131.6 West: Oxley Highway (W) 10 L2 5.7 0.89 52.1 LOS D 154.1 11 T1 1.5 0.89 46.6 LOS D 154.1 12 R2 4.9 0.57 45 LOS D 48.3 Approach 2.3 0.89 46.7 LOS D 154.1 All Vehicles 3.9 0.89 42.8 LOS D 154.1	Overall the intersection has LOS D and the degree of saturation is 0.89 , which is at the practical capacity.The right-turns presented a LOS D and E, this is due to a relatively high delays for these movements. The right turn on the eastern approach has queues of approximately 130m at times which exceeds the available turn pocket length. The average delay across the intersection is 43 seconds.
PM Peak		PM Peak 16:15 - 17:15 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay / LOS / BoQ (m)** South: Ocean Drive (S) 1 L2 3.3 0.57 35.1 LOS C 60.2 2 T1 4.6 0.57 30.9 LOS C 60.2 3 R2 1 0.91 56.2 LOS D 62.6 Approach 3.5 0.91 38.6 LOS C 62.6 East: Gordon Street (E) 4 L2 2.5 0.18 19.6 LOS B 26.9 5 T1 1.2 0.57 27.1 LOS B 81.5 6 R2 4.2 0.91 53.5 LOS D 120 Approach 2.3 0.91 33.8 LOS C 120 North: Hastings River Drive (N) 7 L2 1.9 0.89 46.6 LOS D 156.3 8 T1 2.3 0.89 43.2 LOS D 156.3 9 R2 3 0.54 43.5 LOS D 32.9 Approach 2.3 0.89 44.3 LOS D 156.3 West: Oxley Highway (W) 10 L2 0 0.94 59.5 LOS E 137.8 11 T1 2 0.94 54 LOS D 137.8 12 R2 2.8 0.59 44.4 LOS D 34.1 Approach 1.9 0.94 53.1 LOS D 137.8 All Vehicles 2.4 0.94 42 LOS C 156.3	Overall the intersection has LOS C and the degree of saturation is 0.94 , which is just **outside** the practical limit of 0.9.The right-turns presented a LOS C and D, this is due to a relative high delays for these movements. The right turn movement on the eastern approach has queues of approximately 120m at times which exceeds the available turn pocket length. The average delay across the intersection is 42 seconds.

10. Ocean Drive / Table Street
2040

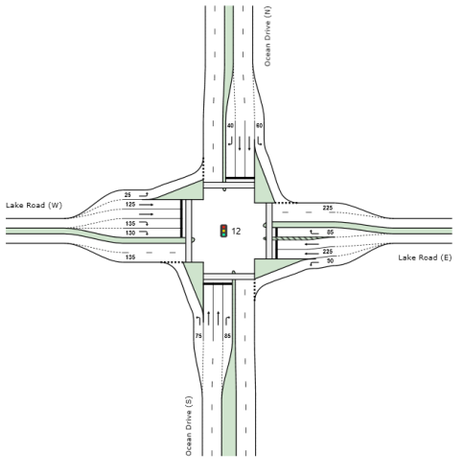
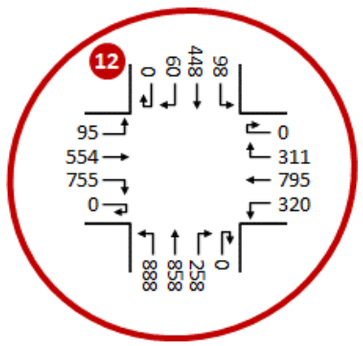
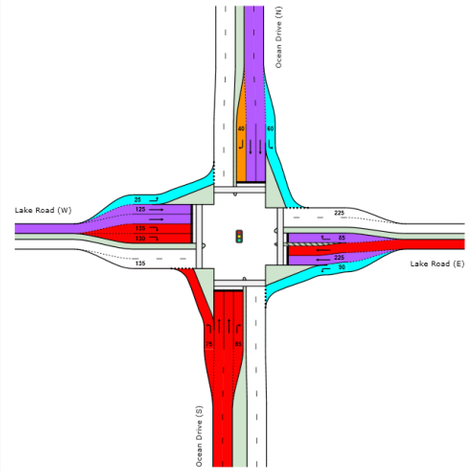
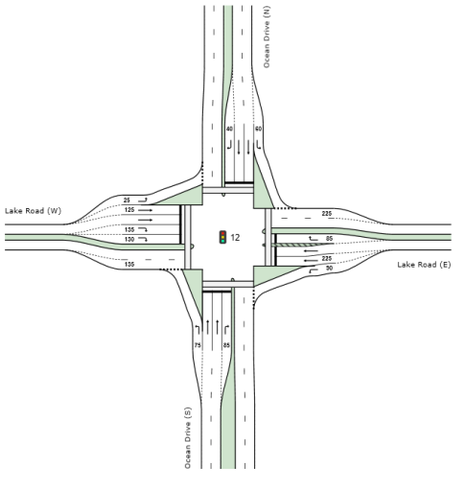
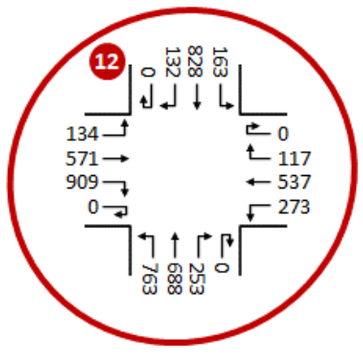
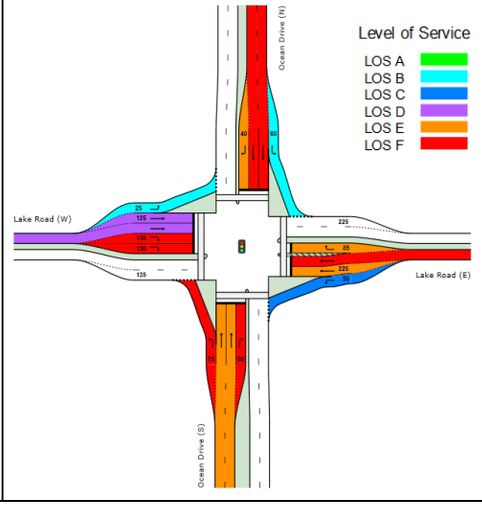
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 0 0.22 4.6 LOS A 0 2 T1 3.7 0.22 0 LOS A 0 3 R2 0 0.25 7.6 LOS A 7.4 Approach 2.9 0.25 1.7 NA 7.4 East: Table Street (E) 4 L2 0 0.09 5.6 LOS A 2.4 Approach 0 0.09 5.6 LOS A 2.4 North: Ocean Drive (N) 7 L2 0 0.14 4.6 LOS A 0 8 T1 4.2 0.14 0 LOS A 0 9 R2 2.7 0.12 10.1 LOS A 3 9u U 0 0.12 17.3 LOS B 3 Approach 3.9 0.14 1.3 NA 3 West: Table Street (W) 10 L2 5.7 0.04 6.4 LOS A 1.1 Approach 5.7 0.04 6.4 LOS A 1.1 All Vehicles 3.1 0.25 1.9 NA 7.4	Overall the intersection has a LOS A and the degree of saturation is 0.25, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.
PM Peak		PM Peal 15:00 - 16:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 0 0.20 4.6 LOS A 0 2 T1 4.1 0.20 0 LOS A 0 3 R2 1.8 0.33 10.3 LOS A 10.8 Approach 3.6 0.33 2.2 NA 10.8 East: Table Street (E) 4.00 L2 2.10 0.13 6.30 LOS A 3.30 Approach 2.10 0.13 6.30 LOS A 3.30 North: Ocean Drive (N) 7 L2 0 0.19 4.6 LOS A 0 8 T1 2.8 0.19 0 LOS A 0 9 R2 3 0.12 9.4 LOS A 3.1 9u U 0 0.12 16.2 LOS B 3.1 Approach 2.6 0.19 1 NA 3.1 West: Table Street (W) 10 L2 0 0.03 6.2 LOS A 0.6 Approach 0 0.03 6.2 LOS A 0.6 All Vehicles 3 0.33 2 NA 10.8	Overall the intersection has a LOS A and the degree of saturation is 0.33, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.

11. Ocean Drive / Hindman Street / Kooloonbung Close

2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 0.4 0.51 4.2 LOS A 32.3 2 T1 2.3 0.51 4.1 LOS A 32.3 3 R2 0 0.51 8.7 LOS A 31.9 3u U 100 0.51 12.7 LOS A 31.9 Approach 1.9 0.51 4.2 LOS A 32.3 East: Kooloonbung Close(E) 4 L2 0 0.02 5.5 LOS A 0.4 5 T1 0 0.02 5.5 LOS A 0.4 6 R2 0 0.02 10 LOS A 0.4 Approach 0 0.02 7.1 LOS A 0.4 North: Ocean Drive (N) 7 L2 0 0.26 3.9 LOS A 12.3 8 T1 3.1 0.26 3.6 LOS A 12.3 9 R2 1.7 0.26 8.2 LOS A 11.9 9u U 0 0.26 10 LOS A 11.9 Approach 2.7 0.26 4.8 LOS A 12.3 West: Hindman Street (W) 10 L2 6.8 0.25 6.4 LOS A 9.1 11 T1 0 0.26 6.5 LOS A 8.8 12 R2 2.3 0.26 11.1 LOS A 8.8 Approach 4.6 0.26 8.7 LOS A 9.1 All Vehicles 2.5 0.51 5 LOS A 32.3	Overall the intersection has a LOS A and the degree of saturation is 0.51, which is within the acceptable limit of 0.80.The average delay across the intersection is 5 seconds.
PM Peak		PM Peal 15:00 - 16:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) South: Ocean Drive (S) 1 L2 0.9 0.37 3.9 LOS A 21.1 2 T1 2.8 0.37 3.7 LOS A 21.1 3 R2 0 0.37 8.2 LOS A 20.7 3u U 0 0.37 10.1 LOS A 20.7 Approach 2.5 0.37 3.7 LOS A 21.1 East: Kooloonbung Close(E) 4 L2 0 0.03 7.1 LOS A 0.9 5 T1 0 0.03 7 LOS A 0.9 6 R2 0 0.03 11.5 LOS A 0.9 Approach 0 0.03 8.5 LOS A 0.9 North: Ocean Drive (N) 7 L2 0 0.41 4.9 LOS A 22.3 8 T1 1.9 0.41 4.7 LOS A 22.3 9 R2 4.2 0.41 9.5 LOS A 21.4 9u U 0 0.41 11.2 LOS A 21.4 Approach 2.1 0.41 5.4 LOS A 22.3 West: Hindman Street (W) 10 L2 3.6 0.37 6.8 LOS A 13.3 11 T1 0 0.38 5.7 LOS A 13.6 12 R2 1.7 0.38 10.2 LOS A 13.6 Approach 2.5 0.38 8.6 LOS A 13.6 All Vehicles 2.4 0.41 5.5 LOS A 22.3	Overall the intersection has a LOS A and the degree of saturation is 0.41, which is within the acceptable limit of 0.80.The average delay across the intersection is 6 seconds.

12. Ocean Drive / Lake Road
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary
AM Peak		AM Peal08:00 - 09:00 	
PM Peak		PM Peal15:00 - 16:00 	

Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	3.6	1.4	409.7	LOS F	390
2	T1	2.1	1.07	144.7	LOS F	162.6
3	R2	3.7	1.08	157.4	LOS F	97
Approach		2.9	1.4	263.7	LOS F	390
East: Lake Road (E)						
4	L2	5.4	0.37	16.6	LOS B	43.3
5	T1	3.7	1.09	107.7	LOS F	225
6	R2	0.6	0.77	50.1	LOS D	80.5
Approach		3.4	1.09	74.7	LOS E	225
North: Ocean Drive (N)						
7	L2	0	0.09	14	LOS B	9.2
8	T1	3.7	0.74	52.8	LOS D	62.8
9	R2	7.8	0.33	61.8	LOS E	16.2
Approach		3.5	0.74	47.4	LOS D	62.8
West: Lake Road (W)						
10	L2	9.5	0.12	17.9	LOS B	13
11	T1	3.3	0.78	49.4	LOS D	84.7
12	R2	4.6	1.06	140.3	LOS F	178.8
Approach		4.4	1.06	96.2	LOS F	178.8
All Vehicles		3.5	1.4	136.5	LOS F	390

Intersection Performance Summary

The intersection performs outside of acceptable performance levels with LOS F and DOS 1.4. This is however predominantly as a result of downstream impacts at the Lake Road / Central Street intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. It is expected the intersection would perform significantly better if the downstream constraints were resolved. The right-turns on approaches operate at LOS D, E and F, due to relatively high delays for these movement. Queues for some of the movements are not contained within the turn pockets and will block the through movements. Overall the intersection delay is 137 seconds

Intersection Performance

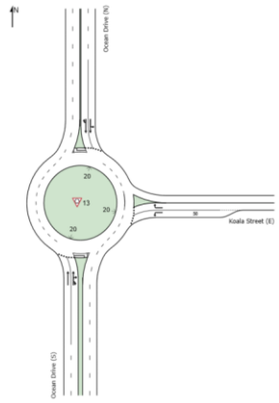
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	4.9	1.37	389.1	LOS F	390
2	T1	2.7	0.88	58.1	LOS E	114.9
3	R2	2.8	1.1	169.3	LOS F	127.2
Approach		3.7	1.37	222.9	LOS F	390
East: Lake Road (E)						
4	L2	0.5	0.41	28.3	LOS C	45.2
5	T1	4.4	1.12	130.4	LOS F	168.4
6	R2	1.1	0.64	60.4	LOS E	31.1
Approach		2.8	1.12	91.5	LOS F	168.4
North: Ocean Drive (N)						
7	L2	0.8	0.17	15.5	LOS B	17.6
8	T1	2.1	1.1	162.5	LOS F	216.5
9	R2	0	0.56	60.5	LOS E	33.6
Approach		1.6	1.1	129.2	LOS F	216.5
West: Lake Road (W)						
10	L2	1.9	0.13	12.3	LOS B	13.1
11	T1	3.1	0.62	38.7	LOS D	77.4
12	R2	2.3	1.12	185.5	LOS F	248
Approach		2.6	1.12	119.2	LOS F	248
All Vehicles		2.8	1.37	149.4	LOS F	390

The intersection performs **outside** of acceptable performance levels with LOS F and DOS 1.37. This is however predominantly as a result of downstream impacts at the Lake Road / Central Street intersection rather than capacity limitations at the subject intersection. Downstream capacity constraints on Lake Road result in queues extending to the south on Ocean Drive beyond Koala Street. It is expected the intersection would perform signficantly better if the downstream constraints were resolved. The right-turns on approaches operate at LOS E and F, due to relatively high delays for these movement. Queues for some of the movements are not contained within the turn pockets and will block the through movements. Overall the intersection delay is 149 seconds

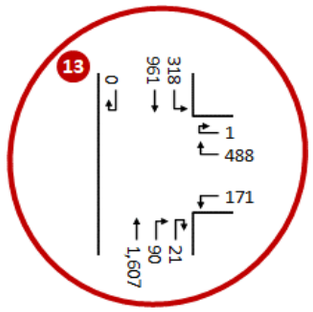
13. Ocean Drive / Koala Street

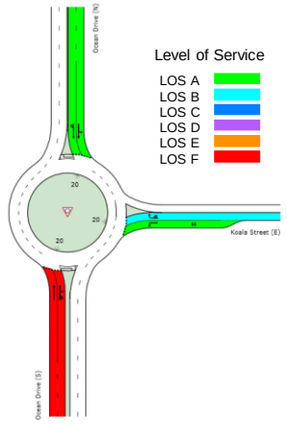
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AM Peak



AM Peal 07:45 - 08:45

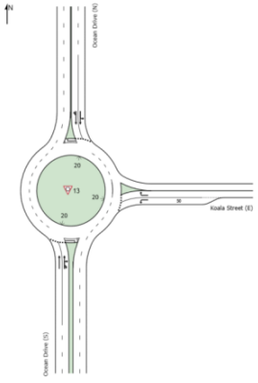




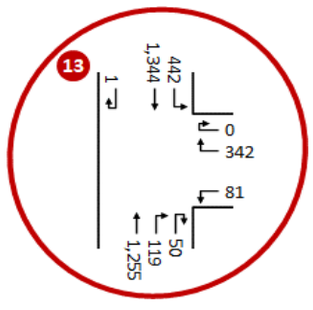
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
2	T1	3	1.08	107.1	LOS F	571.2
3	R2	9.7	1.08	115.1	LOS F	494
3u	U	35.3	1.08	119.3	LOS F	494
Approach		3.8	1.08	107.7	LOS F	571.2
East: Koala Street (E)						
4	L2	4.7	0.39	10.8	LOS A	15.1
6	R2	2.8	0.72	17	LOS B	47.8
6u	U	100	0.72	26.8	LOS B	47.8
Approach		3.5	0.72	15.4	LOS B	47.8
North: Ocean Drive (N)						
7	L2	5.9	0.51	5.9	LOS A	39.6
8	T1	5.2	0.51	6.3	LOS A	39.6
9u	U	0	0.51	13.1	LOS A	38.4
Approach		5.4	0.51	6.2	LOS A	39.6
All Vehicles		4.3	1.08	55.5	LOS D	571.2

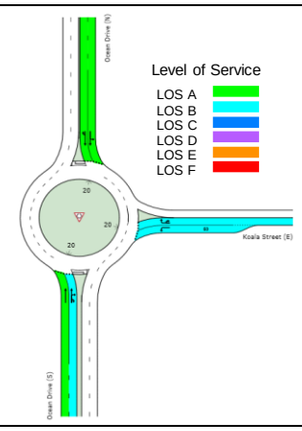
Overall the intersection has LOS F and the degree of saturation is 1.08. The intersection performs outside the acceptable thresholds due to delays on the southern approach. This is as a result of the downstream impacts at the Lake Road / Central Street intersection with queues extending south on Ocean Drive and through to Koala Street.

PM Peak



PM Peal 15:00 - 16:00

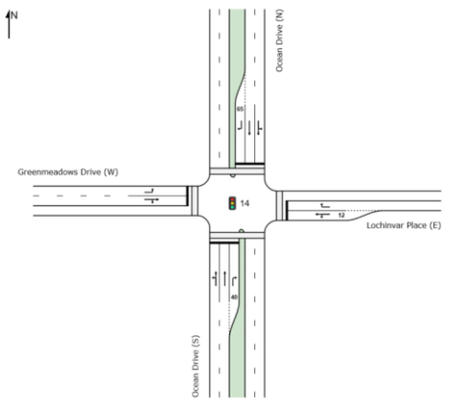
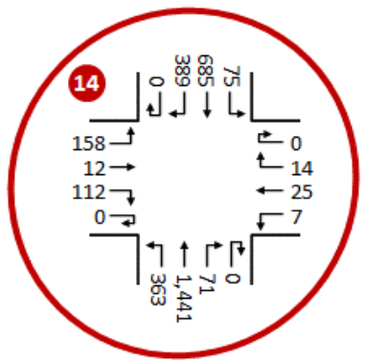
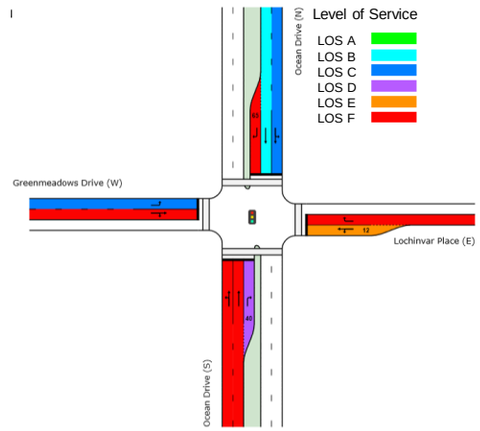
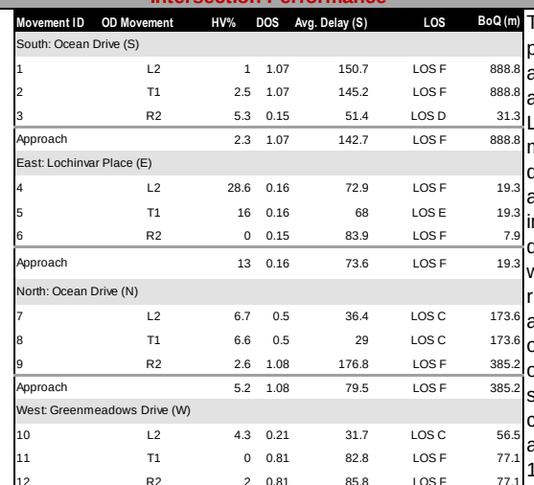
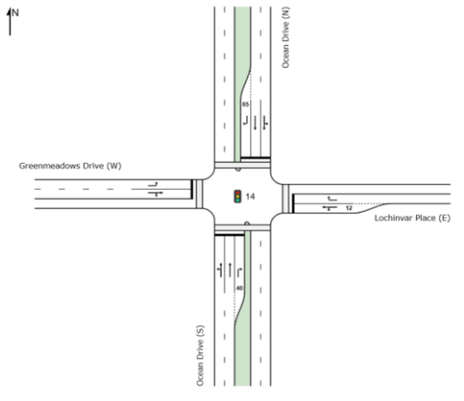
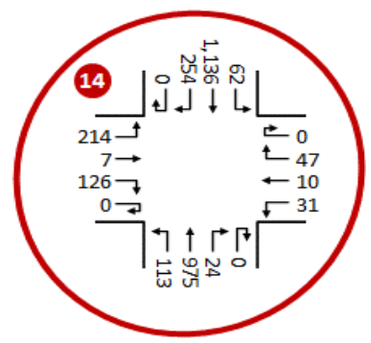
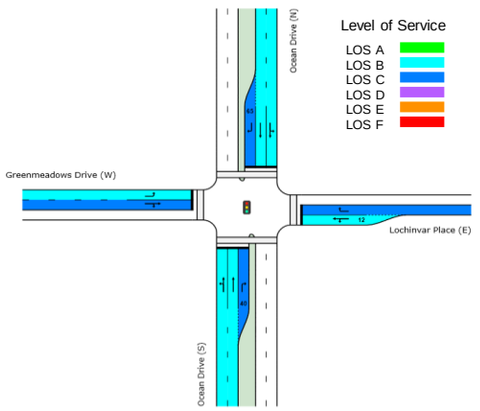
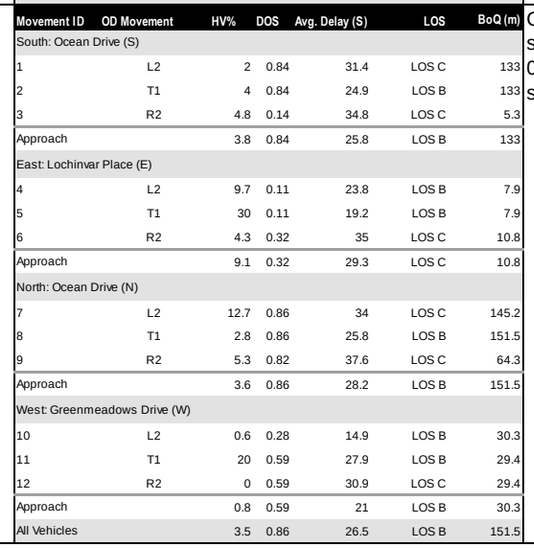




Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
2	T1	4.6	0.77	12.6	LOS A	89.1
3	R2	3.8	0.77	18.4	LOS B	87.5
3u	U	31.1	0.77	22.2	LOS B	87.5
Approach		5.4	0.77	13.4	LOS A	89.1
East: Koala Street (E)						
4	L2	11	0.34	14.5	LOS B	12.9
6	R2	2.6	0.78	25	LOS B	52.4
6u	U	0	0.78	28.2	LOS B	52.4
Approach		4.2	0.78	23	LOS B	52.4
North: Ocean Drive (N)						
7	L2	1.5	0.76	7.2	LOS A	78
8	T1	2.1	0.76	8.2	LOS A	81.5
9u	U	100	0.76	19	LOS B	81.5
Approach		2	0.76	7.9	LOS A	81.5
All Vehicles		3.6	0.78	11.8	LOS A	89.1

Overall the intersection has LOS B and the degree of saturation is 0.78, which is within the acceptable limit of 0.85.The average delay across the intersection is 12 seconds.

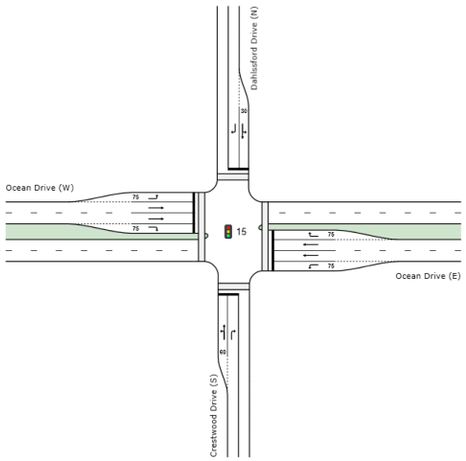
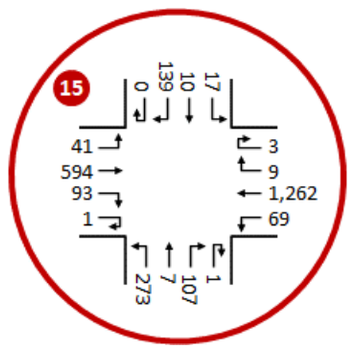
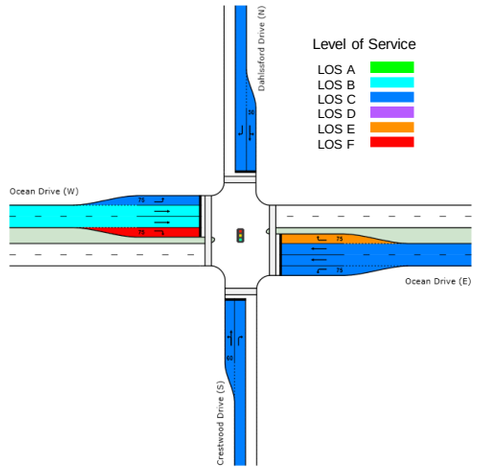
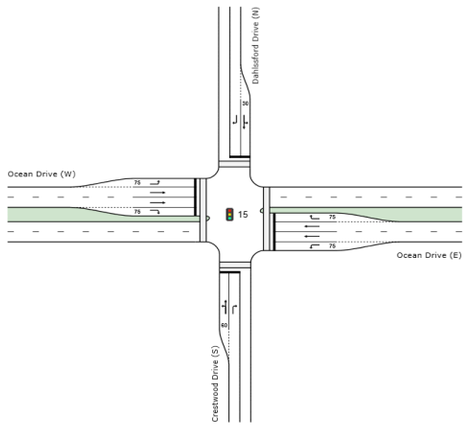
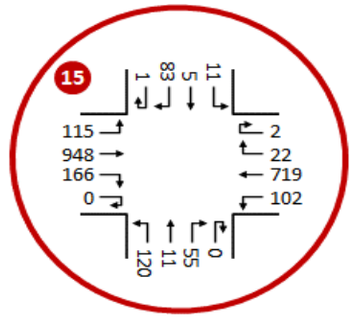
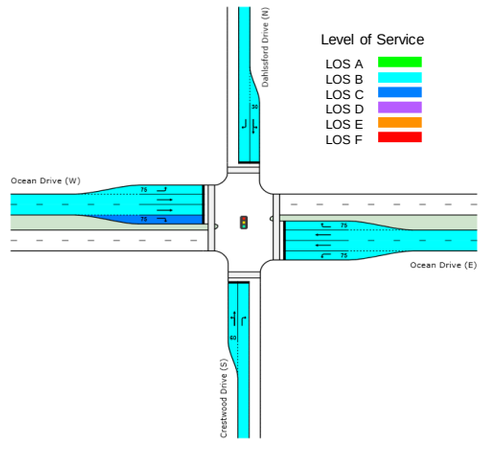
14. Ocean Drive / Greenmeadows Drive / Lochinvar Place
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal07:45 - 08:45 			The intersection operates **outside** the acceptable performance limits. Overall the intersection has LOS F and the degree of saturation is 1.08, which is above the acceptable limit of 0.9. All of the right-turns presented a LOS D and F, with relatively high delays for these movements. The right turn on the northern approach has queuing in the order 385m, almost seven times the available queuing distance within the turn pocket. This will impact through movements in the adjacent lane. Right turn queues on the western approach are in the order of 77m, which is greater than the separation distance from the roundabout to the west. It is likely that right turn queues are queuing into the roundabout and may be blocking other movements at the roundabout. The left turn queues on the western approach also exceed the available spacing from the roundabout to the west. Queues are contained in the right turn pocket on the southern approach. The average delay across the intersection is 113 seconds.
PM Peak		PM Peal15:00 - 16:00 			Overall the intersection has LOS B and the degree of saturation is 0.87 , which is just below acceptable limit of 0.9.The average delay across the intersection is 27 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	1	1.07	150.7	LOS F	888.8
2	T1	2.5	1.07	145.2	LOS F	888.8
3	R2	5.3	0.15	51.4	LOS D	31.3
Approach		2.3	1.07	142.7	LOS F	888.8
East: Lochinvar Place (E)						
4	L2	28.6	0.16	72.9	LOS F	19.3
5	T1	16	0.16	68	LOS E	19.3
6	R2	0	0.15	83.9	LOS F	7.9
Approach		13	0.16	73.6	LOS F	19.3
North: Ocean Drive (N)						
7	L2	6.7	0.5	36.4	LOS C	173.6
8	T1	6.6	0.5	29	LOS C	173.6
9	R2	2.6	1.08	176.8	LOS F	385.2
Approach		5.2	1.08	79.5	LOS F	385.2
West: Greenmeadows Drive (W)						
10	L2	4.3	0.21	31.7	LOS C	56.5
11	T1	0	0.81	82.8	LOS F	77.1
12	R2	2	0.81	85.8	LOS F	77.1
Approach		3.2	0.81	55.4	LOS D	77.1
All Vehicles		3.5	1.08	112.7	LOS F	888.8

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	2	0.84	31.4	LOS C	133
2	T1	4	0.84	24.9	LOS B	133
3	R2	4.8	0.14	34.8	LOS C	5.3
Approach		3.8	0.84	25.8	LOS B	133
East: Lochinvar Place (E)						
4	L2	9.7	0.11	23.8	LOS B	7.9
5	T1	30	0.11	19.2	LOS B	7.9
6	R2	4.3	0.32	35	LOS C	10.8
Approach		9.1	0.32	29.3	LOS C	10.8
North: Ocean Drive (N)						
7	L2	12.7	0.86	34	LOS C	145.2
8	T1	2.8	0.86	25.8	LOS B	151.5
9	R2	5.3	0.82	37.6	LOS C	64.3
Approach		3.6	0.86	28.2	LOS B	151.5
West: Greenmeadows Drive (W)						
10	L2	0.6	0.28	14.9	LOS B	30.3
11	T1	20	0.59	27.9	LOS B	29.4
12	R2	0	0.59	30.9	LOS C	29.4
Approach		0.8	0.59	21	LOS B	30.3
All Vehicles		3.5	0.86	26.5	LOS B	151.5

15. Ocean Drive / Crestwood Drive / Dahlsford Drive
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary
AM Peak		AM Peal 07:45 - 08:45 	
PM Peak		PM Peal 15:15 - 16:15 	

Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Crestwood Drive (S)						
1	L2	3.5	0.55	36.2	LOS C	102.1
2	T1	0	0.55	31.6	LOS C	102.1
3	R2	1.1	0.2	40.8	LOS C	37.7
Approach		2.8	0.55	37.4	LOS C	102.1
East: Ocean Drive (E)						
4	L2	10.9	0.1	29.1	LOS C	20.3
5	T1	3	0.77	30.5	LOS C	253.3
6	R2	28.6	0.11	69.4	LOS E	6.8
Approach		3.6	0.77	30.8	LOS C	253.3
North: Dahlssford Drive (N)						
7	L2	6.7	0.06	32.3	LOS C	8.8
8	T1	22.2	0.06	27.7	LOS B	8.8
9	R2	3.2	0.27	41.6	LOS C	50.5
Approach		4.7	0.27	39.8	LOS C	50.5
West: Ocean Drive (W)						
10	L2	9.1	0.06	28.6	LOS C	11.6
11	T1	5.9	0.36	23.9	LOS B	92.5
12	R2	12.2	0.77	76.2	LOS F	51.9
Approach		6.9	0.77	30.9	LOS C	92.5
All Vehicles		4.5	0.77	32.4	LOS C	253.3

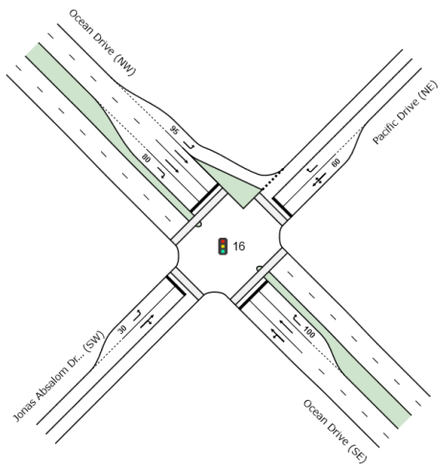
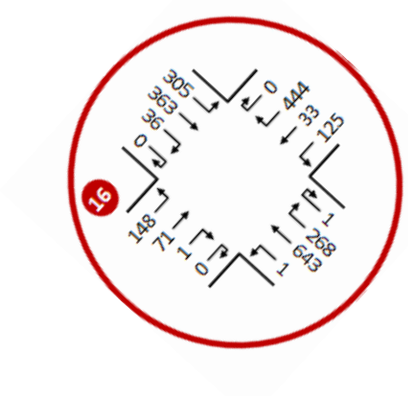
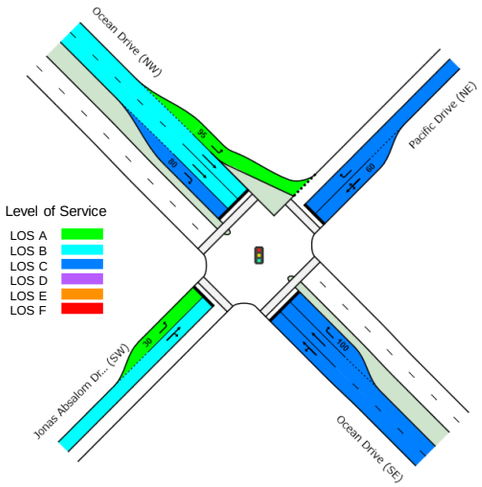
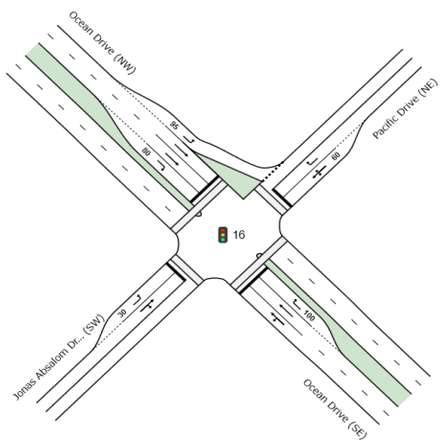
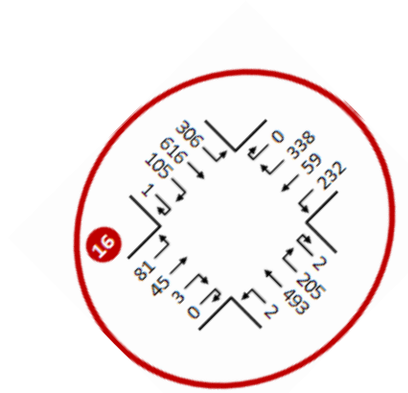
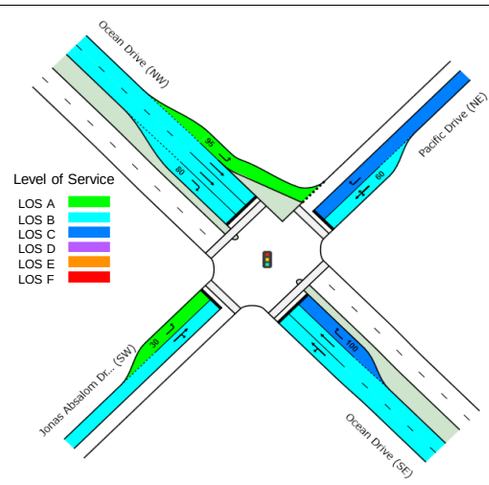
Intersection Performance Summary

Overall the intersection has LOS C and the degree of saturation is 0.77 , which is within the acceptable limit of 0.90. The intersection has high through volumes on Ocean Drive, which are unbalanced with the side streets. The average delay across the intersection is 32 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Crestwood Drive (S)						
1	L2	4.3	0.29	16.4	LOS B	17.2
2	T1	9.1	0.29	11.8	LOS A	17.2
3	R2	9.3	0.24	26.7	LOS B	10.2
Approach		6	0.29	19.2	LOS B	17.2
East: Ocean Drive (E)						
4	L2	3.3	0.19	20	LOS B	14
5	T1	5.3	0.58	15.1	LOS B	57.6
6	R2	5	0.1	27.9	LOS B	4.2
Approach		5	0.58	16.1	LOS B	57.6
North: Dahlssford Drive (N)						
7	L2	22.2	0.05	16.9	LOS B	2.2
8	T1	0	0.05	12.2	LOS A	2.2
9	R2	4.2	0.35	27.1	LOS B	15.2
Approach		6	0.35	25.2	LOS B	15.2
West: Ocean Drive (W)						
10	L2	2.9	0.21	20.1	LOS B	15.9
11	T1	1.8	0.75	18.4	LOS B	85.8
12	R2	4.7	0.71	31.8	LOS C	33.5
Approach		2.3	0.75	20.4	LOS B	85.8
All Vehicles		3.7	0.75	19	LOS B	85.8

Overall the intersection has LOS B and the degree of saturation is 0.75 , which is within the acceptable limit of 0.90. The intersection has high through volumes on Ocean Drive, which are unbalanced with the side streets. The average delay across the intersection is 19 seconds.

16. Ocean Drive / Jonas Absalom Drive / Pacific Drive
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 07:45 - 08:45 			Overall the intersection has LOS B and the degree of saturation is 0.83, which is within the acceptable limit of 0.90. The average delay across the intersection is 26 seconds.
PM Peak		PM Peak 15:15 - 16:15 			Overall the intersection has LOS B and the degree of saturation is 0.76, which is within the acceptable limit of 0.90. The average delay across the intersection is 22 seconds.

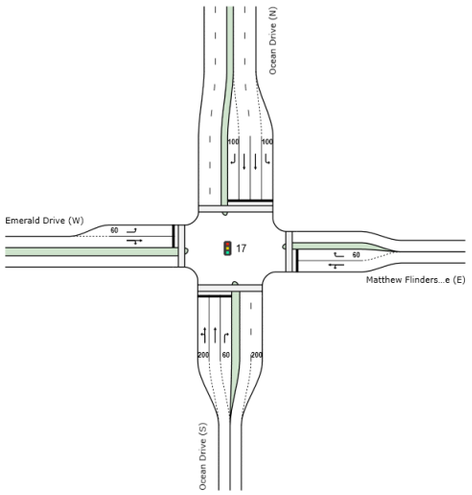
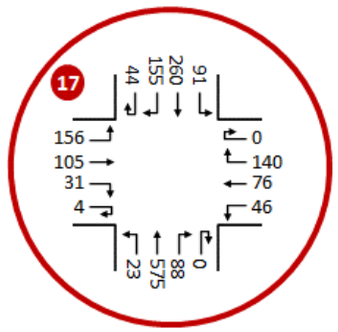
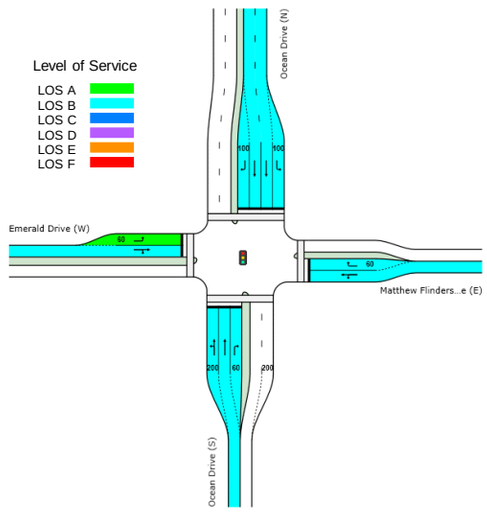
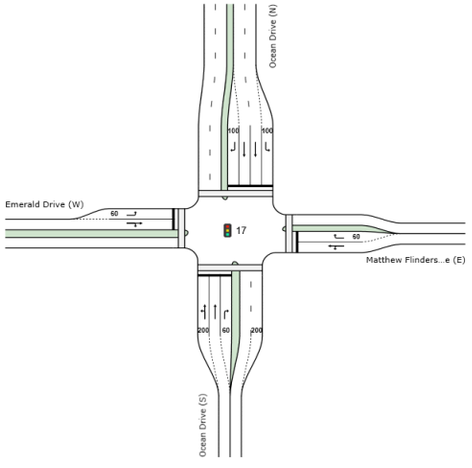
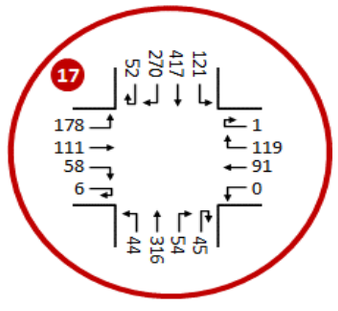
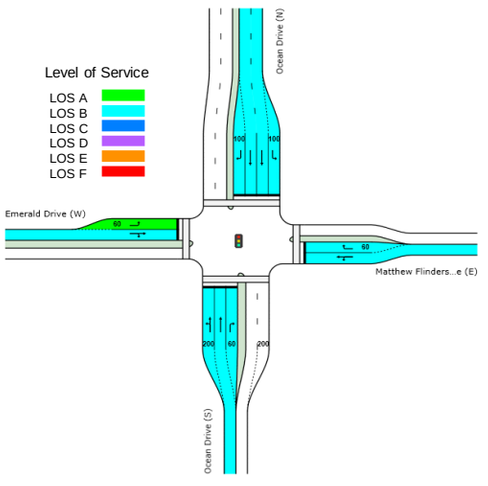
AM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Ocean Drive (SE)						
1	L2	0	0.82	36	LOS C	80.1
2	T1	4.7	0.82	29.7	LOS C	80.2
3	R2	1.9	0.83	38.4	LOS C	67.4
Approach		3.8	0.83	32.3	LOS C	80.2
NorthEast: Pacific Drive (NE)						
4	L2	3.5	0.75	29	LOS C	72.7
5	T1	3.3	0.75	24.7	LOS B	72.7
6	R2	2.3	0.75	30.4	LOS C	72.7
Approach		2.6	0.75	29.8	LOS C	72.7
NorthWest: Ocean Drive (NW)						
7	L2	4.5	0.33	10.1	LOS A	24.2
8	T1	5.5	0.46	22.9	LOS B	37.2
9	R2	13.8	0.12	29.5	LOS C	7.5
Approach		5.5	0.46	17.7	LOS B	37.2
SouthWest: Jonas Absalom Drive (SW)						
10	L2	4.8	0.16	11.8	LOS A	16.4
11	T1	1.7	0.13	16.7	LOS B	11.7
12	R2	0	0.13	21.3	LOS B	11.7
Approach		3.7	0.16	13.4	LOS A	16.4
All Vehicles		4	0.83	25.7	LOS B	80.2

PM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Ocean Drive (SE)						
1	L2	0	0.62	26.7	LOS B	44.5
2	T1	4.3	0.62	20.3	LOS B	44.5
3	R2	1.1	0.73	31.2	LOS C	40.4
Approach		3.4	0.73	23.5	LOS B	44.5
NorthEast: Pacific Drive (NE)						
4	L2	1.1	0.75	24.7	LOS B	70.8
5	T1	12.5	0.75	20.5	LOS B	70.8
6	R2	6.2	0.75	27.7	LOS B	70.8
Approach		4.9	0.75	25.9	LOS B	70.8
NorthWest: Ocean Drive (NW)						
7	L2	1.5	0.3	9.1	LOS A	17.4
8	T1	2.5	0.76	23.1	LOS B	60.2
9	R2	6.4	0.39	28.1	LOS B	19.3
Approach		2.6	0.76	19.4	LOS B	60.2
SouthWest: Jonas Absalom Drive (SW)						
10	L2	3.2	0.09	11.1	LOS A	7.6
11	T1	5.7	0.11	15.6	LOS B	7.1
12	R2	0	0.11	20.2	LOS B	7.1
Approach		4	0.11	12.9	LOS A	7.6
All Vehicles		3.5	0.76	21.9	LOS B	70.8

17. Ocean Drive / Matthew Flinders Drive / Emerald Drive
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 		See table below	Overall the intersection has LOS B and the degree of saturation is 0.77, which is within the acceptable limit of 0.90.The average delay across the intersection is 19 seconds.
PM Peak		PM Peal 15:45 - 16:45 		See table below	Overall the intersection has LOS B and the degree of saturation is 0.81, which is within the acceptable limit of 0.90.The average delay across the intersection is 20 seconds.

AM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	5.6	0.73	24.7	LOS B	46.7
2	T1	3.5	0.73	18.2	LOS B	47.1
3	R2	2.9	0.34	24.2	LOS B	12.6
Approach		3.5	0.73	19.2	LOS B	47.1
East: Matthew Flinders Drive (E)						
4	L2	0	0.35	19.6	LOS B	16.2
5	T1	4.8	0.35	15	LOS B	16.2
6	R2	4.3	0.59	24.4	LOS B	22
Approach		3.7	0.59	20.8	LOS B	22
North: Ocean Drive (N)						
7	L2	2.7	0.26	21.9	LOS B	12
8	T1	4.3	0.32	14.8	LOS B	17.1
9	R2	4	0.77	27.9	LOS B	33.6
Approach		4	0.77	20.7	LOS B	33.6
West: Emerald Drive (W)						
10	L2	2.3	0.2	11.9	LOS A	14.2
11	T1	6.8	0.51	17.5	LOS B	20.8
12	R2	0	0.51	22.1	LOS B	20.8
Approach		3.6	0.51	15.1	LOS B	20.8
All Vehicles		3.7	0.77	19.2	LOS B	47.1

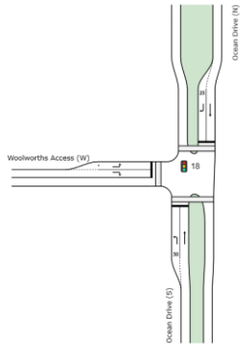
PM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	2.6	0.68	26.4	LOS B	28.5
2	T1	5.7	0.68	19.9	LOS B	29.7
3	R2	4.2	0.38	24.4	LOS B	14.5
Approach		5.1	0.68	21.5	LOS B	29.7
East: Matthew Flinders Drive (E)						
4	L2	0	0.28	20.2	LOS B	12.2
5	T1	1.4	0.28	15.7	LOS B	12.2
6	R2	6.2	0.52	24.1	LOS B	18.8
Approach		4.1	0.52	20.4	LOS B	18.8
North: Ocean Drive (N)						
7	L2	1.9	0.34	22.2	LOS B	16.2
8	T1	1.9	0.5	15.5	LOS B	28.3
9	R2	1.2	0.81	27.1	LOS B	53.9
Approach		1.6	0.81	20.8	LOS B	53.9
West: Emerald Drive (W)						
10	L2	1.6	0.22	12	LOS A	16.3
11	T1	7.5	0.67	19.3	LOS B	28.2
12	R2	2.4	0.67	23.8	LOS B	28.2
Approach		3.6	0.67	16.4	LOS B	28.2
All Vehicles		3.1	0.81	20.1	LOS B	53.9

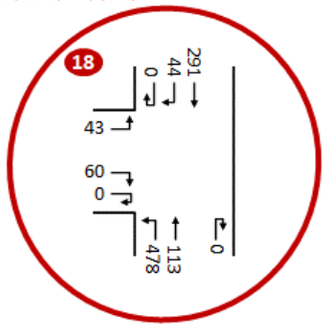
18. Ocean Drive / Woolworths Access

2040

AM Peak

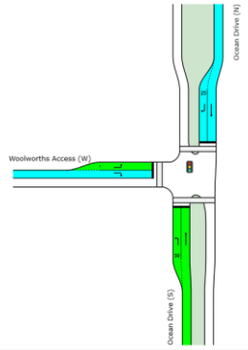


AM Peak 07:45 - 08:45



Level of Service

LOS A
LOS B
LOS C
LOS D
LOS E
LOS F

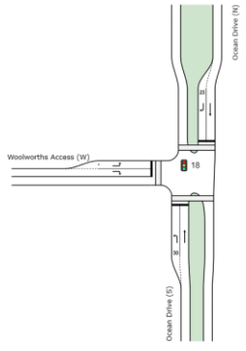


Movement ID	OD Movement	HV%	DOS	Avg. Delay (S	LOS	BoQ (m)
South: Ocean Drive (S)						
1	L2	5.1	0.54	11.6	LOS A	49.2
2	T1	2.3	0.25	13.6	LOS A	13.9
Approach		4.6	0.54	12	LOS A	49.2
North: Ocean Drive (N)						
8	T1	5.3	0.65	16	LOS B	43
9	R2	0	0.17	21.7	LOS B	5.9
Approach		4.6	0.65	16.8	LOS B	43
West: Woolworths Access (W)						
10	L2	2.4	0.06	9.4	LOS A	3.8
12	R2	1.8	0.23	19.6	LOS B	8.3
Approach		2	0.23	15.3	LOS B	8.3
All Vehicles		4.3	0.65	13.9	LOS A	49.2

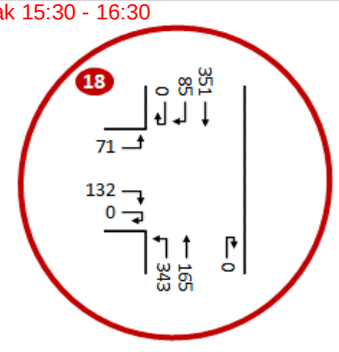
Intersection Performance Summary

Overall the intersection has LOS A and the degree of saturation is 0.65, which is within the acceptable limit of 0.90.The average delay across the intersection is 14 seconds.

PM Peak

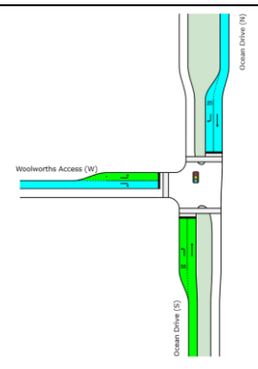


PM Peak 15:30 - 16:30



Level of Service

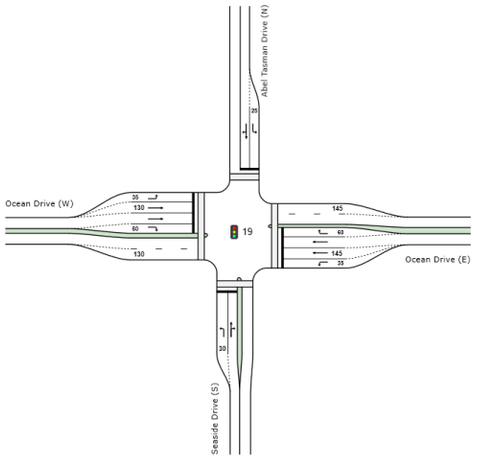
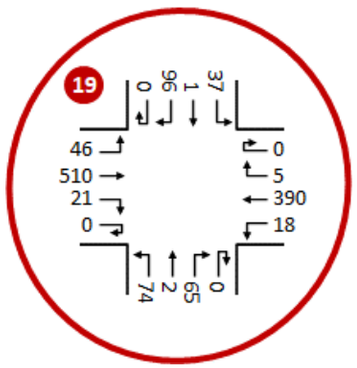
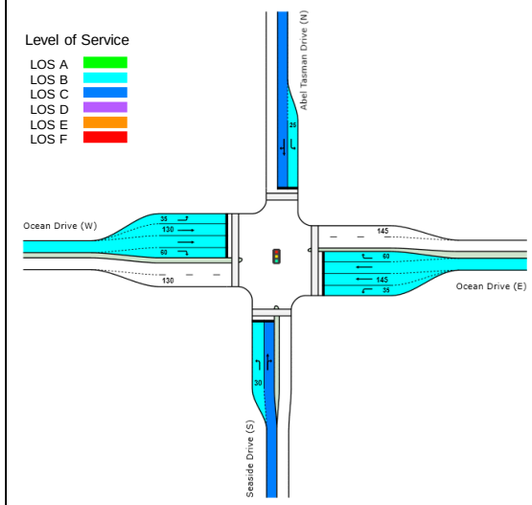
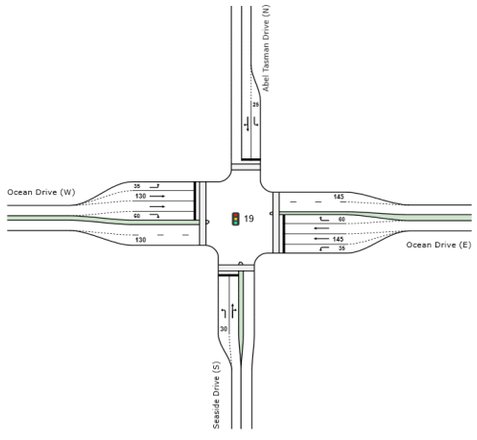
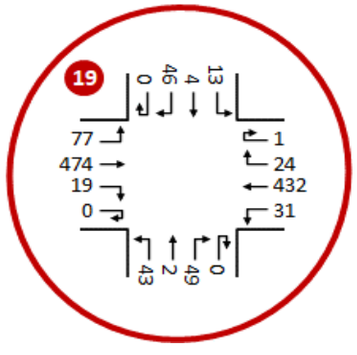
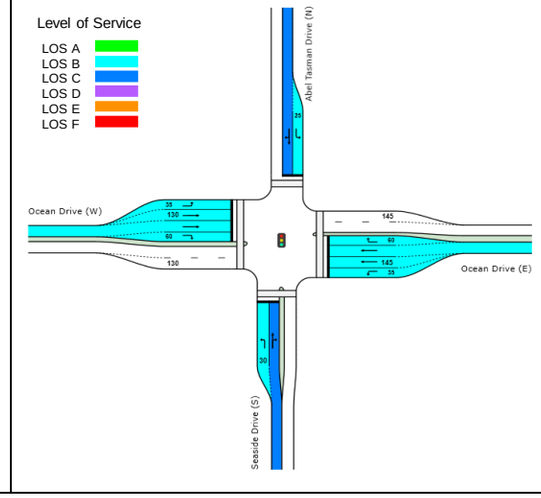
LOS A
LOS B
LOS C
LOS D
LOS E
LOS F



Movement ID	OD Movement	HV%	DOS	Avg. Delay (S	LOS	BoQ (m)
South: Ocean Drive (S)						
1	361	5.1	0.39	10.9	LOS A	31.6
2	174	2.3	0.36	14.1	LOS A	21.1
Approach	535	4.2	0.39	11.9	LOS A	31.6
North: Ocean Drive (N)						
8	369	5.3	0.82	20.5	LOS B	60.9
9	89	0	0.33	22.3	LOS B	11.9
Approach	459	4.3	0.82	20.9	LOS B	60.9
West: Woolworths Access (W)						
10	75	2.4	0.1	9.6	LOS A	6.4
12	139	1.8	0.63	21.3	LOS B	20
Approach	214	2	0.63	17.2	LOS B	20
All Vehicles	1207	3.8	0.82	16.3	LOS B	60.9

Overall the intersection has LOS B and the degree of saturation is 0.82, which is within the acceptable limit of 0.90.The average delay across the intersection is 16 seconds.

19. Ocean Drive / Abel Tasman Drive / Seaside Drive
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 07:45 - 08:45 			Overall the intersection has LOS B and the degree of saturation is 0.69, which is within the acceptable limit of 0.90.The average delay across the intersection is 22 seconds.
PM Peak		PM Peal 15:00 - 16:00 			Overall the intersection has LOS B and the degree of saturation is 0.64, which is within the acceptable limit of 0.90.The average delay across the intersection is 21 seconds.

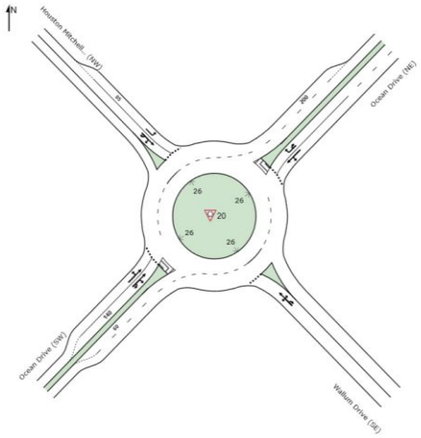
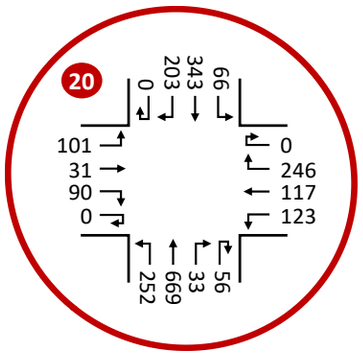
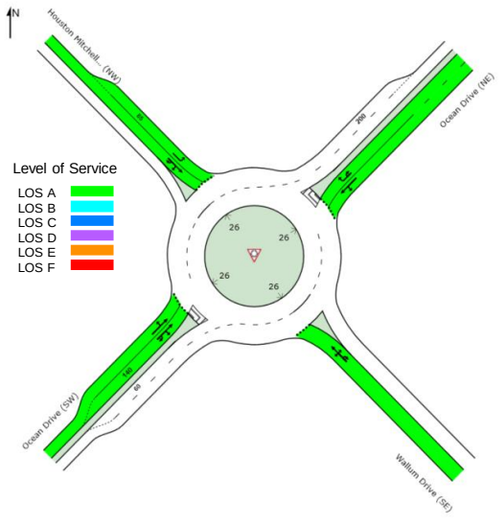
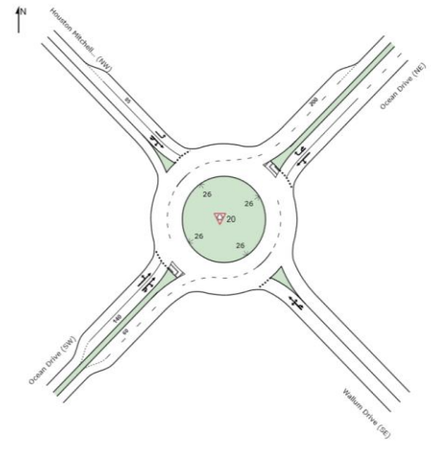
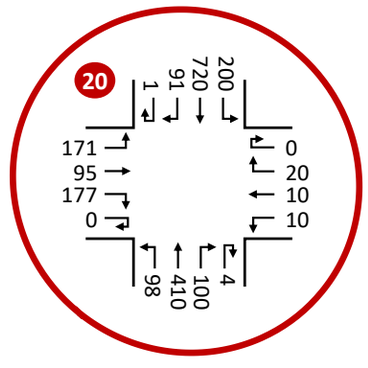
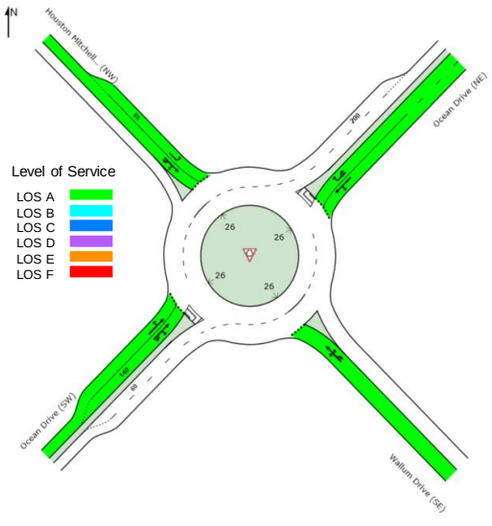
Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Seaside Drive (S)						
1	L2	9.8	0.14	23.4	LOS B	14.7
2	T1	0	0.29	29.6	LOS C	16.8
3	R2	8.3	0.29	34.2	LOS C	16.8
Approach		9	0.29	28.5	LOS B	16.8
East: Ocean Drive (E)						
4	L2	14.3	0.05	27.7	LOS B	4
5	T1	4.3	0.49	24	LOS B	52.5
6	R2	0	0.02	18.9	LOS B	0.7
Approach		4.7	0.49	24.1	LOS B	52.5
North: Abel Tasman Drive (N)						
7	L2	3.6	0.07	22.8	LOS B	6.8
8	T1	0	0.46	31.5	LOS C	24.1
9	R2	1.4	0.46	36.1	LOS C	24.1
Approach		2	0.46	32.4	LOS C	24.1
West: Ocean Drive (W)						
10	L2	0	0.16	20.1	LOS B	6.8
11	T1	4.3	0.69	16	LOS B	50.6
12	R2	5	0.04	22.6	LOS B	3.8
Approach		4	0.69	16.6	LOS B	50.6
All Vehicles		4.5	0.69	22	LOS B	52.5

Intersection Performance

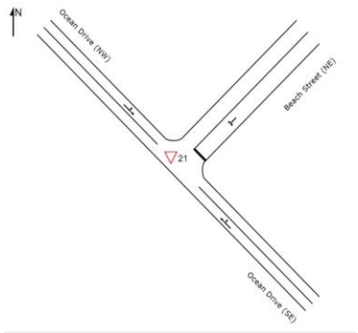
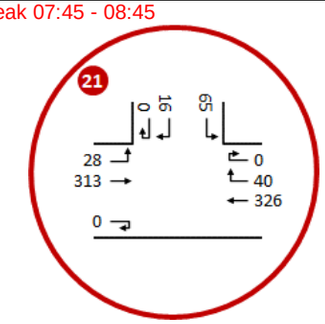
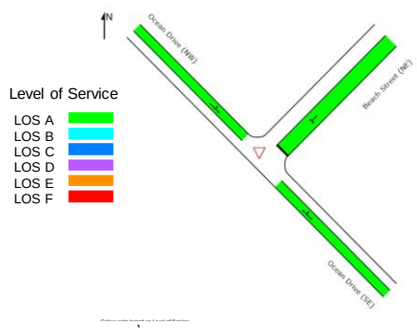
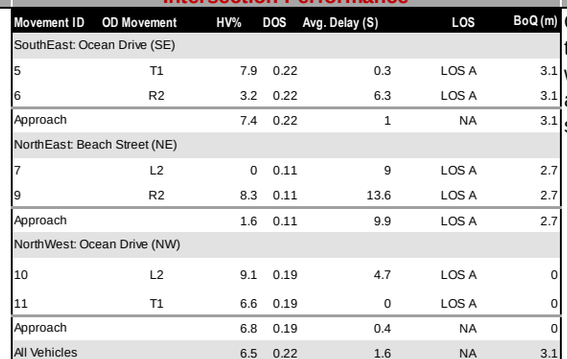
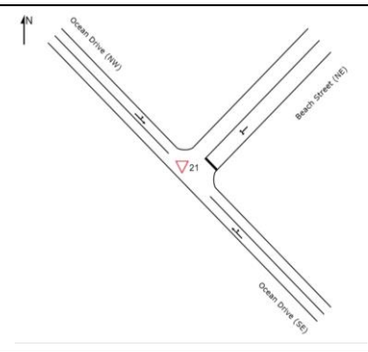
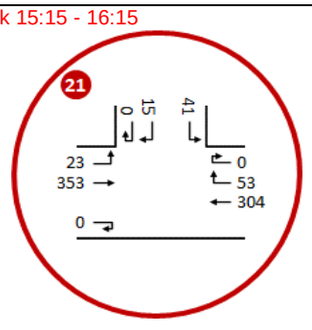
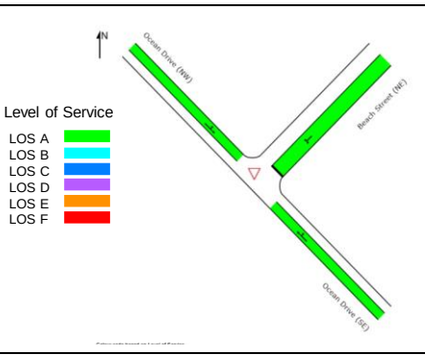
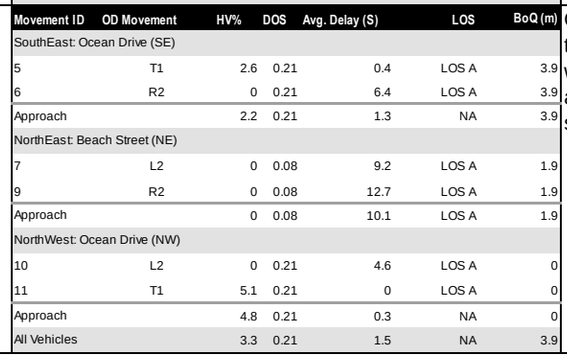
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Seaside Drive (S)						
1	L2	4.2	0.08	22.9	LOS B	7.9
2	T1	0	0.23	29.2	LOS C	12.5
3	R2	7.4	0.23	33.8	LOS C	12.5
Approach		5.8	0.23	28.7	LOS C	12.5
East: Ocean Drive (E)						
4	L2	0	0.08	27.8	LOS B	6.2
5	T1	4.2	0.55	24.3	LOS B	59.1
6	R2	0	0.08	19.4	LOS B	3.5
Approach		3.7	0.55	24.3	LOS B	59.1
North: Abel Tasman Drive (N)						
7	L2	0	0.02	22.4	LOS B	2.3
8	T1	0	0.21	29.1	LOS C	11.7
9	R2	2.3	0.21	33.6	LOS C	11.7
Approach		1.7	0.21	31	LOS C	11.7
West: Ocean Drive (W)						
10	L2	1.6	0.26	20.6	LOS B	11.9
11	T1	3.3	0.64	15.4	LOS B	44.7
12	R2	0	0.04	22.5	LOS B	3.3
Approach		3	0.64	16.4	LOS B	44.7
All Vehicles		3.4	0.64	21.3	LOS B	59.1

20. Ocean Drive / Houston Mitchell Drive
2040

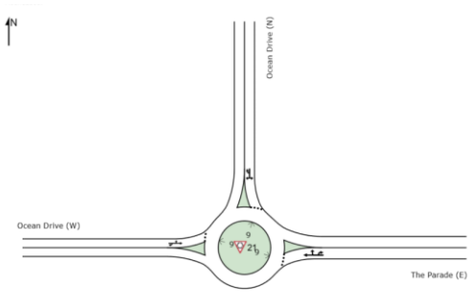
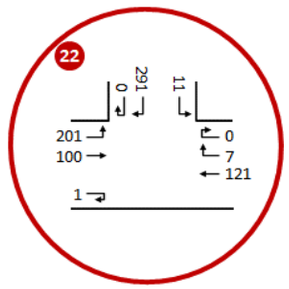
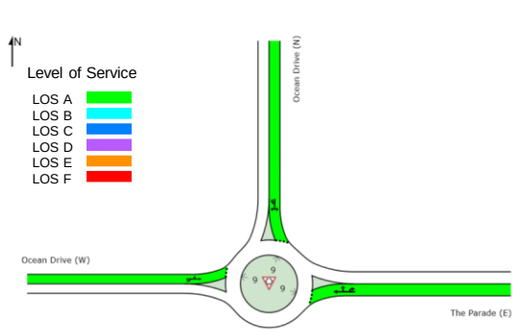
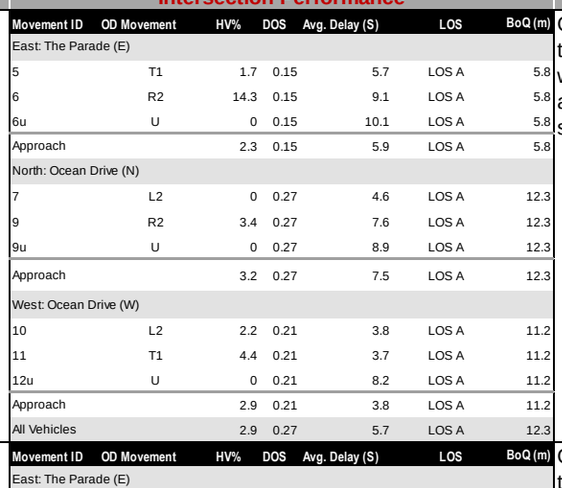
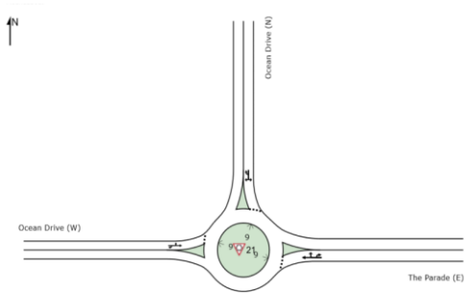
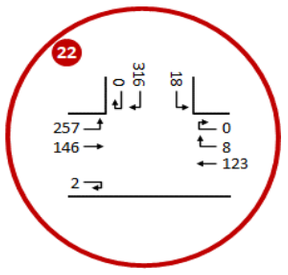
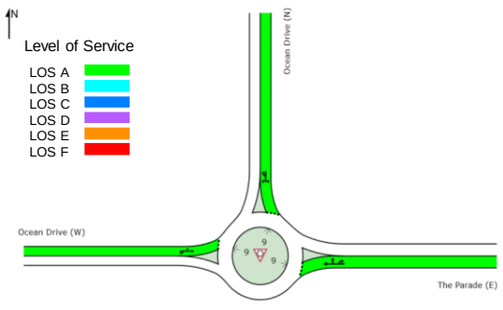
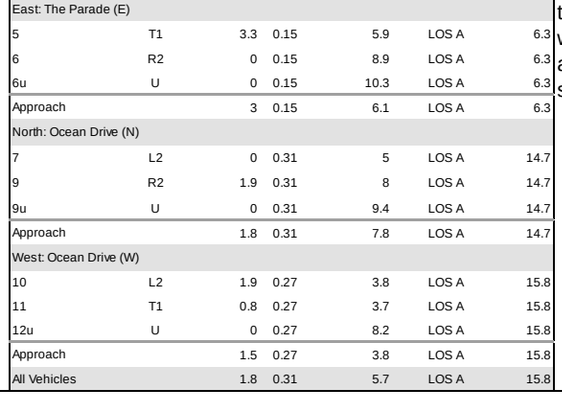
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 07:45 - 08:45 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** SouthEast: Wallum Drive (SE) 1 L2 3.3 0.54 5.1 LOS A 19.9 2 T1 5 0.54 5 LOS A 19.9 3 R2 5 0.54 10.1 LOS A 19.9 3u U 0 0.54 11.9 LOS A 19.9 Approach 4.5 0.54 7.6 LOS A 19.9 NorthEast: Ocean Drive (NE) 4 L2 5 0.32 5.9 LOS A 16.7 5 T1 3.5 0.32 6.2 LOS A 16.7 6 R2 2.5 0.2 11.8 LOS A 9.1 6u U 0 0.2 14.3 LOS A 9.1 Approach 3.3 0.32 8 LOS A 16.7 NorthWest: Houston Mitchell Drive (NW) 7 L2 4 0.19 10.4 LOS A 7.3 8 T1 0 0.19 9.6 LOS A 7.8 9 R2 10 0.19 15.4 LOS B 7.8 9u U 0 0.19 17.6 LOS B 7.8 Approach 5.8 0.19 12.4 LOS A 7.8 SouthWest: Ocean Drive (SW) 10 L2 2 0.58 7.3 LOS A 43.8 11 T1 1.6 0.58 7.4 LOS A 43.8 12 R2 5 0.58 13.2 LOS A 41.4 12u U 5.4 0.58 14.6 LOS B 41.4 Approach 2 0.58 8 LOS A 43.8 All Vehicles 3.3 0.58 8.3 LOS A 43.8	Overall the intersection has LOS A and the degree of saturation is 0.58, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.
PM Peak		PM Peak 15:00 - 16:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** SouthEast: Wallum Drive (SE) 1 L2 5 0.06 5 LOS A 2 2 T1 5 0.06 4.8 LOS A 2 3 R2 5 0.06 10 LOS A 2 3u U 0 0.06 11.8 LOS A 2 Approach 4.9 0.06 7.5 LOS A 2 NorthEast: Ocean Drive (NE) 4 L2 5 0.8 12.6 LOS A 100 5 T1 1.4 0.8 12.8 LOS A 100 6 R2 6.6 0.13 13.6 LOS A 5.4 6u U 0 0.13 15.9 LOS B 5.4 Approach 2.6 0.8 12.8 LOS A 100 NorthWest: Houston Mitchell Drive (NW) 7 L2 4.7 0.22 8.4 LOS A 7.6 8 T1 0 0.27 8 LOS A 10 9 R2 2.3 0.27 13.5 LOS A 10 9u U 0 0.27 16.1 LOS B 10 Approach 2.7 0.27 10.4 LOS A 10 SouthWest: Ocean Drive (SW) 10 L2 1 0.23 2.1 LOS A 11.2 11 T1 1.5 0.23 1.3 LOS A 11.2 12 R2 2 0.23 6.1 LOS A 11 12u U 5 0.23 7.6 LOS A 11 Approach 1.5 0.23 2.2 LOS A 11.2 All Vehicles 2.3 0.8 9.1 LOS A 100	Overall the intersection has LOS A and the degree of saturation is 0.8, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

21. Ocean Drive / Beach Street

2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 07:45 - 08:45 		 Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) SouthEast: Ocean Drive (SE) 5 T1 7.9 0.22 0.3 LOS A 3.1 6 R2 3.2 0.22 6.3 LOS A 3.1 Approach 7.4 0.22 1 NA 3.1 NorthEast: Beach Street (NE) 7 L2 0 0.11 9 LOS A 2.7 9 R2 8.3 0.11 13.6 LOS A 2.7 Approach 1.6 0.11 9.9 LOS A 2.7 NorthWest: Ocean Drive (NW) 10 L2 9.1 0.19 4.7 LOS A 0 11 T1 6.6 0.19 0 LOS A 0 Approach 6.8 0.19 0.4 NA 0 All Vehicles 6.5 0.22 1.6 NA 3.1	Overall the intersection has LOS A and the degree of saturation is 0.22, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.
PM Peak		PM Peak 15:15 - 16:15 		 Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) SouthEast: Ocean Drive (SE) 5 T1 2.6 0.21 0.4 LOS A 3.9 6 R2 0 0.21 6.4 LOS A 3.9 Approach 2.2 0.21 1.3 NA 3.9 NorthEast: Beach Street (NE) 7 L2 0 0.08 9.2 LOS A 1.9 9 R2 0 0.08 12.7 LOS A 1.9 Approach 0 0.08 10.1 LOS A 1.9 NorthWest: Ocean Drive (NW) 10 L2 0 0.21 4.6 LOS A 0 11 T1 5.1 0.21 0 LOS A 0 Approach 4.8 0.21 0.3 NA 0 All Vehicles 3.3 0.21 1.5 NA 3.9	Overall the intersection has LOS A and the degree of saturation is 0.21, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 second.

22. Ocean Drive / The Parade
2040

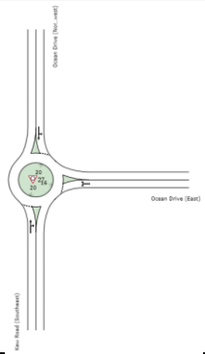
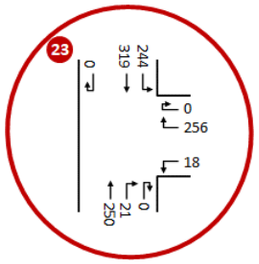
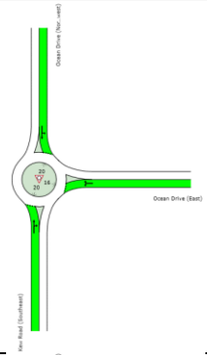
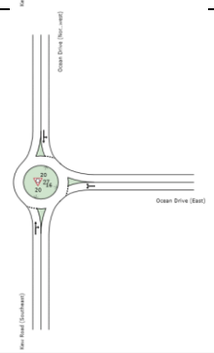
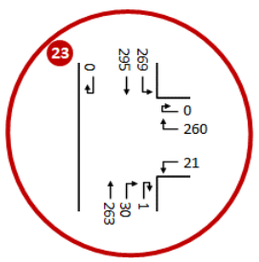
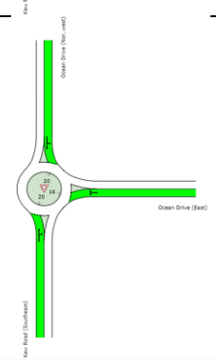
Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 			Overall the intersection has LOS A and the degree of saturation is 0.27, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.
PM Peak		PM Peak 15:00 - 16:00 			Overall the intersection has LOS A and the degree of saturation is 0.31, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: The Parade (E)						
5	T1	1.7	0.15	5.7	LOS A	5.8
6	R2	14.3	0.15	9.1	LOS A	5.8
6u	U	0	0.15	10.1	LOS A	5.8
Approach		2.3	0.15	5.9	LOS A	5.8
North: Ocean Drive (N)						
7	L2	0	0.27	4.6	LOS A	12.3
9	R2	3.4	0.27	7.6	LOS A	12.3
9u	U	0	0.27	8.9	LOS A	12.3
Approach		3.2	0.27	7.5	LOS A	12.3
West: Ocean Drive (W)						
10	L2	2.2	0.21	3.8	LOS A	11.2
11	T1	4.4	0.21	3.7	LOS A	11.2
12u	U	0	0.21	8.2	LOS A	11.2
Approach		2.9	0.21	3.8	LOS A	11.2
All Vehicles		2.9	0.27	5.7	LOS A	12.3

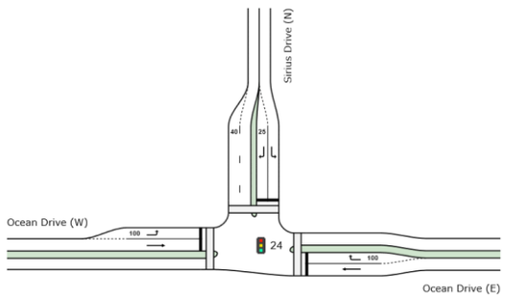
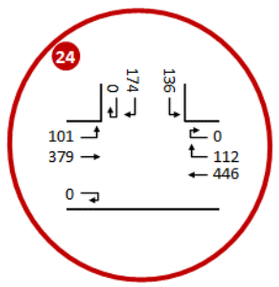
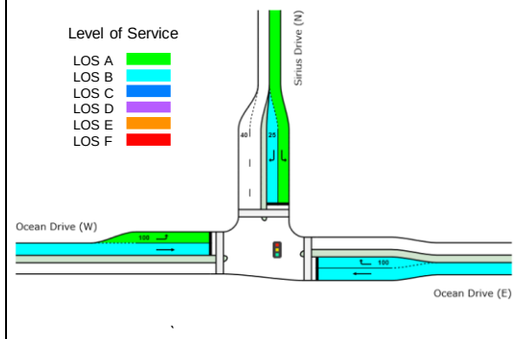
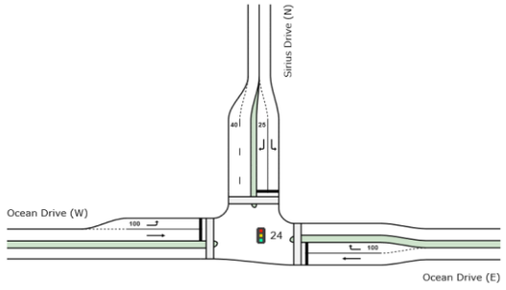
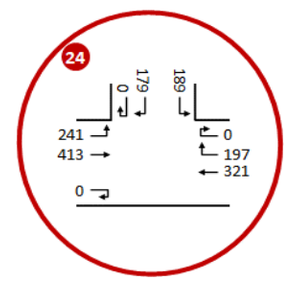
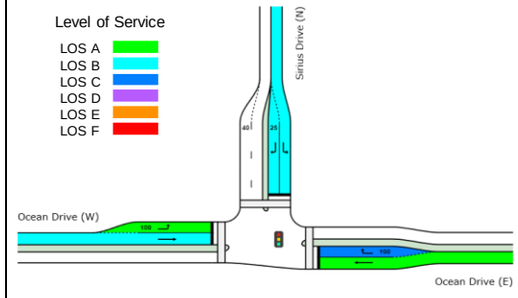
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: The Parade (E)						
5	T1	3.3	0.15	5.9	LOS A	6.3
6	R2	0	0.15	8.9	LOS A	6.3
6u	U	0	0.15	10.3	LOS A	6.3
Approach		3	0.15	6.1	LOS A	6.3
North: Ocean Drive (N)						
7	L2	0	0.31	5	LOS A	14.7
9	R2	1.9	0.31	8	LOS A	14.7
9u	U	0	0.31	9.4	LOS A	14.7
Approach		1.8	0.31	7.8	LOS A	14.7
West: Ocean Drive (W)						
10	L2	1.9	0.27	3.8	LOS A	15.8
11	T1	0.8	0.27	3.7	LOS A	15.8
12u	U	0	0.27	8.2	LOS A	15.8
Approach		1.5	0.27	3.8	LOS A	15.8
All Vehicles		1.8	0.31	5.7	LOS A	15.8

23. Ocean Drive / Kew Road

2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 	**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** South: Kew Road (Southeast) 2 T1 6 0.27 4.4 LOS A 12.4 3 R2 5 0.27 8.9 LOS A 12.4 Approach 5.9 0.27 4.8 LOS A 12.4 East: Ocean Drive (East) 4 L2 6.3 0.29 5.3 LOS A 12.1 6 R2 4.3 0.29 9.4 LOS A 12.1 Approach 4.4 0.29 9.1 LOS A 12.1 North: Ocean Drive (Northwest) 7 L2 6.3 0.38 1.8 LOS A 21.7 8 T1 5.1 0.38 1.5 LOS A 21.7 Approach 5.6 0.38 1.6 LOS A 21.7 All Vehicles 5.4 0.38 4.3 LOS A 21.7	Overall the intersection has LOS A and the degree of saturation is 0.38, which is within the acceptable limit of 0.85.The average delay across the intersection is 4 seconds.
PM Peak		PM Peak 15:15 - 16:15 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 	**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** South: Kew Road (Southeast) 2 T1 5.7 0.29 4.5 LOS A 13.6 3 R2 0 0.29 8.9 LOS A 13.6 Approach 5.1 0.29 5 LOS A 13.6 East: Ocean Drive (East) 4 L2 0 0.29 4.9 LOS A 12.2 6 R2 4.1 0.29 9.2 LOS A 12.2 Approach 3.8 0.29 8.9 LOS A 12.2 North: Ocean Drive (Northwest) 7 L2 3.1 0.38 1.8 LOS A 21.5 8 T1 2 0.38 1.6 LOS A 21.5 Approach 2.5 0.38 1.7 LOS A 21.5 All Vehicles 3.5 0.38 4.3 LOS A 21.5	Overall the intersection has LOS A and the degree of saturation is 0.38, which is within the acceptable limit of 0.85.The average delay across the intersection is 4 seconds.

24. Ocean Drive / Sirius Drive
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peal 08:00 - 09:00 			Overall the intersection has LOS B and the degree of saturation is 0.86, which is within the acceptable limit of 0.90.The average delay across the intersection is 19 seconds.
PM Peak		PM Peal 15:15 - 16:15 			Overall the intersection has LOS B and the degree of saturation is 0.74, which is within the acceptable limit of 0.90.The average delay across the intersection is 19 seconds.

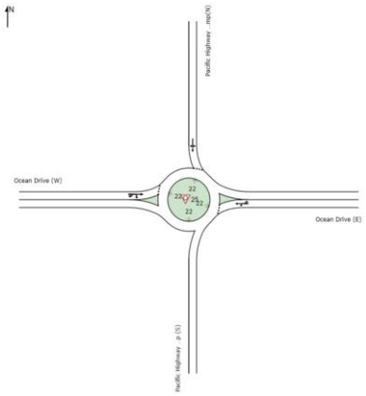
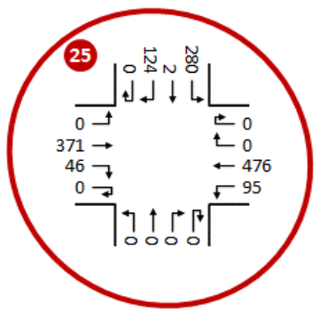
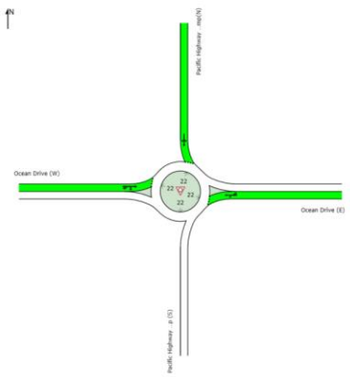
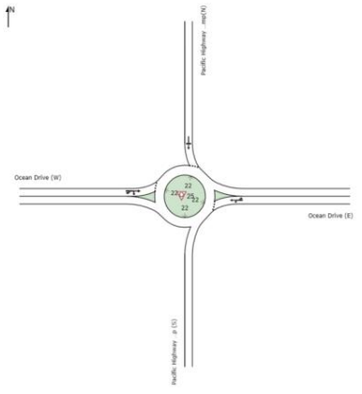
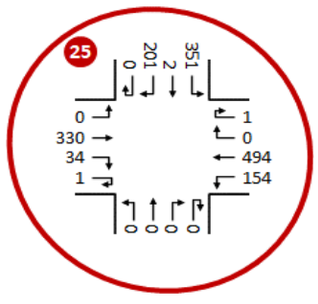
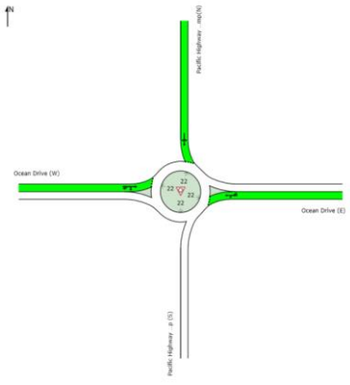
AM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
5	T1	3.9	0.76	16.1	LOS B	68.9
6	R2	3.1	0.44	24.5	LOS B	16.5
Approach		3.8	0.76	17.8	LOS B	68.9
North: Sirius Drive (N)						
7	L2	4.2	0.19	12.6	LOS A	13
9	R2	3.3	0.68	24.7	LOS B	27.8
Approach		3.7	0.68	19.4	LOS B	27.8
West: Ocean Drive (W)						
10	L2	8.1	0.12	11.7	LOS A	8
11	T1	7.7	0.86	22.9	LOS B	72.2
Approach		7.8	0.86	20.6	LOS B	72.2
All Vehicles		5.2	0.86	19.1	LOS B	72.2

PM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
5	T1	1.2	0.46	12.9	LOS A	44.9
6	R2	5.1	0.74	31.3	LOS C	40.1
Approach		2.6	0.74	19.9	LOS B	44.9
North: Sirius Drive (N)						
7	L2	2.1	0.26	15	LOS B	23
9	R2	3	0.66	28.2	LOS B	34.3
Approach		2.6	0.66	21.4	LOS B	34.3
West: Ocean Drive (W)						
10	L2	1.5	0.24	12	LOS A	21.6
11	T1	3	0.71	17.9	LOS B	73
Approach		2.5	0.71	15.7	LOS B	73
All Vehicles		2.6	0.74	18.5	LOS B	73

25. Ocean Drive / Pacific Highway Ramp
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary
AM Peak		AM Peak 08:00 - 09:00 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 
PM Peak		PM Peak 15:15 - 16:15 	Level of Service LOS A LOS B LOS C LOS D LOS E LOS F 

Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
4	L2	3.8	0.5	5.3	LOS A	31.2
5	T1	3.8	0.5	5.6	LOS A	31.2
6u	U	0	0.5	12.5	LOS A	31.2
Approach		3.8	0.5	5.6	LOS A	31.2
North: Pacific Highway Off Ramp(N)						
7	L2	9.6	0.46	7.7	LOS A	24.8
8	T1	0	0.46	7.6	LOS A	24.8
9	R2	11.4	0.46	12.9	LOS A	24.8
Approach		10.1	0.46	9.3	LOS A	24.8
West: Ocean Drive (W)						
11	T1	4.7	0.26	4.1	LOS A	14.5
12	R2	10.3	0.26	9	LOS A	14.5
12u	U	0	0.26	11	LOS A	14.5
Approach		5.3	0.26	4.6	LOS A	14.5
All Vehicles		6.1	0.5	6.4	LOS A	31.2

Intersection Performance Summary

Overall the intersection has LOS A and the degree of saturation is 0.5, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.

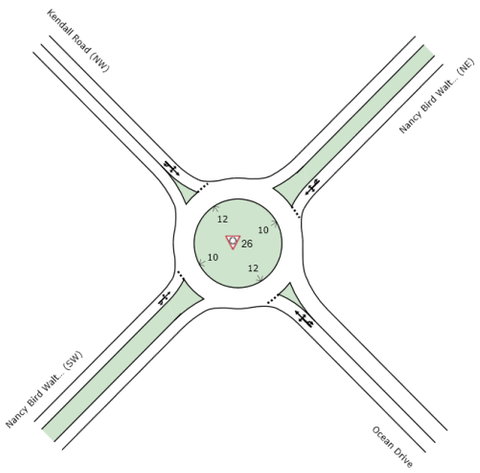
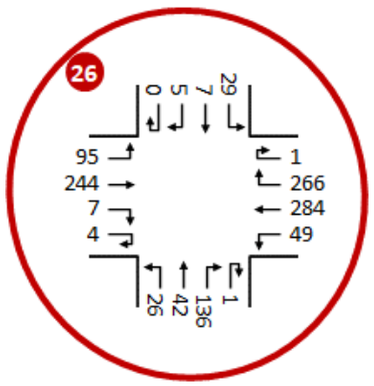
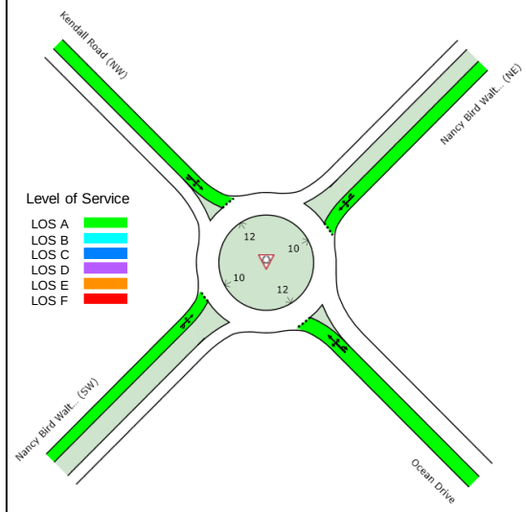
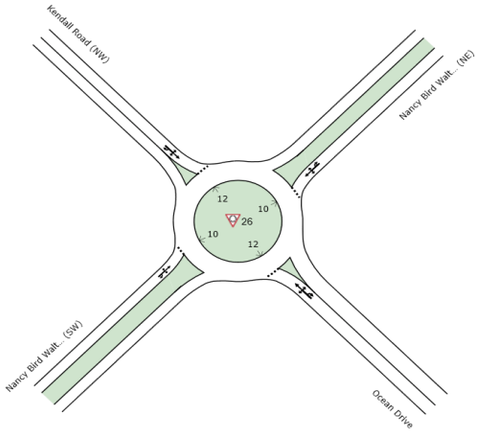
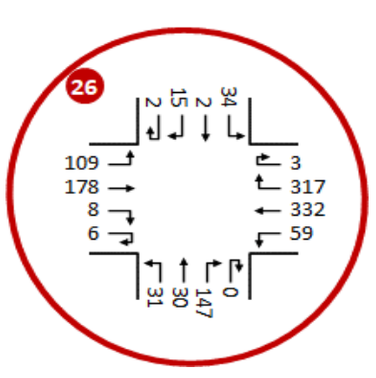
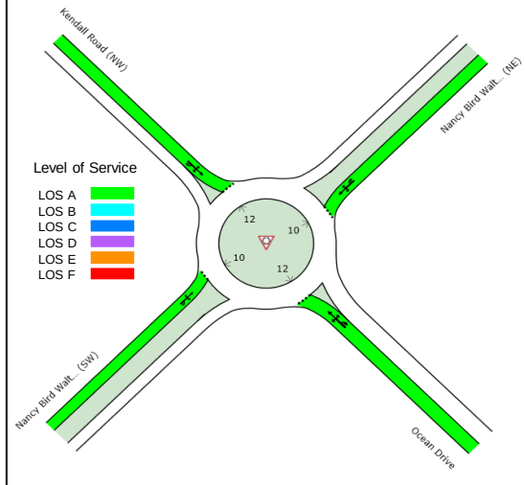
Intersection Performance

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
East: Ocean Drive (E)						
4	L2	5.2	0.61	6.3	LOS A	42.6
5	T1	2.2	0.61	6.5	LOS A	42.6
6u	U	0	0.61	13.4	LOS A	42.6
Approach		2.9	0.61	6.4	LOS A	42.6
North: Pacific Highway Off Ramp(N)						
7	L2	2.3	0.58	8.1	LOS A	37.6
8	T1	100	0.58	12.4	LOS A	37.6
9	R2	7.4	0.58	13.4	LOS A	37.6
Approach		4.5	0.58	10	LOS A	37.6
West: Ocean Drive (W)						
11	T1	3.8	0.22	4	LOS A	12.6
12	R2	3.7	0.22	8.9	LOS A	12.6
12u	U	0	0.22	11	LOS A	12.6
Approach		3.8	0.22	4.5	LOS A	12.6
All Vehicles		3.7	0.61	7.2	LOS A	42.6

Intersection Performance Summary

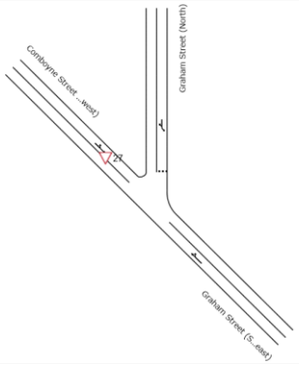
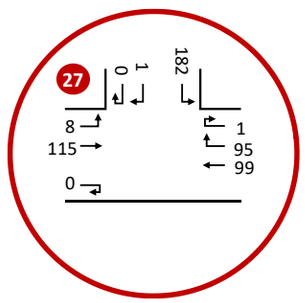
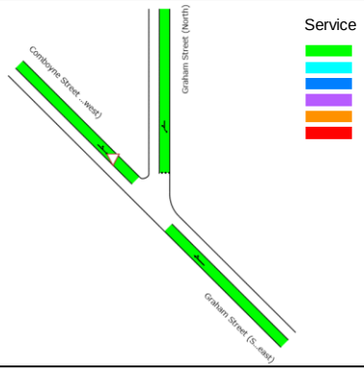
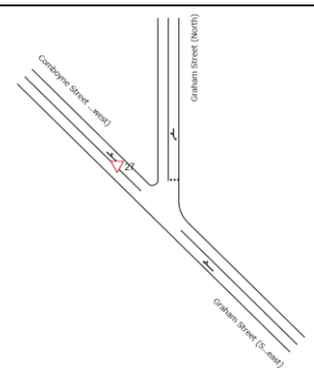
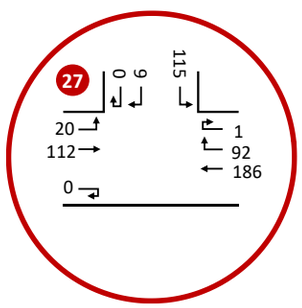
Overall the intersection has LOS A and the degree of saturation is 0.61, which is within the acceptable limit of 0.85.The average delay across the intersection is 7 seconds.

26. Ocean Drive / Nancy Bird Walton Drive / Kendall Road
2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) SouthEast: Ocean Drive 4 L2 13.2 0.42 4.6 LOS A 23.4 5 T1 4.1 0.42 4.7 LOS A 23.4 6 R2 4.8 0.42 8.4 LOS A 23.4 6u U 0 0.42 10 LOS A 23.4 Approach 5.1 0.42 6.4 LOS A 23.4 NorthEast: Nancy Bird Walton Drive (NE) 7 L2 8.3 0.05 7.5 LOS A 2.3 8 T1 16.7 0.05 7.8 LOS A 2.3 9 R2 0 0.05 10.6 LOS A 2.3 9u U 0 0.05 12.4 LOS A 2.3 Approach 8.5 0.05 8 LOS A 2.3 NorthWest: Kendall Road (NW) 10 L2 12.3 0.44 7.8 LOS A 23.2 11 T1 4.3 0.44 7.7 LOS A 23.2 12 R2 0 0.44 10.9 LOS A 23.2 12u U 0 0.44 13.8 LOS A 23.2 Approach 6.4 0.44 7.9 LOS A 23.2 SouthWest: Nancy Bird Walton Drive (SW) 1 L2 13.6 0.29 10.2 LOS A 13.7 2 T1 8.3 0.29 10.3 LOS A 13.7 3 R2 5.2 0.29 13.6 LOS A 13.7 3u U 0 0.29 15.1 LOS B 13.7 Approach 6.9 0.29 12.5 LOS A 13.7 All Vehicles 5.9 0.44 7.9 LOS A 23.4	Overall the intersection has LOS A and the degree of saturation is 0.44, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.
PM Peak		PM Peak 15:00 - 16:00 		Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m) SouthEast: Ocean Drive 4 L2 3.6 0.5 4.6 LOS A 31.3 5 T1 4.1 0.5 4.8 LOS A 31.3 6 R2 5.6 0.5 8.5 LOS A 31.3 6u U 0 0.5 10.1 LOS A 31.3 Approach 4.7 0.5 6.5 LOS A 31.3 NorthEast: Nancy Bird Walton Drive (NE) 7 L2 0 0.06 6.8 LOS A 2.4 8 T1 0 0.06 6.9 LOS A 2.4 9 R2 0 0.06 10.2 LOS A 2.4 9u U 0 0.06 12 LOS A 2.4 Approach 0 0.06 8 LOS A 2.4 NorthWest: Kendall Road (NW) 10 L2 18.8 0.41 8.5 LOS A 20.9 11 T1 4.5 0.41 8 LOS A 20.9 12 R2 0 0.41 11.1 LOS A 20.9 12u U 0 0.41 14.1 LOS A 20.9 Approach 9.5 0.41 8.4 LOS A 20.9 SouthWest: Nancy Bird Walton Drive (SW) 1 L2 0 0.32 11 LOS A 15.3 2 T1 11.5 0.32 12.1 LOS A 15.3 3 R2 3.2 0.32 15.1 LOS B 15.3 3u U 0 0.32 16.7 LOS B 15.3 Approach 3.9 0.32 14.1 LOS A 15.3 All Vehicles 5.5 0.5 8.1 LOS A 31.3	Overall the intersection has LOS A and the degree of saturation is 0.5, which is within the acceptable limit of 0.85.The average delay across the intersection is 8 seconds.

27. Comboyne Street / Graham Street

2040

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		See table below	Overall the intersection has LOS A and the degree of saturation is 0.14, which is within the acceptable limit of 0.80.The average delay across the intersection is 3 seconds.
PM Peak		PM Peak 15:00 - 16:00 		See table below	Overall the intersection has LOS A and the degree of saturation is 0.17, which is within the acceptable limit of 0.80.The average delay across the intersection is 2 seconds.

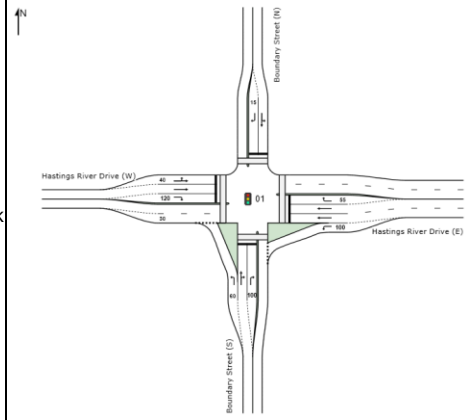
Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Graham Street (Southeast)						
2	T1	7.7	0.12	0.3	LOS A	4.1
23a	R1	6.7	0.12	4.1	LOS A	4.1
Approach		7.2	0.12	2.2	NA	4.1
North: Graham Street (North)						
7a	L1	4.9	0.14	4.9	LOS A	4.2
9b	R3	0	0.14	6.7	LOS A	4.2
Approach		4.8	0.14	4.9	LOS A	4.2
NorthWest: Comboyne Street (Northwest)						
27b	L3	16.7	0.07	5.6	LOS A	0
8	T1	8.8	0.07	0	LOS A	0
Approach		9.3	0.07	0.4	NA	0
All Vehicles		6.8	0.14	2.7	NA	4.2

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
SouthEast: Graham Street (Southeast)						
2	T1	4.3	0.17	0.3	LOS A	4.8
23a	R1	7.2	0.17	4.2	LOS A	4.8
Approach		5.3	0.17	1.6	NA	4.8
North: Graham Street (North)						
7a	L1	14	0.1	5	LOS A	3.2
9b	R3	0	0.1	7.1	LOS A	3.2
Approach		12.9	0.1	5.2	LOS A	3.2
NorthWest: Comboyne Street (Northwest)						
27b	L3	0	0.08	5.4	LOS A	0
8	T1	4.8	0.08	0	LOS A	0
Approach		4	0.08	0.8	NA	0
All Vehicles		6.8	0.17	2.2	NA	4.8

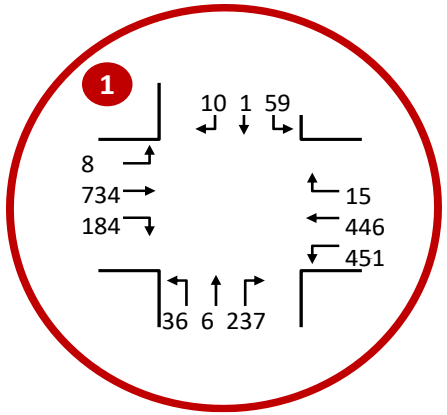
1. Hastings River Drive / Boundary Street 2040 - Upgrade

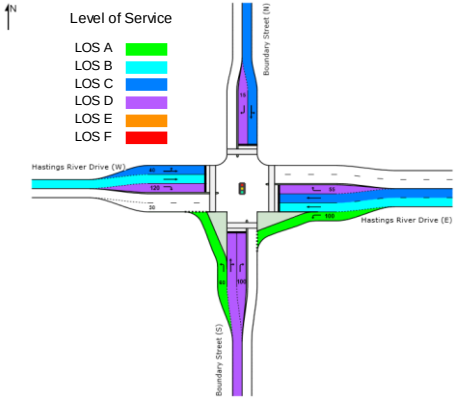
Without Airport Link Road

AM Peak



AM Peak 08:00 - 09:00

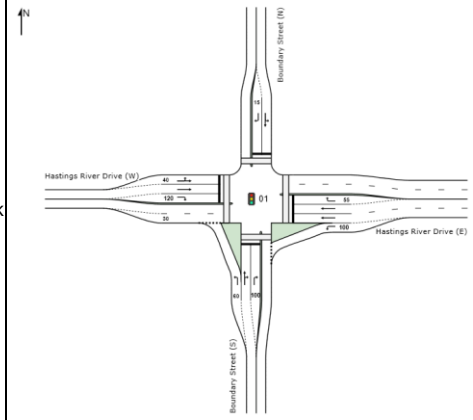




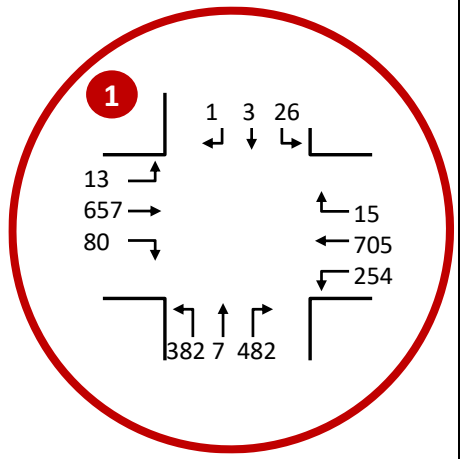
Movement	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	95th Percentile BoQ (m)
South: Boundary Street (S)						
1	L2	0	0.03	7.7	LOS A	2.9
2	T1	0	0.67	43.7	LOS D	46.4
3	R2	21.7	0.67	48.6	LOS D	49.7
Approach		18.5	0.67	43.3	LOS D	49.7
East: Hastings River Drive (E)						
4	L2	8.5	0.36	6.9	LOS A	27.6
5	T1	5.7	0.677	29	LOS C	107
6	R2	0	0.128	50.7	LOS D	4.8
Approach		7	0.677	18.7	LOS B	107
North: Boundary Street (N)						
7	L2	19	0.133	31.8	LOS C	15.1
8	T1	0	0.133	27.2	LOS B	15.1
9	R2	0	0.085	49.3	LOS D	3.2
Approach		16	0.133	34.2	LOS C	15.1
West: Hastings River Drive (W)						
10	L2	42.9	0.677	36	LOS C	108.1
11	T1	2.8	0.677	25.5	LOS B	108.1
12	R2	21.4	0.676	45.5	LOS D	69.9
Approach		6.9	0.677	29.5	LOS C	108.1
All Vehicles		8.2	0.677	26.8	LOS B	108.1

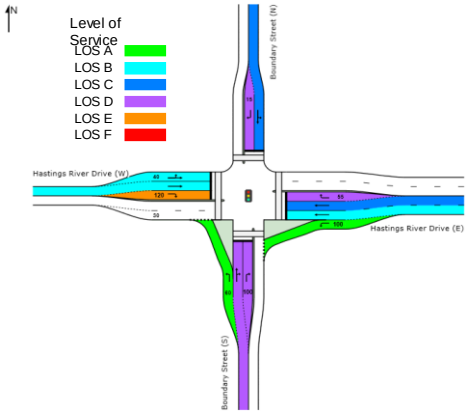
Overall the intersection has LOS B and the degree of saturation is 0.67 , which is within the acceptable limit of 0.9. delays for these movements. The average delay across the intersection is 27 seconds.

PM Peak



PM Peak 16:15 - 17:15





Movement	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	95th Percentile BoQ (m)
South: Boundary Street (S)						
1	L2	6.7	0.4	13.1	LOS A	62.8
2	T1	0	0.88	51.3	LOS D	91.5
3	R2	2.9	0.88	55.6	LOS D	98.3
Approach		4.6	0.88	39.9	LOS C	98.3
East: Hastings River Drive (E)						
4	L2	11.7	0.19	6.4	LOS A	8.9
5	T1	4.6	0.87	33.9	LOS C	205
6	R2	0	0.13	50.7	LOS D	4.8
Approach		6.4	0.87	27	LOS B	2.5
North: Boundary Street (N)						
7	L2	5.3	0.08	33.8	LOS C	7.7
8	T1	0	0.08	29.2	LOS C	7.7
9	R2	0	0.01	48	LOS D	0.3
Approach		4.6	0.08	33.8	LOS C	7.7
West: Hastings River Drive (W)						
10	L2	0	0.61	29.4	LOS C	86
11	T1	2.3	0.61	23.9	LOS B	86
12	R2	16.7	0.76	56.6	LOS E	32.9
Approach		3.8	0.76	27.5	LOS B	86.1
All Vehicles		5	0.88	30.5	LOS C	205

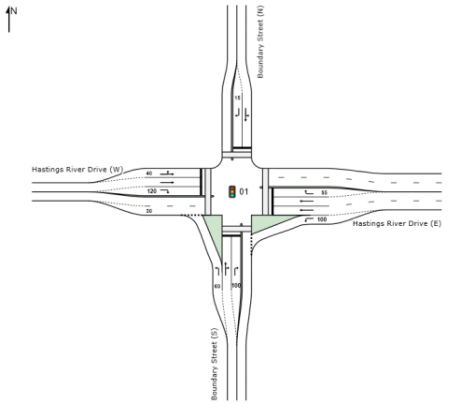
Overall the intersection has LOS C and the degree of saturation is 0.88 , which is just within the acceptable limit of 0.9. The average delay across the intersection is 30 seconds

1. Hastings River Drive / Boundary Street 2040 - Upgrade

With Airport Link Road

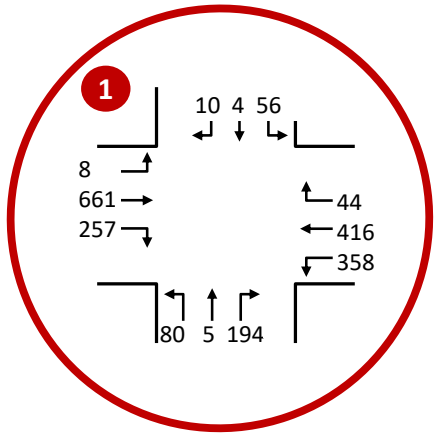
AM Peak

SIDRA Geometry

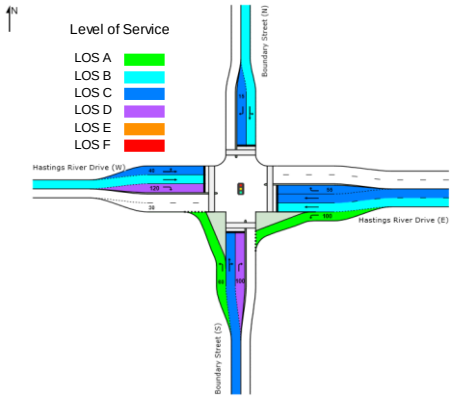


Year 2040 Volumes

AM Peak 08:00 - 09:00



Lane LOS Summary



Intersection Performance

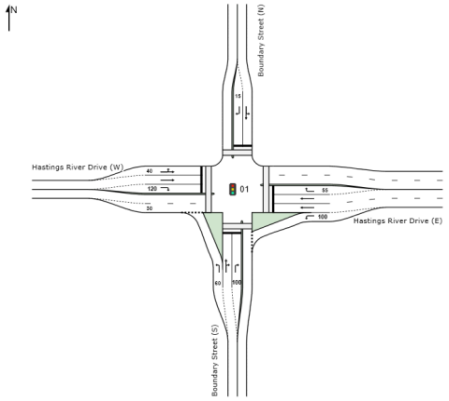
Movement	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	95th Percentile BoQ (m)
South: Boundary Street (S)						
1	L2	0	0.07	7.5	LOS A	5.6
2	T1	0	0.733	36.8	LOS C	33.2
3	R2	21.7	0.733	42.5	LOS C	33.2
Approach		15.1	0.733	32.4	LOS C	33.2
East: Hastings River Drive (E)						
4	L2	8.5	0.334	8	LOS A	26.3
5	T1	5.7	0.816	31.4	LOS C	95.4
6	R2	0	0.291	40.3	LOS C	11.2
Approach		6.6	0.816	21.6	LOS B	95.4
North: Boundary Street (N)						
7	L2	1.9	0.124	24.8	LOS B	11.5
8	T1	0	0.124	20.2	LOS B	11.5
9	R2	0	0.066	38	LOS C	2.4
Approach		1.5	0.124	26.4	LOS B	11.5
West: Hastings River Drive (W)						
10	L2	42.9	0.708	34.7	LOS C	74.2
11	T1	2.8	0.708	24.9	LOS B	84.9
12	R2	21.4	0.84	42.7	LOS D	87.6
Approach		8.3	0.84	29.9	LOS C	87.6
All Vehicles		8.3	0.84	26.9	LOS B	95.4

Intersection Performance Summary

Overall the intersection has LOS C and the degree of saturation is 0.84 , which is within the acceptable limit of 0.9. The average delay across the intersection is 31.5 seconds.

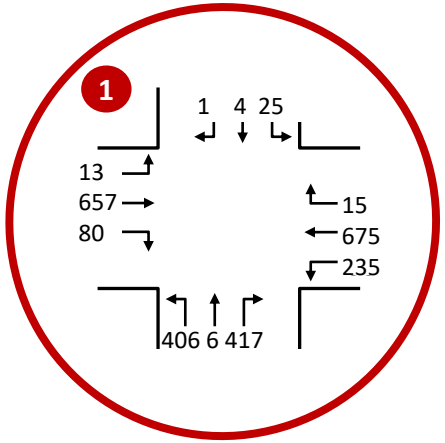
PM Peak

SIDRA Geometry

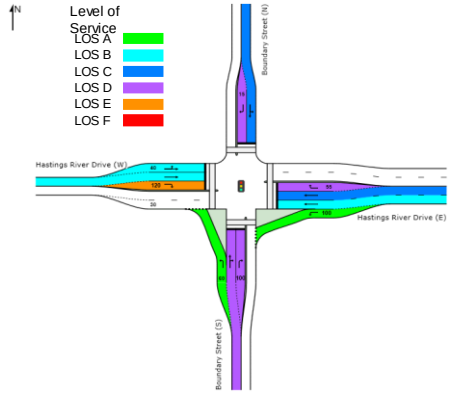


Year 2040 Volumes

PM Peak 16:15 - 17:15



Lane LOS Summary



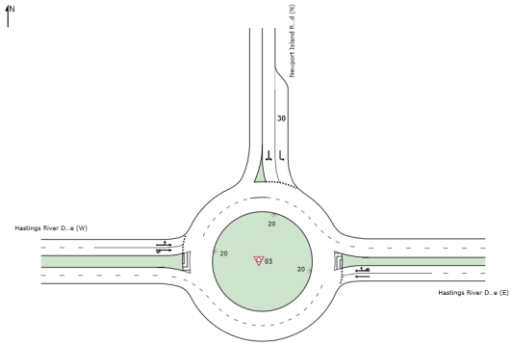
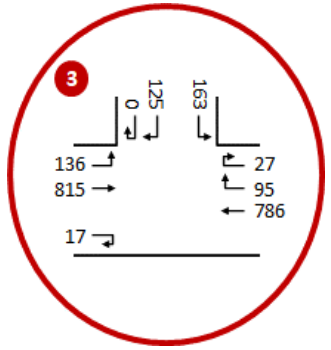
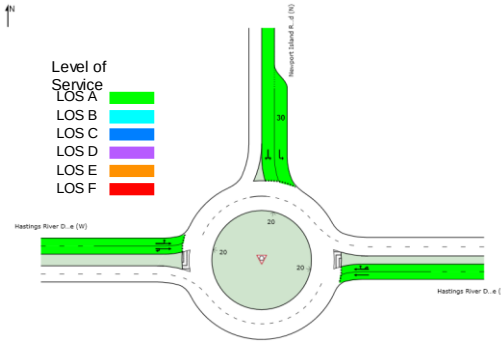
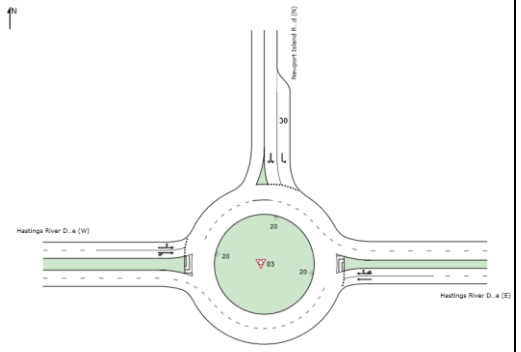
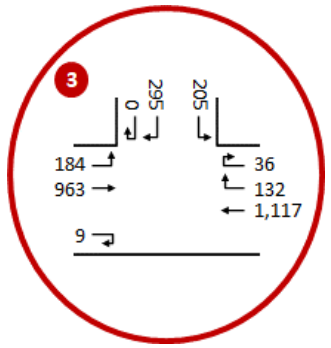
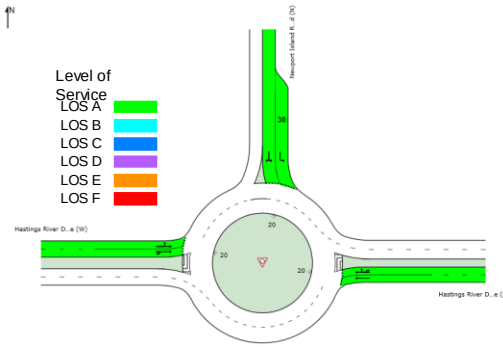
Intersection Performance

Movement	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	95th Percentile BoQ (m)
South: Boundary Street (S)						
1	L2	6.7	0.41	11.9	LOS A	63
2	T1	0	0.81	46.5	LOS D	73.7
3	R2	2.9	0.13	50.8	LOS D	79.6
Approach		4.7	0.81	31.8	LOS C	79.6
East: Hastings River Drive (E)						
4	L2	11.7	0.08	6.5	LOS A	9.2
5	T1	4.6	0.08	28.4	LOS B	174.7
6	R2	0	0.01	50.7	LOS D	4.8
Approach		6.3	0.08	23.2	LOS B	174.7
North: Boundary Street (N)						
7	L2	5.3	0.59	34.7	LOS C	7.8
8	T1	0	0.76	30.1	LOS C	7.8
9	R2	0	0.76	48	LOS D	0.3
Approach		4.4	0.08	34.5	LOS C	7.8
West: Hastings River Drive (W)						
10	L2	0	0.59	28.6	LOS C	84.4
11	T1	2.3	0.59	23	LOS B	84.4
12	R2	16.7	0.76	56.6	LOS E	32.9
Approach		3.8	0.76	26.7	LOS B	84.5
All Vehicles		5	0.82	27.2	LOS B	174.7

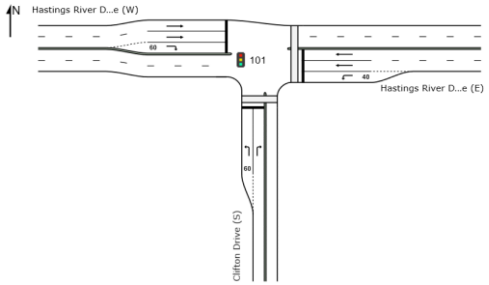
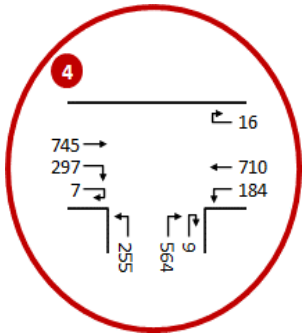
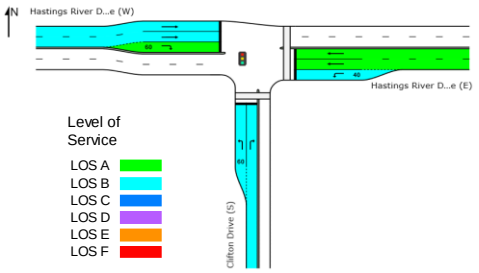
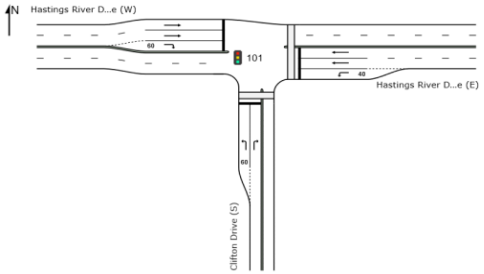
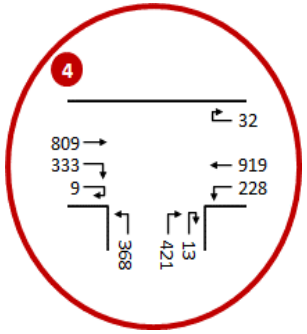
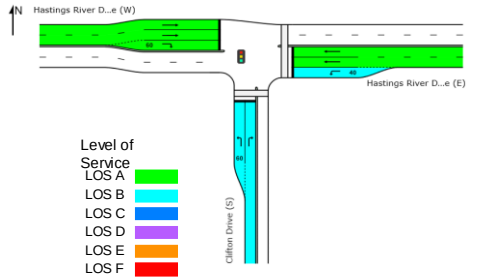
Intersection Performance Summary

Overall the intersection has LOS B and the degree of saturation is 0.82 , which is just within the acceptable limit of 0.9. The average delay across the intersection is 27 seconds.

3. Hastings River Drive / Newport Island Road 2040 - Upgrade

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** East: Hastings River Drive (E) 5 T1 4 0.359 5.1 LOS A 20.6 6 R2 23.1 0.359 10.4 LOS A 20.7 6u U 0 0.359 12 LOS A 20.7 Approach 5.9 0.359 5.9 LOS A 20.7 North: Newport Island Road (N) 7 L2 3.1 0.16 5 LOS A 4.3 9 R2 3.3 0.16 9.2 LOS A 4.1 Approach 3.2 0.16 6.8 LOS A 4.3 West: Hastings River Drive (W) 10 L2 7.1 0.37 4.9 LOS A 21.5 11 T1 4.6 0.37 5.1 LOS A 21.5 12u U 14.3 0.37 12.1 LOS A 21 Approach 5.1 0.37 5.2 LOS A 21.5 All Vehicles 5.2 0.37 5.7 LOS A 21.5	Overall the intersection has LOS A and the degree of saturation is 0.37, which is within the acceptable limit of 0.85.The average delay across the intersection is 6 seconds.
PM Peak		PM Peak 15:15 - 16:15 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** East: Hastings River Drive (E) 5 T1 2.2 0.60 7.1 LOS A 45.4 6 R2 14.2 0.60 13 LOS A 45.4 6u U 0 0.60 14.5 LOS B 45.4 Approach 3.4 0.60 7.9 LOS A 45.4 North: Newport Island Road (N) 7 L2 3.1 0.39 7.9 LOS A 12 9 R2 17 0.52 12.4 LOS A 18.5 Approach 2.3 0.52 10.5 LOS A 18.5 West: Hastings River Drive (W) 10 L2 3.8 0.47 5.3 LOS A 31.3 11 T1 3.3 0.47 5.5 LOS A 31.3 12u U 0 0.47 12.3 LOS A 30 Approach 3.3 0.47 5.5 LOS A 31.3 All Vehicles 3.2 0.60 7.4 LOS A 45.4	Overall the intersection has LOS A and the degree of saturation is 0.60 , which is below the acceptable limit of 0.85.The average delay across the intersection is 7 seconds.

4. Hastings River Drive / Clifton Drive 2040 - Upgrade

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		See table below	Overall the intersection has LOS B and the degree of saturation is 0.76, which is below the acceptable limit of 0.85.The average delay across the intersection is 16 seconds.
PM Peak		PM Peak 15:00 - 16:00 		See table below	Overall the intersection has LOS B and the degree of saturation is 0.69, which is below the acceptable limit of 0.85.The average delay across the intersection is 15 seconds.

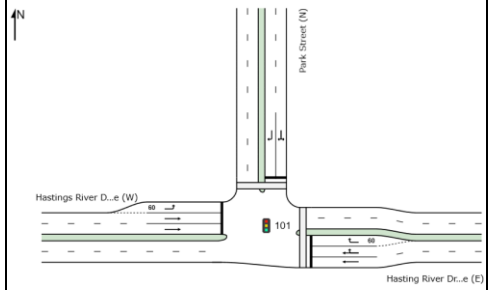
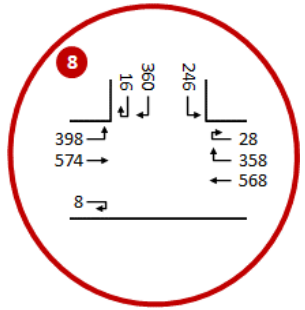
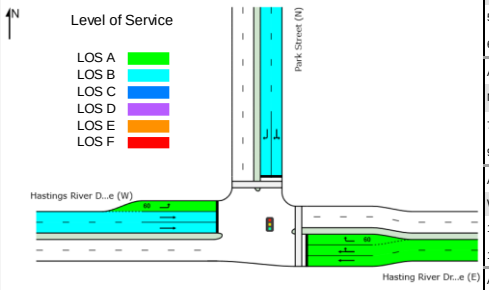
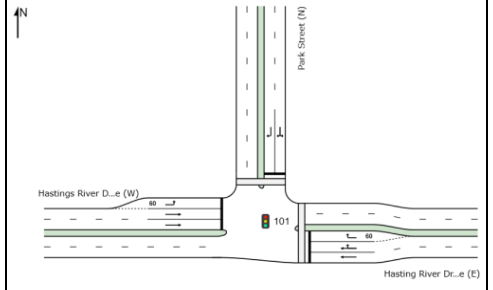
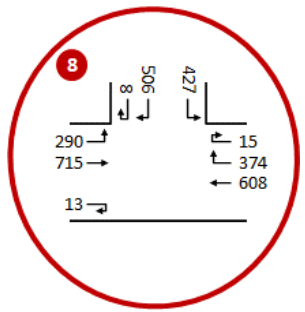
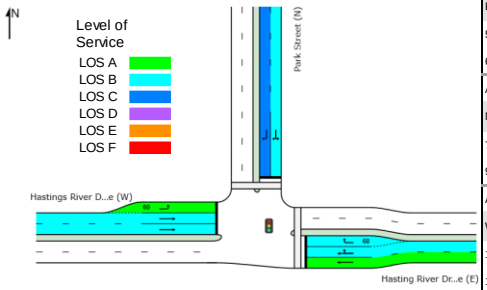
AM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Clifton Drive (S)						
1	L2	3.1	0.45	17.6	LOS B	31.3
3	R2	0.9	0.76	19.3	LOS B	83.3
Approach		1.6	0.76	18.8	LOS B	83.3
East: Hastings River Drive (E)						
4	L2	0.7	0.27	15.3	LOS B	19.2
5	T1	6.9	0.54	1.1	LOS A	45.3
Approach		5.6	0.54	1.9	LOS A	45.3
West: Hastings River Drive (W)						
11	T1	5.5	0.75	17.5	LOS B	59.7
12	R2	1.6	0.37	9.2	LOS A	20.6
Approach		4.4	0.75	15.1	LOS B	59.7
All Vehicles		4	0.76	15.1	LOS B	83.3

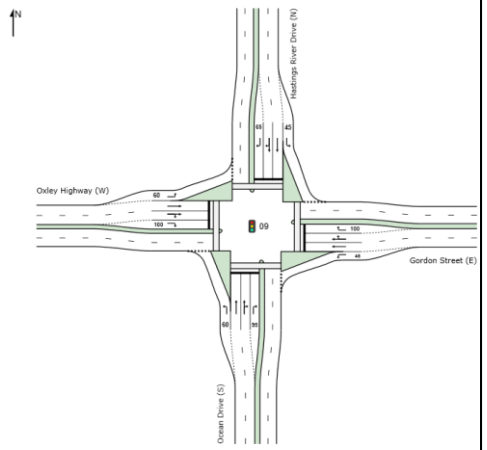
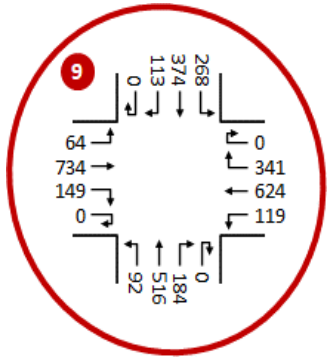
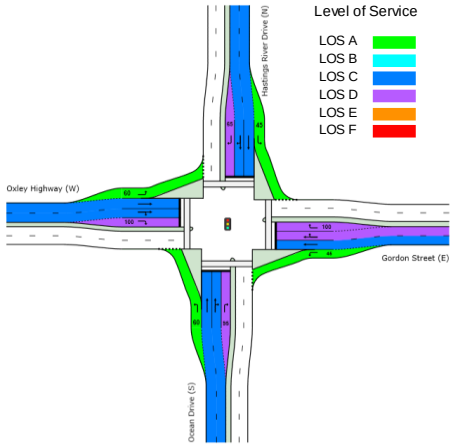
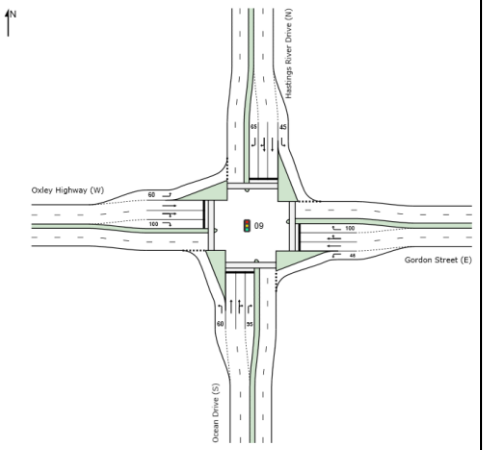
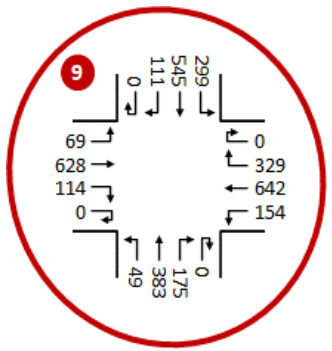
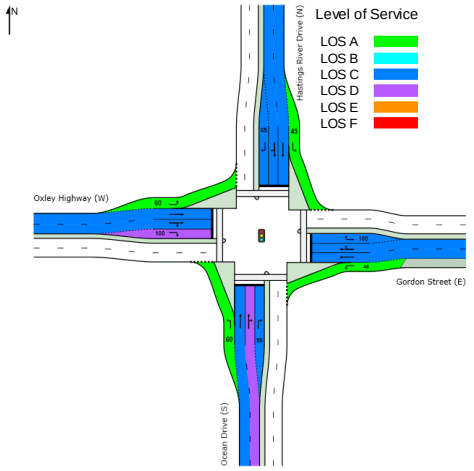
PM Peak

Movement ID	OD Movement	HV%	DOS	Avg. Delay (S)	LOS	BoQ (m)
South: Clifton Drive (S)						
1	L2	2.9	0.65	19.3	LOS B	50.5
3	R2	0.3	0.65	17.7	LOS B	55.8
Approach		1.5	0.65	18.5	LOS B	55.8
East: Hastings River Drive (E)						
4	L2	1.5	0.34	15.6	LOS B	24.8
5	T1	2.9	0.69	12.9	LOS A	65.3
Approach		2.7	0.69	13.4	LOS A	65.3
West: Hastings River Drive (W)						
11	T1	4.8	0.69	14.4	LOS A	58.3
12	R2	3.1	0.44	10.4	LOS A	28.2
Approach		4.3	0.69	13.2	LOS A	58.3
All Vehicles		3	0.69	14.6	LOS B	65.3

8. Hastings River Drive / Park Street 2040 - Upgrade

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** East: Hastings River Drive (E) 5 T1 6.4 0.51 7 LOS A 48.7 6 R2 4.1 0.51 13.7 LOS A 22.4 Approach 5.5 0.51 9.7 LOS A 48.7 North: Park Street (N) 7 L2 4.3 0.65 17.2 LOS B 55.5 9 R2 3 0.65 23 LOS B 55.5 Approach 3.8 0.65 19.5 LOS B 55.5 West: Hastings River Drive (W) 10 L2 15 0.42 11.3 LOS A 34.6 11 T1 2.9 0.71 17.8 LOS B 44.8 Approach 2.4 0.71 15.2 LOS B 44.8 All Vehicles 3.9 0.71 14.2 LOS A 55.5	Overall the intersection has LOS A and the degree of saturation is 0.70, which is within the acceptable limit of 0.85.The average delay across the intersection is 14 seconds.
PM Peak		PM Peak 15:00 - 16:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Delay (S) / LOS / BoQ (m)** East: Hastings River Drive (E) 5 T1 3.4 0.61 10 LOS A 74.3 6 R2 12 0.61 17.3 LOS B 26.5 Approach 2.5 0.61 12.8 LOS A 74.3 North: Park Street (N) 7 L2 2.5 0.80 22.5 LOS B 105.8 9 R2 13 0.80 27.8 LOS B 105.8 Approach 2 0.80 24.9 LOS B 105.8 West: Hastings River Drive (W) 10 L2 0 0.26 9.7 LOS A 22.6 11 T1 2.8 0.77 22 LOS B 70.7 Approach 2 0.77 18.5 LOS B 70.7 All Vehicles 2.2 0.80 18.6 LOS B 105.8	Overall the intersection has LOS B and the degree of saturation is 0.88, which is **above** the acceptable limit of 0.85.The average delay across the intersection is 18 seconds.

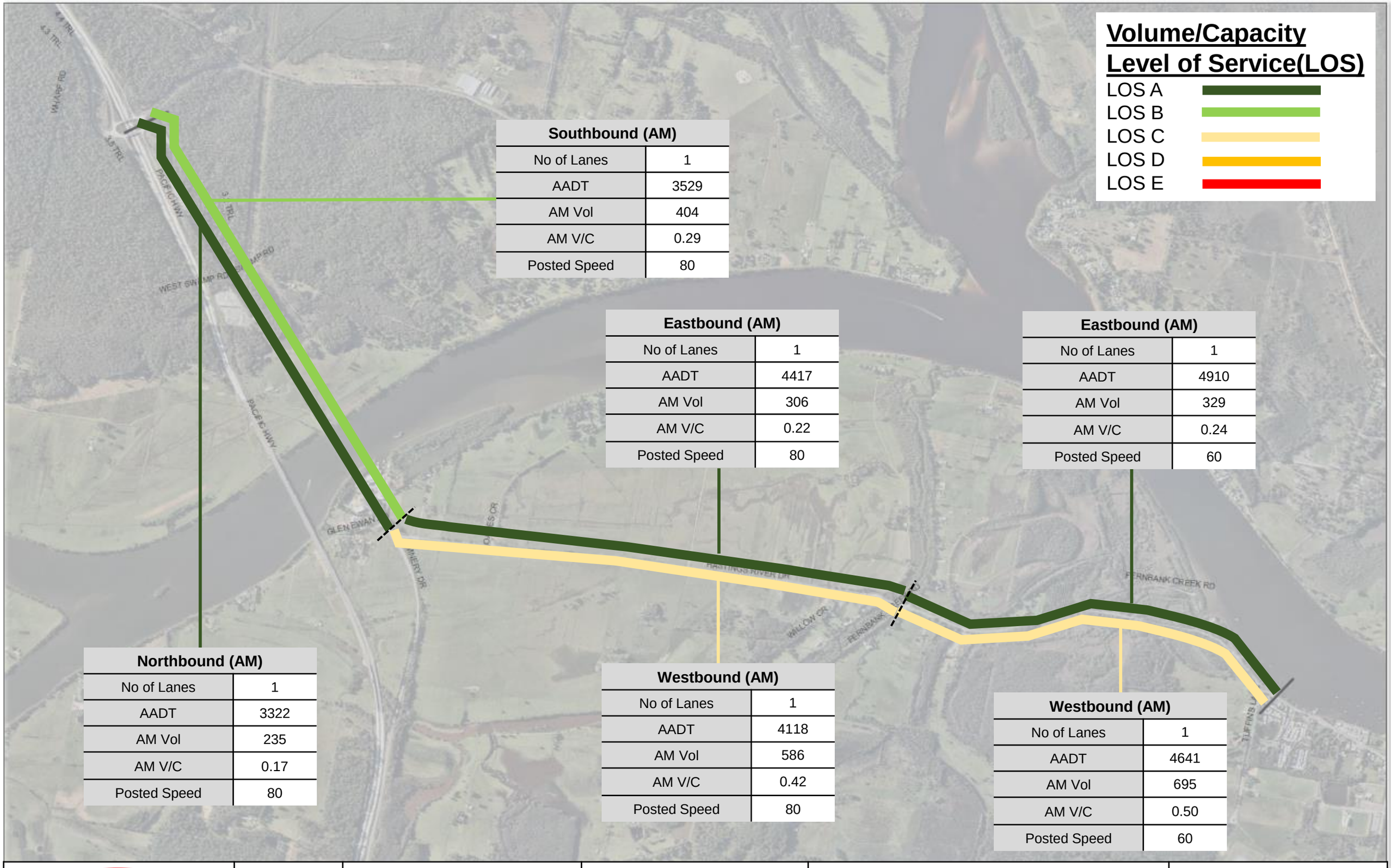
9. Hastings River Drive / Oxley Highway/ Ocean Drive / Gordon Street 2040 - Upgrade

Period	SIDRA Geometry	Year 2040 Volumes	Lane LOS Summary	Intersection Performance	Intersection Performance Summary
AM Peak		AM Peak 08:00 - 09:00 		**Movement ID / OD Movement / HV% / DOS / Avg. Dela / LOS / BoQ (m)** South: Ocean Drive (S) 1 L2 3.9 0.09 7.5 LOS A 7.2 2 T1 3.3 0.82 40.6 LOS C 84.5 3 R2 2.6 0.79 46 LOS D 58.9 Approach 3.2 0.82 38 LOS C 84.5 East: Gordon Street (E) 4 L2 5.1 0.09 8.7 LOS A 9.5 5 T1 3.5 0.82 33 LOS C 143.6 6 R2 8.5 0.82 44.9 LOS D 102.6 Approach 5.3 0.82 34.1 LOS C 143.6 North: Hastings River Drive (N) 7 L2 6.3 0.24 12 LOS A 37.2 8 T1 4.2 0.76 41 LOS C 59.6 9 R2 2.2 0.72 47.7 LOS D 35.6 Approach 4.7 0.76 31.7 LOS C 59.6 West: Oxley Highway (W) 10 L2 5.7 0.07 13.4 LOS A 8.3 11 T1 15 0.79 34.5 LOS C 111.5 12 R2 4.9 0.78 48.2 LOS D 48.7 Approach 2.3 0.80 35.3 LOS C 111.5 All Vehicles 3.9 0.83 34.8 LOS C 143.6	Overall the intersection has LOS C and the degree of saturation is 0.79 , which is at the practical capacity.The average delay across the intersection is 34 seconds.
PM Peak		PM Peak 16:15 - 17:15 		**Movement ID / OD Movement / HV% / DOS / Avg. Dela / LOS / BoQ (m)** South: Ocean Drive (S) 1 L2 3.3 0.04 6.6 LOS A 2.9 2 T1 4.6 0.71 37 LOS C 63.1 3 R2 1 0.71 40.8 LOS C 52.9 Approach 3.5 0.71 35.7 LOS C 63.1 East: Gordon Street (E) 4 L2 2.5 0.13 9.2 LOS A 12.2 5 T1 12 0.82 31.4 LOS C 115.9 6 R2 4.2 0.82 41 LOS C 84.5 Approach 2.3 0.82 31.2 LOS C 115.9 North: Hastings River Drive (N) 7 L2 2 0.25 10 LOS A 31.8 8 T1 2.3 0.86 39.2 LOS C 81 9 R2 3 0.62 40.8 LOS C 30.1 Approach 2.3 0.86 30.2 LOS C 81 West: Oxley Highway (W) 10 L2 0 0.07 11.9 LOS A 7.2 11 T1 2 0.85 36.9 LOS C 92.7 12 R2 2.8 0.77 44.8 LOS D 32.8 Approach 1.9 0.85 35.9 LOS C 92.7 All Vehicles 2.4 0.86 32.8 LOS C 115.9	Overall the intersection has LOS C and the degree of saturation is 0.86 , which is just within the practical limit of 0.9 The average delay across the intersection is 32 seconds.

Appendix G: Link LOS Summaries

MR538 and MR600 Link Level of Service Assessment 2030

Site_ID	Corridor Section	Link_ID	Site Location	Direction	No. Lanes in Each Direction	Posted Speed	Terrain (Level, Rolling, Mountainous)	Level of Impedance (Low, Medium, High)	Estimated Peak Period Lane Capacity (veh/hr/lane)	Estimated Peak Corridor Capacity (Direction) veh/hr	Weekday Daily Traffic Volume (24hr)	7day Daily Traffic	Weekday AM Peak Hr Volume (veh/hr)	Weekday PM Peak Hr Volume (veh/hr)	AM Peak Average Speed (km/hr)	PM Peak Average Speed (km/hr)	AM Link Volume/Capacity (V/C) Ratio	PM Link Volume/Capacity (V/C) Ratio	AM Peak Ave Speed / Posted Speed	PM Peak Ave Speed / Posted Speed	AM Link Speed Level of Service (LoS)	PM Link Speed Level of Service (LoS)	AM Link V/C Level of Service (LoS)	PM Link V/C Level of Service (LoS)
AS02NB	1	AS02	Hastings River Dr South of Blackmans Point Interchange	NB	1	80	Level	Low	1400	1400	3322	3103	235	305	75.1	74.9	0.17	0.22	0.94	0.94	A	A	A	A
AS02SB	1	AS02	Hastings River Dr South of Blackmans Point Interchange	SB	1	80	Level	Low	1400	1400	3529	3291	404	306	73.3	74.8	0.29	0.22	0.92	0.94	A	A	B	A
AS03EB	1	AS03	Hastings River Dr E of Winery Dr	EB	1	80	Level	Low	1400	1400	4417	4081	306	438	76.5	76.8	0.22	0.31	0.96	0.96	A	A	A	B
AS03WB	1	AS03	Hastings River Dr E of Winery Dr	WB	1	80	Level	Low	1400	1400	4118	3772	586	350	75.9	77.2	0.42	0.25	0.95	0.97	A	A	C	A
AS04EB	1	AS04	Hastings River Dr W of Tuffins Ln	EB	1	60	Level	Low	1400	1400	4910	4552	329	504	60.3	60.7	0.24	0.36	1.01	1.01	A	A	A	B
AS04WB	1	AS04	Hastings River Dr W of Tuffins Ln	WB	1	60	Level	Low	1400	1400	4641	4249	695	394	57.4	57.5	0.50	0.28	0.96	0.96	A	A	C	B
AS05NB	2	AS05	Hastings River Drive, btwn Tuffins Ln & Boundary St	NB	1	60	Level	Medium	1200	1200	5404	5035	370	549	51	52	0.31	0.46	0.85	0.87	A	A	B	C
AS05SB	2	AS05	Hastings River Drive, btwn Tuffins Ln & Boundary St	SB	1	60	Level	Medium	1200	1200	5103	4700	724	429	48.1	50.4	0.60	0.35	0.80	0.84	A	A	D	B
AS06NB	2	AS06	Hastings River Drive, btwn Boundary St & Hibbard Rd W	NB	2	60	Level	Medium	1000	2000	7189	6656	554	719	50	47.7	0.28	0.36	0.83	0.80	A	B	B	B
AS06SB	2	AS06	Hastings River Drive, btwn Boundary St & Hibbard Rd W	SB	2	60	Level	Medium	1000	2000	6936	6378	848	609	50.5	49.1	0.42	0.30	0.84	0.82	A	A	C	B
AS07EB	2	AS07	Hastings River Drive, btwn Mumford St & Newport Island Rd	EB	2	60	Level	Medium	1000	2000	10874	10016	855	973	50	49.3	0.48	0.49	0.83	0.82	A	A	C	C
AS07WB	2	AS07	Hastings River Drive, btwn Mumford St & Newport Island Rd	WB	2	60	Level	Medium	1000	2000	11807	10818	946	1122	51.2	51.8	0.47	0.56	0.85	0.86	A	A	C	C
AS08EB	2	AS08	Hastings River Drive, btwn Clifton Dr & Bellbowrie St	EB	2	60	Level	Medium	1000	2000	12226	11312	1194	1061	48.7	49.1	0.60	0.53	0.81	0.82	A	A	D	C
AS08WB	2	AS08	Hastings River Drive, btwn Clifton Dr & Bellbowrie St	WB	2	60	Level	Medium	1000	2000	10422	9653	851	943	47.4	47.3	0.43	0.47	0.79	0.79	B	B	C	C
AS09EB	2	AS09	Hastings River Dr btwn Aston St and Findlay Ave	EB	2	50	Level	Low	1000	2000	9706	8843	870	887	49.9	50	0.43	0.44	1.00	1.00	A	A	C	C
AS09WB	2	AS09	Hastings River Dr btwn Aston St and Findlay Ave	WB	2	50	Level	Low	1000	2000	10189	9335	914	929	50	51.1	0.46	0.46	1.00	1.02	A	A	C	C
AS10NB	2	AS10	Hastings River Dr btwn Gordon St and Bridge St	NB	2	50	Level	Low	1000	2000	9089	8391	810	762	58.7	58.9	0.40	0.38	0.77	0.78	B	B	B	B
AS10SB	2	AS10	Hastings River Dr btwn Gordon St and Bridge St	SB	2	50	Level	Low	1000	2000	9128	8545	707	759	31.6	29.9	0.35	0.38	0.63	0.60	C	C	B	B
AS13NB	3	AS13	Ocean Dr btwn Gordon St and Ackroyd St	NB	2	50	Level	Medium	1000	2000	6845	6252	711	612	40.1	40.6	0.36	0.31	0.80	0.81	A	A	B	B
AS13SB	3	AS13	Ocean Dr btwn Gordon St and Ackroyd St	SB	2	50	Level	Medium	1000	2000	7761	7051	617	742	47.1	48.3	0.31	0.37	0.94	0.97	A	A	B	B
AS14NB	3	AS14	Ocean Dr btwn Hindman St and Lake Rd	NB	2	70	Level	Low	1400	2800	8203	7604	1160	729	62	64.7	0.41	0.26	0.89	0.92	A	A	C	B
AS14SB	3	AS14	Ocean Dr btwn Hindman St and Lake Rd	SB	2	70	Level	Low	1400	2800	8358	7691	590	950	62.8	62.9	0.21	0.34	0.90	0.90	A	A	A	B
AS15NB	3	AS15	Ocean Dr btwn Lake Rd and Koala St	NB	2	70	Level	Low	1400	2800	15790	14313	2005	1357	50	61.6	0.72	0.48	0.71	0.88	B	A	D	C
AS15SB	3	AS15	Ocean Dr btwn Lake Rd and Koala St	SB	2	70	Level	Low	1400	2800	15230	13737	1061	1538	59.7	58.8	0.38	0.55	0.85	0.84	A	A	B	C
AS16NB	3	AS16	Ocean Dr btwn Koala St and Lochinvar Pl	NB	2	70	Level	Low	1400	2800	12300	11205	1342	1007	57.6	63.5	0.48	0.36	0.82	0.91	A	A	C	B
AS16SB	3	AS16	Ocean Dr btwn Koala St and Lochinvar Pl	SB	2	70	Level	Low	1400	2800	12225	11047	1505	1291	61	62.9	0.36	0.46	0.87	0.90	A	A	B	C
AS17NB	3	AS17	Ocean Dr btwn Greenmeadows Dr and Maranatha Pl	NB	2	70	Level	Low	1400	2800	11083	10122	1486	809	67.6	69.4	0.53	0.29	0.97	0.99	A	A	C	B
AS17SB	3	AS17	Ocean Dr btwn Greenmeadows Dr and Maranatha Pl	SB	2	70	Level	Low	1400	2800	11059	10008	766	1173	67.6	65.1	0.27	0.42	0.97	0.93	A	A	B	C
AS18NB	3	AS18	Ocean Dr btwn Crestwood Dr and Pacific Dr	NB	2	70	Level	Low	1400	2800	9851	8912	1172	707	48.7	60.3	0.42	0.25	0.70	0.86	B	A	C	A
AS18SB	3	AS18	Ocean Dr btwn Crestwood Dr and Pacific Dr	SB	2	70	Level	Low	1400	2800	9925	8786	670	1004	59.4	67.9	0.24	0.36	0.83	0.83	A	A	A	B
AS19NB	3	AS19	Ocean Dr btwn Pacific Dr & Matthew Flinders Dr	NB	2	70	Level	Low	1400	2800	8365	7940	884	598	53.4	63.2	0.32	0.21	0.76	0.90	B	A	B	A
AS19SB	3	AS19	Ocean Dr btwn Pacific Dr & Matthew Flinders Dr	SB	2	70	Level	Low	1400	2800	8197	7682	592	845	63.5	64.9	0.21	0.30	0.91	0.93	A	A	A	B
AS20NB	3	AS20	Ocean Drive, btwn NE of Links Cres	NB	1	70	Level	Low	1400	1400	4860	4498	626	350	63.4	64.2	0.45	0.25	0.91	0.92	A	A	C	A
AS20WB	3	AS20	Ocean Drive, btwn NE of Links Cres	WB	1	70	Level	Low	1400	1400	4827	4446	360	479	70.4	70.9	0.26	0.34	1.01	1.01	A	A	A	B
AS21NB	4	AS21	Ocean Dr btwn S of Pozieres Development	NB	1	100	Level	Low	1400	1400	4662	4331	598	327	84.7	86.1	0.43	0.23	0.85	0.86	A	A	A	A
AS21SB	4	AS21	Ocean Dr btwn S of Pozieres Development	SB	1	100	Level	Low	1400	1400	4646	4292	342	481	86.6	88.8	0.24	0.34	0.87	0.89	A	A	A	B
AS22NB	4	AS22	Ocean Dr N of Dirah St	NB	1	50	Level	Low	1400	1400	4635	4310	582	319	65.6	67.5	0.42	0.23	1.31	1.35	A	A	C	A
AS22SB	4	AS22	Ocean Dr N of Dirah St	SB	1	50	Level	Low	1400	1400	4644	4290	342	482	58.8	58.4	0.24	0.34	1.18	1.17	A	A	A	B
AS23NB	5	AS23	Ocean Dr btwn Evans St and Tallong Dr	NB	1	50	Level	Low	900	900	5041	4714	605	364	49.6	49.6	0.67	0.40	0.92	0.93	A	A	D	B
AS23SB	5	AS23	Ocean Dr btwn Evans St and Tallong Dr	SB	1	50	Level	Low	900	900	5022	4665	366	510	46.7	46.2	0.41	0.57	0.93	0.92	A	A	B	C
AS24NB	5	AS24	Ocean Dr btwn Shopping Centre and Fiona Cres	NB	1	50	Level	Medium	900	900	4997	4765	535	400	48.1	48.5	0.59	0.44	0.96	0.97	A	A	D	C
AS24SB	5	AS24	Ocean Dr btwn Shopping Centre and Fiona Cres	SB	1	50	Level	Medium	900	900	4896	4636	372	462	50.4	50.5	0.41	0.51	1.01	1.01	A	A	C	C
AS25NB	5	AS25	Ocean Dr btwn Miala St & Medical Centre	NB	1	70	Level	Low	1200	1200	4786	4372	498	401	53	54.6	0.42	0.33	0.76	0.78	B	B	C	B
AS25SB	5	AS25	Ocean Dr btwn Miala St & Medical Centre	SB	1	70	Level	Low	1200	1200	4762	4484	361	432	53.3	53.9	0.30	0.36	0.79	0.80	B	B	B	B
AS26EB	5	AS26	Ocean Drive,btwn Ocean Club Access & Houston Mitchell Dr	EB	1	70	Level	Low	1400	1400	4918	4671	512	411	65.2	67.3	0.37	0.29	0.93	0.96	A	A	B	A
AS26WB	5	AS26	Ocean Drive,btwn Ocean Club Access & Houston Mitchell Dr	WB	1	70	Level	Low	1400	1400	4907	4632	432	440	63.5	64.1	0.31	0.31	0.91	0.92	A	A	B	B
AS27NB	5	AS27	Ocean Dr btwn Lake Cathie School Access and Bonny View D	NB	1	70	Level	Low	1400	1400	4649	4404	552	334	59.8	67.2	0.39	0.24	0.85	0.96	A	A	B	A
AS27SB	5	AS27	Ocean Dr btwn Lake Cathie School Access and Bonny View D	SB	1	70	Level	Low	1400	1400	4676	4436	350	497	64.8	70.6	0.25	0.36	0.93	1.01	A	A	A	B
AS28NB	6	AS28	Ocean Dr btwn Seawind Chase and Beach St	NB	1	70	Level	Low	1200	1200	4255	4085	443	306	59	60.6	0.37	0.25	0.84	0.87	A	A	B	A
AS28SB	6	AS28	Ocean Dr btwn Seawind Chase and Beach St	SB	1	70	Level	Low	1200	1200	4334	4135	331	450	61.4	62.3	0.28	0.37	0.88	0.89	A	A	B	B
AS29NB	6	AS29	Ocean Dr btwn Graham St and Jordan Ave	NB	1	50	Rolling	Low	1200	1200	3691	3538	317	298	55.4	56.1	0.26	0.25	1.11	1.12	A	A	B	A
AS29SB	6	AS29	Ocean Dr btwn Graham St and Jordan Ave	SB	1	50	Rolling	Low	1200	1200	3670	3512	309	338	54.6	54.6	0.26	0.28	1.09	1.09	A	A	B	B
AS30NB	7	AS30	Ocean Dr N of Edith St	NB	1	90	Level	Low	1200	1200	3177	3017	241	295	67.2	70.1	0.20	0.25	0.75	0.78	A	B	A	B
AS30SB	7	AS30	Ocean Dr N of Edith St	SB	1	90	Level	Low	1200	1200	3220	3045	305	281	62.1	64.4	0.25	0.23	0.69	0.72	B	B	A	A
AS31NB	8	AS31	Ocean Dr btwn Alma St and The Parade	NB	1	50	Level	Medium	900	900	2765	2636	213	254	42.9	42.8	0.24	0.28	0.86	0.86	A	A	A	B
AS31SB	8	AS31	Ocean Dr btwn Alma St and The Parade	SB	1	50	Level	Medium	900	900	3017	2860	291	276	41	40.9	0.32	0.31	0.82	0.82	A	A	B	B
AS32EB	8	AS32	Ocean Dr btwn Pioneer St and Vine St	EB	1	50	Level	High	900	900	4369	4244	351	411	34.2	36.9	0.39	0.46	0.68	0.74	B	B	B	B
AS32WB	8	AS32	Ocean Dr btwn Pioneer St and Vine St	WB	1	50	Level	High	900	900	4568	4426	402	388	36	38.5	0.45	0.43	0.72	0.77	B	B	C	C
AS33NB	8	AS33	Ocean Dr btwn Adeline St and Short St	NB	1	50	Level	High	900	900	4539	4367	371	422	41.8	41.8	0.41	0.47	0.84	0.84	A	A	C	C
AS33SB	8	AS33	Ocean Dr btwn Adeline St and Short St	SB	1	50	Level	High	900	900	4528	4355	403	377	44.3	45.3	0.45	0.42	0.89	0.91	A	A	C	C
AS34EB	8	AS34	Ocean Drive, btwn Haven Circuit & Stingray Creek Bridge	EB	1	50	Level	High	900	900	4912	4706	403	462	49.2	53.8	0.45	0.51	0.98	1.08	A	A	C	C
AS34WB	8	AS34	Ocean Drive, btwn Haven Circuit & Stingray Creek Bridge	WB	1	50	Level	High	900	900	4932	4723	432	409	50.1	51.7	0.48	0.45	1.00	1.03	A	A	C	C
AS35EB	8	AS35	Ocean Dr btwn Kew Rd and Bold St	EB	1	50	Level	High	900	900	2821	2668	246	275	48.4	49.6	0.27	0.31	0.97	0.99	A	A	B	B
AS35WB	8	AS35	Ocean Dr btwn Kew Rd and Bold St	WB	1	50	Level	High	900	900	2841	2682	254	239	46.7	47.8	0.28	0.27	0.93	0.96	A	A	B	B
AS36NB	9	AS36	Ocean Dr btwn Kew Rd and Flinders Dr	NB	1	50	Level	Medium	1200	1200	5936	5562	481	515	45.6	49.4	0.40	0.43	0.91	0.99	A	A	B	C
AS36SB	9	AS36	Ocean Dr btwn Kew Rd and Flinders Dr	SB	1	50	Level	Medium	1200	1200	5963	5571	556	561	42.5	46.7	0.46	0.47	0.85	0.93	A	A	C	C
AS37NB	9	AS37	Ocean Dr btwn Waterview Cres and Captain Cook Bicentennial Drive	NB	1	70	Level	Low	1400	1400	5202	4841	475	471	51.6	52.7	0.34	0.34	0.74	0.75	B	B	B	B
AS37SB	9	AS37	Ocean Dr btwn Waterview Cres and Captain Cook Bicentennial Drive	SB	1	70	Level	Low	1400	1400	5207	4841	423	470	54.8	55.8	0.30	0.34	0.78	0.80	B	B	B	B
AS38EB	9	AS38	Ocean Dr btwn Sirius Dr and Fairwinds Ave	EB	1	70	Level	Low	1400	1400	5190	4841	442	493	64.6	64.8	0.32	0.35	0.92	0.93	A	A	B	B
AS38WB	9	AS38	Ocean Dr btwn Sirius Dr and Fairwinds Ave	WB	1	70	Level	Low	1400	1400	5202	4863	459	462	63.3	63.8	0.33	0.33	0.90	0.91	A	A	B	B
AS39EB	9	AS39	Ocean Dr btwn Pacific Hwy and Glen Haven Dr	EB	1	60	Level	Low	1400	1400	4883	4523	468	484	62.3	63.8	0.33	0.35	1.04	1.06	A	A	B	B
AS39WB	9	AS39	Ocean Dr btwn Pacific Hwy and Glen Haven Dr	WB	1	60	Level	Low	1400	1400	4897	4508	443	501	62.9	65	0.32	0.36	1.05	1.08	A	A	B	B
AS40EB	10	AS40	Ocean Drive, at Pacific Hwy Overbridge W	EB	1	60	Level	Medium	900	900	3447	3274	326	335	52.9	53.5	0.36	0.37	0.88	0.89	A	A	B	B
AS40WB	10	AS40	Ocean Drive, at Pacific Hwy Overbridge W	WB	1	60	Level	Medium	900	900	5015	4552	438	523	50.7	51.7	0.49	0.58	0.85	0.86	A	A	C	C
AS41NB	10	AS41	Nancy Bird Walton Dr btwn Herons Creek Rd and Ocean Dr	NB	1	80	Level	Low	1400	1400	3197	2860	334	306	70	71.2	0.24	0.22	0.88	0.89	A	A	A	A
AS41SB	10	AS41	Nancy Bird Walton Dr btwn Herons Creek Rd and Ocean Dr	SB	1	80	Level	Low	1400	1400	150	150	16	17	52.7	52.9	0.01	0.01	0.66	0.65	C	C	A	A
AS42NB	10	AS42	Nancy Bird Walton Dr btwn Bethesda Pl and Ocean Dr	NB	1	80	Level	Low	1400	1400	1483	1462	126	136	67.1	67.8	0.09	0.10	0.84	0.85	A	A	A	A
AS42SB	10	AS42	Nancy Bird Walton Dr btwn Bethesda Pl and Ocean Dr	SB	1	80	Level	Low	1400	1400	92	90	8	10	66.7	68.1	0.01	0.01	0.83	0.85	A	A	A	A
AS43EB	10	AS43	Kendall Rd btwn Homedale Rd and Nancy Bird Walton Dr.	EB	1	50	Level	Low	900	900	2889	2651	234	289	45.1	52.7	0.26	0.32	0.90	1.05	A	A	B	B
AS43WB	10	AS43	Kendall Rd btwn Homedale Rd and Nancy Bird Walton Dr	WB	1	50	Level	Low	900	900	2904	2659	331	264	48.9	48.9	0.37	0.29	0.98	0.97	A	A	B	B
AS44EB	10	AS44	Kendall Rd btwn Dunwoodie St and Homedale Rd	EB	1	60	Level	Low	900	900	2450	2249	184	254	59.7	62.8	0.20	0.28	1.00	1.05	A	A	A	B
AS44WB	10	AS44	Kendall Rd btwn Dunwoodie St and Homedale Rd	WB	1	60	Level	Low	900	900	2452	2246	294	211	60.9	61.8	0.33	0.23	1.02	1.03	A	A	B	A
AS45EB	10	AS45	River St btwn Railway Line and Railway St	EB	1	60	Level	Low	900	900	2284	2096	272	204	40.7	39.6	0.30	0.23	0.68	0.66	B	C	B	A
AS45WB	10	AS45	River St btwn Railway Line and Railway St	WB	1	60	Level	Low	900	900	2254	2071	165	232	37.3	39.9	0.18	0.26	0.62	0.67	C	C	A	A
AS46EB	10	AS46	Graham St btwn Raymond St and Comboyne St	EB	1	60	Level	Low	900	900	943	865	153	109	51.2	50.9	0.17	0.12	0.85	0.85	A	A	A	A
AS46WB	10	AS46	Graham St btwn Raymond St and Comboyne St	WB	1	60	Level	Low	900	900	914	838	87	89	51.1	52.6	0.10	0.10	0.85	0.88	A	A	A	A



Southbound (AM)	
No of Lanes	1
AADT	3529
AM Vol	404
AM V/C	0.29
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	4417
AM Vol	306
AM V/C	0.22
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	4910
AM Vol	329
AM V/C	0.24
Posted Speed	60

Northbound (AM)	
No of Lanes	1
AADT	3322
AM Vol	235
AM V/C	0.17
Posted Speed	80

Westbound (AM)	
No of Lanes	1
AADT	4118
AM Vol	586
AM V/C	0.42
Posted Speed	80

Westbound (AM)	
No of Lanes	1
AADT	4641
AM Vol	695
AM V/C	0.50
Posted Speed	60

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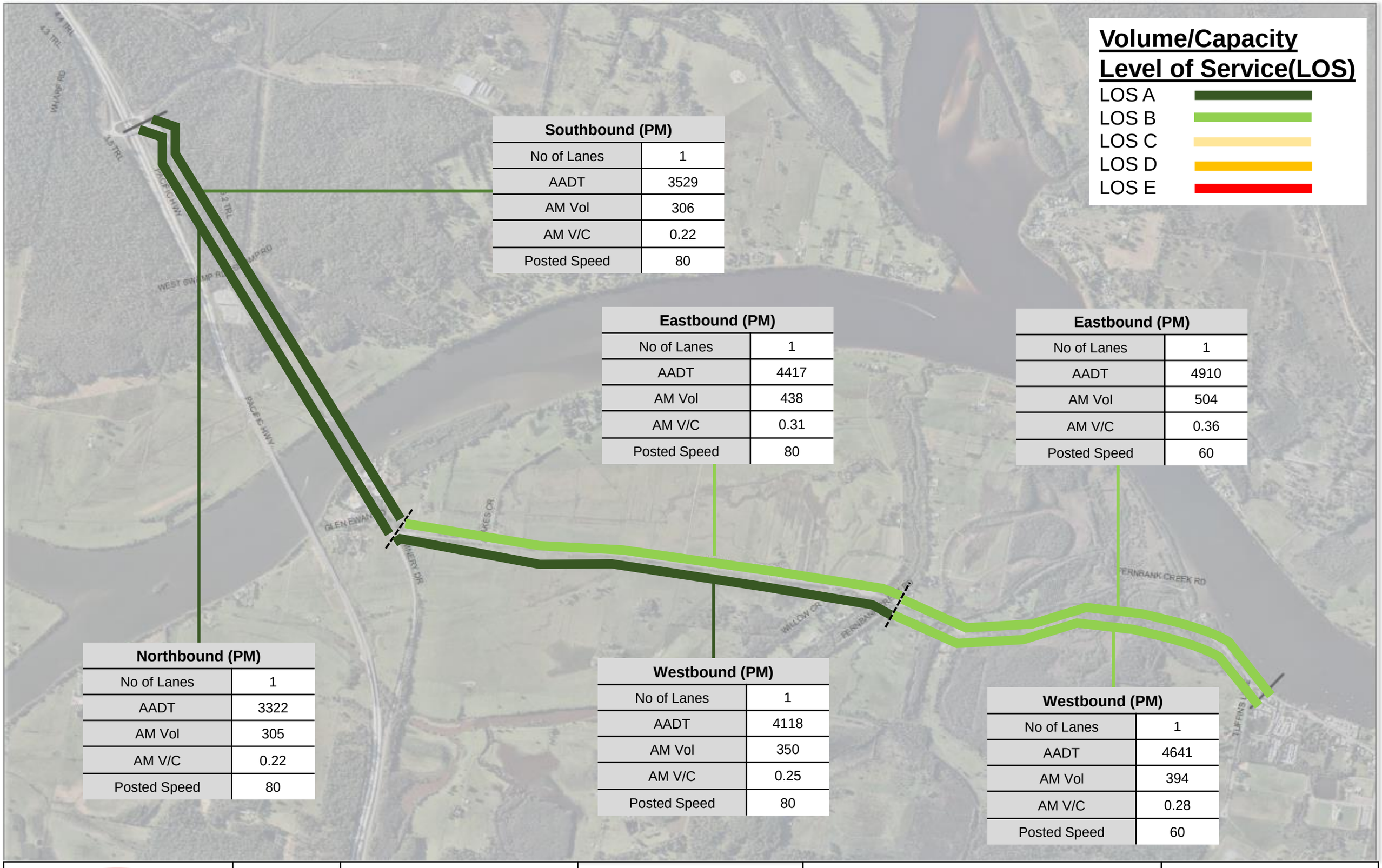
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0 500 1,000 Meters

Level of Service
2030 AM

Section 1
Chainage Start:0 End :6900
Description Start: Pacific Highway End Tuffins Lane

Project Number: P4665
Date: 11/03/21
Sheet: 1



Southbound (PM)	
No of Lanes	1
AADT	3529
AM Vol	306
AM V/C	0.22
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	4417
AM Vol	438
AM V/C	0.31
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	4910
AM Vol	504
AM V/C	0.36
Posted Speed	60

Northbound (PM)	
No of Lanes	1
AADT	3322
AM Vol	305
AM V/C	0.22
Posted Speed	80

Westbound (PM)	
No of Lanes	1
AADT	4118
AM Vol	350
AM V/C	0.25
Posted Speed	80

Westbound (PM)	
No of Lanes	1
AADT	4641
AM Vol	394
AM V/C	0.28
Posted Speed	60

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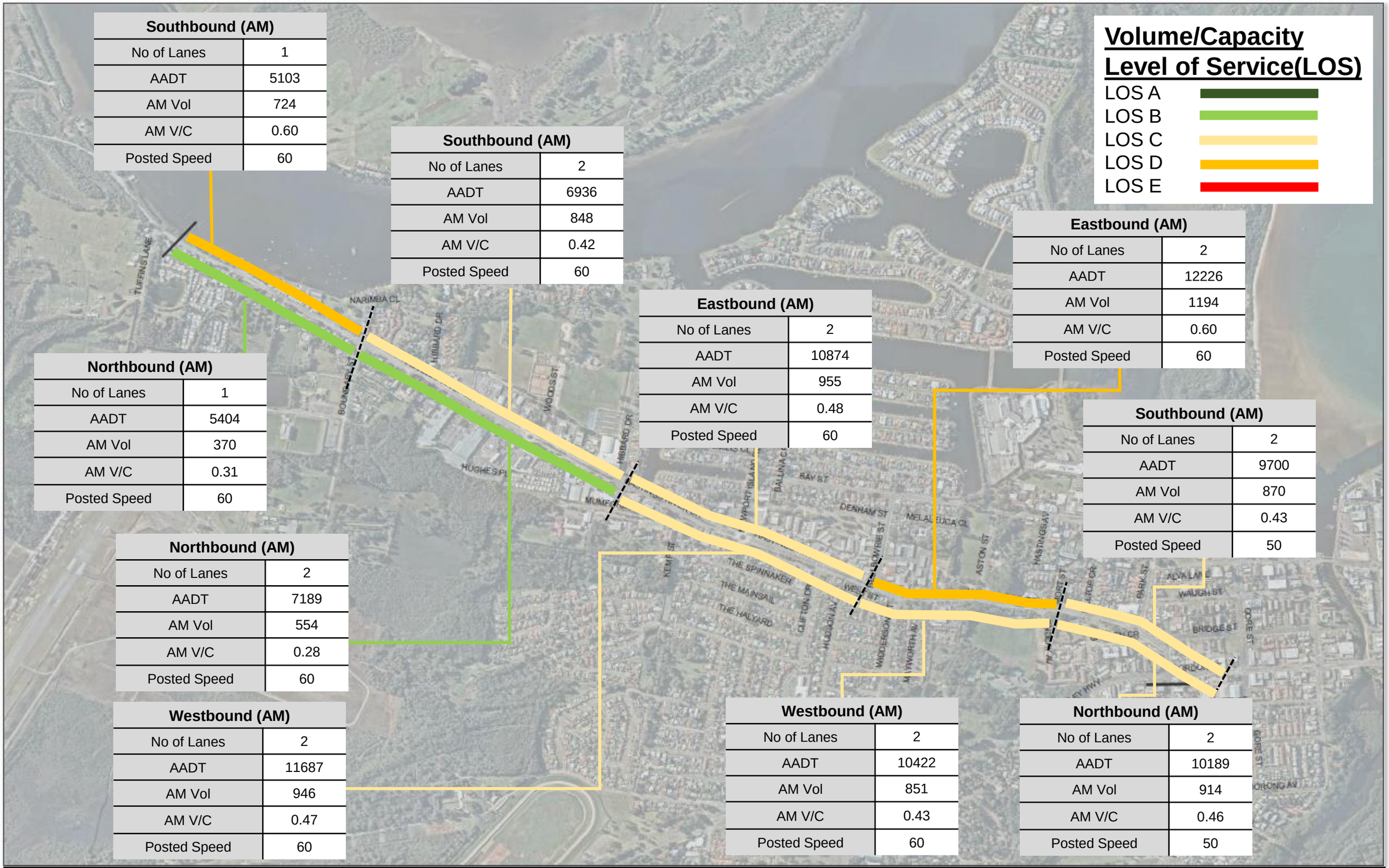
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0 500 1,000 Meters

Level of Service
2030 AM

Section 1
Chainage Start:0 End :6900
Description Start: Pacific Highway End Tuffins Lane

Project Number: P4665
Date: 11/03/21
Sheet: 2



Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Southbound (AM)	
No of Lanes	1
AADT	5103
AM Vol	724
AM V/C	0.60
Posted Speed	60

Southbound (AM)	
No of Lanes	2
AADT	6936
AM Vol	848
AM V/C	0.42
Posted Speed	60

Eastbound (AM)	
No of Lanes	2
AADT	10874
AM Vol	955
AM V/C	0.48
Posted Speed	60

Eastbound (AM)	
No of Lanes	2
AADT	12226
AM Vol	1194
AM V/C	0.60
Posted Speed	60

Southbound (AM)	
No of Lanes	2
AADT	9700
AM Vol	870
AM V/C	0.43
Posted Speed	50

Northbound (AM)	
No of Lanes	1
AADT	5404
AM Vol	370
AM V/C	0.31
Posted Speed	60

Northbound (AM)	
No of Lanes	2
AADT	7189
AM Vol	554
AM V/C	0.28
Posted Speed	60

Westbound (AM)	
No of Lanes	2
AADT	11687
AM Vol	946
AM V/C	0.47
Posted Speed	60

Westbound (AM)	
No of Lanes	2
AADT	10422
AM Vol	851
AM V/C	0.43
Posted Speed	60

Northbound (AM)	
No of Lanes	2
AADT	10189
AM Vol	914
AM V/C	0.46
Posted Speed	50

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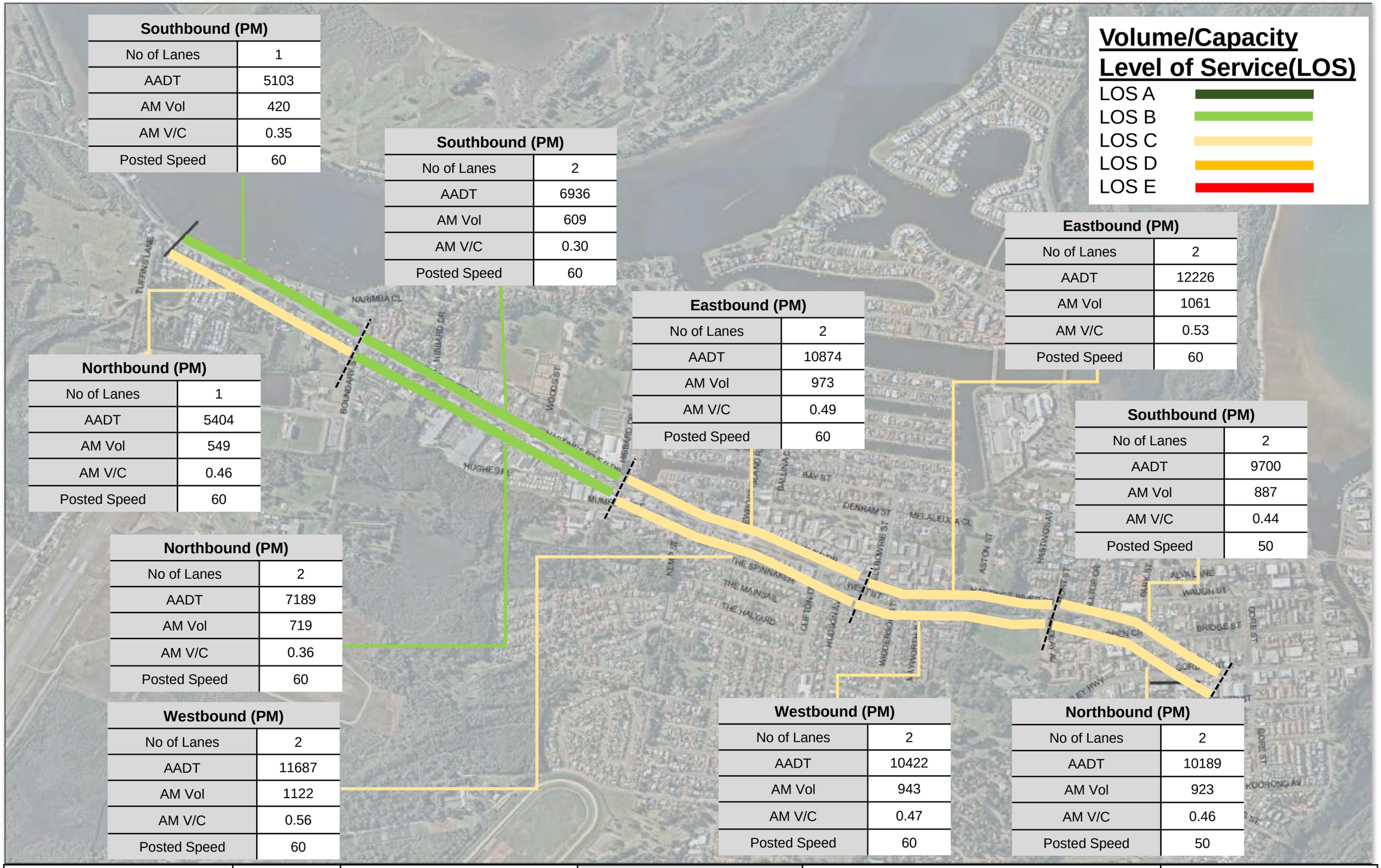
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0 330 660 Meters

Level of Service 2030 AM

Section 2
Chainage Start:7000 End :10500
Description Start: Tuffins Lane End Oxley Highway

Project Number:P4665
Date: 11/03/21
Sheet: 3



Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Southbound (PM)	
No of Lanes	1
AADT	5103
AM Vol	420
AM V/C	0.35
Posted Speed	60

Southbound (PM)	
No of Lanes	2
AADT	6936
AM Vol	609
AM V/C	0.30
Posted Speed	60

Eastbound (PM)	
No of Lanes	2
AADT	12226
AM Vol	1061
AM V/C	0.53
Posted Speed	60

Eastbound (PM)	
No of Lanes	2
AADT	10874
AM Vol	973
AM V/C	0.49
Posted Speed	60

Southbound (PM)	
No of Lanes	2
AADT	9700
AM Vol	887
AM V/C	0.44
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	5404
AM Vol	549
AM V/C	0.46
Posted Speed	60

Northbound (PM)	
No of Lanes	2
AADT	7189
AM Vol	719
AM V/C	0.36
Posted Speed	60

Westbound (PM)	
No of Lanes	2
AADT	11687
AM Vol	1122
AM V/C	0.56
Posted Speed	60

Westbound (PM)	
No of Lanes	2
AADT	10422
AM Vol	943
AM V/C	0.47
Posted Speed	60

Northbound (PM)	
No of Lanes	2
AADT	10189
AM Vol	923
AM V/C	0.46
Posted Speed	50

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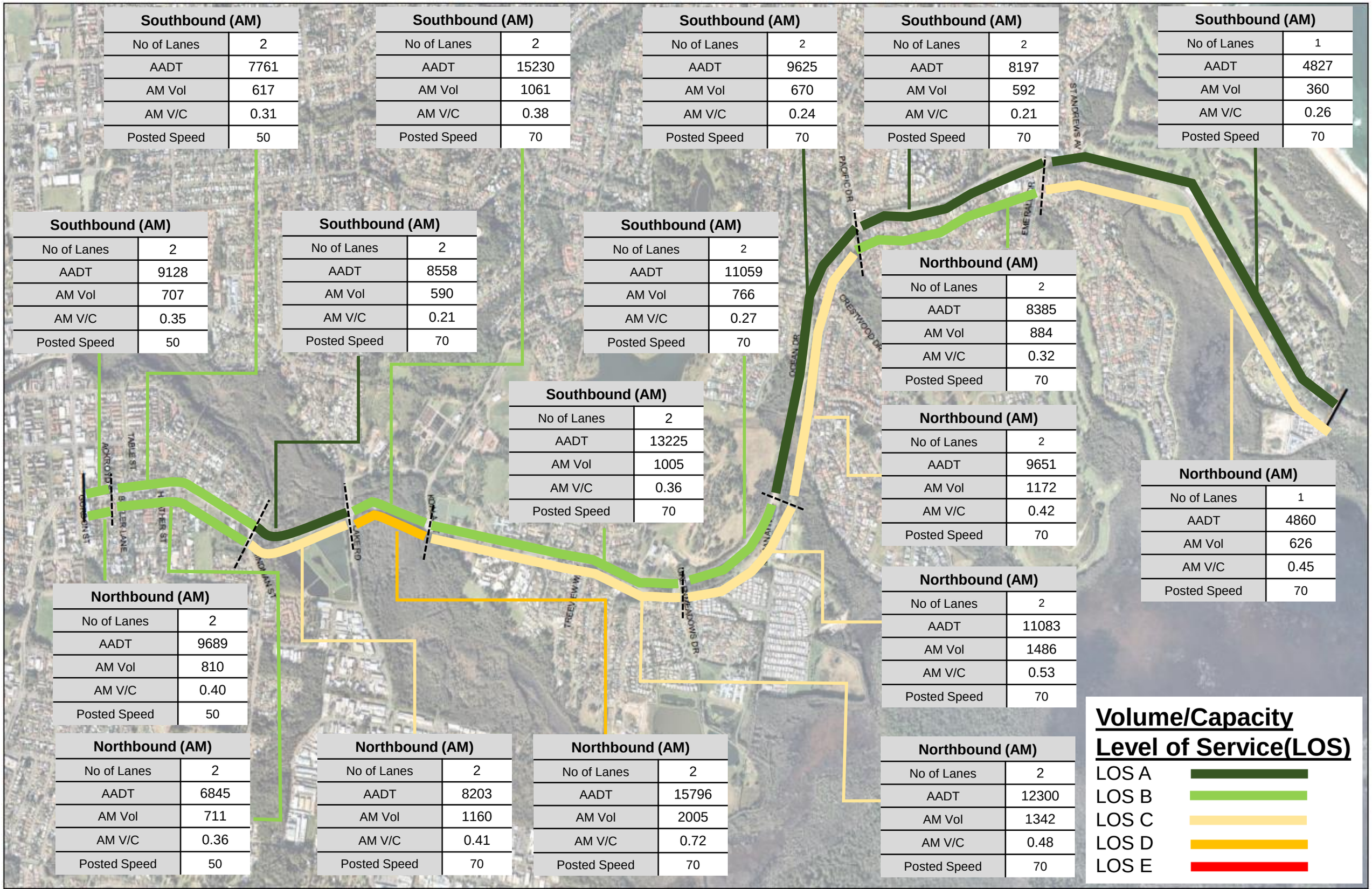
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0 330 660 Meters

Level of Service 2030 PM

Section 2
Chainage Start:7000 End :10500
Description Start: Tuffins Lane End Oxley Highway

Project Number:P4665
Date: 11/03/21
Sheet: 4



Southbound (AM)	
No of Lanes	2
AADT	7761
AM Vol	617
AM V/C	0.31
Posted Speed	50

Southbound (AM)	
No of Lanes	2
AADT	15230
AM Vol	1061
AM V/C	0.38
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	9625
AM Vol	670
AM V/C	0.24
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	8197
AM Vol	592
AM V/C	0.21
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	4827
AM Vol	360
AM V/C	0.26
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	9128
AM Vol	707
AM V/C	0.35
Posted Speed	50

Southbound (AM)	
No of Lanes	2
AADT	8558
AM Vol	590
AM V/C	0.21
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	11059
AM Vol	766
AM V/C	0.27
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	13225
AM Vol	1005
AM V/C	0.36
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	8385
AM Vol	884
AM V/C	0.32
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	9651
AM Vol	1172
AM V/C	0.42
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	4860
AM Vol	626
AM V/C	0.45
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	9689
AM Vol	810
AM V/C	0.40
Posted Speed	50

Northbound (AM)	
No of Lanes	2
AADT	11083
AM Vol	1486
AM V/C	0.53
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	6845
AM Vol	711
AM V/C	0.36
Posted Speed	50

Northbound (AM)	
No of Lanes	2
AADT	8203
AM Vol	1160
AM V/C	0.41
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	15796
AM Vol	2005
AM V/C	0.72
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	12300
AM Vol	1342
AM V/C	0.48
Posted Speed	70

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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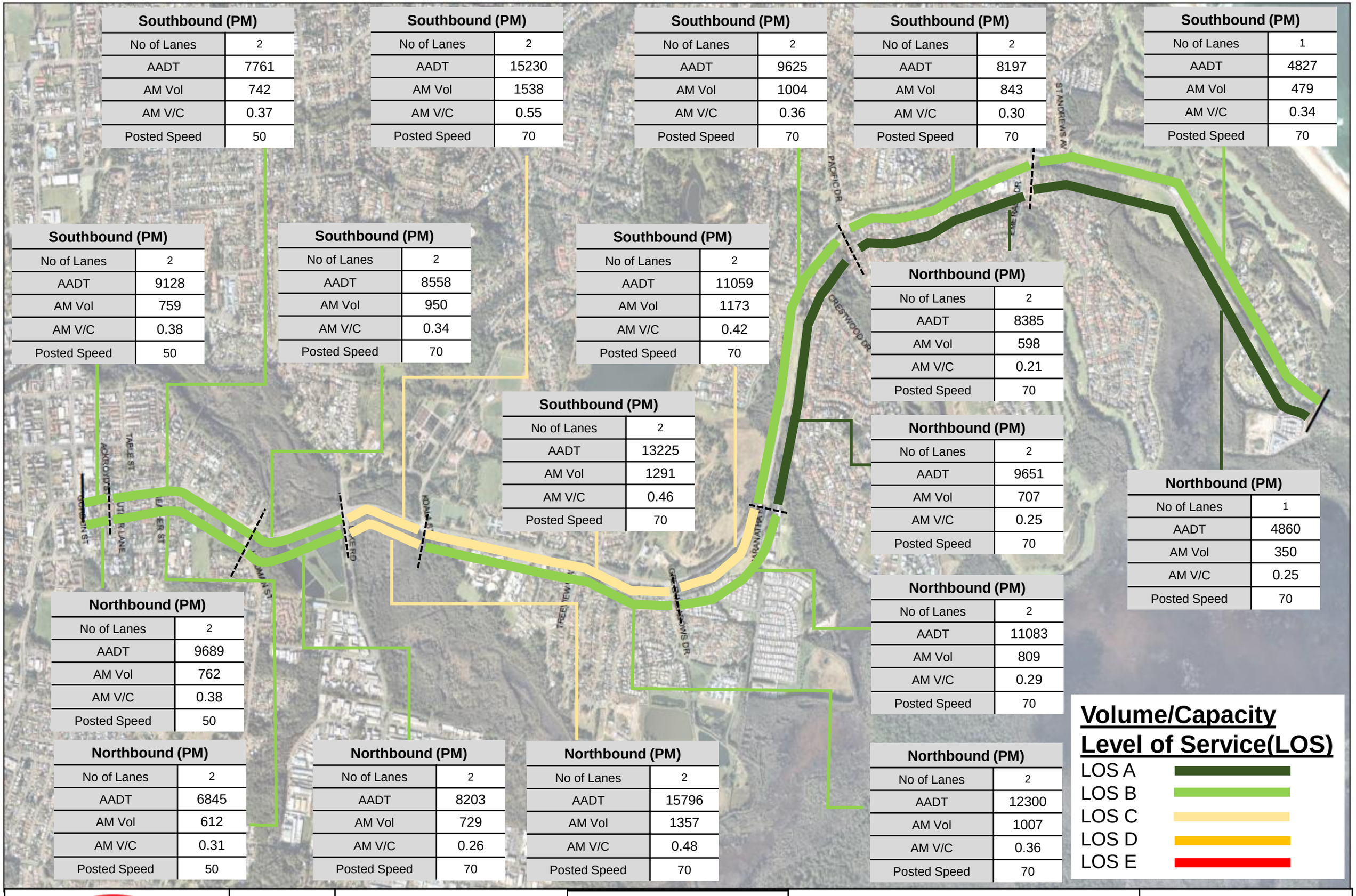
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0 460 920 Meters

Level of Service 2030 AM

Section 3
Chainage Start:11000 End :18000
Description Start: Oxley Highway End: Elkhorn Grove

Project Number: P4665
Date: 11/03/21
Sheet: 5



Southbound (PM)	
No of Lanes	2
AADT	7761
AM Vol	742
AM V/C	0.37
Posted Speed	50

Southbound (PM)	
No of Lanes	2
AADT	15230
AM Vol	1538
AM V/C	0.55
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	9625
AM Vol	1004
AM V/C	0.36
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	8197
AM Vol	843
AM V/C	0.30
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	4827
AM Vol	479
AM V/C	0.34
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	9128
AM Vol	759
AM V/C	0.38
Posted Speed	50

Southbound (PM)	
No of Lanes	2
AADT	8558
AM Vol	950
AM V/C	0.34
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	11059
AM Vol	1173
AM V/C	0.42
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	8385
AM Vol	598
AM V/C	0.21
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	13225
AM Vol	1291
AM V/C	0.46
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	9651
AM Vol	707
AM V/C	0.25
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	4860
AM Vol	350
AM V/C	0.25
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	9689
AM Vol	762
AM V/C	0.38
Posted Speed	50

Northbound (PM)	
No of Lanes	2
AADT	11083
AM Vol	809
AM V/C	0.29
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	6845
AM Vol	612
AM V/C	0.31
Posted Speed	50

Northbound (PM)	
No of Lanes	2
AADT	8203
AM Vol	729
AM V/C	0.26
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	15796
AM Vol	1357
AM V/C	0.48
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	12300
AM Vol	1007
AM V/C	0.36
Posted Speed	70

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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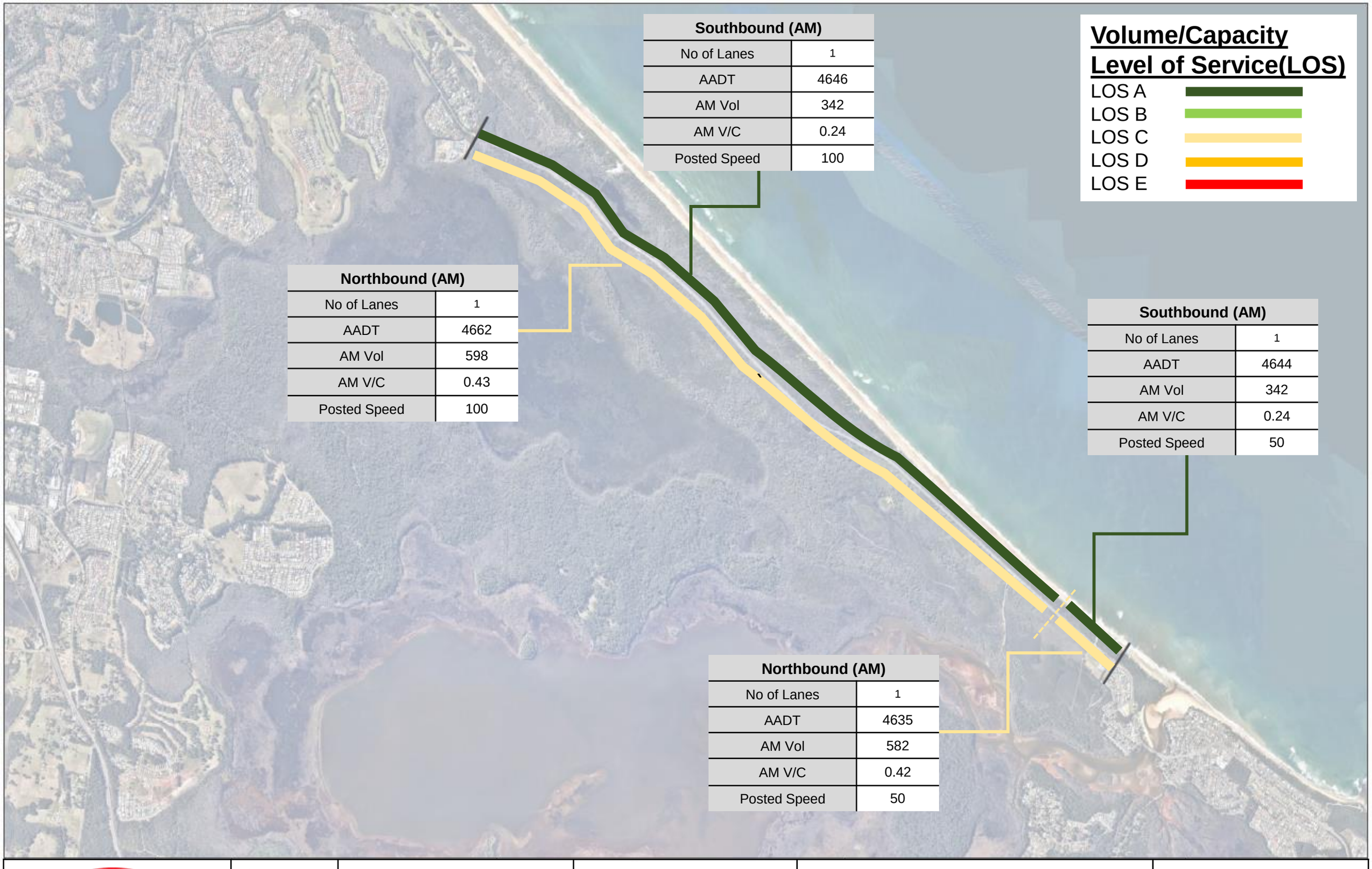
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0 460 920 Meters

Level of Service 2030 PM

Section 3
Chainage Start:11000 End :18000
Description Start: Oxley Highway End: Elkhorn Grove

Project Number: P4665
Date: 11/03/21
Sheet: 5



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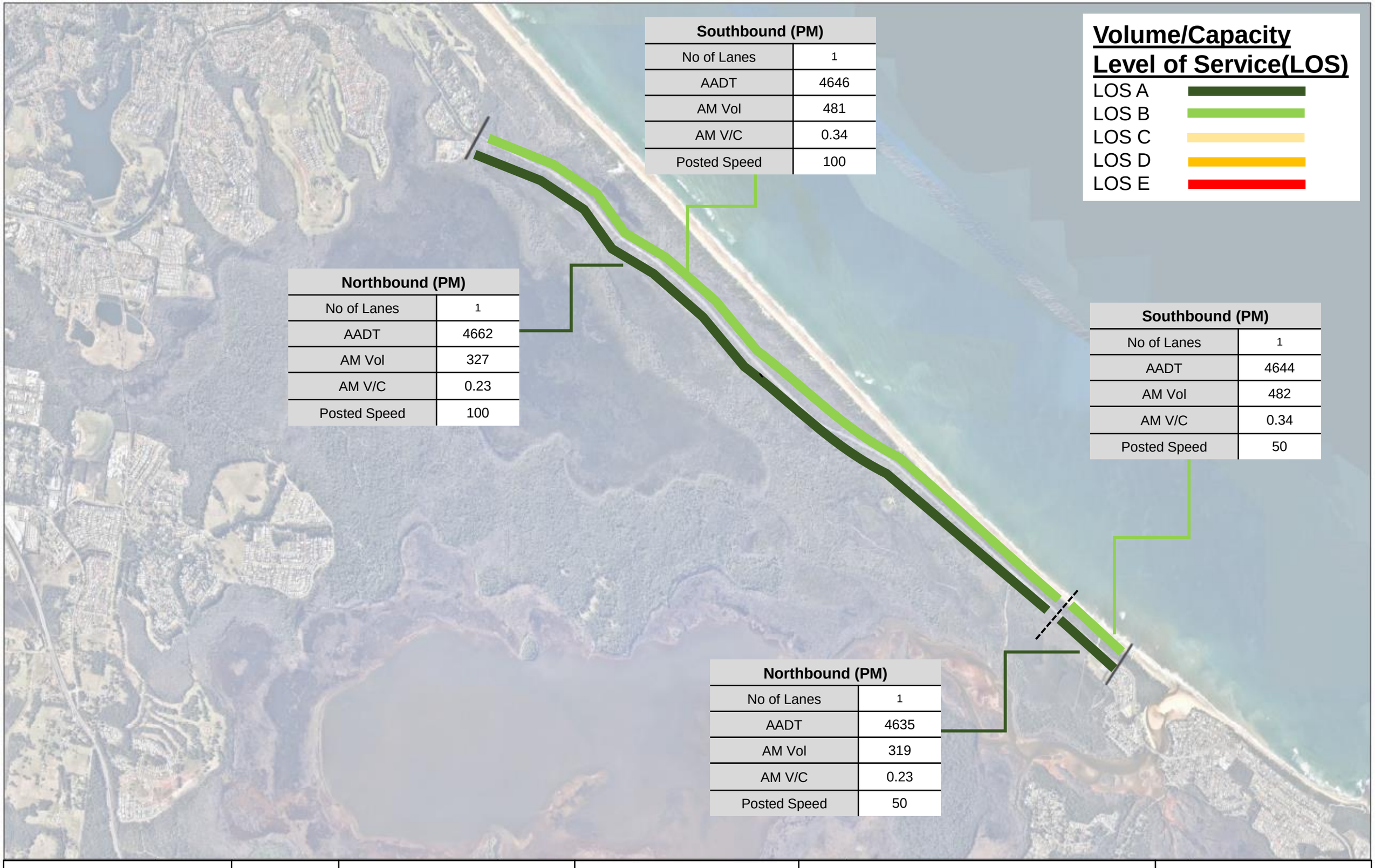
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0 800 1,600 Meters

Level of Service
2030 AM

Section 4
Chainage Start:18500 End :24500
Description Start: Elkhorn Grove End: Dirah Street

Project Number:P4665
Date: 11/03/21
Sheet: 7



Southbound (PM)	
No of Lanes	1
AADT	4646
AM Vol	481
AM V/C	0.34
Posted Speed	100

Northbound (PM)	
No of Lanes	1
AADT	4662
AM Vol	327
AM V/C	0.23
Posted Speed	100

Southbound (PM)	
No of Lanes	1
AADT	4644
AM Vol	482
AM V/C	0.34
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	4635
AM Vol	319
AM V/C	0.23
Posted Speed	50

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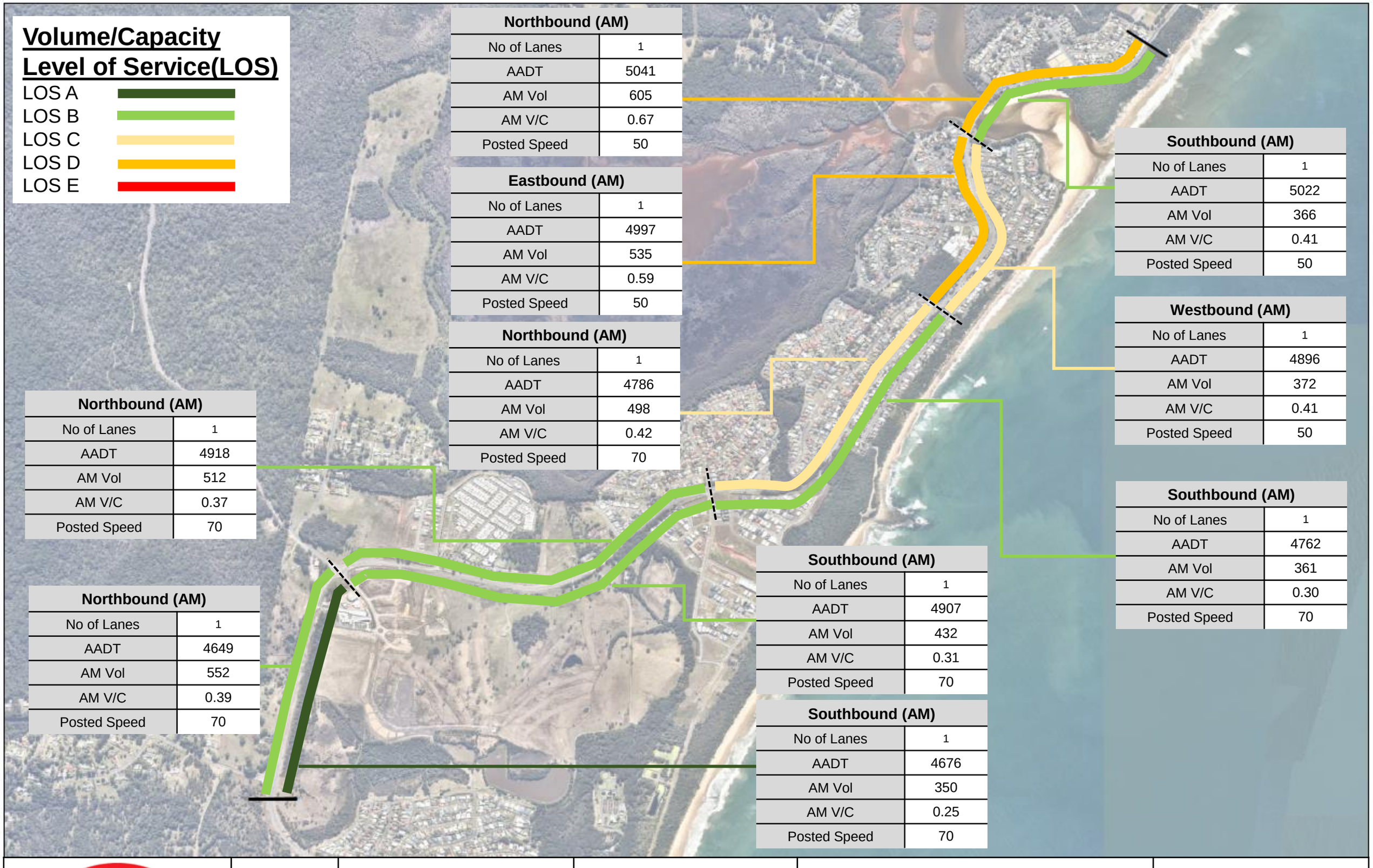
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0 800 1,600 Meters

Level of Service
2030 PM

Section 4
Chainage Start:18500 End :24500
Description Start: Elkhorn Grove End: Dirah Street

Project Number:P4665
Date: 11/03/21
Sheet: 8



Northbound (AM)	
No of Lanes	1
AADT	5041
AM Vol	605
AM V/C	0.67
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	4997
AM Vol	535
AM V/C	0.59
Posted Speed	50

Northbound (AM)	
No of Lanes	1
AADT	4786
AM Vol	498
AM V/C	0.42
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5022
AM Vol	366
AM V/C	0.41
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	4896
AM Vol	372
AM V/C	0.41
Posted Speed	50

Southbound (AM)	
No of Lanes	1
AADT	4762
AM Vol	361
AM V/C	0.30
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	4918
AM Vol	512
AM V/C	0.37
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	4649
AM Vol	552
AM V/C	0.39
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	4907
AM Vol	432
AM V/C	0.31
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	4676
AM Vol	350
AM V/C	0.25
Posted Speed	70

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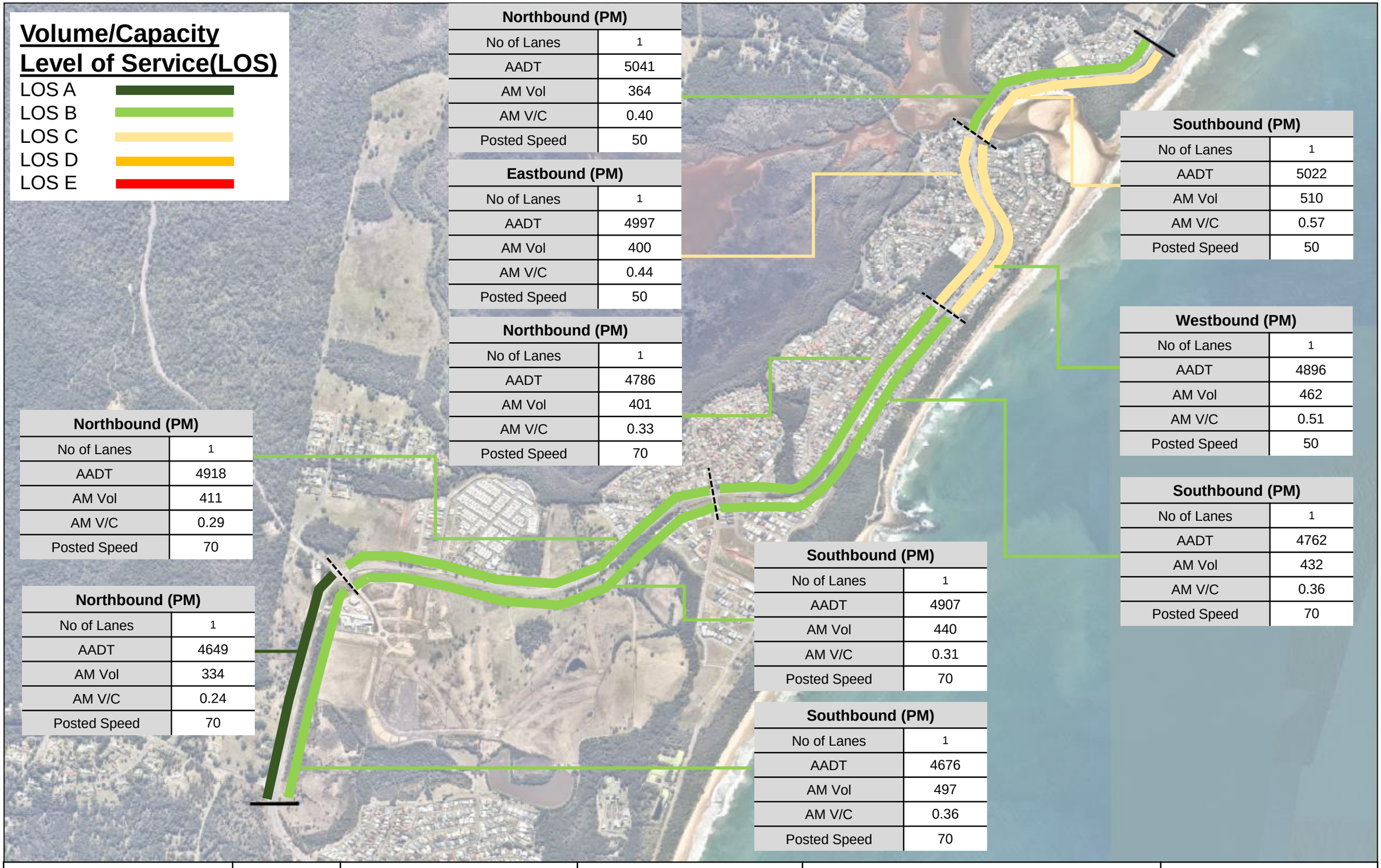
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0 425 850 Meters

Level of Service
2030 AM

Section 5
Chainage Start:25000 End :30500
Description Start: Dirah Street End: Bonny View Drive

Project Number: P4665
Date: 11/03/21
Sheet: 10



Northbound (PM)	
No of Lanes	1
AADT	5041
AM Vol	364
AM V/C	0.40
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	4997
AM Vol	400
AM V/C	0.44
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	4786
AM Vol	401
AM V/C	0.33
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5022
AM Vol	510
AM V/C	0.57
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	4896
AM Vol	462
AM V/C	0.51
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	4918
AM Vol	411
AM V/C	0.29
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	4762
AM Vol	432
AM V/C	0.36
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	4649
AM Vol	334
AM V/C	0.24
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	4907
AM Vol	440
AM V/C	0.31
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	4676
AM Vol	497
AM V/C	0.36
Posted Speed	70

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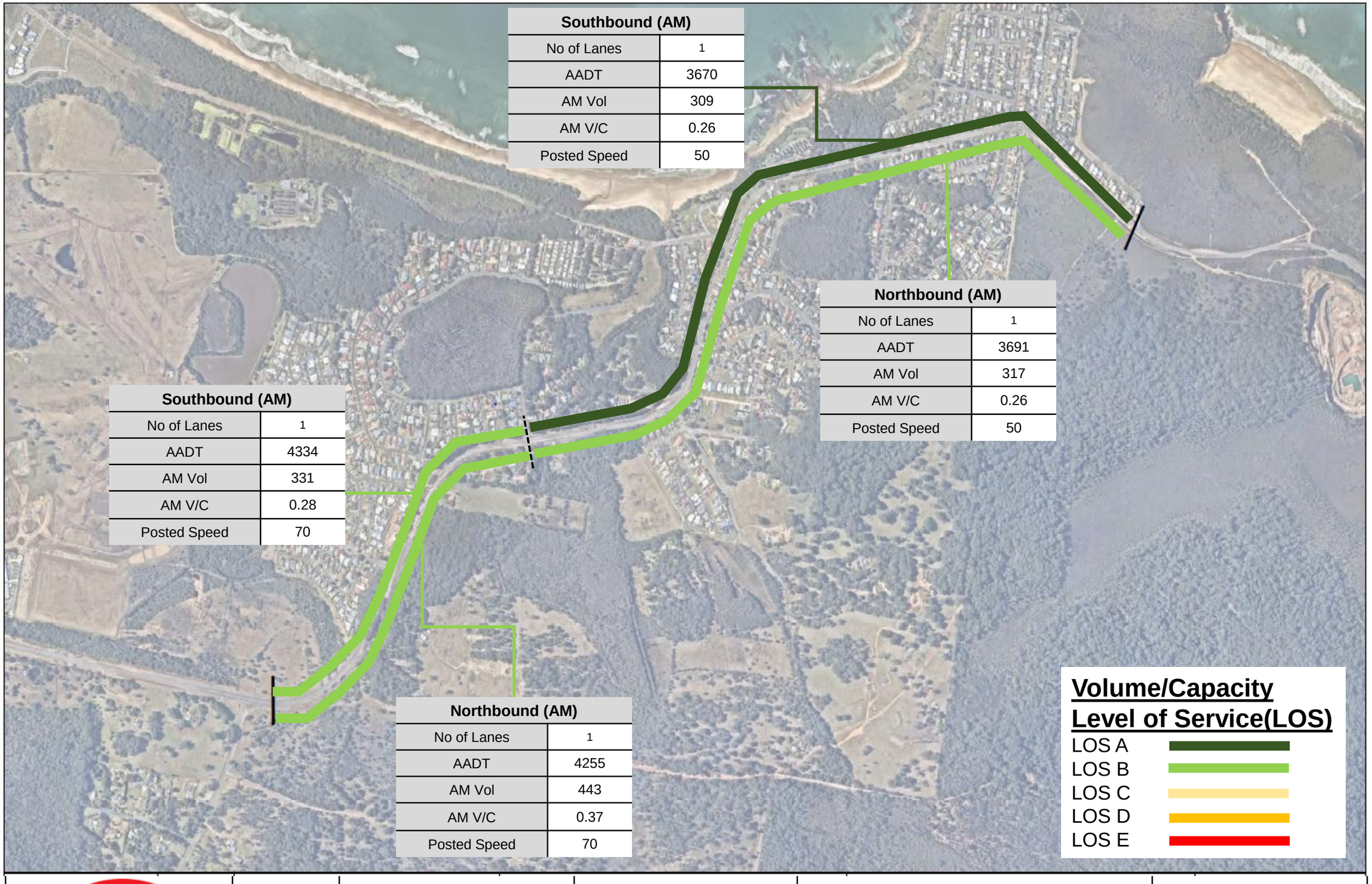
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0 425 850 Meters

Level of Service
2030 PM

Section 5
Chainage Start:25000 End :30500
Description Start: Dirah Street End: Bonny View Drive

Project Number:P4665
Date: 11/03/21
Sheet: 10



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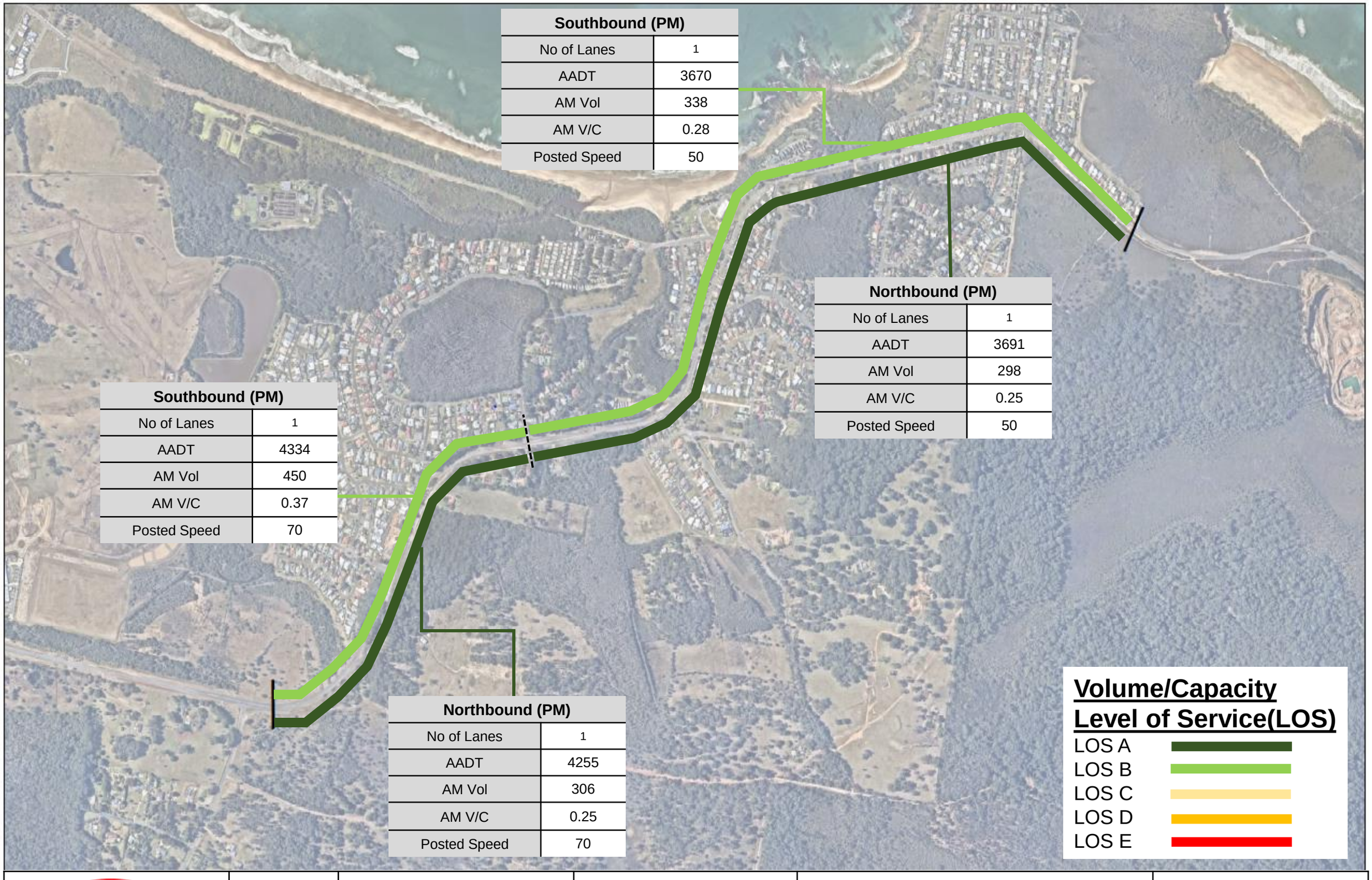
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0 295 590 Meters

Level of Service
2030 AM

Section 6
Chainage Start:31000 End : 34000
Description Start: Bonny View Drive End: 800 Ocean Drive

Project Number:P4665
Date: 11/03/21
Sheet: 11



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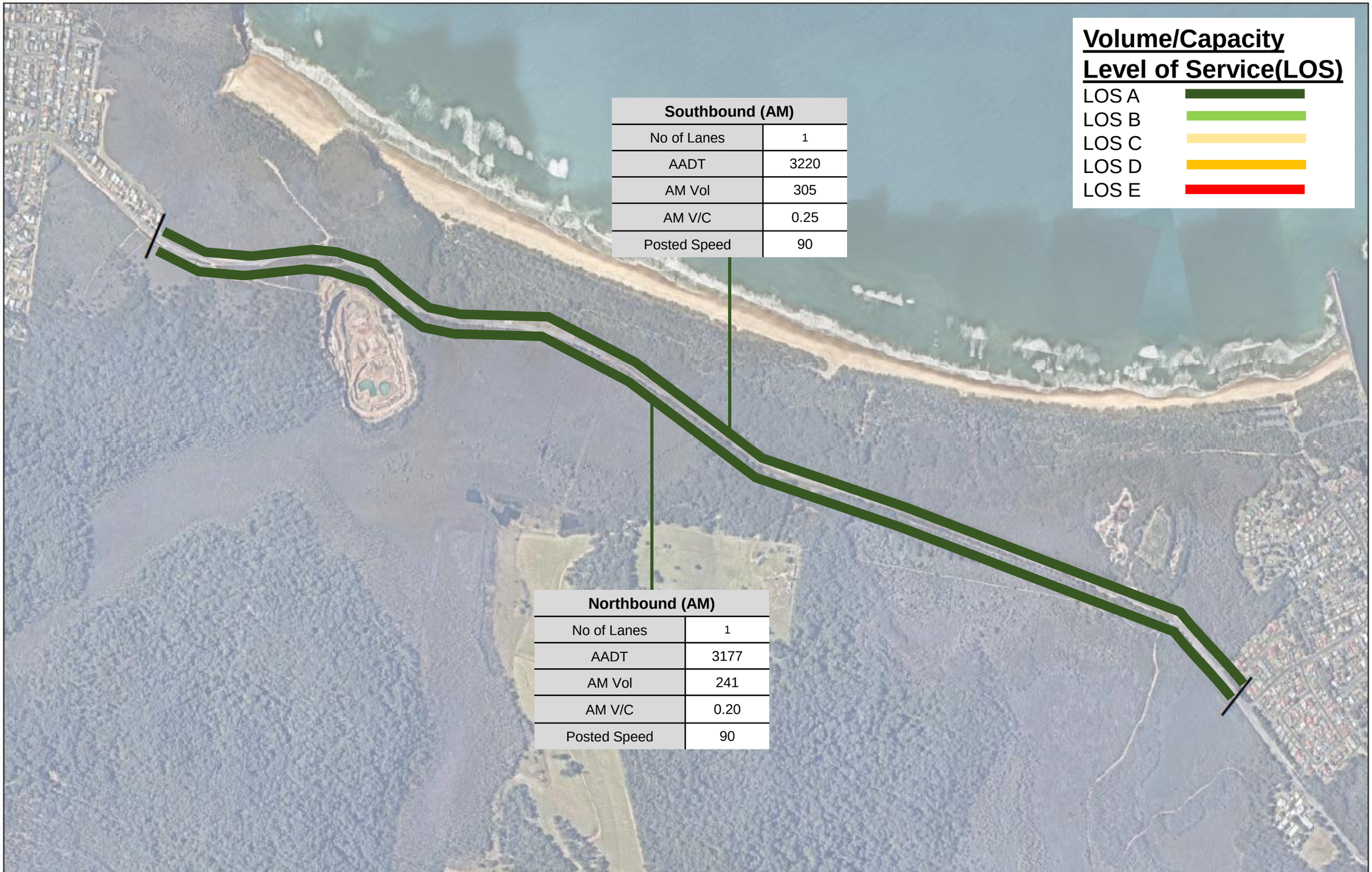
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0 295 590 Meters

Level of Service
2030 PM

Section 6
Chainage Start:31000 End : 34000
Description Start: Bonny View Drive End: 800 Ocean Drive

Project Number:P4665
Date: 11/03/21
Sheet: 12



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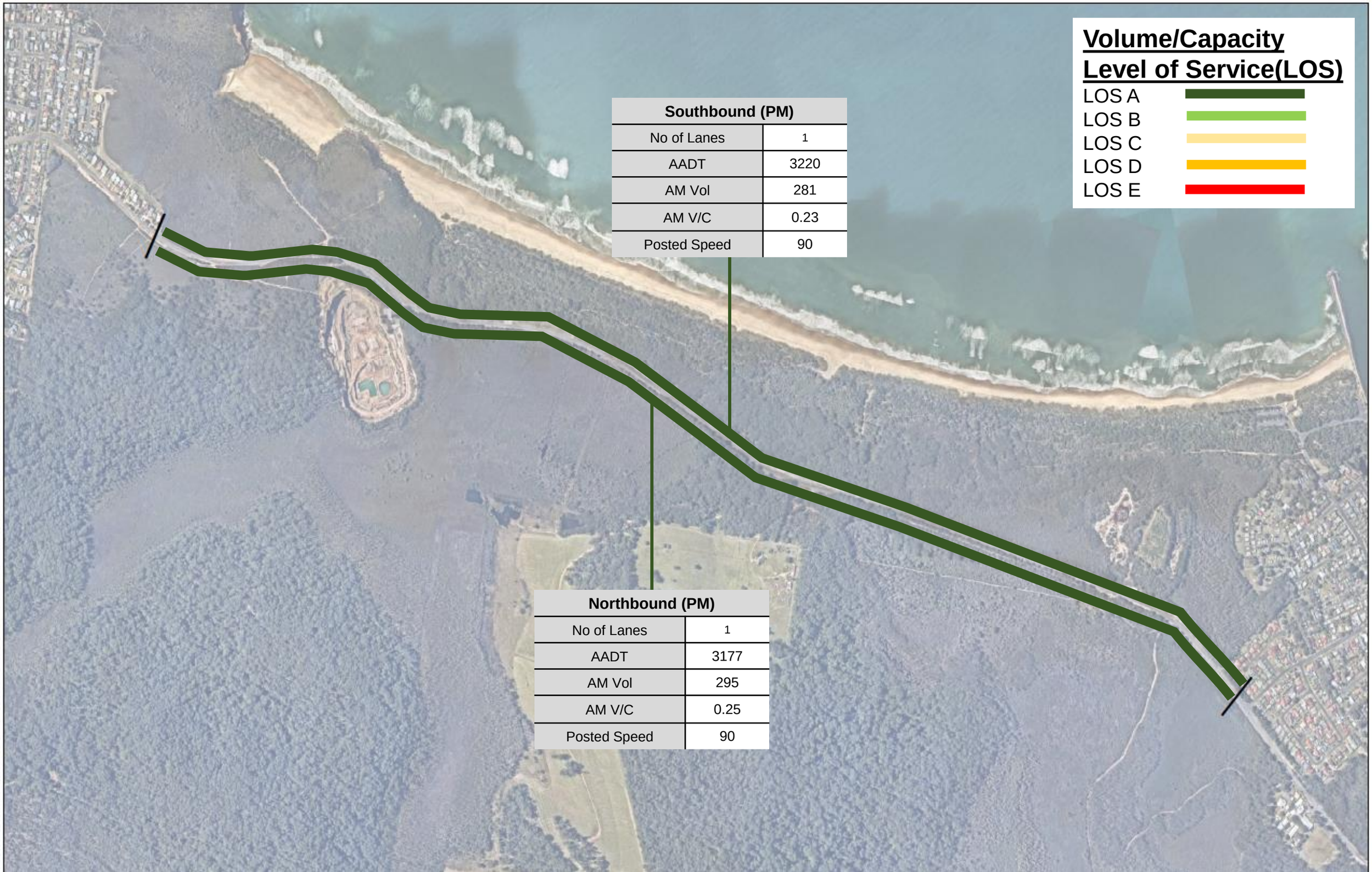
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0 295 590 Meters

Level of Service
2030 AM

Section 7
Chainage Start:34500 End : 37500
Description Start: 800 Ocean Drive End: North Haven

Project Number:P4665
Date: 11/03/21
Sheet: 13



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0 295 590 Meters

Level of Service
2030 PM

Section 7
Chainage Start:34500 End : 37500
Description Start: 800 Ocean Drive End: North Haven

Project Number:P4665
Date: 11/03/21
Sheet: 14

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Northbound (AM)	
No of Lanes	1
AADT	4539
AM Vol	371
AM V/C	0.41
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	4912
AM Vol	403
AM V/C	0.45
Posted Speed	50

Northbound (AM)	
No of Lanes	1
AADT	2821
AM Vol	246
AM V/C	0.27
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	2765
AM Vol	213
AM V/C	0.24
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	4369
AM Vol	351
AM V/C	0.39
Posted Speed	50

Southbound (AM)	
No of Lanes	1
AADT	2841
AM Vol	254
AM V/C	0.28
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	4932
AM Vol	432
AM V/C	0.48
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	3017
AM Vol	291
AM V/C	0.32
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	4568
AM Vol	402
AM V/C	0.45
Posted Speed	50

Southbound (AM)	
No of Lanes	1
AADT	4528
AM Vol	403
AM V/C	0.45
Posted Speed	50

CAMDEN HAVEN INLE

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0 295 590 Meters

Level of Service 2030 AM

Section 8
Chainage Start: 38000 End : 41000
Description Start: Edith Street End: Kew Road / Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 15

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Northbound (PM)	
No of Lanes	1
AADT	4539
AM Vol	422
AM V/C	0.47
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	4912
AM Vol	462
AM V/C	0.51
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	2821
AM Vol	275
AM V/C	0.31
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	2765
AM Vol	254
AM V/C	0.28
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	4369
AM Vol	411
AM V/C	0.46
Posted Speed	50

Southbound (PM)	
No of Lanes	1
AADT	2841
AM Vol	239
AM V/C	0.27
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	4932
AM Vol	409
AM V/C	0.45
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	3017
AM Vol	276
AM V/C	0.31
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	3208
AM Vol	363
AM V/C	0.26
Posted Speed	80

Southbound (PM)	
No of Lanes	1
AADT	4528
AM Vol	377
AM V/C	0.42
Posted Speed	50

CAMDEN HAVEN INLET

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0 295 590 Meters

Level of Service 2030 PM

Section 8
Chainage Start: 38000 End : 41000
Description Start: Edith Street End: Kew Road / Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 16

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Eastbound (AM)	
No of Lanes	1
AADT	5936
AM Vol	481
AM V/C	0.40
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	5202
AM Vol	475
AM V/C	0.34
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5190
AM Vol	442
AM V/C	0.32
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	4883
AM Vol	468
AM V/C	0.33
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	5963
AM Vol	556
AM V/C	0.46
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	5207
AM Vol	423
AM V/C	0.30
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	5202
AM Vol	459
AM V/C	0.33
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	4897
AM Vol	443
AM V/C	0.32
Posted Speed	60

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0 550 1,100 Meters

Level of Service 2030 AM

Section 9
Chainage Start: 41500 End : 48500
Description Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 17

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Eastbound (PM)	
No of Lanes	1
AADT	5936
AM Vol	515
AM V/C	0.43
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	5202
AM Vol	471
AM V/C	0.34
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5190
AM Vol	493
AM V/C	0.35
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	4883
AM Vol	484
AM V/C	0.35
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	5963
AM Vol	561
AM V/C	0.47
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	5207
AM Vol	470
AM V/C	0.34
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	5202
AM Vol	462
AM V/C	0.33
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	4897
AM Vol	501
AM V/C	0.36
Posted Speed	60

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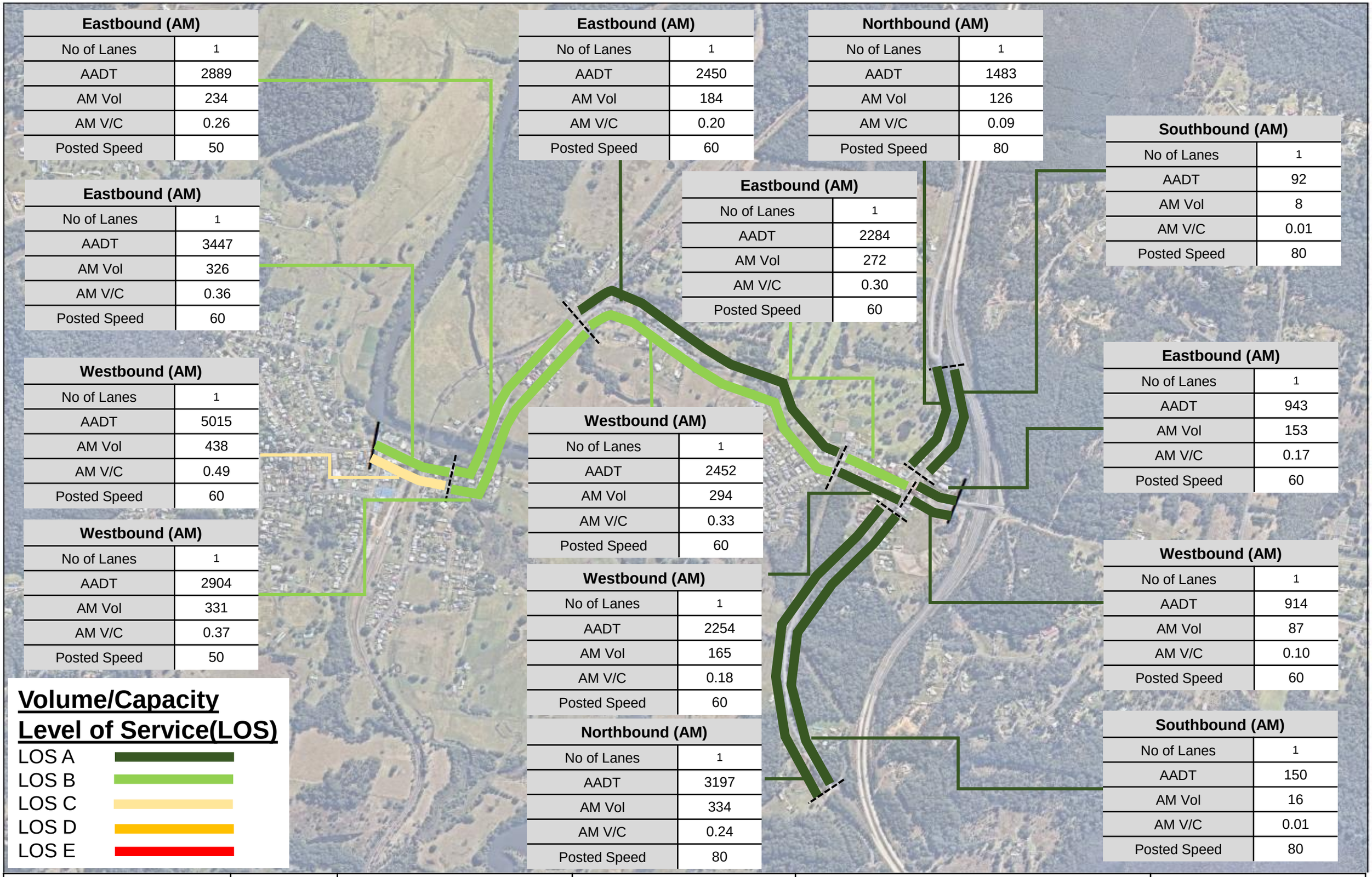
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0 550 1,100 Meters

Level of Service 2030 PM

Section 9
Chainage Start: 41500 End : 48500
Description Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 18



Eastbound (AM)	
No of Lanes	1
AADT	2889
AM Vol	234
AM V/C	0.26
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	3447
AM Vol	326
AM V/C	0.36
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	5015
AM Vol	438
AM V/C	0.49
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	2904
AM Vol	331
AM V/C	0.37
Posted Speed	50

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Eastbound (AM)	
No of Lanes	1
AADT	2450
AM Vol	184
AM V/C	0.20
Posted Speed	60

Eastbound (AM)	
No of Lanes	1
AADT	2284
AM Vol	272
AM V/C	0.30
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	2452
AM Vol	294
AM V/C	0.33
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	2254
AM Vol	165
AM V/C	0.18
Posted Speed	60

Northbound (AM)	
No of Lanes	1
AADT	3197
AM Vol	334
AM V/C	0.24
Posted Speed	80

Northbound (AM)	
No of Lanes	1
AADT	1483
AM Vol	126
AM V/C	0.09
Posted Speed	80

Southbound (AM)	
No of Lanes	1
AADT	92
AM Vol	8
AM V/C	0.01
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	943
AM Vol	153
AM V/C	0.17
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	914
AM Vol	87
AM V/C	0.10
Posted Speed	60

Southbound (AM)	
No of Lanes	1
AADT	150
AM Vol	16
AM V/C	0.01
Posted Speed	80

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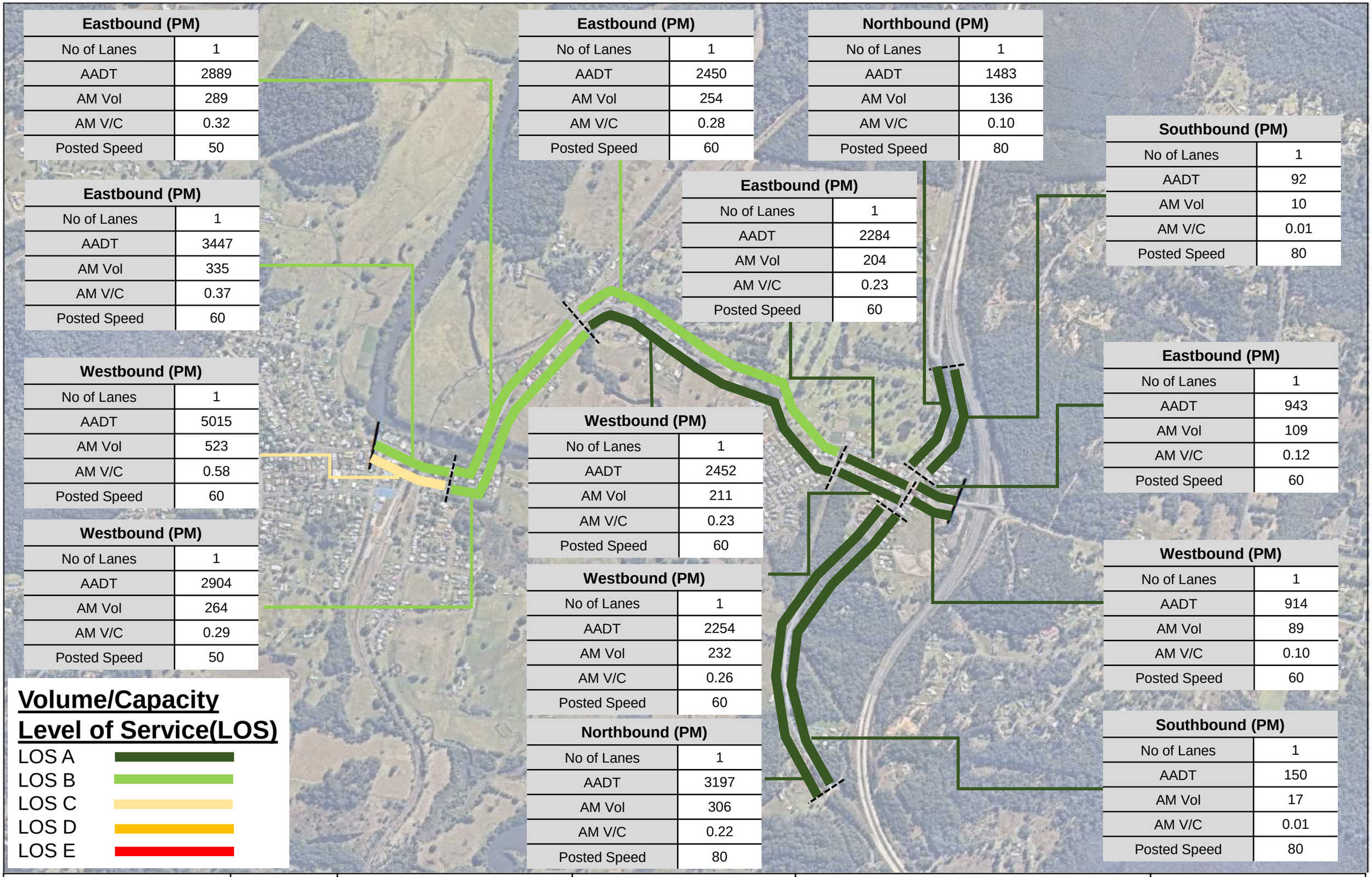
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0 337.5 675 Meters

Level of Service 2030 AM

Section 10
Chainage Start: 41500 End : 48500
Description Start: Ocean Drive End: Comboyne Street

Project Number: P4665
Date: 11/03/21
Sheet: 19



Eastbound (PM)	
No of Lanes	1
AADT	2889
AM Vol	289
AM V/C	0.32
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	3447
AM Vol	335
AM V/C	0.37
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	5015
AM Vol	523
AM V/C	0.58
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	2904
AM Vol	264
AM V/C	0.29
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	2450
AM Vol	254
AM V/C	0.28
Posted Speed	60

Northbound (PM)	
No of Lanes	1
AADT	1483
AM Vol	136
AM V/C	0.10
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	2284
AM Vol	204
AM V/C	0.23
Posted Speed	60

Southbound (PM)	
No of Lanes	1
AADT	92
AM Vol	10
AM V/C	0.01
Posted Speed	80

Westbound (PM)	
No of Lanes	1
AADT	2452
AM Vol	211
AM V/C	0.23
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	2254
AM Vol	232
AM V/C	0.26
Posted Speed	60

Northbound (PM)	
No of Lanes	1
AADT	3197
AM Vol	306
AM V/C	0.22
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	943
AM Vol	109
AM V/C	0.12
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	914
AM Vol	89
AM V/C	0.10
Posted Speed	60

Southbound (PM)	
No of Lanes	1
AADT	150
AM Vol	17
AM V/C	0.01
Posted Speed	80

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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0 337.5 675 Meters

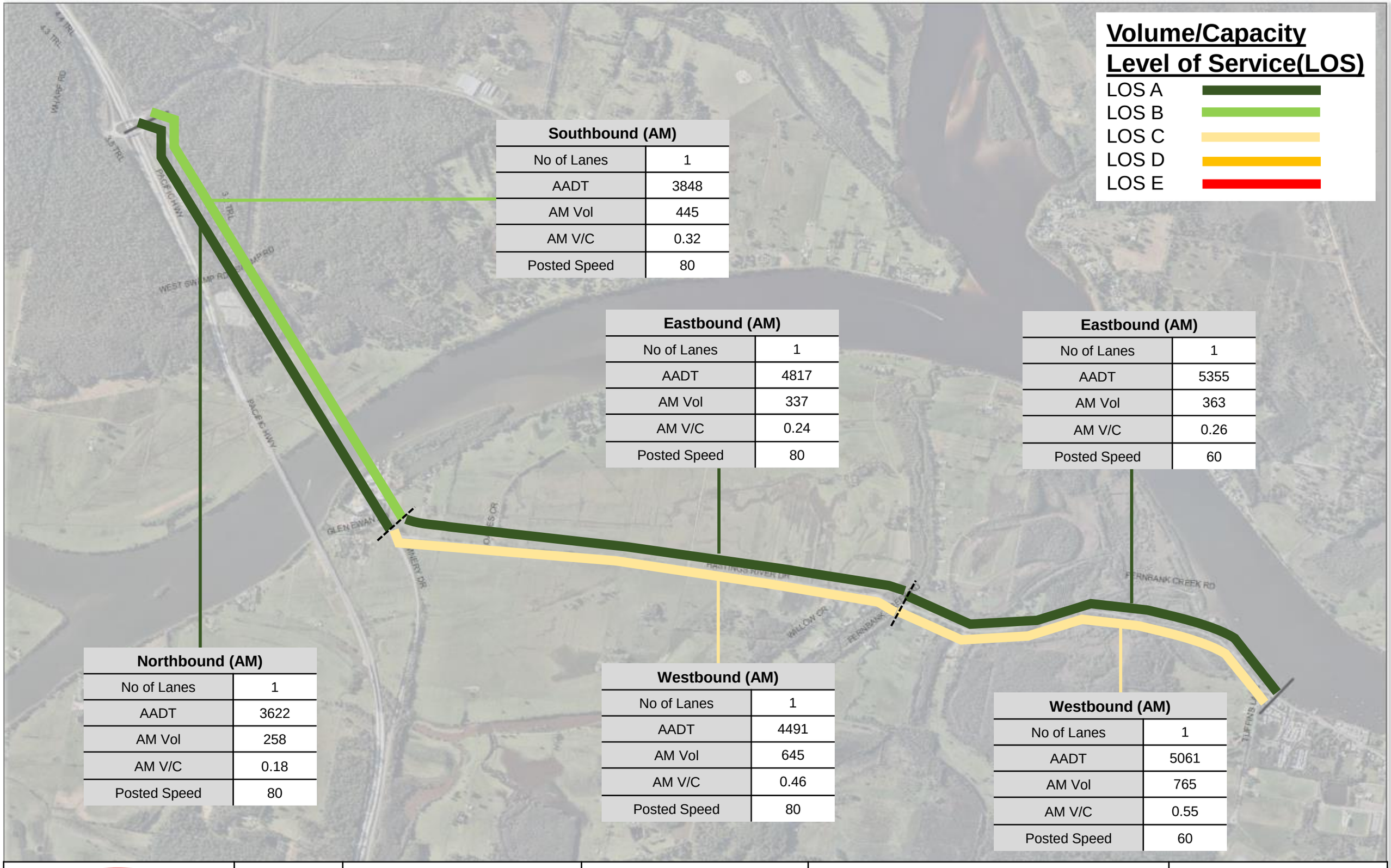
Level of Service 2030 PM

Section 10
Chainage Start: 41500 End : 48500
Description Start: Ocean Drive End: Comboyne Street

Project Number: P4665
Date: 11/03/21
Sheet: 20

MR538 and MR600 Link Level of Service Assessment 2040

Site_ID	Corridor Section	Link_ID	Site Location	Direction	No. Lanes in Each Direction	Posted Speed	Terrain (Level, Rolling, Mountainous)	Level of Impedance (Low, Medium, High)	Estimated Peak Period Lane Capacity (veh/hr/lane)	Estimated Peak Corridor Capacity (Direction) veh/hr	Weekday Daily Traffic Volume (24hr)	7day Daily Traffic	Weekday AM Peak Hr Volume (veh/hr)	Weekday PM Peak Hr Volume (veh/hr)	AM Peak Average Speed (km/hr)	PM Peak Average Speed (km/hr)	AM Link Volume/Capacity (V/C) Ratio	PM Link Volume/Capacity (V/C) Ratio	AM Peak Ave Speed / Posted Speed	PM Peak Ave Speed / Posted Speed	AM Link Speed Level of Service (LoS)	PM Link Speed Level of Service (LoS)	AM Link V/C Level of Service (LoS)	PM Link V/C Level of Service (LoS)
AS02NB	1	AS02	Hastings River Dr South of Blackmans Point Interchange	NB	1	80	Level	Low	1400	1400	3622	3383	258	330	75.1	74.9	0.18	0.24	0.94	0.94	A	A	A	A
AS02SB	1	AS02	Hastings River Dr South of Blackmans Point Interchange	SB	1	80	Level	Low	1400	1400	3848	3589	445	331	73.5	74.8	0.32	0.24	0.92	0.94	A	A	B	A
AS03EB	1	AS03	Hastings River Dr E of Winery Dr	EB	1	80	Level	Low	1400	1400	3848	3589	445	331	76.5	76.8	0.32	0.24	0.96	0.96	A	A	B	A
AS03WB	1	AS03	Hastings River Dr E of Winery Dr	WB	1	80	Level	Low	1400	1400	4817	4450	337	473	75.9	77.2	0.24	0.34	0.95	0.97	A	A	A	B
AS04EB	1	AS04	Hastings River Dr W of Tuffins Ln	EB	1	60	Level	Low	1400	1400	4491	4113	645	378	60.3	60.7	0.46	0.27	1.01	1.01	A	A	C	B
AS04WB	1	AS04	Hastings River Dr W of Tuffins Ln	WB	1	60	Level	Low	1400	1400	5355	4964	363	545	57.4	57.5	0.26	0.39	0.96	0.96	A	A	A	B
AS05NB	2	AS05	Hastings River Drive, btwn Tuffins Ln & Boundary St	NB	1	60	Level	Medium	1200	1200	5061	4634	765	426	51	52	0.64	0.36	0.85	0.87	A	A	D	B
AS05SB	2	AS05	Hastings River Drive, btwn Tuffins Ln & Boundary St	SB	1	60	Level	Medium	1200	1200	5893	5490	408	593	48.1	50.4	0.34	0.49	0.80	0.84	A	A	B	C
AS06NB	2	AS06	Hastings River Drive, btwn Boundary St & Hibbard Rd W	NB	2	60	Level	Medium	1000	2000	5565	5125	797	454	50	47.7	0.40	0.23	0.83	0.80	A	B	B	A
AS06SB	2	AS06	Hastings River Drive, btwn Boundary St & Hibbard Rd W	SB	2	60	Level	Medium	1000	2000	7840	7258	610	777	50.5	49.1	0.30	0.39	0.84	0.82	A	A	B	B
AS07EB	2	AS07	Hastings River Drive, btwn Mumford St & Newport Island Rd	EB	2	60	Level	Medium	1000	2000	7364	6955	934	658	50	49.3	0.47	0.33	0.83	0.82	A	A	C	B
AS07WB	2	AS07	Hastings River Drive, btwn Mumford St & Newport Island Rd	WB	2	60	Level	Medium	1000	2000	11839	10923	1052	1051	51.2	51.8	0.53	0.53	0.85	0.86	A	A	C	C
AS08EB	2	AS08	Hastings River Drive, btwn Clifton Dr & Bellbowrie St	EB	2	60	Level	Medium	1000	2000	12745	11792	1042	1213	48.7	49.1	0.52	0.61	0.81	0.82	A	A	C	D
AS08WB	2	AS08	Hastings River Drive, btwn Clifton Dr & Bellbowrie St	WB	2	60	Level	Medium	1000	2000	13353	12336	1315	1147	47.4	47.3	0.66	0.57	0.79	0.79	B	B	D	C
AS09EB	2	AS09	Hastings River Dr btwn Aston St and Findlay Ave	EB	2	50	Level	Low	1000	2000	11369	10527	937	1019	49.9	50	0.47	0.51	1.00	1.00	A	A	C	C
AS09WB	2	AS09	Hastings River Dr btwn Aston St and Findlay Ave	WB	2	50	Level	Low	1000	2000	10577	9643	958	958	50	51.1	0.48	0.48	1.00	1.02	A	A	C	C
AS10NB	2	AS10	Hastings River Dr btwn Gordon St and Bridge St	NB	2	50	Level	Low	1000	2000	11111	10174	1007	997	58.7	58.9	0.50	0.50	0.77	0.78	B	B	C	C
AS10SB	2	AS10	Hastings River Dr btwn Gordon St and Bridge St	SB	2	50	Level	Low	1000	2000	10565	9150	892	824	31.6	29.9	0.45	0.41	0.63	0.60	C	C	C	C
AS13NB	3	AS13	Ocean Dr btwn Gordon St and Ackroyd St	NB	2	50	Level	Medium	1000	2000	9809	9183	755	821	40.1	40.6	0.38	0.41	0.80	0.81	A	A	B	C
AS13SB	3	AS13	Ocean Dr btwn Gordon St and Ackroyd St	SB	2	50	Level	Medium	1000	2000	7413	6770	772	662	47.1	48.3	0.39	0.33	0.94	0.97	A	A	B	B
AS14NB	3	AS14	Ocean Dr btwn Hindman St and Lake Rd	NB	2	70	Level	Low	1400	2800	9805	7635	670	902	62	64.7	0.24	0.29	0.89	0.92	A	A	A	B
AS14SB	3	AS14	Ocean Dr btwn Hindman St and Lake Rd	SB	2	70	Level	Low	1400	2800	8864	8018	1256	788	62.8	62.9	0.45	0.28	0.90	0.90	A	C	B	B
AS15NB	3	AS15	Ocean Dr btwn Lake Rd and Koala St	NB	2	70	Level	Low	1400	2800	9249	8312	682	983	50	61.6	0.24	0.35	0.71	0.88	B	A	A	B
AS15SB	3	AS15	Ocean Dr btwn Lake Rd and Koala St	SB	2	70	Level	Low	1400	2800	17089	15485	2244	1437	59.7	58.8	0.80	0.51	0.85	0.84	A	A	D	C
AS16NB	3	AS16	Ocean Dr btwn Koala St and Lochinvar Pl	NB	2	70	Level	Low	1400	2800	16477	14862	1158	1628	57.6	63.5	0.42	0.58	0.82	0.91	A	A	C	C
AS16SB	3	AS16	Ocean Dr btwn Koala St and Lochinvar Pl	SB	2	70	Level	Low	1400	2800	13307	12187	1502	1066	61	62.9	0.54	0.38	0.87	0.90	A	A	C	B
AS17NB	3	AS17	Ocean Dr btwn Greenmeadows Dr and Maranatha Pl	NB	2	70	Level	Low	1400	2800	14307	12817	1124	1367	67.6	69.4	0.40	0.49	0.97	0.99	A	A	B	C
AS17SB	3	AS17	Ocean Dr btwn Greenmeadows Dr and Maranatha Pl	SB	2	70	Level	Low	1400	2800	11990	10951	1662	856	67.6	65.1	0.59	0.31	0.97	0.93	A	A	D	B
AS18NB	3	AS18	Ocean Dr btwn Crestwood Dr and Pacific Dr	NB	2	70	Level	Low	1400	2800	11904	10627	857	1242	48.7	60.3	0.31	0.44	0.70	0.86	B	B	C	C
AS18SB	3	AS18	Ocean Dr btwn Crestwood Dr and Pacific Dr	SB	2	70	Level	Low	1400	2800	9961	9042	1312	748	59.4	67.9	0.47	0.27	0.83	0.83	A	A	C	B
AS19NB	3	AS19	Ocean Dr btwn Pacific Dr & Matthew Flinders Dr	NB	2	70	Level	Low	1400	2800	10410	9517	750	1063	53.4	63.2	0.27	0.38	0.76	0.90	B	A	B	B
AS19SB	3	AS19	Ocean Dr btwn Pacific Dr & Matthew Flinders Dr	SB	2	70	Level	Low	1400	2800	9072	8590	989	633	63.5	64.9	0.35	0.23	0.91	0.93	A	A	B	A
AS20NB	3	AS20	Ocean Drive, btwn NE of Links Cres	NB	1	70	Level	Low	1400	1400	8868	8311	662	892	63.4	64.2	0.47	0.64	0.91	0.92	A	A	C	D
AS20WB	3	AS20	Ocean Drive, btwn NE of Links Cres	WB	1	70	Level	Low	1400	1400	5258	4866	700	371	70.4	70.9	0.50	0.26	1.01	1.01	A	A	C	B
AS21NB	4	AS21	Ocean Dr btwn S of Pozieres Development	NB	1	100	Level	Low	1400	1400	5547	5109	415	547	84.7	86.1	0.30	0.39	0.85	0.86	B	B	B	B
AS21SB	4	AS21	Ocean Dr btwn S of Pozieres Development	SB	1	100	Level	Low	1400	1400	5190	4822	679	358	86.6	88.8	0.49	0.26	0.87	0.89	A	A	C	A
AS22NB	4	AS22	Ocean Dr N of Dirah St	NB	1	50	Level	Low	1400	1400	5173	4779	388	527	65.6	67.5	0.28	0.38	1.31	1.35	A	A	B	B
AS22SB	4	AS22	Ocean Dr N of Dirah St	SB	1	50	Level	Low	1400	1400	5160	4799	661	350	58.8	58.4	0.47	0.25	1.18	1.17	A	A	C	A
AS23NB	5	AS23	Ocean Dr btwn Evans St and Tallong Dr	NB	1	50	Level	Low	900	900	5170	4777	388	528	49.6	49.6	0.43	0.59	0.92	0.93	A	C	C	C
AS23SB	5	AS23	Ocean Dr btwn Evans St and Tallong Dr	SB	1	50	Level	Low	900	900	5612	5249	687	400	46.7	46.2	0.76	0.44	0.93	0.92	A	A	D	C
AS24NB	5	AS24	Ocean Dr btwn Shopping Centre and Fiona Cres	NB	1	50	Level	Medium	900	900	5591	5194	415	560	48.1	48.5	0.46	0.62	0.96	0.97	A	A	C	D
AS24SB	5	AS24	Ocean Dr btwn Shopping Centre and Fiona Cres	SB	1	50	Level	Medium	900	900	5564	5305	607	438	50.4	50.5	0.67	0.49	1.01	1.01	A	A	D	C
AS25NB	5	AS25	Ocean Dr btwn Miala St & Medical Centre	NB	1	70	Level	Low	1200	1200	5451	5161	422	506	53	54.6	0.35	0.42	0.76	0.78	B	B	B	C
AS25SB	5	AS25	Ocean Dr btwn Miala St & Medical Centre	SB	1	70	Level	Low	1200	1200	5329	4868	566	440	53.3	53.9	0.47	0.37	0.79	0.80	B	B	B	B
AS26EB	5	AS26	Ocean Drive,btwn Ocean Club Access & Houston Mitchell Dr	EB	1	70	Level	Low	1400	1400	5302	4992	410	474	65.2	67.3	0.29	0.34	0.93	0.96	A	A	B	B
AS26WB	5	AS26	Ocean Drive,btwn Ocean Club Access & Houston Mitchell Dr	WB	1	70	Level	Low	1400	1400	5476	5200	581	451	63.5	64.1	0.42	0.32	0.91	0.92	A	A	C	B
AS27NB	5	AS27	Ocean Dr btwn Lake Cathie School Access and Bonny View D	NB	1	70	Level	Low	1400	1400	5463	5158	491	482	59.8	67.2	0.35	0.34	0.85	0.96	A	A	B	B
AS27SB	5	AS27	Ocean Dr btwn Lake Cathie School Access and Bonny View D	SB	1	70	Level	Low	1400	1400	5176	4903	627	367	64.8	70.9	0.45	0.26	0.93	1.01	A	A	C	B
AS28NB	6	AS28	Ocean Dr btwn Seawind Chase and Beach St	NB	1	70	Level	Low	1200	1200	5206	4940	397	545	59	60.6	0.33	0.45	0.84	0.87	A	A	B	C
AS28SB	6	AS28	Ocean Dr btwn Seawind Chase and Beach St	SB	1	70	Level	Low	1200	1200	4738	4549	503	335	61.4	62.3	0.42	0.28	0.88	0.89	A	A	C	B
AS29NB	6	AS29	Ocean Dr btwn Graham St and Jordan Ave	NB	1	50	Rolling	Low	1200	1200	4826	4604	376	493	55.4	56.1	0.31	0.41	1.11	1.12	A	A	B	C
AS29SB	6	AS29	Ocean Dr btwn Graham St and Jordan Ave	SB	1	50	Rolling	Low	1200	1200	4110	3940	361	327	54.6	54.6	0.30	0.27	1.09	1.09	A	A	B	B
AS30NB	7	AS30	Ocean Dr N of Edith St	NB	1	90	Level	Low	1200	1200	3783	3621	296	367	67.1	70.1	0.25	0.31	0.75	0.78	B	B	A	B
AS30SB	7	AS30	Ocean Dr N of Edith St	SB	1	90	Level	Low	1200	1200	3410	3238	252	323	62.1	64.4	0.21	0.27	0.69	0.72	B	B	A	B
AS31NB	8	AS31	Ocean Dr btwn Alma St and The Parade	NB	1	50	Level	Medium	900	900	3456	3268	319	307	42.9	42.8	0.35	0.34	0.86	0.86	A	A	B	B
AS31SB	8	AS31	Ocean Dr btwn Alma St and The Parade	SB	1	50	Level	Medium	900	900	2968	2830	223	277	41	40.9	0.25	0.31	0.82	0.82	A	A	A	B
AS32EB	8	AS32	Ocean Dr btwn Pioneer St and Vine St	EB	1	50	Level	High	900	900	3238	3070	304	301	34.2	36.9	0.34	0.33	0.68	0.74	B	B	B	B
AS32WB	8	AS32	Ocean Dr btwn Pioneer St and Vine St	WB	1	50	Level	High	900	900	4689	4555	367	449	36	38.5	0.41	0.50	0.72	0.77	B	B	B	C
AS33NB	8	AS33	Ocean Dr btwn Adeline St and Short St	NB	1	50	Level	High	900	900	4903	4751	421	424	41.8	41.8	0.47	0.47	0.84	0.84	A	A	C	C
AS33SB	8	AS33	Ocean Dr btwn Adeline St and Short St	SB	1	50	Level	High	900	900	4872	4687	388	461	44.3	45.3	0.43	0.51	0.89	0.91	A	A	C	C
AS34EB	8	AS34	Ocean Drive, btwn Haven Circuit & Stingray Creek Bridge	EB	1	50	Level	High	900	900	4860	4674	422	412	49.2	53.8	0.47	0.46	0.98	1.08	A	A	C	C
AS34WB	8	AS34	Ocean Drive, btwn Haven Circuit & Stingray Creek Bridge	WB	1	50	Level	High	900	900	5272	5051	422	505	50.1	51.7	0.47	0.56	1.00	1.03	A	A	C	C
AS35EB	8	AS35	Ocean Dr btwn Kew Rd and Bold St	EB	1	50	Level	High	900	900	5588	5351	485	467	48.4	49.6	0.54	0.52	0.97	0.99	A	A	C	C
AS35WB	8	AS35	Ocean Dr btwn Kew Rd and Bold St	WB	1	50	Level	High	900	900	3107	2938	267	307	46.7	47.8	0.30	0.34	0.93	0.96	A	A	B	B
AS36NB	9	AS36	Ocean Dr btwn Kew Rd and Flinders Dr	NB	1	50	Level	Medium	1200	1200	3129	2954	275	267	45.6	49.4	0.23	0.22	0.91	0.99	A	A	A	A
AS36SB	9	AS36	Ocean Dr btwn Kew Rd and Flinders Dr	SB	1	50	Level	Medium	1200	1200	6538	6126	520	575	42.5	46.7	0.43	0.48	0.85	0.93	A	A	C	C
AS37NB	9	AS37	Ocean Dr btwn Waterview Cres and Captain Cook Bicentennial Drive	NB	1	70	Level	Low	1400	1400	6567	6136	602	625	51.6	52.7	0.43	0.45	0.74	0.75	B	B	C	C
AS37SB	9	AS37	Ocean Dr btwn Waterview Cres and Captain Cook Bicentennial Drive	SB	1	70	Level	Low	1400	1400	5729	5331	514	526	54.8	55.8	0.37	0.38	0.78	0.80	B	B	B	B
AS38EB	9	AS38	Ocean Dr btwn Sirius Dr and Fairwinds Ave	EB	1	70	Level	Low	1400	1400	5734	5331	458	525	64.6	64.8	0.33	0.37	0.92	0.93	A	A	B	B
AS38WB	9	AS38	Ocean Dr btwn Sirius Dr and Fairwinds Ave	WB	1	70	Level	Low	1400	1400	5716	5331	478	550	63.3	63.8	0.34	0.39	0.90	0.91	A	A	B	B
AS39EB	9	AS39	Ocean Dr btwn Pacific Hwy and Glen Haven Dr	EB	1	60	Level	Low	1400	1400	5729	5356	497	516	62.3	63.8	0.35	0.37	1.04	1.06	A	A	B	B
AS39WB	9	AS39	Ocean Dr btwn Pacific Hwy and Glen Haven Dr	WB	1	60	Level	Low	1400	1400	5378	4981	506	540	62.9	65	0.36	0.39	1.05	1.08	A	A	B	B
AS40EB	10	AS40	Ocean Drive, at Pacific Hwy Overbridge W	EB	1	60	Level	Medium	900	900	5394	4965	479	559	52.9	53.5	0.53	0.62	0.88	0.89	A	A	C	D
AS40WB	10	AS40	Ocean Drive, at Pacific Hwy Overbridge W	WB	1	60	Level	Medium	900	900	3797	3606	353	374	50.7	51.7	0.39	0.42	0.85	0.86	A	A	B	C
AS41NB	10	AS41	Nancy Bird Walton Dr btwn Herons Creek Rd and Ocean Dr	NB	1	80	Level	Low	1400	1400	5524	5013	474	584	70	71.2	0.34	0.42	0.88	0.89	A	A	B	C
AS41SB	10	AS41	Nancy Bird Walton Dr btwn Herons Creek Rd and Ocean Dr	SB	1	80	Level	Low	1400	1400	3521	3150	361	341	52.7	52.3	0.26	0.24	0.66	0.65	C	C	A	A
AS42NB	10	AS42	Nancy Bird Walton Dr btwn Bethesda Pl and Ocean Dr	NB	1	80	Level	Low	1400	1400	165	165	18	19	67.1	67.8	0.01	0.01	0.84	0.85	A	A	A	A
AS42SB	10	AS42	Nancy Bird Walton Dr btwn Bethesda Pl and Ocean Dr	SB	1	80	Level	Low	1400	1400	1634	1611	137	152	66.7	68.1	0.10	0.11	0.83	0.85	A	A	A	A
AS43EB	10	AS43	Kendall Rd btwn Homedale Rd and Nancy Bird Walton Dr	EB	1	50	Level	Low	900	900	102	99	8	11	45.1	52.7	0.01	0.01	0.90	1.05	A	A	A	A
AS43WB	10	AS43	Kendall Rd btwn Homedale Rd and Nancy Bird Walton Dr	WB	1	50	Level	Low	900	900	3182	2920	254	322	48.9	48.9	0.28	0.36	0.98	0.97	A	A	B	B
AS44EB	10	AS44	Kendall Rd btwn Dunwoodie St and Homedale Rd	EB	1	60	Level	Low	900	900	3198	2928	359	294	59.7	62.8	0.40	0.33	1.00	1.05	A	A	B	B
AS44WB	10	AS44	Kendall Rd btwn Dunwoodie St and Homedale Rd	WB	1	60	Level	Low	900	900	2698	2476	199	283	60.9	61.8	0.22	0.31	1.02	1.03	A	A	A	B
AS45EB	10	AS45	River St btwn Railway Line and Railway St	EB	1	60	Level	Low	900	900	2701	2474	319	235	40.7	39.6	0.35	0.26	0.68	0.66	B	C	B	B
AS45WB	10	AS45	River St btwn Railway Line and Railway St	WB	1	60	Level	Low	900	900	2516	2309	294	228	37.3	39.9	0.33	0.25	0.62	0.67	C	C	B	A
AS46EB	10	AS46	Graham St btwn Raymond St and Comboyne St	EB	1	60	Level	Low	900	900	2483	2280	178	259	51.2	50.9	0.20	0.29	0.85	0.85	A	A	A	B
AS46WB	10	AS46	Graham St btwn Raymond St and Comboyne St	WB	1	60	Level	Low	900	900	1039	953	165	122	51.1	52.6	0.18	0.14	0.85	0.88	A	A	A	A



Southbound (AM)	
No of Lanes	1
AADT	3848
AM Vol	445
AM V/C	0.32
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	4817
AM Vol	337
AM V/C	0.24
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	5355
AM Vol	363
AM V/C	0.26
Posted Speed	60

Northbound (AM)	
No of Lanes	1
AADT	3622
AM Vol	258
AM V/C	0.18
Posted Speed	80

Westbound (AM)	
No of Lanes	1
AADT	4491
AM Vol	645
AM V/C	0.46
Posted Speed	80

Westbound (AM)	
No of Lanes	1
AADT	5061
AM Vol	765
AM V/C	0.55
Posted Speed	60

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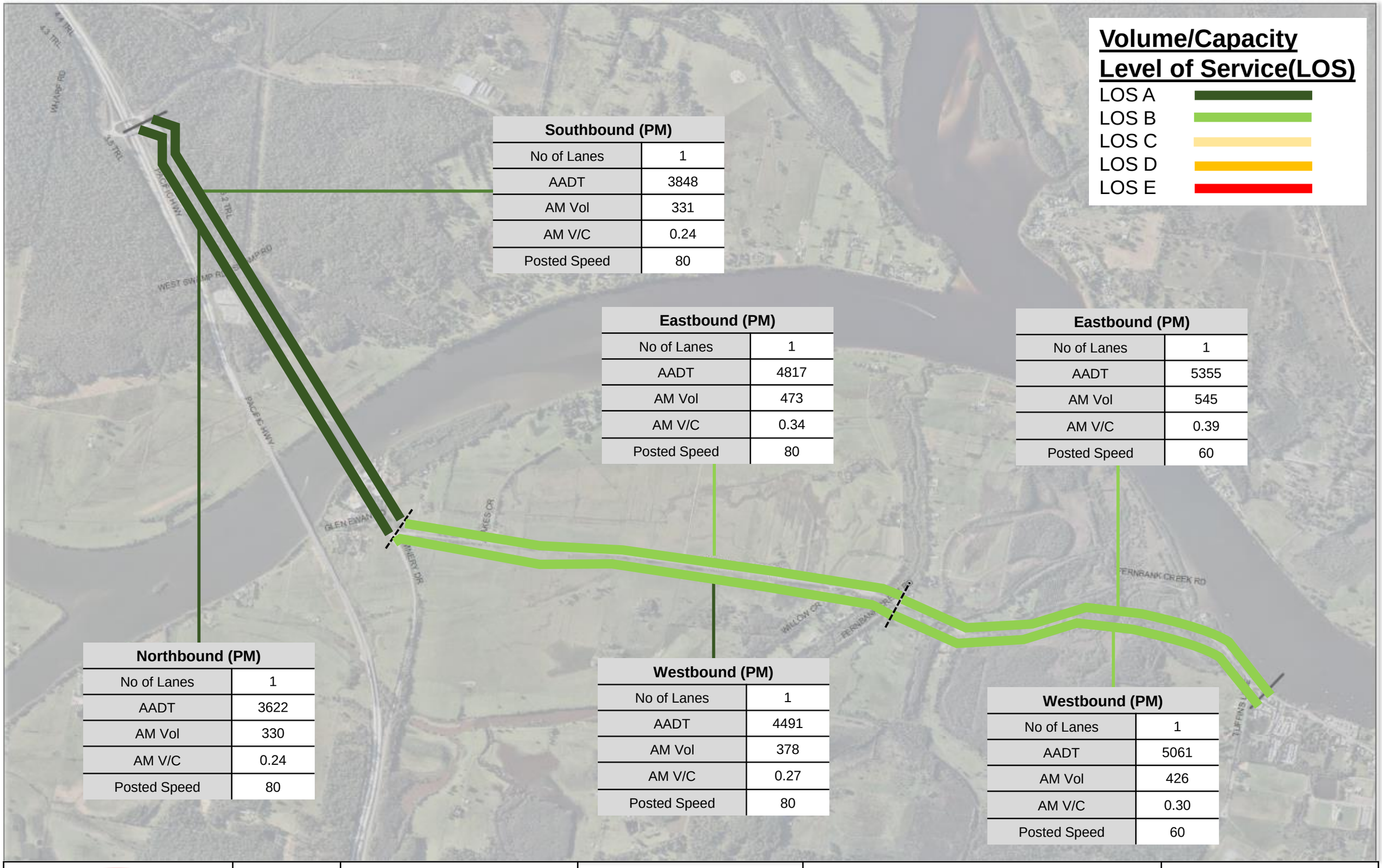
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0 500 1,000 Meters

Level of Service
2040 AM

Section 1
Chainage Start:0 End :6900
Description Start: Pacific Highway End Tuffins Lane

Project Number: P4665
Date: 11/03/21
Sheet: 1



Southbound (PM)	
No of Lanes	1
AADT	3848
AM Vol	331
AM V/C	0.24
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	4817
AM Vol	473
AM V/C	0.34
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	5355
AM Vol	545
AM V/C	0.39
Posted Speed	60

Northbound (PM)	
No of Lanes	1
AADT	3622
AM Vol	330
AM V/C	0.24
Posted Speed	80

Westbound (PM)	
No of Lanes	1
AADT	4491
AM Vol	378
AM V/C	0.27
Posted Speed	80

Westbound (PM)	
No of Lanes	1
AADT	5061
AM Vol	426
AM V/C	0.30
Posted Speed	60

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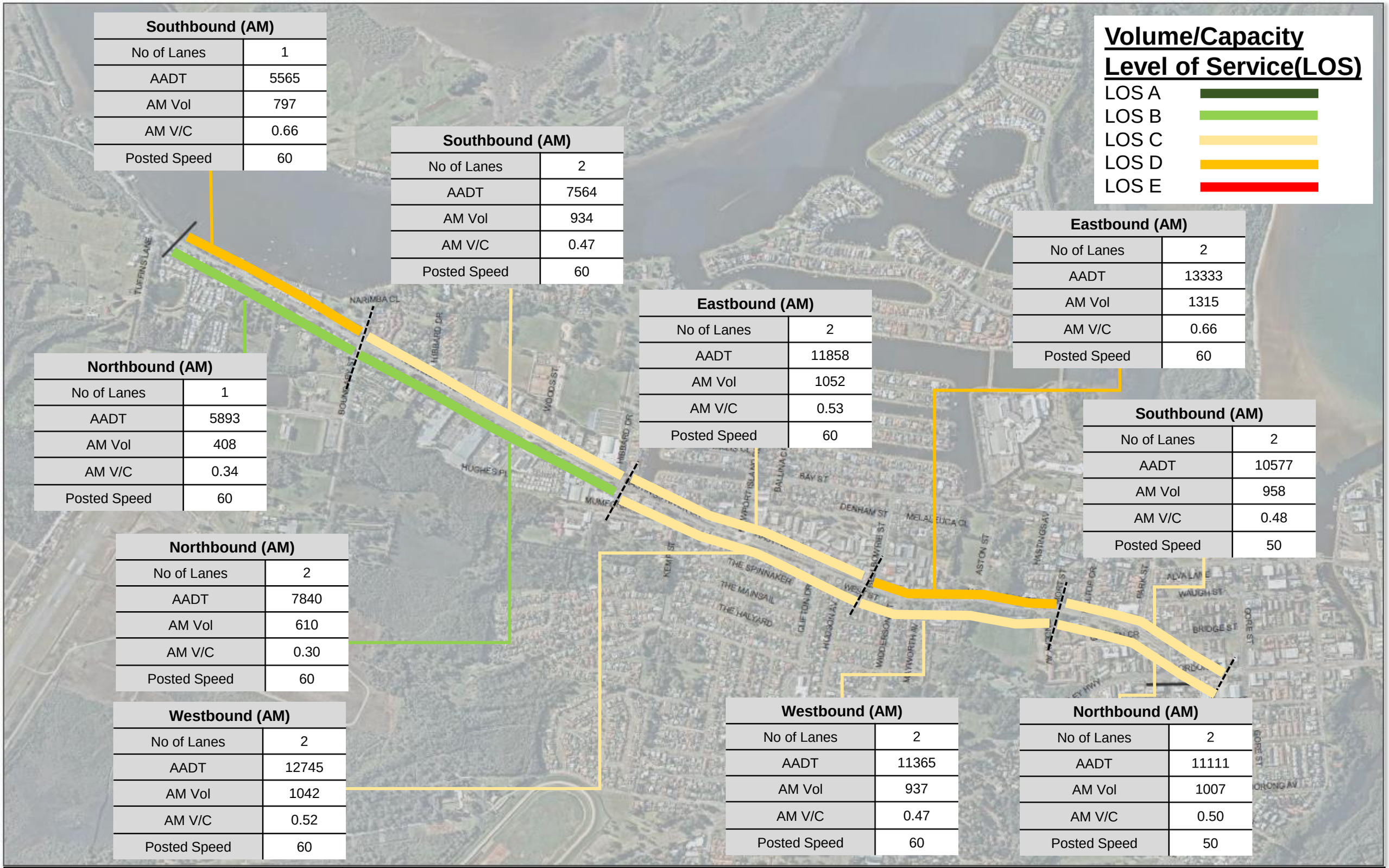
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0 500 1,000 Meters

Level of Service
2040 PM

Section 1
Chainage Start:0 End :6900
Description Start: Pacific Highway End Tuffins Lane

Project Number: P4665
Date: 11/03/21
Sheet: 2



Southbound (AM)	
No of Lanes	1
AADT	5565
AM Vol	797
AM V/C	0.66
Posted Speed	60

Southbound (AM)	
No of Lanes	2
AADT	7564
AM Vol	934
AM V/C	0.47
Posted Speed	60

Eastbound (AM)	
No of Lanes	2
AADT	11858
AM Vol	1052
AM V/C	0.53
Posted Speed	60

Eastbound (AM)	
No of Lanes	2
AADT	13333
AM Vol	1315
AM V/C	0.66
Posted Speed	60

Northbound (AM)	
No of Lanes	1
AADT	5893
AM Vol	408
AM V/C	0.34
Posted Speed	60

Southbound (AM)	
No of Lanes	2
AADT	10577
AM Vol	958
AM V/C	0.48
Posted Speed	50

Northbound (AM)	
No of Lanes	2
AADT	7840
AM Vol	610
AM V/C	0.30
Posted Speed	60

Westbound (AM)	
No of Lanes	2
AADT	12745
AM Vol	1042
AM V/C	0.52
Posted Speed	60

Westbound (AM)	
No of Lanes	2
AADT	11365
AM Vol	937
AM V/C	0.47
Posted Speed	60

Northbound (AM)	
No of Lanes	2
AADT	11111
AM Vol	1007
AM V/C	0.50
Posted Speed	50

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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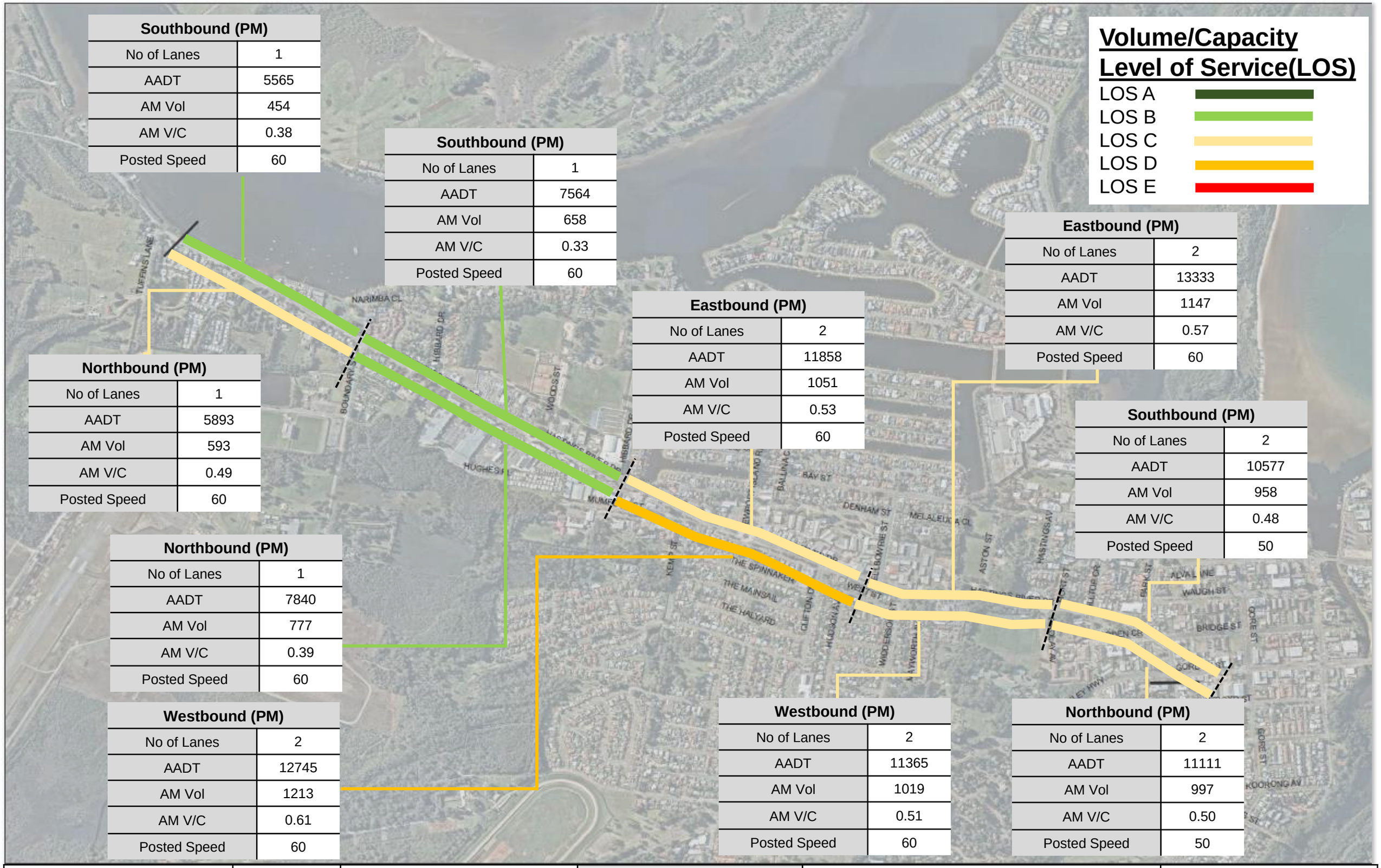
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0 330 660 Meters

Level of Service 2040 AM

Section 2
Chainage Start:7000 End :10500
Description Start: Tuffins Lane End Oxley Highway

Project Number: P4665
Date: 11/03/21
Sheet: 3



Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Southbound (PM)	
No of Lanes	1
AADT	5565
AM Vol	454
AM V/C	0.38
Posted Speed	60

Southbound (PM)	
No of Lanes	1
AADT	7564
AM Vol	658
AM V/C	0.33
Posted Speed	60

Eastbound (PM)	
No of Lanes	2
AADT	13333
AM Vol	1147
AM V/C	0.57
Posted Speed	60

Northbound (PM)	
No of Lanes	1
AADT	5893
AM Vol	593
AM V/C	0.49
Posted Speed	60

Eastbound (PM)	
No of Lanes	2
AADT	11858
AM Vol	1051
AM V/C	0.53
Posted Speed	60

Southbound (PM)	
No of Lanes	2
AADT	10577
AM Vol	958
AM V/C	0.48
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	7840
AM Vol	777
AM V/C	0.39
Posted Speed	60

Westbound (PM)	
No of Lanes	2
AADT	12745
AM Vol	1213
AM V/C	0.61
Posted Speed	60

Westbound (PM)	
No of Lanes	2
AADT	11365
AM Vol	1019
AM V/C	0.51
Posted Speed	60

Northbound (PM)	
No of Lanes	2
AADT	11111
AM Vol	997
AM V/C	0.50
Posted Speed	50

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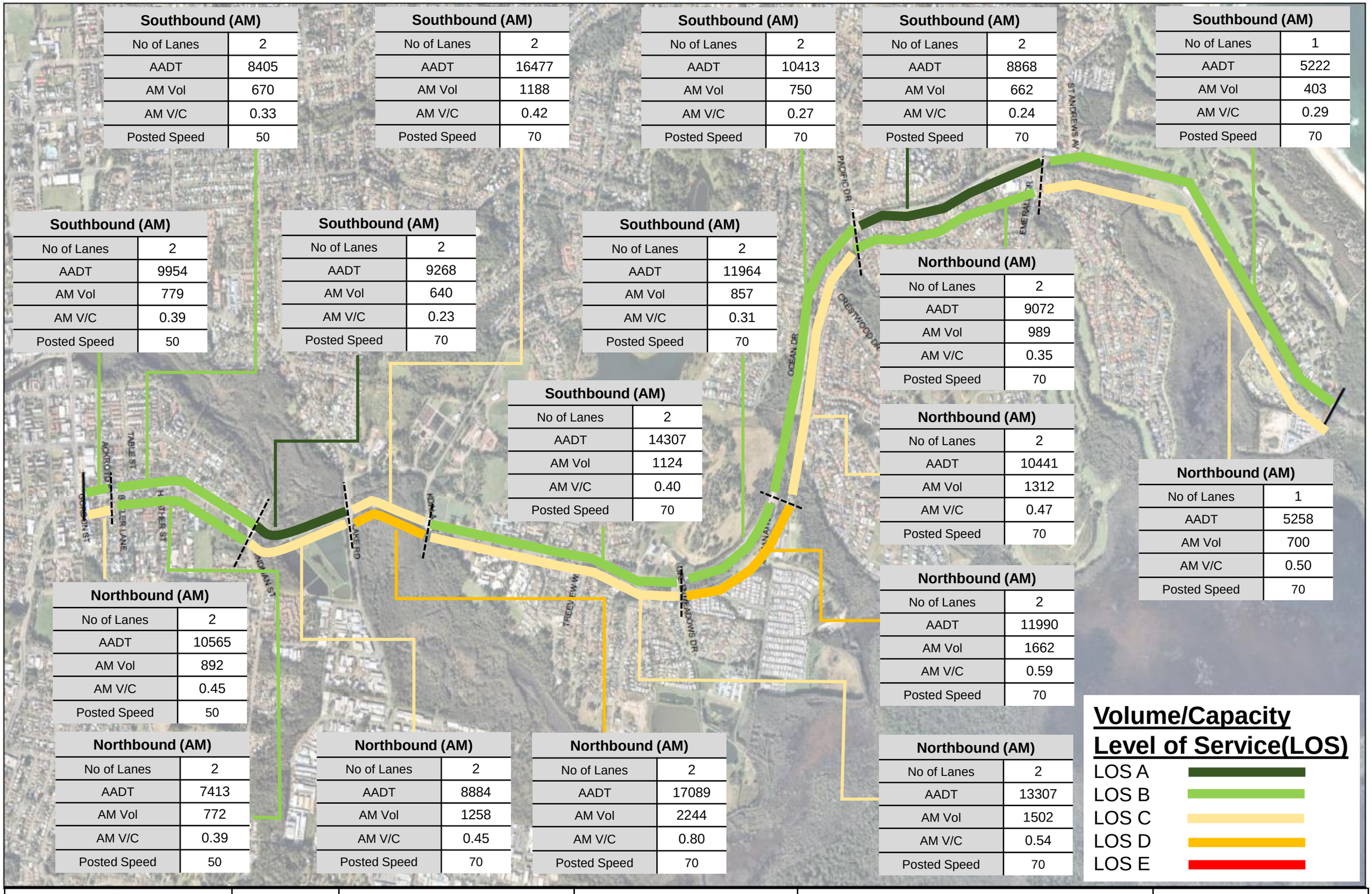
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0 330 660 Meters

Level of Service 2040 PM

Section 2
Chainage Start:7000 End :10500
Description Start: Tuffins Lane End Oxley Highway

Project Number:P4665
Date: 11/03/21
Sheet: 4



Southbound (AM)	
No of Lanes	2
AADT	8405
AM Vol	670
AM V/C	0.33
Posted Speed	50

Southbound (AM)	
No of Lanes	2
AADT	16477
AM Vol	1188
AM V/C	0.42
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	10413
AM Vol	750
AM V/C	0.27
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	8868
AM Vol	662
AM V/C	0.24
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5222
AM Vol	403
AM V/C	0.29
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	9954
AM Vol	779
AM V/C	0.39
Posted Speed	50

Southbound (AM)	
No of Lanes	2
AADT	9268
AM Vol	640
AM V/C	0.23
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	11964
AM Vol	857
AM V/C	0.31
Posted Speed	70

Southbound (AM)	
No of Lanes	2
AADT	14307
AM Vol	1124
AM V/C	0.40
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	9072
AM Vol	989
AM V/C	0.35
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	10441
AM Vol	1312
AM V/C	0.47
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	5258
AM Vol	700
AM V/C	0.50
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	10565
AM Vol	892
AM V/C	0.45
Posted Speed	50

Northbound (AM)	
No of Lanes	2
AADT	11990
AM Vol	1662
AM V/C	0.59
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	7413
AM Vol	772
AM V/C	0.39
Posted Speed	50

Northbound (AM)	
No of Lanes	2
AADT	8884
AM Vol	1258
AM V/C	0.45
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	17089
AM Vol	2244
AM V/C	0.80
Posted Speed	70

Northbound (AM)	
No of Lanes	2
AADT	13307
AM Vol	1502
AM V/C	0.54
Posted Speed	70

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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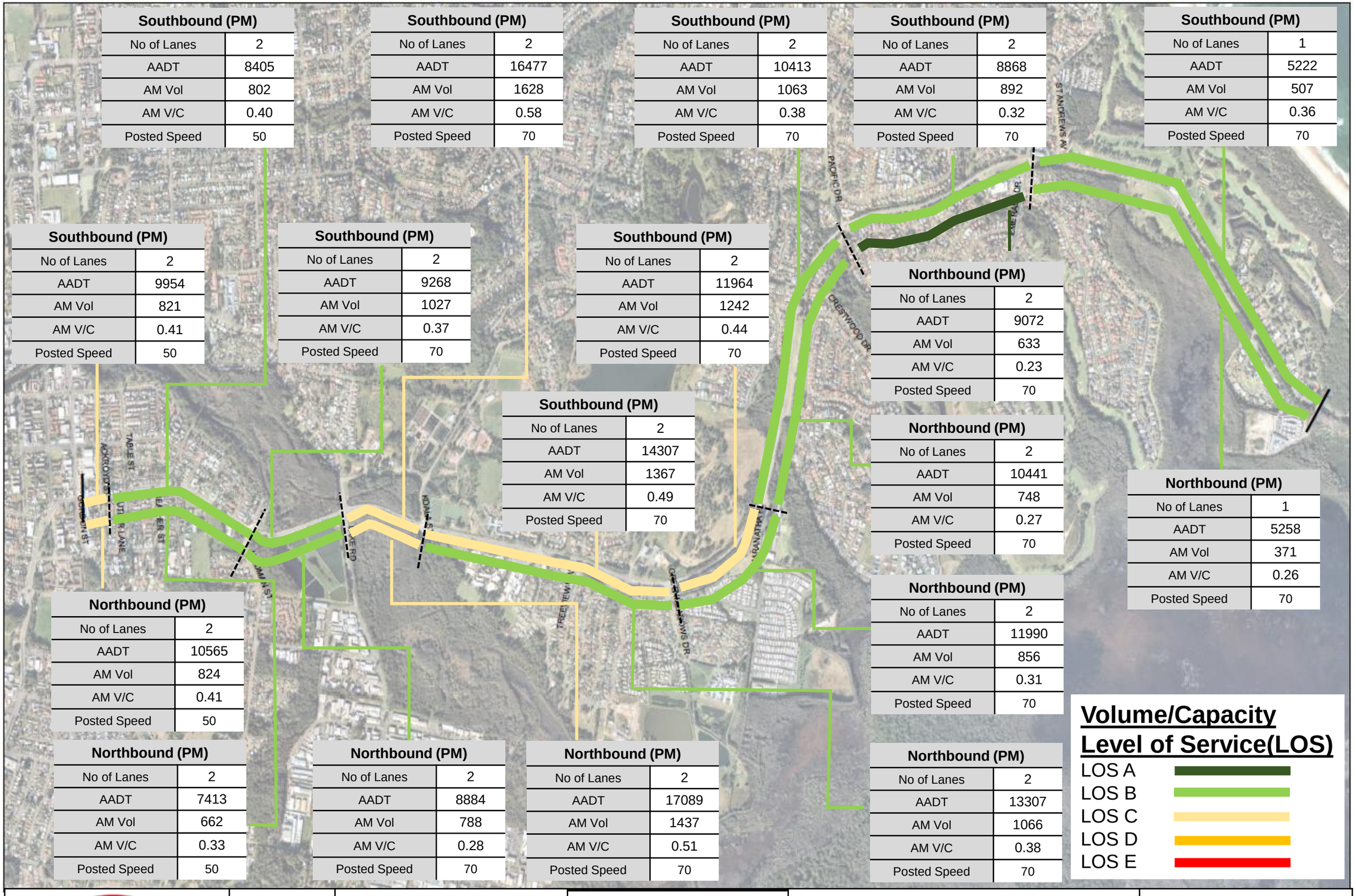
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0 460 920 Meters

Level of Service 2040 AM

Section 3
Chainage Start:11000 End :18000
Description Start: Oxley Highway End: Elkhorn Grove

Project Number: P4665
Date: 11/03/21
Sheet: 5



Southbound (PM)	
No of Lanes	2
AADT	8405
AM Vol	802
AM V/C	0.40
Posted Speed	50

Southbound (PM)	
No of Lanes	2
AADT	16477
AM Vol	1628
AM V/C	0.58
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	10413
AM Vol	1063
AM V/C	0.38
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	8868
AM Vol	892
AM V/C	0.32
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5222
AM Vol	507
AM V/C	0.36
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	9954
AM Vol	821
AM V/C	0.41
Posted Speed	50

Southbound (PM)	
No of Lanes	2
AADT	9268
AM Vol	1027
AM V/C	0.37
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	11964
AM Vol	1242
AM V/C	0.44
Posted Speed	70

Southbound (PM)	
No of Lanes	2
AADT	14307
AM Vol	1367
AM V/C	0.49
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	9072
AM Vol	633
AM V/C	0.23
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	10441
AM Vol	748
AM V/C	0.27
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	5258
AM Vol	371
AM V/C	0.26
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	10565
AM Vol	824
AM V/C	0.41
Posted Speed	50

Northbound (PM)	
No of Lanes	2
AADT	11990
AM Vol	856
AM V/C	0.31
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	7413
AM Vol	662
AM V/C	0.33
Posted Speed	50

Northbound (PM)	
No of Lanes	2
AADT	8884
AM Vol	788
AM V/C	0.28
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	17089
AM Vol	1437
AM V/C	0.51
Posted Speed	70

Northbound (PM)	
No of Lanes	2
AADT	13307
AM Vol	1066
AM V/C	0.38
Posted Speed	70

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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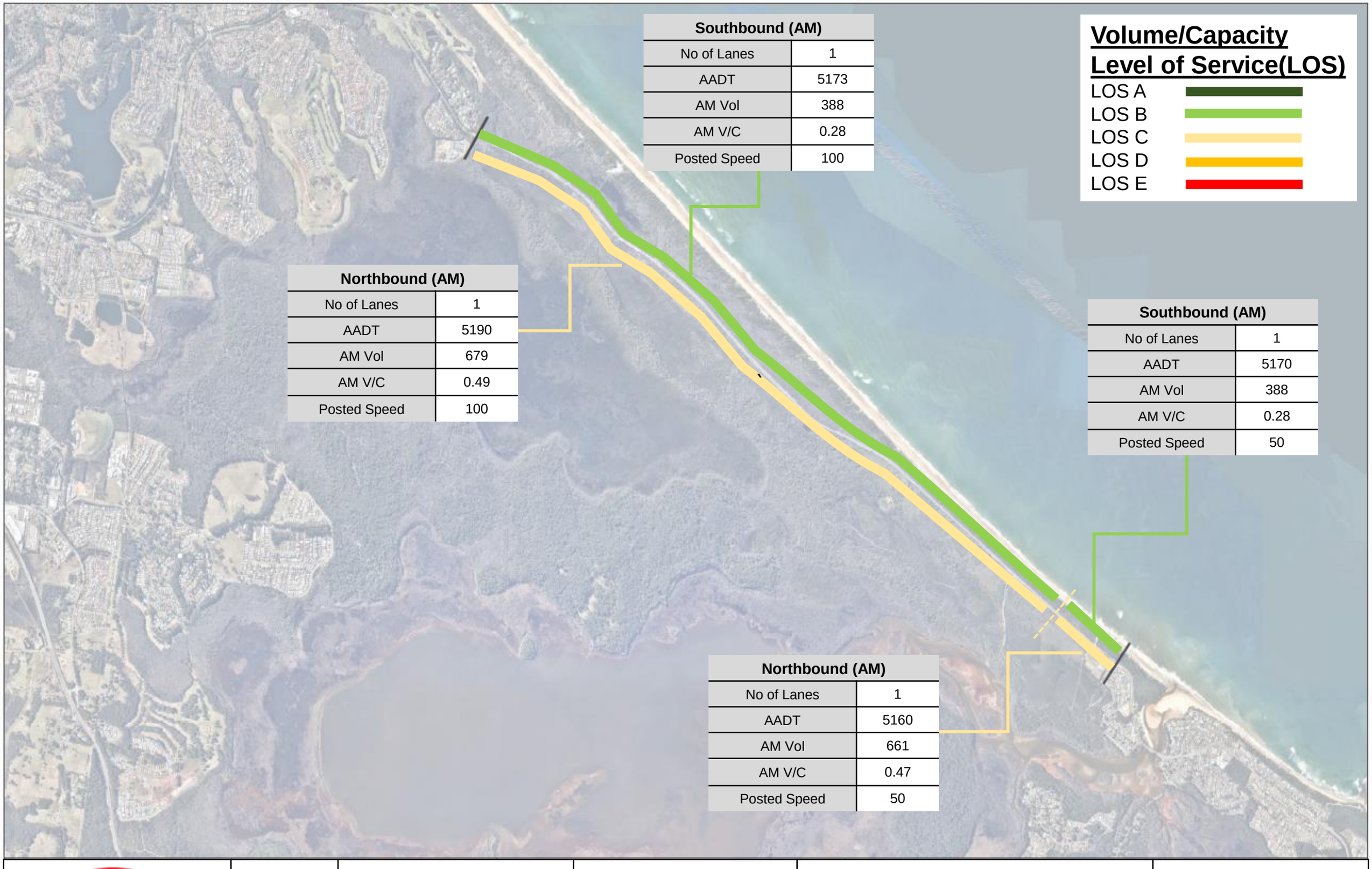
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0 460 920 Meters

Level of Service 2040 PM

Section 3
Chainage Start:11000 End :18000
Description Start: Oxley Highway End: Elkhorn Grove

Project Number: P4665
Date: 11/03/21
Sheet: 5



Southbound (AM)	
No of Lanes	1
AADT	5173
AM Vol	388
AM V/C	0.28
Posted Speed	100

Northbound (AM)	
No of Lanes	1
AADT	5190
AM Vol	679
AM V/C	0.49
Posted Speed	100

Southbound (AM)	
No of Lanes	1
AADT	5170
AM Vol	388
AM V/C	0.28
Posted Speed	50

Northbound (AM)	
No of Lanes	1
AADT	5160
AM Vol	661
AM V/C	0.47
Posted Speed	50

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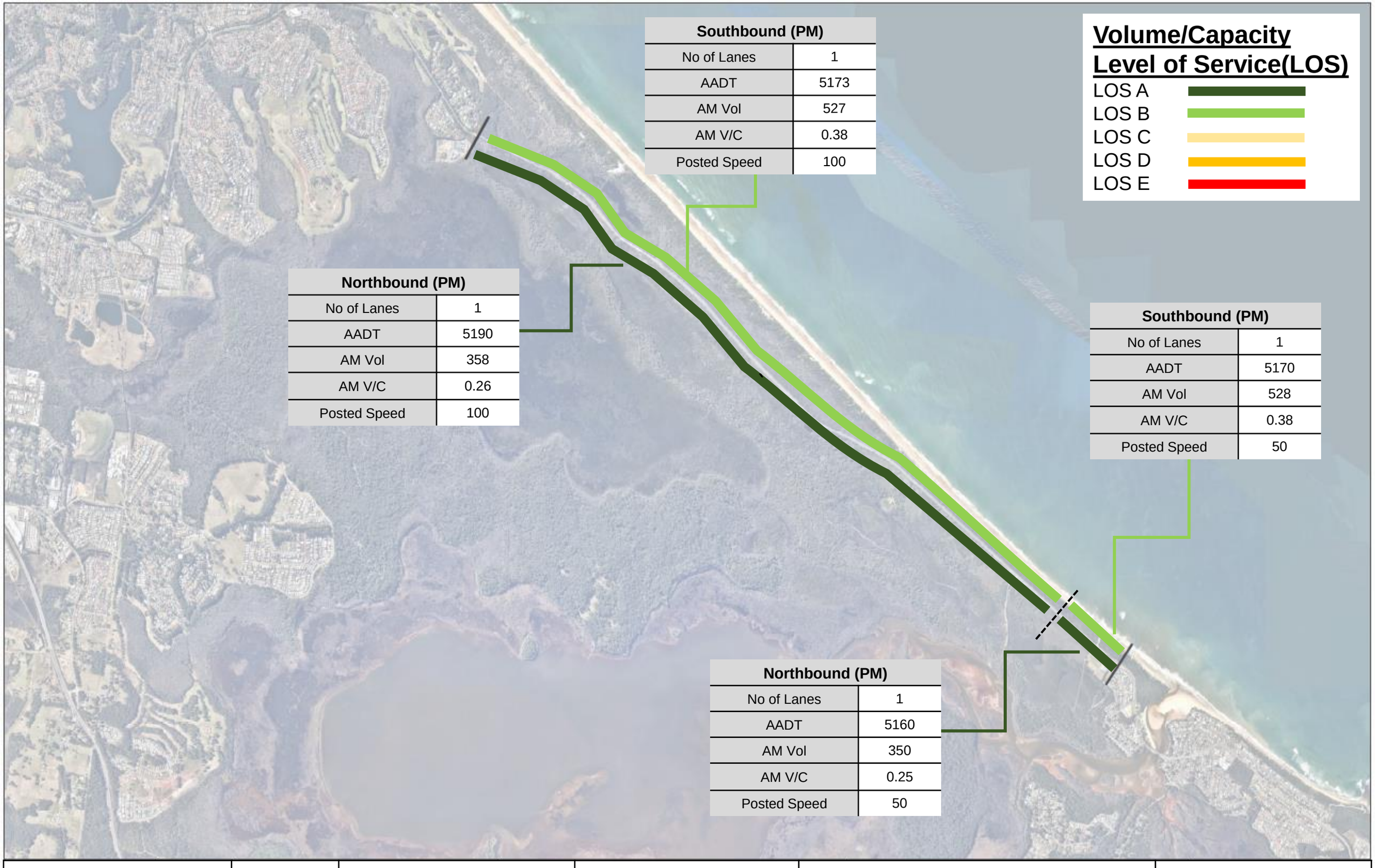
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0 800 1,600 Meters

Level of Service
2040 AM

Section 4
Chainage Start:18500 End :24500
Description Start: Elkhorn Grove End: Dirah Street

Project Number:P4665
Date: 11/03/21
Sheet: 7



Southbound (PM)	
No of Lanes	1
AADT	5173
AM Vol	527
AM V/C	0.38
Posted Speed	100

Northbound (PM)	
No of Lanes	1
AADT	5190
AM Vol	358
AM V/C	0.26
Posted Speed	100

Southbound (PM)	
No of Lanes	1
AADT	5170
AM Vol	528
AM V/C	0.38
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	5160
AM Vol	350
AM V/C	0.25
Posted Speed	50

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0 800 1,600 Meters

Level of Service
2040 PM

Section 4
Chainage Start:18500 End :24500
Description Start: Elkhorn Grove End: Dirah Street

Project Number:P4665
Date: 11/03/21
Sheet: 8

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Northbound (AM)	
No of Lanes	1
AADT	5612
AM Vol	687
AM V/C	0.76
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	5564
AM Vol	607
AM V/C	0.67
Posted Speed	50

Northbound (AM)	
No of Lanes	1
AADT	5329
AM Vol	566
AM V/C	0.47
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	5476
AM Vol	581
AM V/C	0.42
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	5176
AM Vol	627
AM V/C	0.45
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5591
AM Vol	415
AM V/C	0.46
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	5451
AM Vol	422
AM V/C	0.47
Posted Speed	50

Southbound (AM)	
No of Lanes	1
AADT	5302
AM Vol	410
AM V/C	0.34
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5463
AM Vol	491
AM V/C	0.35
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5206
AM Vol	397
AM V/C	0.28
Posted Speed	70

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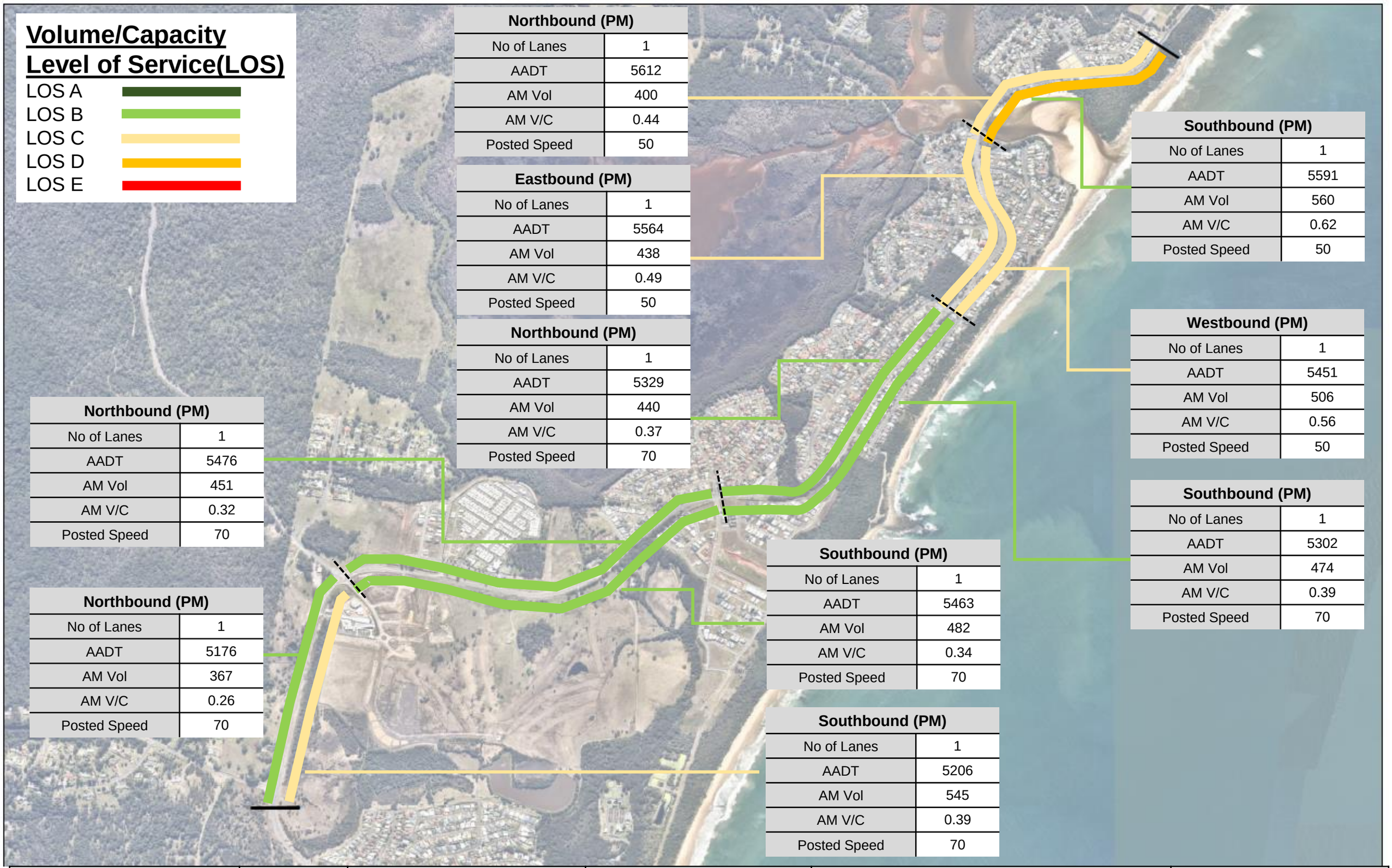
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0 425 850 Meters

Level of Service 2040 AM

Section 5
Chainage Start:25000 End :30500
Description Start: Dirah Street End: Bonny View Drive

Project Number: P4665
Date: 11/03/21
Sheet: 10



Northbound (PM)	
No of Lanes	1
AADT	5612
AM Vol	400
AM V/C	0.44
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	5564
AM Vol	438
AM V/C	0.49
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	5329
AM Vol	440
AM V/C	0.37
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5591
AM Vol	560
AM V/C	0.62
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	5451
AM Vol	506
AM V/C	0.56
Posted Speed	50

Southbound (PM)	
No of Lanes	1
AADT	5302
AM Vol	474
AM V/C	0.39
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	5476
AM Vol	451
AM V/C	0.32
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	5176
AM Vol	367
AM V/C	0.26
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5463
AM Vol	482
AM V/C	0.34
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5206
AM Vol	545
AM V/C	0.39
Posted Speed	70

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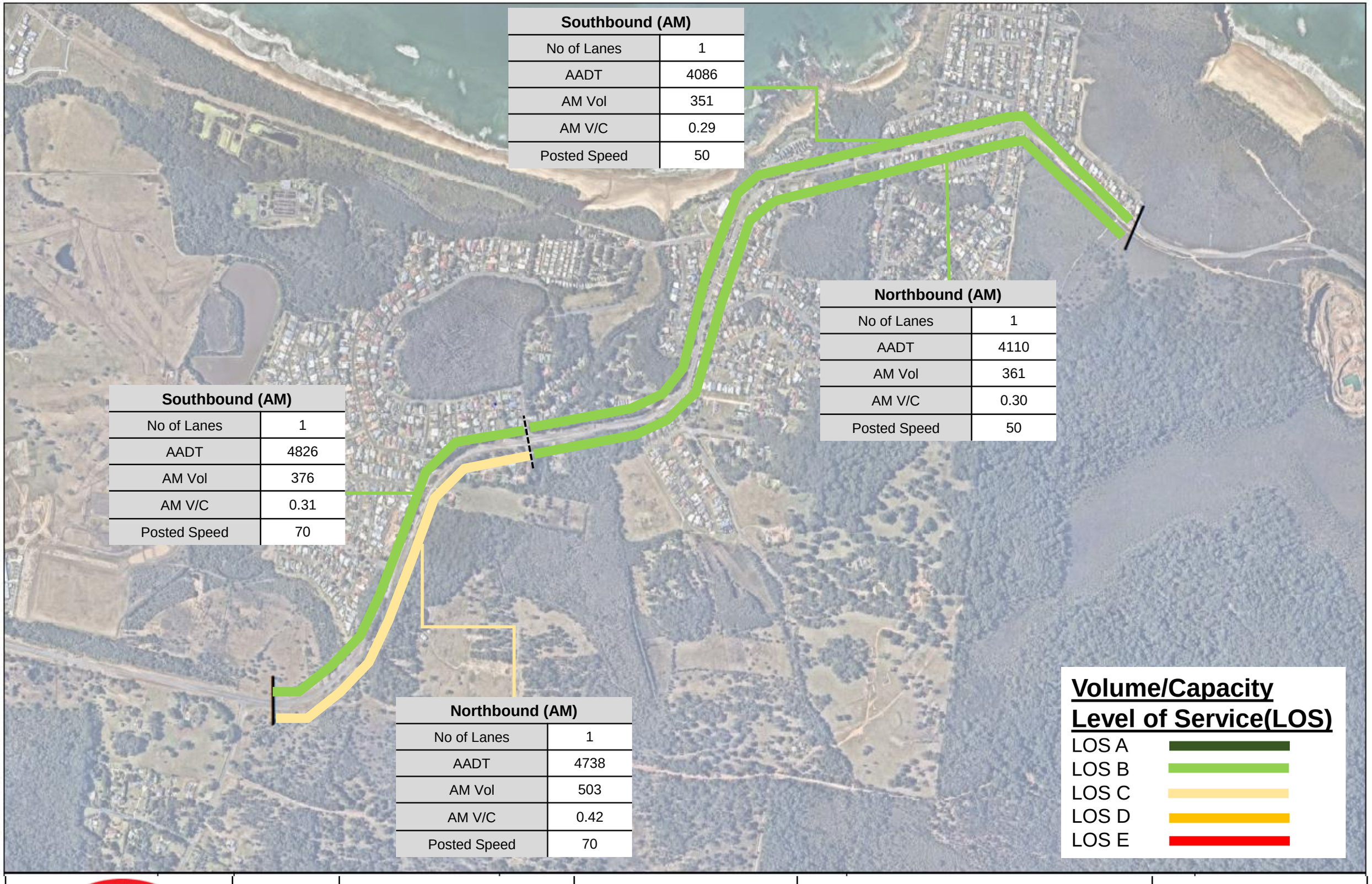
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0 425 850 Meters

Level of Service
2040 PM

Section 5
Chainage Start:25000 End :30500
Description Start: Dirah Street End: Bonny View Drive

Project Number:P4665
Date: 11/03/21
Sheet: 10



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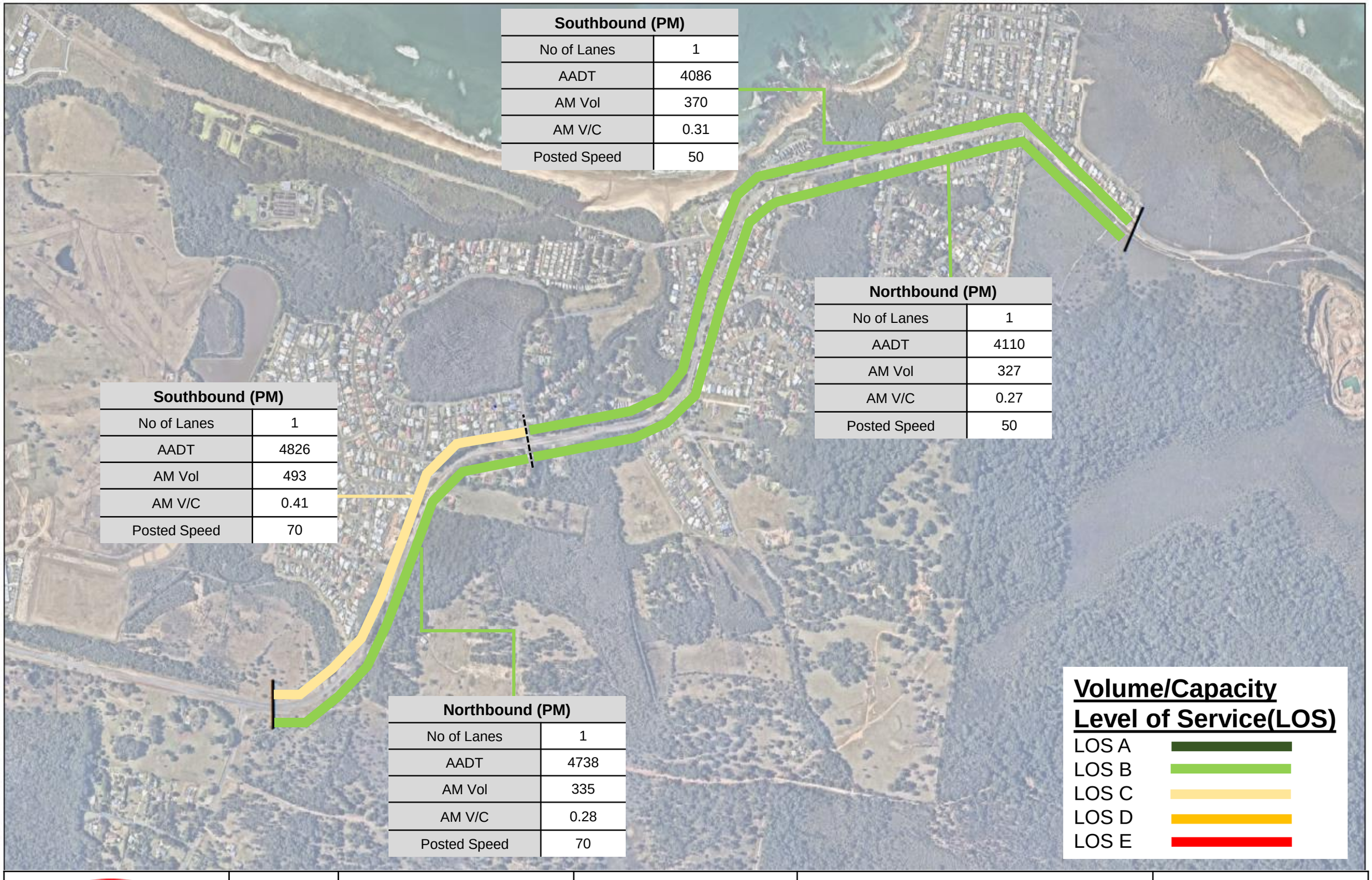
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0 295 590 Meters

Level of Service
2040 AM

Section 6
Chainage Start:31000 End : 34000
Description Start: Bonny View Drive End: 800 Ocean Drive

Project Number:P4665
Date: 11/03/21
Sheet: 11



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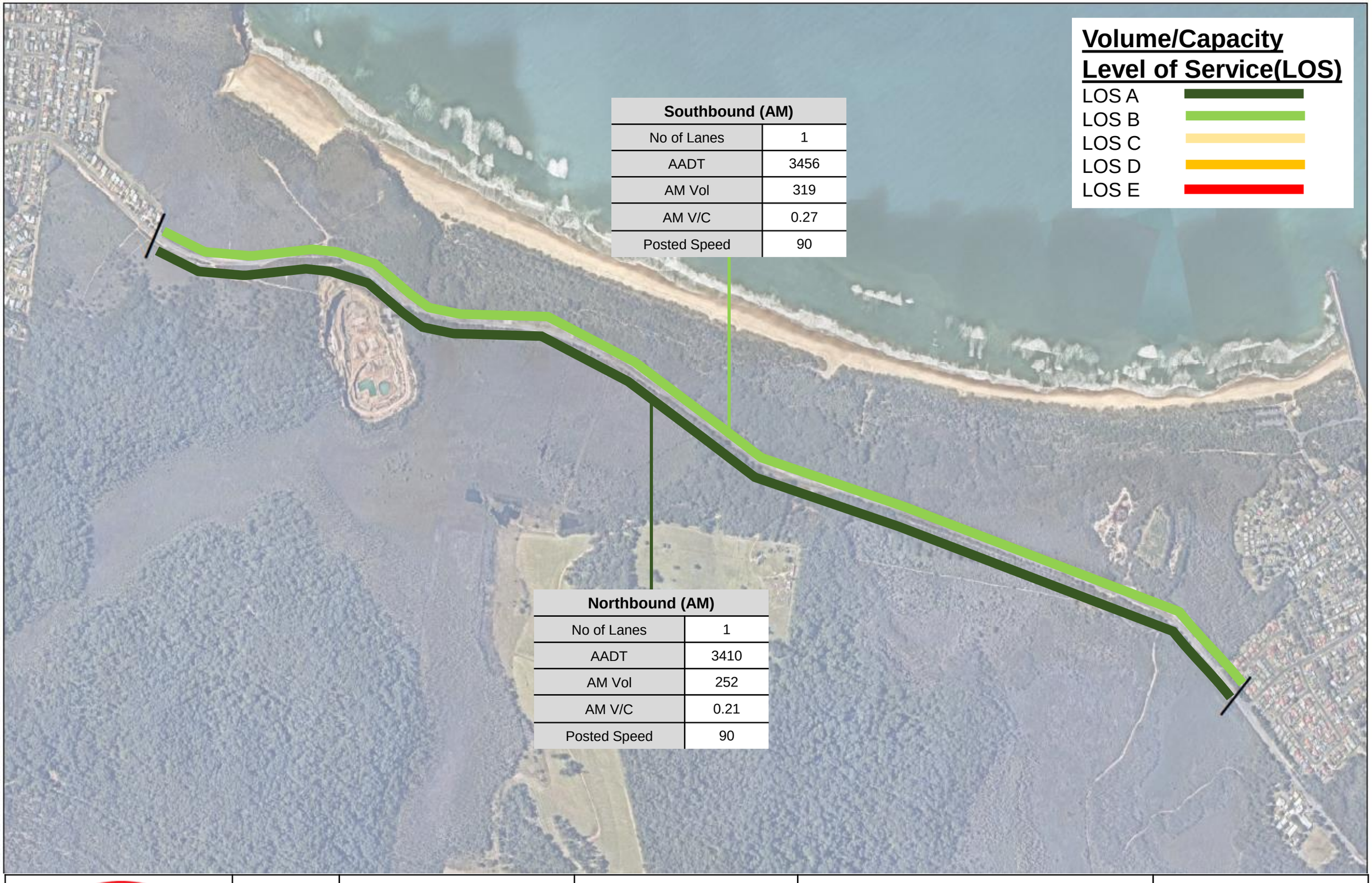
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0 295 590 Meters

Level of Service
2040 PM

Section 6
Chainage Start:31000 End : 34000
Description Start: Bonny View Drive End: 800 Ocean Drive

Project Number:P4665
Date: 11/03/21
Sheet: 12



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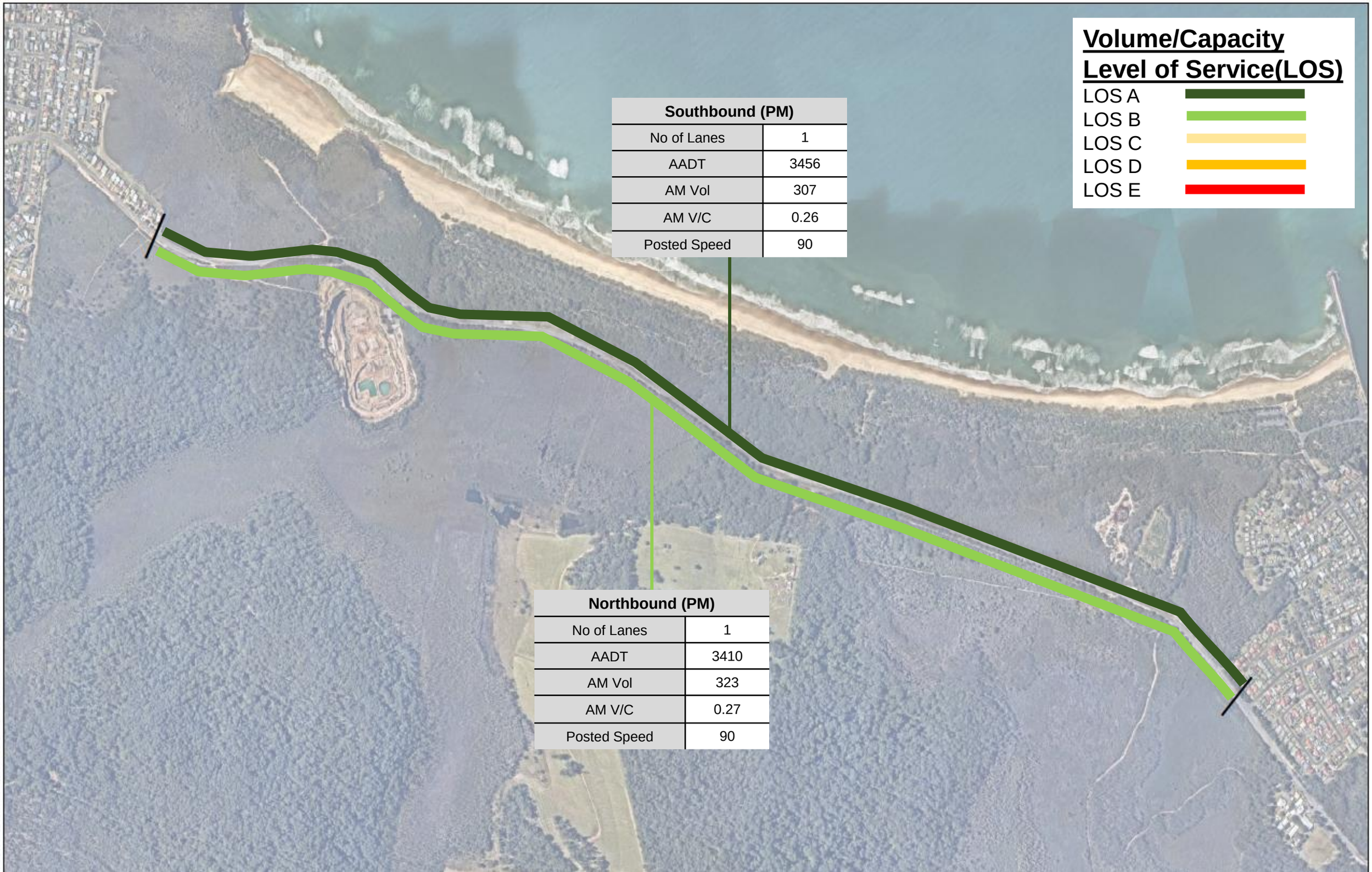
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0 295 590 Meters

Level of Service
2040 AM

Section 7
Chainage Start:34500 End : 37500
Description Start: 800 Ocean Drive End: North Haven

Project Number:P4665
Date: 11/03/21
Sheet: 13



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0 295 590 Meters

Level of Service
2040 PM

Section 7
Chainage Start:34500 End : 37500
Description Start: 800 Ocean Drive End: North Haven

Project Number:P4665
Date: 11/03/21
Sheet: 14

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Northbound (AM)	
No of Lanes	1
AADT	4872
AM Vol	388
AM V/C	0.43
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	5272
AM Vol	422
AM V/C	0.47
Posted Speed	50

Northbound (AM)	
No of Lanes	1
AADT	3107
AM Vol	267
AM V/C	0.30
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	2968
AM Vol	223
AM V/C	0.25
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	4689
AM Vol	367
AM V/C	0.41
Posted Speed	50

Southbound (AM)	
No of Lanes	1
AADT	3129
AM Vol	275
AM V/C	0.31
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	5294
AM Vol	452
AM V/C	0.50
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	3238
AM Vol	304
AM V/C	0.34
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	4903
AM Vol	421
AM V/C	0.47
Posted Speed	50

Southbound (AM)	
No of Lanes	1
AADT	4860
AM Vol	422
AM V/C	0.47
Posted Speed	50

CAMDEN HAVEN INLE

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0 295 590 Meters

Level of Service 2040 AM

Section 8
Chainage Start: 38000 End : 41000
Description Start: Edith Street End: Kew Road / Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 15

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Northbound (PM)	
No of Lanes	1
AADT	4872
AM Vol	461
AM V/C	0.51
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	5272
AM Vol	505
AM V/C	0.56
Posted Speed	50

Northbound (PM)	
No of Lanes	1
AADT	3107
AM Vol	307
AM V/C	0.34
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	2968
AM Vol	277
AM V/C	0.31
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	4689
AM Vol	449
AM V/C	0.50
Posted Speed	50

Southbound (PM)	
No of Lanes	1
AADT	3129
AM Vol	267
AM V/C	0.30
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	5294
AM Vol	447
AM V/C	0.50
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	3238
AM Vol	301
AM V/C	0.33
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	4903
AM Vol	424
AM V/C	0.47
Posted Speed	80

Southbound (PM)	
No of Lanes	1
AADT	4860
AM Vol	412
AM V/C	0.46
Posted Speed	50

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0 295 590 Meters

Level of Service 2040 PM

Section 8
Chainage Start: 38000 End : 41000
Description Start: Edith Street End: Kew Road / Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 16

Volume/Capacity Level of Service(LOS)

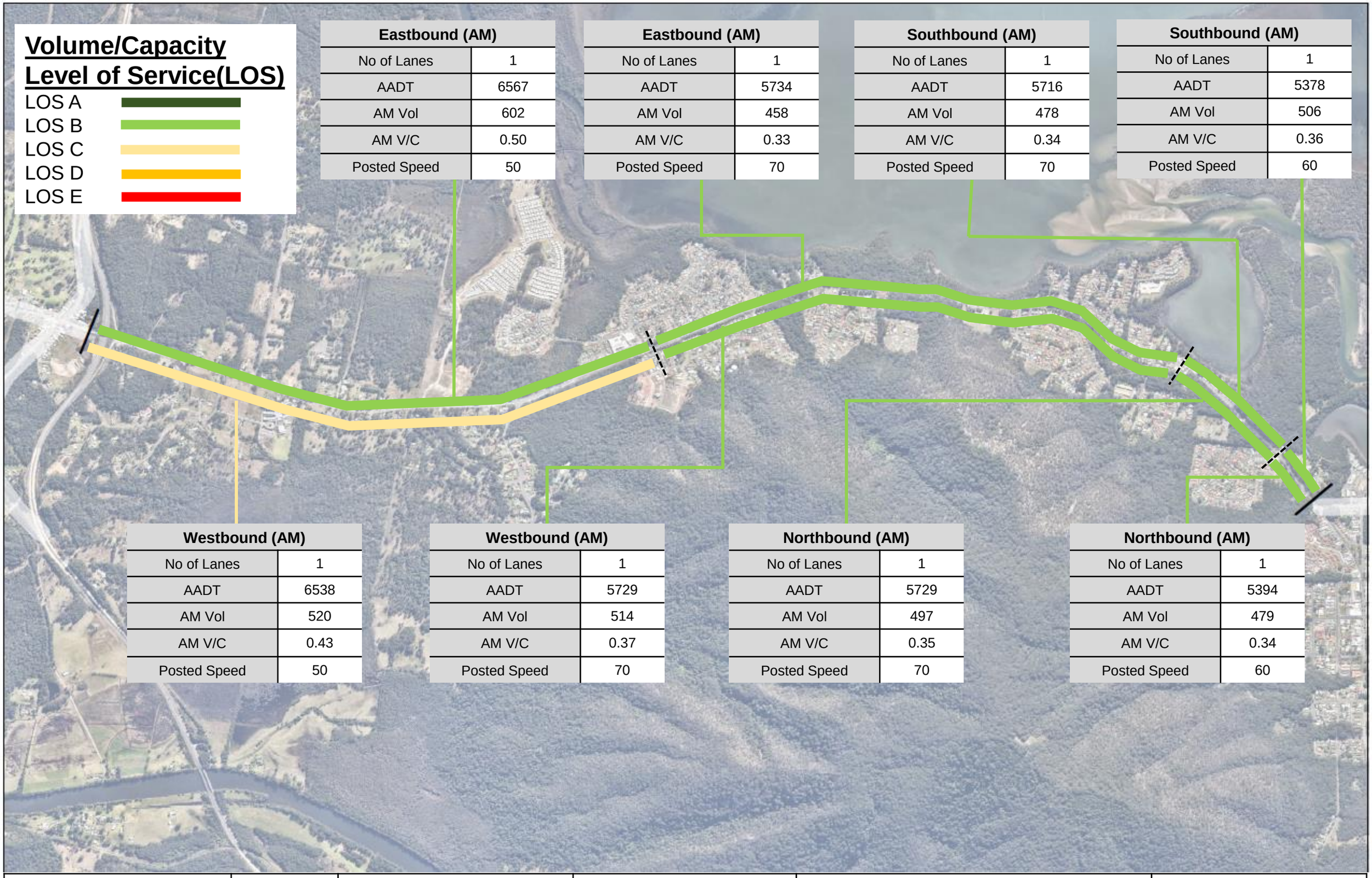
- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Eastbound (AM)	
No of Lanes	1
AADT	6567
AM Vol	602
AM V/C	0.50
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	5734
AM Vol	458
AM V/C	0.33
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5716
AM Vol	478
AM V/C	0.34
Posted Speed	70

Southbound (AM)	
No of Lanes	1
AADT	5378
AM Vol	506
AM V/C	0.36
Posted Speed	60



Westbound (AM)	
No of Lanes	1
AADT	6538
AM Vol	520
AM V/C	0.43
Posted Speed	50

Westbound (AM)	
No of Lanes	1
AADT	5729
AM Vol	514
AM V/C	0.37
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	5729
AM Vol	497
AM V/C	0.35
Posted Speed	70

Northbound (AM)	
No of Lanes	1
AADT	5394
AM Vol	479
AM V/C	0.34
Posted Speed	60

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0 550 1,100 Meters

Level of Service 2040 AM

Section 9
Chainage Start: 41500 End : 48500
Description Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 17

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

Eastbound (PM)	
No of Lanes	1
AADT	6567
AM Vol	625
AM V/C	0.52
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	5734
AM Vol	525
AM V/C	0.37
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5716
AM Vol	550
AM V/C	0.39
Posted Speed	70

Southbound (PM)	
No of Lanes	1
AADT	5378
AM Vol	540
AM V/C	0.39
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	6538
AM Vol	575
AM V/C	0.48
Posted Speed	50

Westbound (PM)	
No of Lanes	1
AADT	5729
AM Vol	526
AM V/C	0.38
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	5729
AM Vol	516
AM V/C	0.37
Posted Speed	70

Northbound (PM)	
No of Lanes	1
AADT	5394
AM Vol	559
AM V/C	0.40
Posted Speed	60

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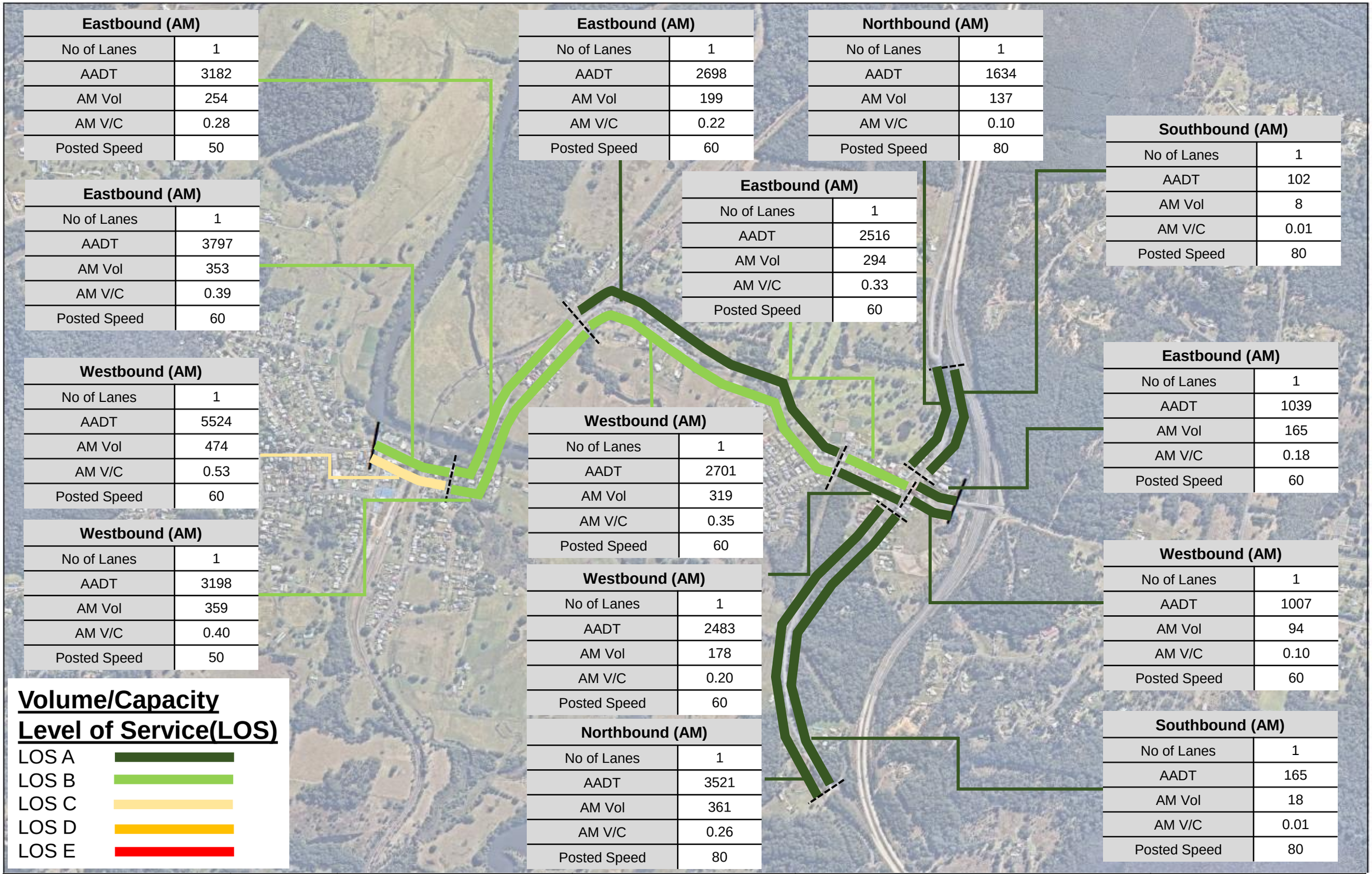
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0 550 1,100 Meters

Level of Service 2040 PM

Section 9
Chainage Start: 41500 End : 48500
Description Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number: P4665
Date: 11/03/21
Sheet: 18



Eastbound (AM)	
No of Lanes	1
AADT	3182
AM Vol	254
AM V/C	0.28
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	3797
AM Vol	353
AM V/C	0.39
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	5524
AM Vol	474
AM V/C	0.53
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	3198
AM Vol	359
AM V/C	0.40
Posted Speed	50

Eastbound (AM)	
No of Lanes	1
AADT	2698
AM Vol	199
AM V/C	0.22
Posted Speed	60

Northbound (AM)	
No of Lanes	1
AADT	1634
AM Vol	137
AM V/C	0.10
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	2516
AM Vol	294
AM V/C	0.33
Posted Speed	60

Southbound (AM)	
No of Lanes	1
AADT	102
AM Vol	8
AM V/C	0.01
Posted Speed	80

Westbound (AM)	
No of Lanes	1
AADT	2701
AM Vol	319
AM V/C	0.35
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	2483
AM Vol	178
AM V/C	0.20
Posted Speed	60

Northbound (AM)	
No of Lanes	1
AADT	3521
AM Vol	361
AM V/C	0.26
Posted Speed	80

Eastbound (AM)	
No of Lanes	1
AADT	1039
AM Vol	165
AM V/C	0.18
Posted Speed	60

Westbound (AM)	
No of Lanes	1
AADT	1007
AM Vol	94
AM V/C	0.10
Posted Speed	60

Southbound (AM)	
No of Lanes	1
AADT	165
AM Vol	18
AM V/C	0.01
Posted Speed	80

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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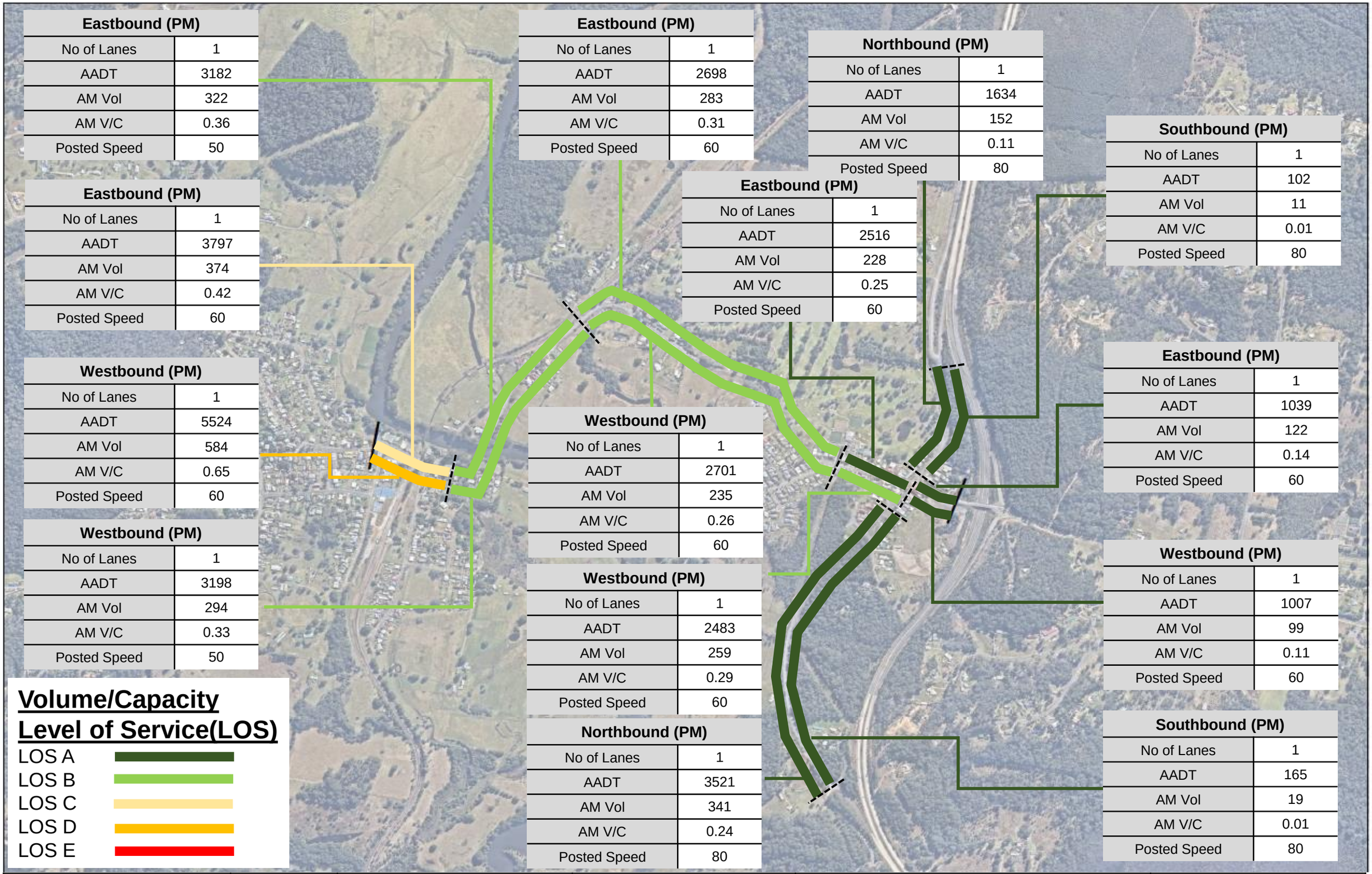
N

0 337.5 675 Meters

Level of Service 2040 AM

Section 10
Chainage Start: 41500 End : 48500
Description Start: Ocean Drive End: Comboyne Street

Project Number: P4665
Date: 11/03/21
Sheet: 19



Eastbound (PM)	
No of Lanes	1
AADT	3182
AM Vol	322
AM V/C	0.36
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	3797
AM Vol	374
AM V/C	0.42
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	5524
AM Vol	584
AM V/C	0.65
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	3198
AM Vol	294
AM V/C	0.33
Posted Speed	50

Eastbound (PM)	
No of Lanes	1
AADT	2698
AM Vol	283
AM V/C	0.31
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	2701
AM Vol	235
AM V/C	0.26
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	2483
AM Vol	259
AM V/C	0.29
Posted Speed	60

Northbound (PM)	
No of Lanes	1
AADT	3521
AM Vol	341
AM V/C	0.24
Posted Speed	80

Northbound (PM)	
No of Lanes	1
AADT	1634
AM Vol	152
AM V/C	0.11
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	2516
AM Vol	228
AM V/C	0.25
Posted Speed	60

Southbound (PM)	
No of Lanes	1
AADT	102
AM Vol	11
AM V/C	0.01
Posted Speed	80

Eastbound (PM)	
No of Lanes	1
AADT	1039
AM Vol	122
AM V/C	0.14
Posted Speed	60

Westbound (PM)	
No of Lanes	1
AADT	1007
AM Vol	99
AM V/C	0.11
Posted Speed	60

Southbound (PM)	
No of Lanes	1
AADT	165
AM Vol	19
AM V/C	0.01
Posted Speed	80

Volume/Capacity Level of Service(LOS)

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E

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N

0 337.5 675 Meters

Level of Service 2040 AM

Section 10
Chainage Start: 41500 End : 48500
Description Start: Ocean Drive End: Comboyne Street

Project Number: P4665
Date: 11/03/21
Sheet: 20

Appendix H: Walking Cycling and Public Transport Infrastructure Maps



BITZIOS consulting

N

0 500 1,000 Meters

Title:

Section: 1

Chainage Start: 0 End: 6900

Description Start: Pacific Highway End: Tuffins Lane

Location Start: Pacific Highway Interchange End: Tuffins Lane

Project Number:	P4665
Date:	09/04/2021
Sheet:	1



BITZIOS consulting

N

0 330 660 Meters

Title:

Section: 2

Chainage Start: 7000 End: 10500

Description Start: Hastings River Drive End: Hastings River Drive

Location Start: Tuffins Lane End: Oxley Highway

Project Number:	P4665
Date:	09/04/2021
Sheet:	2



BITZIOS consulting

N

0 460 920 Meters

Title:
Section: 3
Chainage Start: 11000 End: 18000
Description Start: Port Macquarie End: Port Macquarie
Location Start: Oxley Highway End: Elkhorn Grove

Project Number:	P4665
Date:	12/04/2021
Sheet:	3



Legend

Missing Crossing
- High
- Medium
- Low

Missing Bus Stop
- High
- Medium

Missing Footpath
- High
- Medium
- Low

BITZIOS consulting

N

0 800 1,600 Meters

Title:
Section: 4
Chainage Start: 18500 End: 24500
Description Start: Port Macquarie End: Lake Cathie
Location Start: Elkhorn Grove End: Dirah Street

Project Number:	P4665
Date:	12/04/2021
Sheet:	4



BITZIOS consulting

N

0 435 870 Meters

Title:

Section: 5

Chainage Start: 25000 End: 30500

Description Start: Lake Cathie End: Lake Cathie

Location Start: Dirah Street End: Bonny View Drive

Project Number:	P4665
Date:	19/04/2021
Sheet:	5



BITZIOS consulting

N

0 245 490 Meters

Title:
Section: 6
Chainage Start: 3100 End:3400
Description Start: Bonny Hills End: Bonny Hills
Location Start: Bonny View Drive End: 800 Ocean Drive

Project Number:	P4665
Date:	09/04/2021
Sheet:	6



BITZIOS consulting

N

0 295 590 Meters

Title:
Section: 7
Chainage Start: 34500 End: 37500
Description Start: Bonny Hills End: North Haven
Location Start: 800 Ocean Drive End: North Haven

Project Number:	P4665
Date:	09/04/2021
Sheet:	7



BITZIOS consulting

N

0 280 560 Meters

Title:

Section: 8

Chainage Start: 38000 End: 41000

Description Start: North Haven End: Laurieton

Location Start: Edith Street End: Kew Road / Ocean Drive

Project Number:	P4665
Date:	09/04/2021
Sheet:	8



Legend

Missing Crossing
- High
- Medium
- Low

Missing Bus Stop
- High
- Medium

Missing Footpath
- High
- Medium
- Low

BITZIOS consulting

N

0 550 1,100 Meters

Title:

Section: 9
Chainage Start: 41500 End: 48500
Description Start: Laurieton End: Kew
Location Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number:	P4665
Date:	12/04/2021
Sheet:	9



Legend

Missing Crossing

- High
- Medium
- Low

Missing Bus Stop

- High
- Medium

Missing Footpath

- High
- Medium
- Low

BITZIOS consulting

N

0 225 450 Meters

Title:

Section: 10

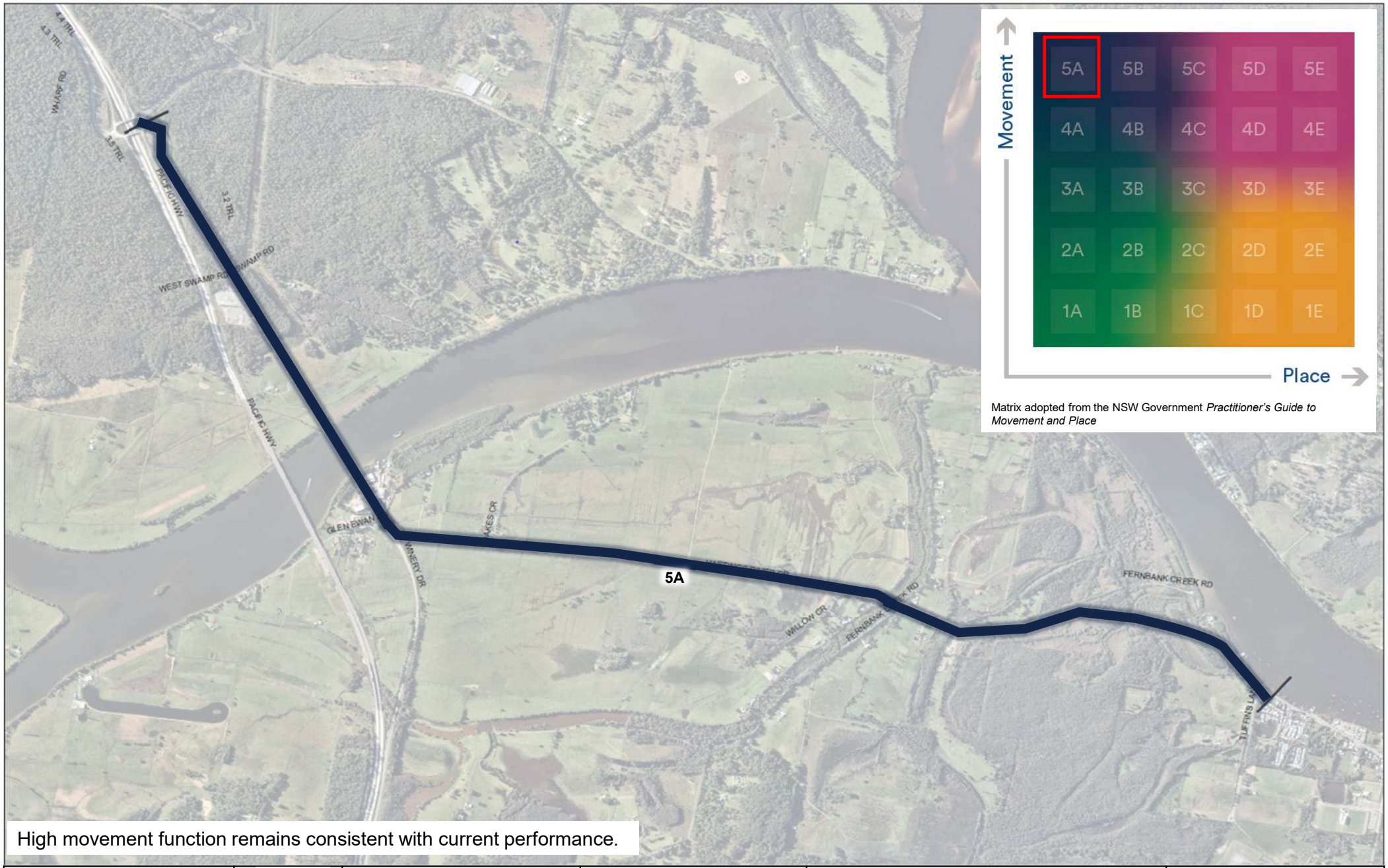
Chainage Start: 49000 End: 51500

Description Start: Ocean Drive End: Comboyne Street

Location Start: Kew End: Kendall

Project Number:	P4665
Date:	19/04/2021
Sheet:	10

Appendix I: Movement and Place Conflict Maps



High movement function remains consistent with current performance.

BITZIOS consulting

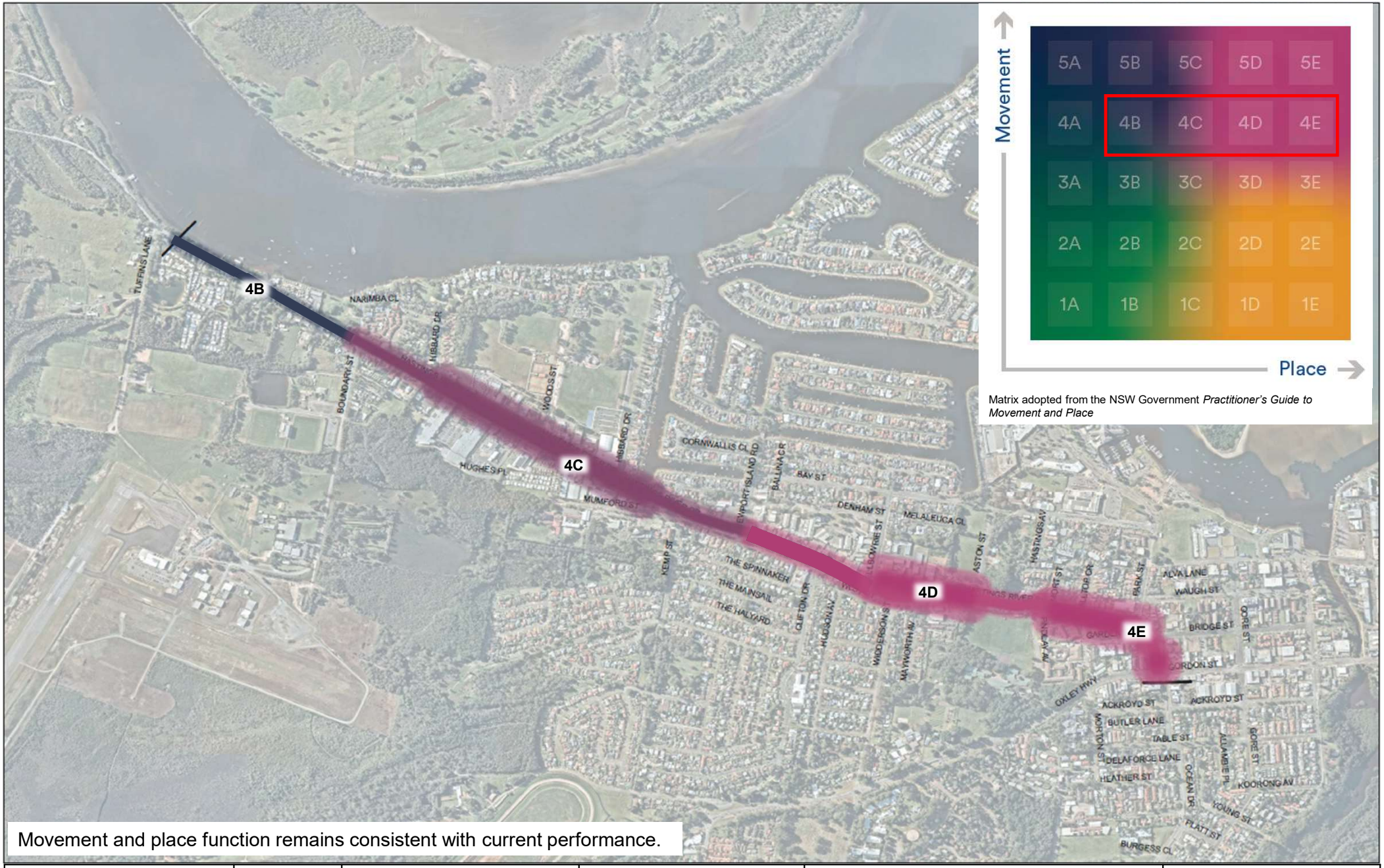
N

0 500 1,000 Meters

Movement – Place Conflict

Section 1
Chainage Start:0 End :6900
Description Start: Pacific Highway End Tuffins Lane

Project Number:P4665
Date: 9/04/2021
Sheet: 1



Matrix adopted from the NSW Government *Practitioner's Guide to Movement and Place*

Movement and place function remains consistent with current performance.

BITZIOS consulting

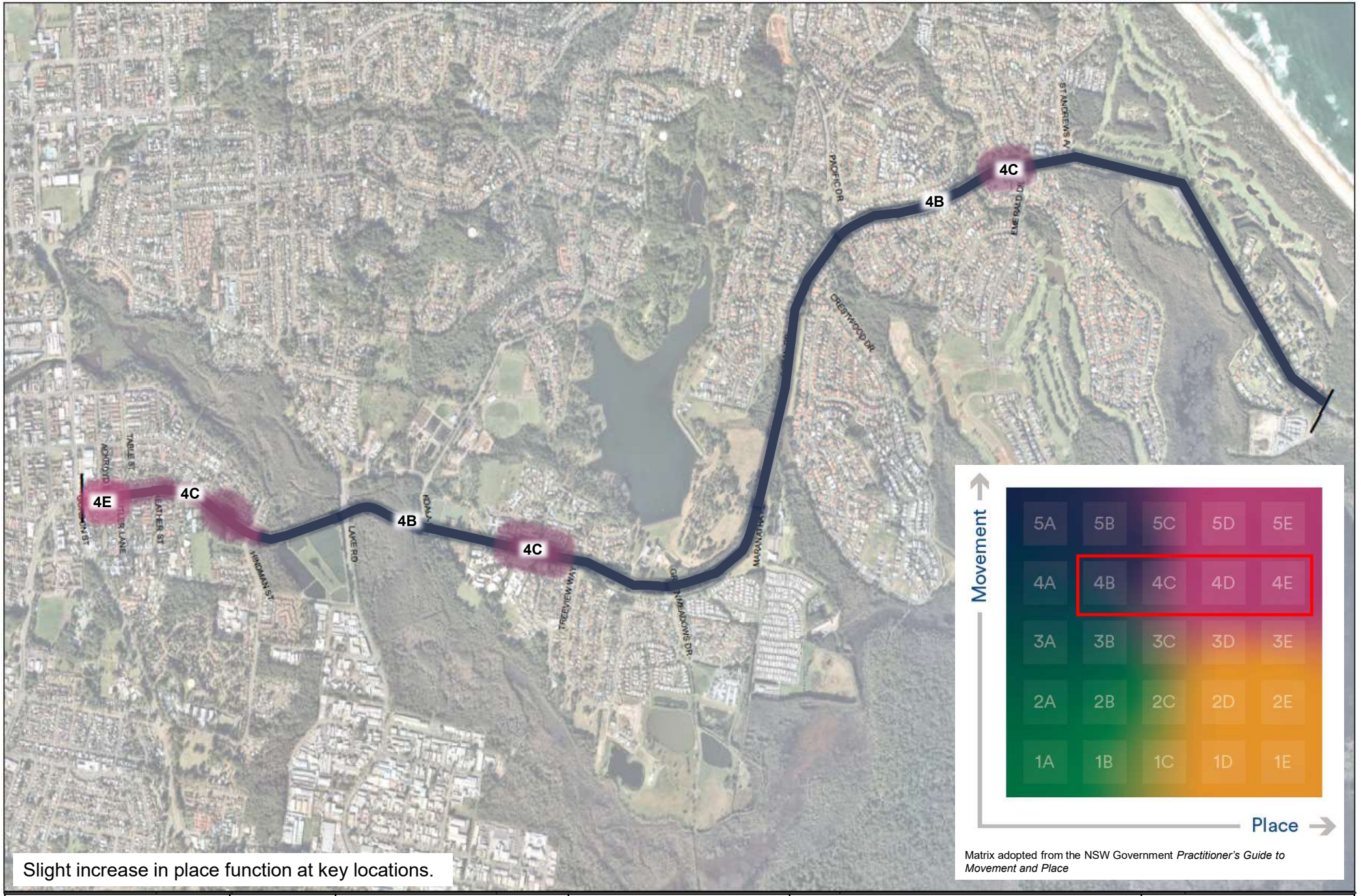
N

0 330 660 Meters

Movement – Place Conflict

Section 2
Chainage Start:7000 End :10500
Description Start: Tuffins Lane End Oxley Highway

Project Number:P4665
Date: 9/04/2021
Sheet: 2



Matrix adopted from the NSW Government *Practitioner's Guide to Movement and Place*

BITZIOS consulting	N	0 460 920 Meters	**Movement – Place Conflict**	**Section 3** Chainage Start:11000 End :18000 Description Start: Oxley Highway End: Elkhorn Grove	**Project Number:**P4665 **Date:** 9/04/2021 **Sheet:** 3



Matrix adopted from the NSW Government *Practitioner's Guide to Movement and Place*

High movement function remains consistent with current performance.

BITZIOS consulting

N

0 800 1,600 Meters

Movement – Place Conflict

Section 4
Chainage Start:18500 End :24500
Description Start: Elkhorn Grove End: Dirah Street

Project Number:P4665
Date: 9/04/2021
Sheet: 4



Increase in place function at key locations based on Area 14 development.

Matrix adopted from the NSW Government *Practitioner's Guide to Movement and Place*

BITZIOS consulting

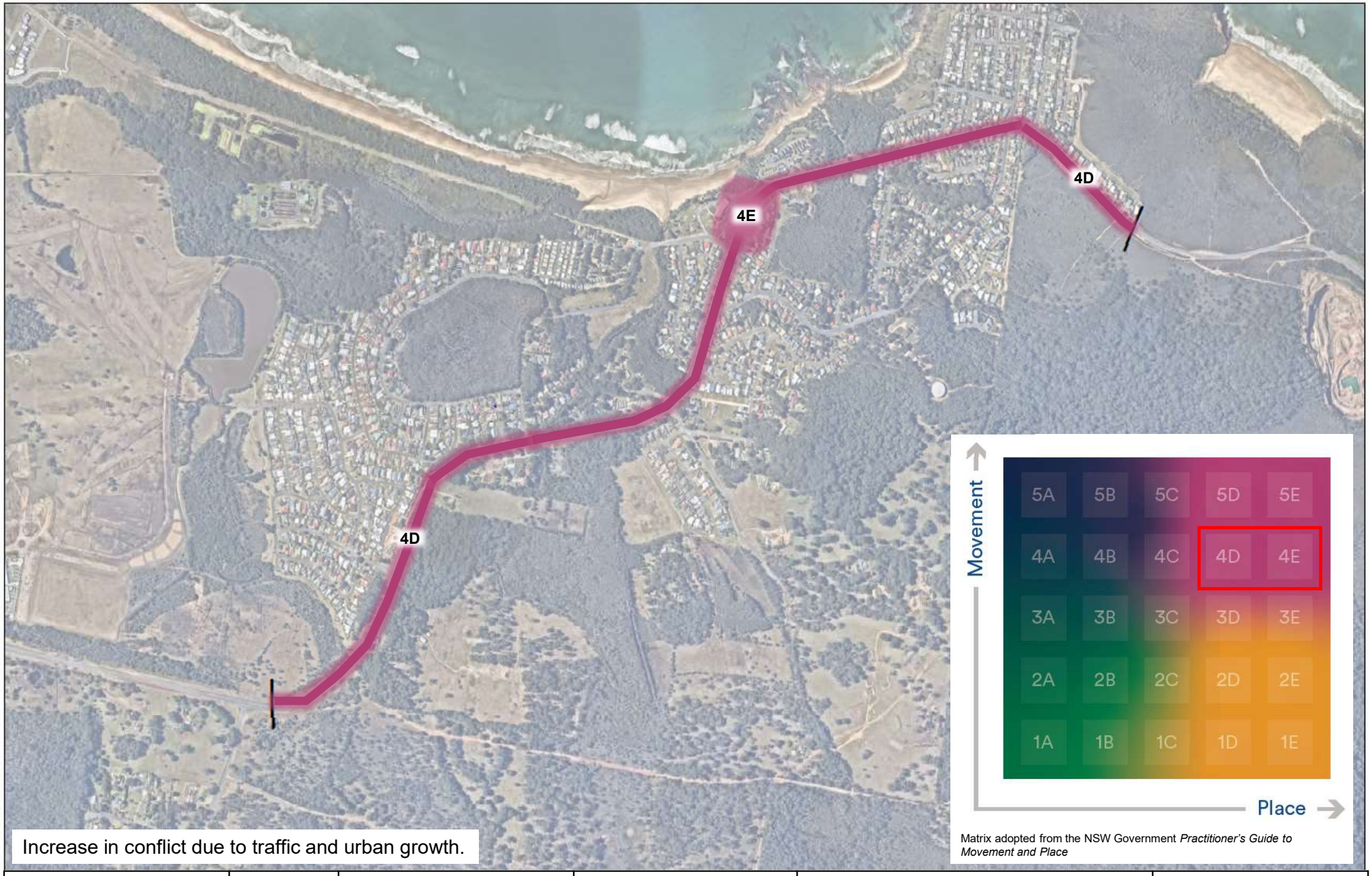
N

0 425 850 Meters

Movement – Place Conflict

Section 5
Chainage Start:25000 End :30500
Description Start: Dirah Street End: Bonny View Drive

Project Number:P4665
Date: 9/04/2021
Sheet: 5



Increase in conflict due to traffic and urban growth.

Matrix adopted from the NSW Government *Practitioner's Guide to Movement and Place*

BITZIOS consulting

N

0 295 590 Meters

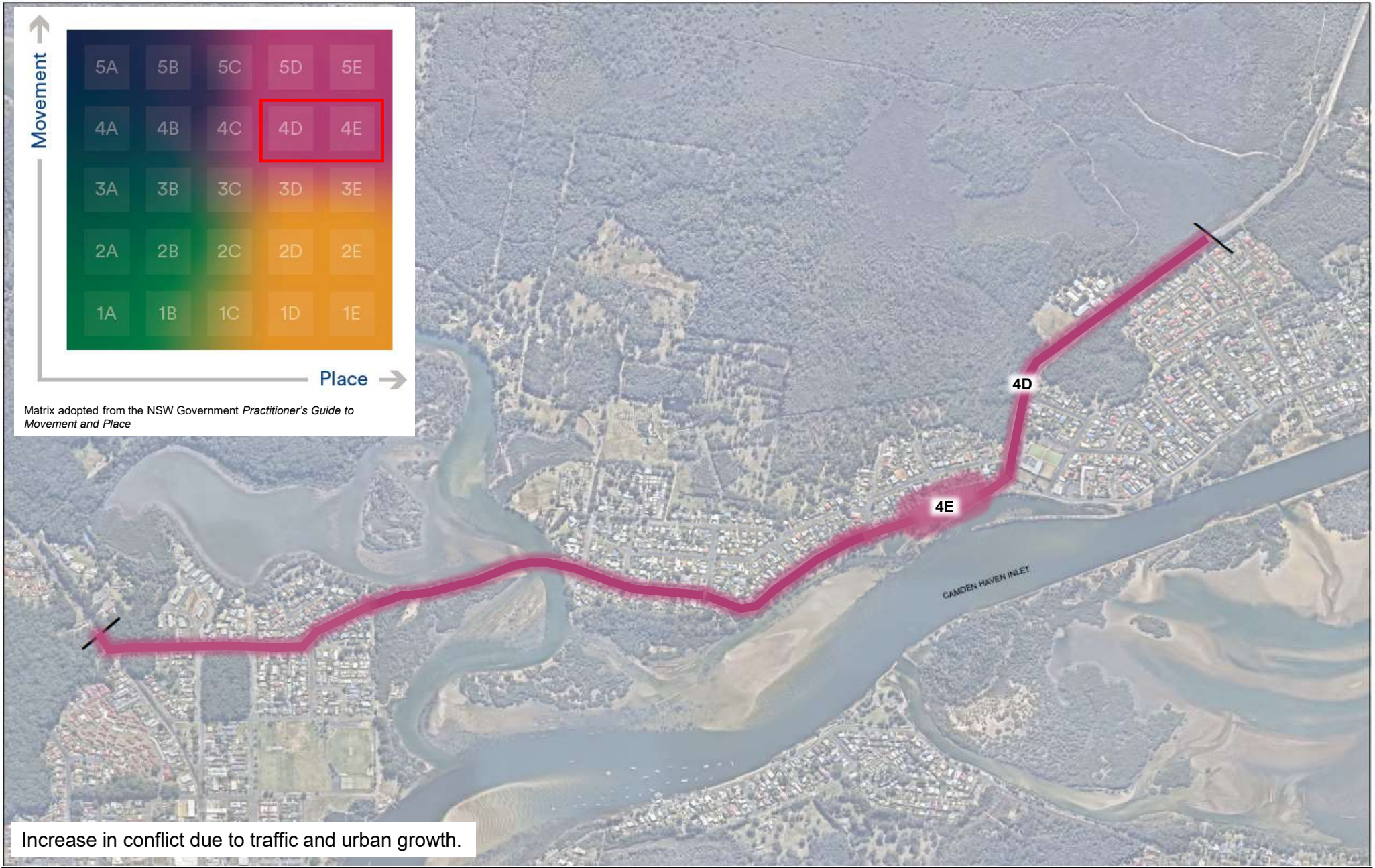
Movement – Place Conflict

Section 6
Chainage Start:31000 End : 34000
Description Start: Bonny View Drive End: 800 Ocean Drive

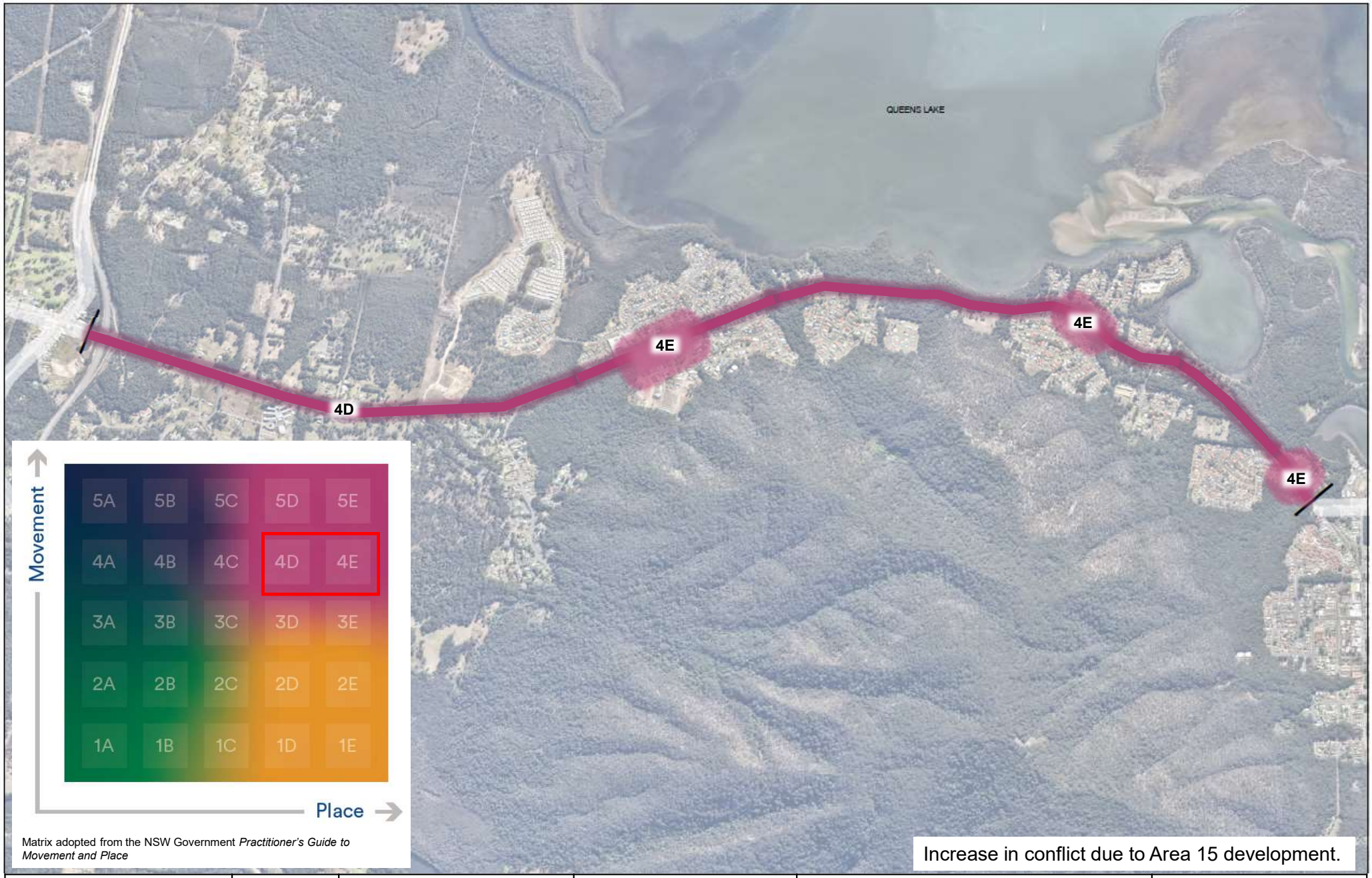
Project Number:P4665
Date: 9/04/2021
Sheet: 6



BITZIOS consulting	N	0 295 590 Meters	**Movement – Place Conflict**	**Section 7** Chainage Start:34500 End : 37500 Description Start: 800 Ocean Drive End: North Haven	**Project Number:**P4665 **Date:** 9/04/2021 **Sheet:** 7



BITZIOS consulting	N	0 295 590 Meters	**Movement – Place Conflict**	**Section 8** Chainage Start: 38000 End : 41000 Description Start: Edith Street End: Kew Road / Ocean Drive	**Project Number:**P4665 **Date:** 9/04/2021 **Sheet:** 8



BITZIOS consulting

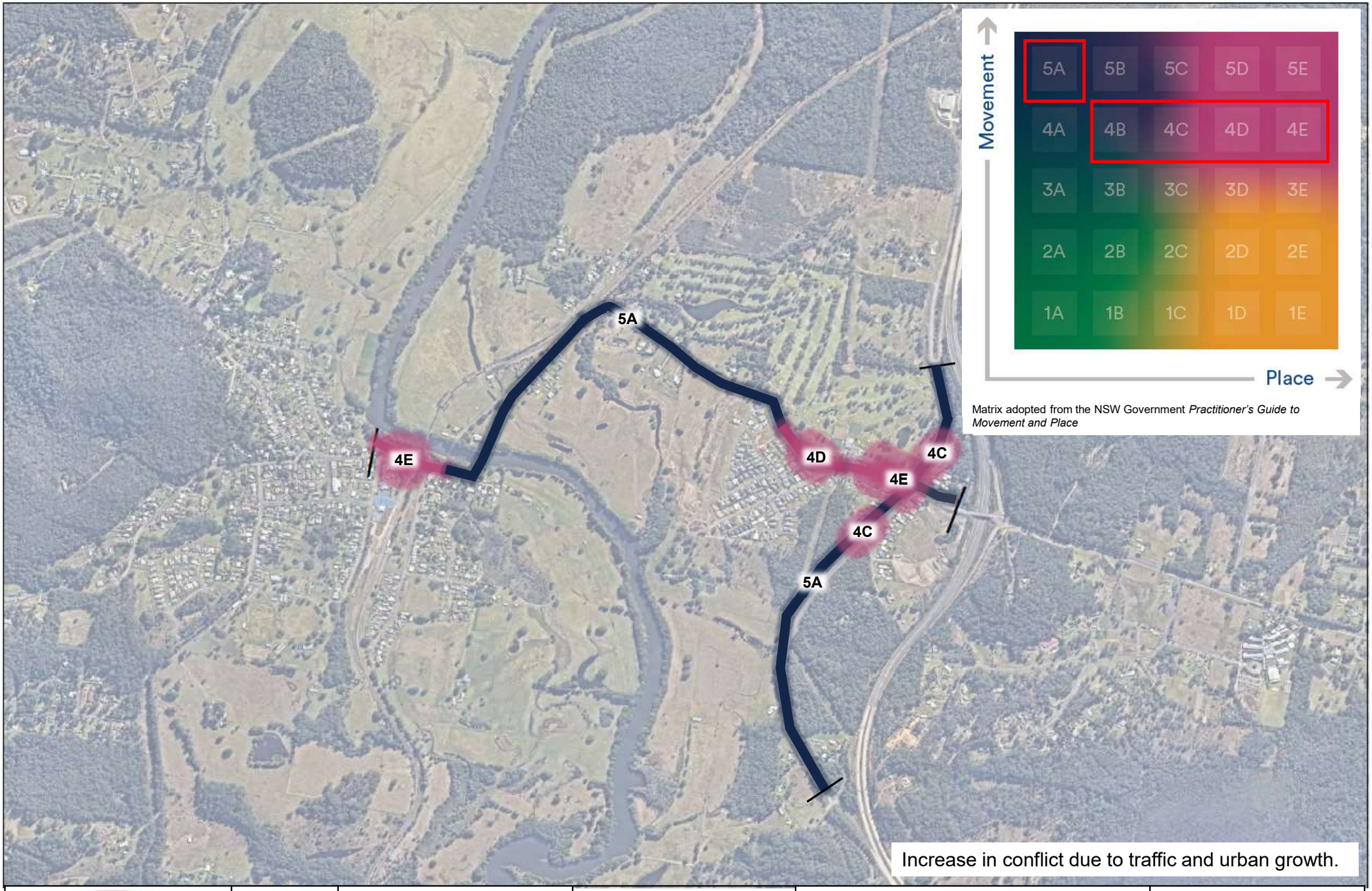
N

0 550 1,100 Meters

Movement – Place Conflict

Section 9
Chainage Start: 41500 End : 48500
Description Start: Kew Road / Ocean Drive End: Ocean Drive

Project Number:P4665
Date: 9/04/2021
Sheet: 9



BITZIOS consulting

N

0 337.5 675 Meters

Movement – Place Conflict

Section 10
Chainage Start: 41500 End : 48500
Description Start: Ocean Drive End: Comboyne Street

Project Number:P4665
Date: 9/04/2021
Sheet: 10