Launceston Network Operations Plan

Operating and Improvement Strategies

January 2021

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1. Introduction

1.1 Background

The Department of State Growth (the Department) has commissioned GHD to develop a Network Operations Plan (NOP) in collaboration with the City of Launceston with a focus on inner Launceston. The development of a NOP is in response to current and predicted future growth and land use changes in Launceston and its surrounds, and the growth in conflicting transport movements on key corridors.

A key component of the NOP is the development of the Launceston Network Operating Framework (the Framework). Elements of the Framework such as transport mode mapping and defining modal principles and objectives have been completed in consultation with key stakeholders.

The outcomes of the Framework have been used to provide direction in the completion of the road network performance assessment. The Department and the City of Launceston have collaborated through this process to define network Level of Service for different transport modes, and in evaluating the existing network performance.

This report provides a summary of the methodology undertaken in preparing the Framework and assessing the network performance, then provides an overview of the Network Strategies developed to address any network performance gaps identified. Developing Network Strategies is the final stage in Phase 2 of the overall study methodology, as shown in Figure 1.

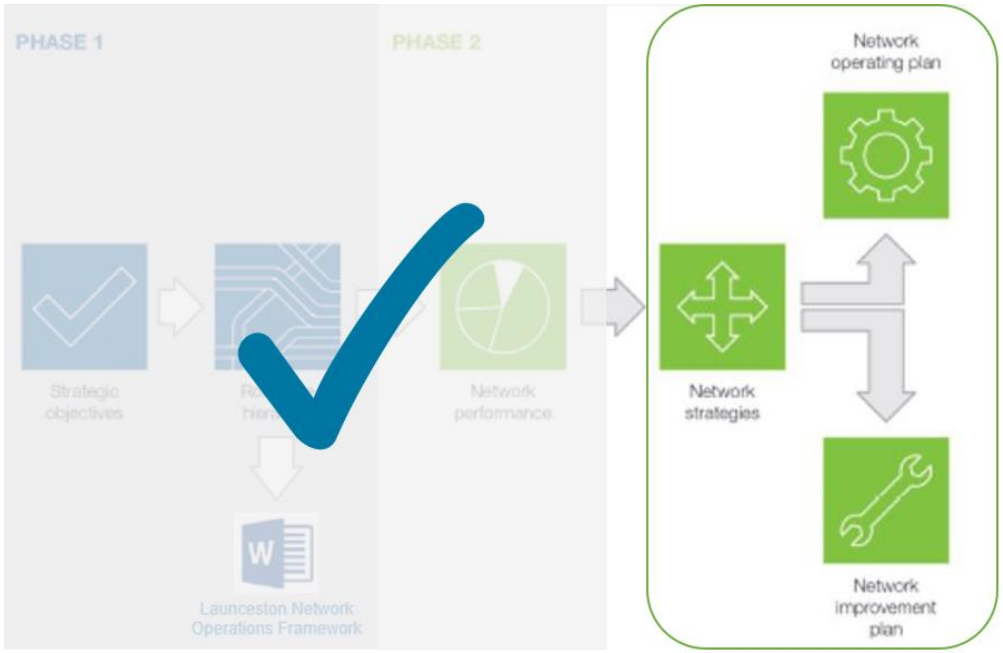


Figure 1 Network Operations Planning Process

1.2 Study area

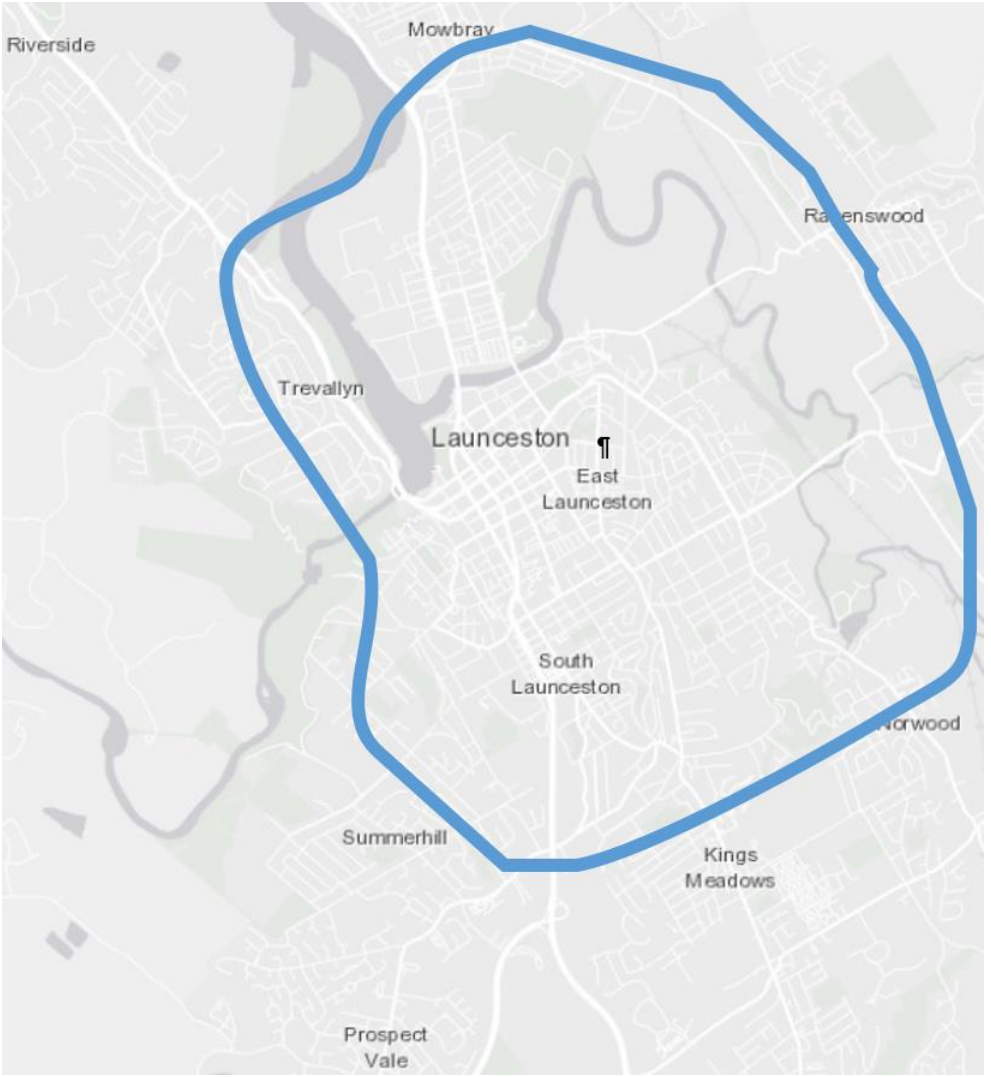
The development of this Network Operations Plan (NOP) encompasses the inner Launceston area. For the purposes of this study, the inner Launceston area generally extends from Mowbray in the north to Punchbowl in the south, and from Trevallyn (West Tamar Road) in the west to St Leonards in the east. The Launceston NOP study focused on the area outlined in Figure 2 while considering Greater Launceston as a wider area of influence.

The road network performance assessment focussed on key routes within this study area. Further detail is provided in Section 3 on these key routes.

1.3 Stakeholder consultation

Representatives from the following stakeholder groups were involved in the development of the Launceston Network Operating Framework:

- City of Launceston
- Department of State Growth
- Bicycle Networks Tasmania
- Tamar Bicycle User Group
- Royal Automobile Club of Tasmania (RACT)
- City of Hobart (Observers)



Source: ESRI, OpenStreetMap

Figure 2 Launceston Network Operating Framework Focus Area

1.4 Previous reports

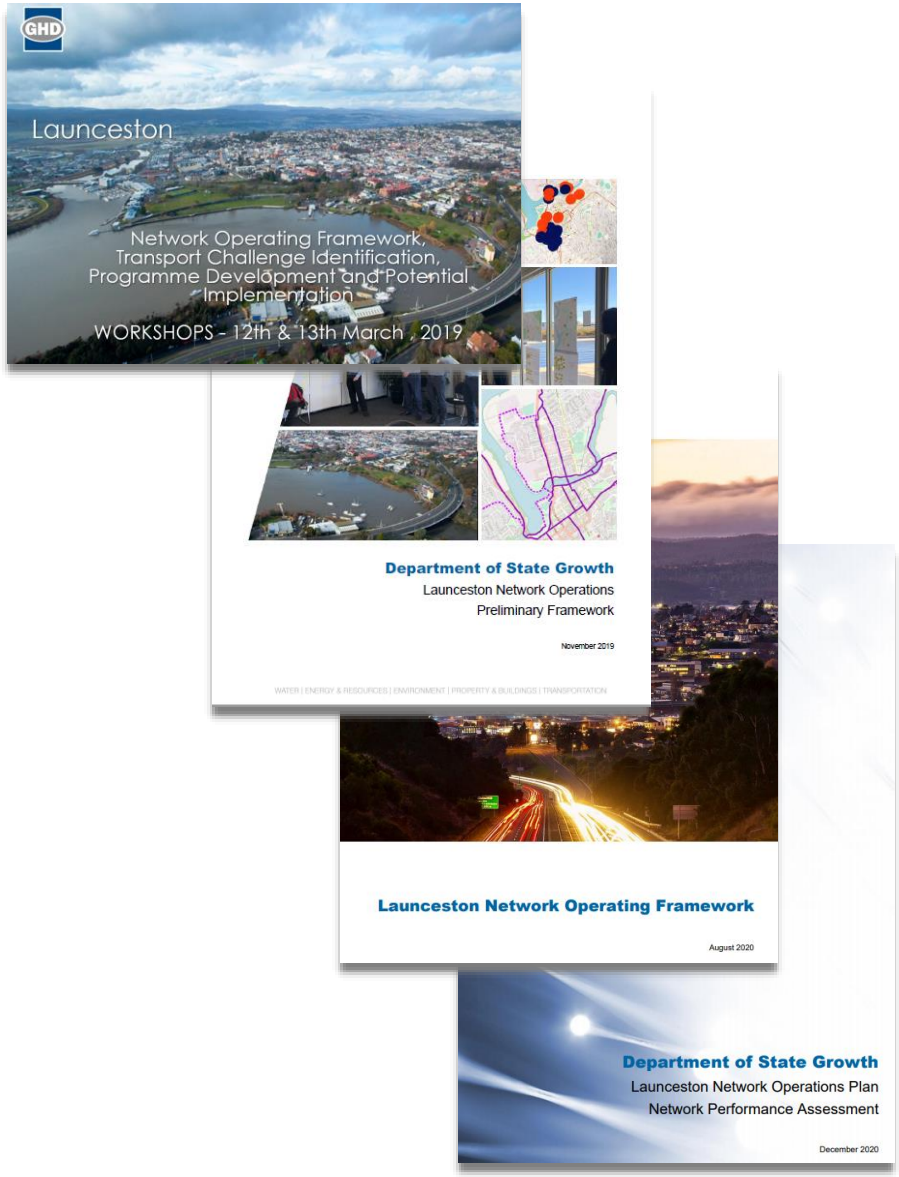
A number of reports have been completed as part of this study, and are referenced within this report. The key reference documents are listed as follows:

- Network Operating Framework, Transport Challenge Identification, Programme Development and Potential Implementation, Workshops – 12th and 13th March 2019, Workshop Report
- Launceston Network Operations, Preliminary Framework, November 2019
- Launceston Network Operating Framework, August 2020
- Launceston Network Operations Plan, Network Performance Assessment Report, December 2020

1.5 Structure of this report

The following provides an outline of key section, as mentioned in Section 1.1:

- **Launceston network operating framework** – Section 2 – provides a high-level summary of the Framework that governs the network performance assessment and development of operating plans and network improvements.
- **Network performance assessment** – Section 3 – provides a high level summary of the process of assessing network performance and presents the outcome and findings of the network performance assessment.
- **Network improvements and operating plans** – Section 4 – divides the outcomes of the network performance assessment into three conflict focus areas. An initial approach to network strategies for different modes in specific conflict focus areas.
- **Summary** – Section 5 – provides guidance on what detailed network operation plans and improvements should be developed in line with the initial operation strategies identified in the Framework.



NETWORK FRAMEWORK

2. Network framework

2.1 Overview

A Network Operating Framework is an approach to network planning which transport authorities can utilise to consider all transport and road users, and the inter-relationships between land use, transport networks, and transport infrastructure and services. The framework provides a collaborative and integrated approach to managing the transport system through a 'one network' approach.

Development of a Network Operating Framework aims to recognise the diverse needs of transport and road users. Utilising a strategic and collaborative approach, stakeholders and road user groups have input into the development of the framework, which aims to understand the needs of users in the existing network, and focuses investment in future schemes that suit the needs and demands of its users.

2.2 Strategic objectives and principles

Strategic objectives and principles provide a guideline for the development of a strategic road network. The strategic objectives of the Framework draw on stakeholder knowledge, existing policy and planning goals and the Greater Launceston Transport Vision to confirm the development of a common set of Strategic Objectives and Principles for the network.

2.2.1 Objectives

The key objectives that stakeholders identified as intended outcomes from the Framework are shown in Figure 3.

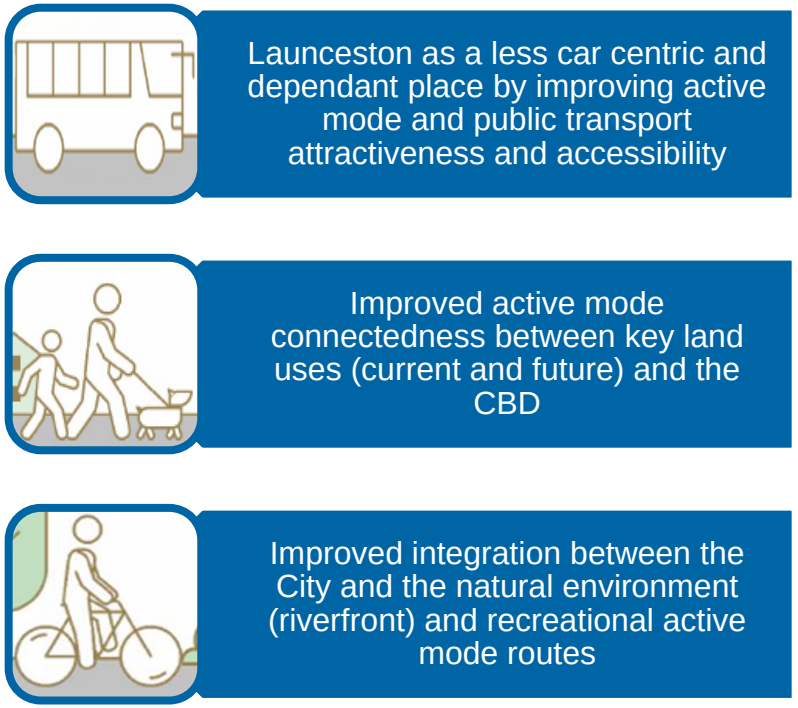


Figure 3 Launceston Network Operating Framework – Key Objectives

2.2.2 Strategic objectives and principles

The Strategic Objectives and Principles frame the aspirations of stakeholders in regards to the operation of the network as it relates to each mode. A summary of the modal Strategic Objectives and Principles is included below.

Pedestrians

Strategic Objective

A network for pedestrians* that provides enjoyable and commuter friendly connections within and throughout Launceston.

Principles

Primary pedestrian routes - Provide linkages that enable movement between the Gorge and the CBD, and between areas of high commercial and retail activity, education centres, and support connectivity to off-road trails.

Secondary pedestrian routes - Provide linkages to Primary routes to/from residential and commercial areas, recreational facilities.

Bike Riders

Strategic Objective

Provide a bike riding network that connects communities to encourage bike riding as an everyday mode of transport to enable people to travel for work, education, social and recreational purposes.

Principles

Primary bike riding routes - Provide linkages for journey to work (suburbs to the CBD), journey to school, or journey to university purposes, and important off-road bike trails that are commonly used for both commuting and recreational purposes.

Secondary bike riding routes - Predominantly recreational routes along the riverfront, and some linkages that provide connections to primary routes.

Public Transport

Strategic Objective

Promote a connected network for efficient movement between commercial centres and residential catchments to support public transport as an attractive mode of transport.

Principles

Primary public transport routes - The primary public transport routes in Launceston are routes carrying high frequency bus services. These bus services generally connect residential areas to the CBD or schools.

Secondary public transport routes - Local routes that compliment primary routes providing local access and connectivity.

Freight

Strategic Objective

Provide a network that facilitates freight movement for local distribution and inter-regional distribution to a high level of efficiency avoiding areas of high amenity.

Principles

Primary freight routes - The primary freight routes in the Launceston network (current and future) were identified as routes that provided efficient inter-regional connections.

Secondary freight routes - Routes that provide last-mile connections for primary routes to commercial, industrial and retail centres.

General Traffic

Strategic Objective

Promote a General Traffic network that enables public transport and active modes priority in higher amenity areas. Encourage routes that are safer and more predictable while making trade-offs in areas with high amenity.

Principles

Preferred traffic routes - The preferred traffic routes in Launceston provide for longer distance traffic avoiding areas of high land use conflict.

Traffic routes - Provides for general traffic connectivity with residential and commercial centres to preferred traffic routes.

Local primary access routes - Provides access routes to/from local destinations within the local area. May also provide circulation routes/Gateway routes.

Local secondary access routes - Collects and distributes between local primary access routes.

Road Safety

Strategic Objective

An operating environment and transport system that does not result in death or serious injury as a consequence of errors on the road network.

Principles

All Routes - All routes to provide a safe road space for all road users

Place

Strategic Objective

Promote a network that recognises the importance of the community function of streets as spaces for social intersection.

Principles

Places of Street Activity (PA)

PA1	Nationally and state significant place of activity. People travel from across the country and state to experience and use the place. The place has a very large number of on-street staying activities e.g. shops and alfresco dining.
PA2	Regionally significant place of activity. People travel from adjoining municipalities to experience and use the place. The place has a large number of on-street staying activities e.g. shops and alfresco dining.
PA3	Municipal level of significant place of activity. People travel from across the municipality to experience and use the place. The place has visible on-street staying activities such as public seating and alfresco dining.
PA4	Neighbourhood level of significant place of activity, serving people from immediate neighbourhoods, e.g. milkbars and local shops.
PA5	Local level of significant place of activity. Places are generally quiet and a destination for people accessing residential properties

Places of Off-Street Activity (PO)

PO 1	State significant places (without on-street activity) generating very high demands on the transport network for high value and/or volume of people or freight movement.
PO 2	Regional significant places (without on-street activity) generating high demands on the transport network for high value and or volume of people or freight movement.
PO 3	Specialised places (without on-street activity) generating unique demands on the transport network for people or freight movement.
PO 4	Other places (without on-street activity) generating unique demands on the transport network for people and/or freight movement.

** Pedestrian network principles consider all forms of active travel (i.e. people walking, running, using a mobility scooter or wheelchair) with the exception of people riding a bike*

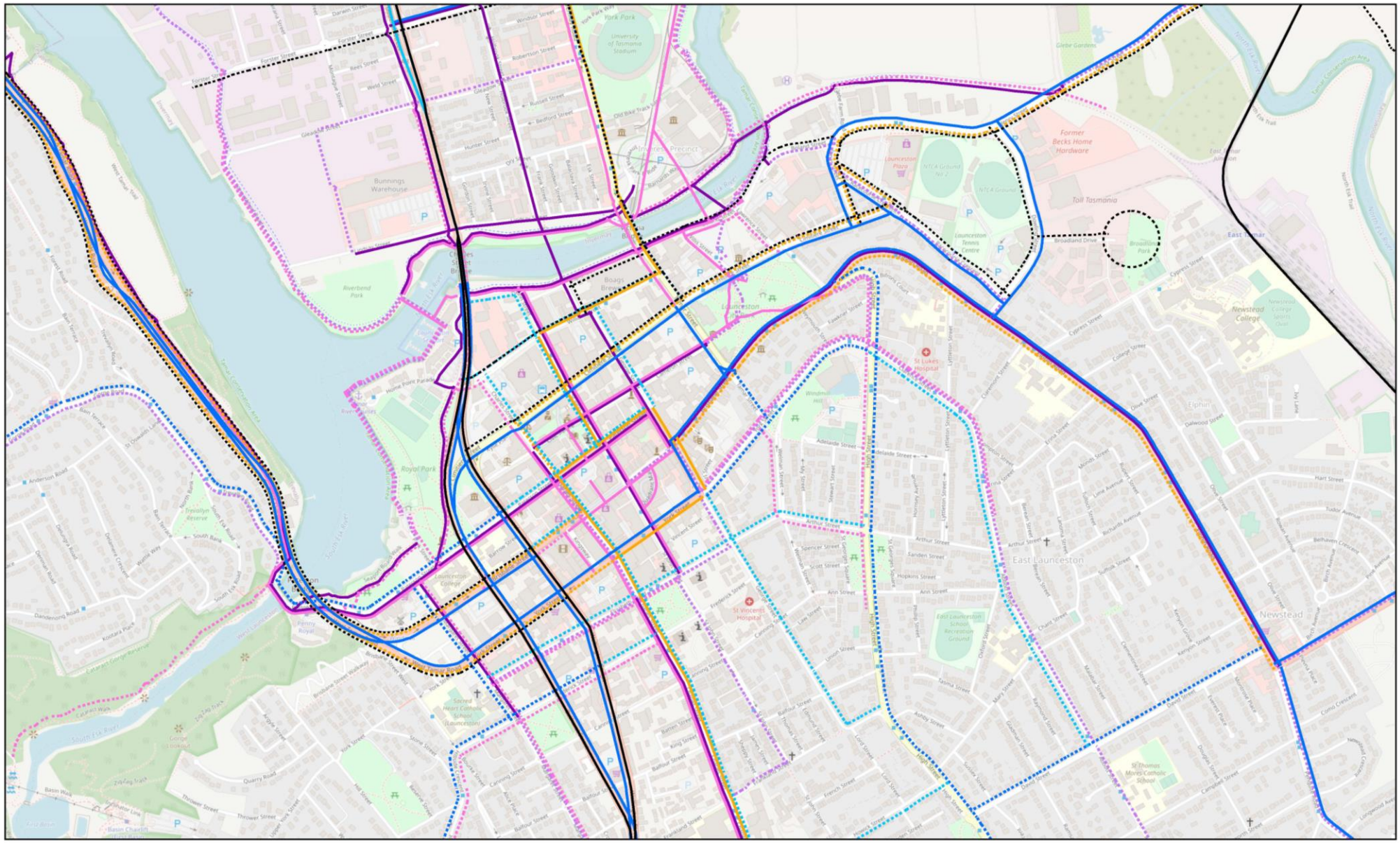
2.3 Network definition

An effective multi-modal transport network generally adopts a balanced approach to network prioritisation, taking into account the needs of all transport and road users. A Network Operating Framework utilises this type of approach through the development of a strategic road network that defines a roads priority by mode. The strategic transport network defines user priority by mode, place and time of day. This moves away from a traditional road classification hierarchy and focuses more on the need to recognise the variety of transport modes, their inter-relationships and the strategic intent for the network.

The following figure provides the combined strategic road networks for each of the identified modes in one map. Each network sets out the aspirational hierarchy, which at this stage does not include any temporal differences. Network performance by time of day will be included in the subsequent Network Performance assessment.

Individual maps for each road use function are provided in the Framework. The following functions of road use were included in the mapping of the strategic road network:

- Pedestrians
- Bike Riders
- Public Transport
- Freight traffic
- General vehicle traffic
- Places of activity



Paper Size A3

0 100 200 300

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND

- Preferred Traffic Route
- Traffic Route
- Local Primary Access Route
- Local Secondary Access Route
- Primary Public Transport Route
- Secondary Public Transport Route
- Primary Pedestrian Route
- Secondary Pedestrian Route
- Primary Cycle Route
- Secondary Cycle Route
- Primary Freight Route
- Secondary Freight Route

GHD

Network Operating Framework
Launceston

Job Number 12530129
Revision B
Date 19 Jan 2021

Combined Modal Networks

Figure 1

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Data source: LINZ Road Centrelines (LINZ, June 2020); GHD Smart Roads Network (GHD, June 2020); Base - Open Street Map 2019 (© OpenStreetMap (and) contributors, CC-BY-SA). Created by:swaliuzzaman

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2.4 Movement and place – levels of encouragement

The classifications for different transport modes were developed to identify transport mode priorities on the different road links within the study area. Most of the classification levels were derived from the aspirational maps developed as part of the Launceston Network Operating Framework. However, there are also some lower classification levels that were not mapped but are important to note during the performance assessment process. Further information regarding the classifications for different transport modes and the definitions can be found in the Launceston Network Operations Plan, Network Performance Assessment report.

The adjacent temporal hierarchy considers the combination of a defined mode priority (GT1, F1, B1, C1, W1 etc.) with the place function the corridor sits (P1 etc.) to provide a relative level of encouragement.

The relative levels of encouragement range include Low, Medium and High to provide a simple, but strategic based, approach to define the level of encourage a particular mode should be provided given the place function where that mode operates.

For example, during peak hours on a corridor with a high place function (P1), public transport, walking and bike riding have 'High' levels of encouragement while general traffic is low. This reflects the aspiration for place function having an inverse relationship with general traffic priority while being aligned with active modes.

The matrix shown in Figure 4 has been translated to key intersections and is provided in Figure 5.

General Traffic - Peak	P1	P2	P3	P4	P5
GT1	Low	Medium	Medium	Medium	Medium
GT2	Low	Low	Medium	Medium	Medium
GT3	Low	Low	Low	Low	Medium
GT4	Low	Low	Low	Low	Low
GT5	Low	Low	Low	Low	Low

General Traffic - Off-peak	P1	P2	P3	P4	P5
GT1	Medium	Medium	High	High	High
GT2	Low	Medium	Medium	High	High
GT3	Low	Low	Medium	Medium	Medium
GT4	Low	Low	Low	Medium	Medium
GT5	Low	Low	Low	Low	Low

Freight - Peak	P1	P2	P3	P4	P5
F1	Medium	Medium	Medium	Medium	Medium
F2	Low	Low	Medium	Medium	Medium
F3	Low	Low	Low	Low	Low

Freight - Off-peak	P1	P2	P3	P4	P5
F1	Medium	Medium	Medium	High	High
F2	Low	Low	Medium	Medium	High
F3	Low	Low	Low	Medium	Medium

Public Transport - Peak	P1	P2	P3	P4	P5
B1	High	High	High	High	High
B2	Medium	Medium	High	High	High
B3	Medium	Medium	High	High	High
B4	Low	Low	Medium	Medium	Medium
B5	Low	Low	Low	Medium	Medium

Public Transport - Off-peak	P1	P2	P3	P4	P5
B1	Medium	High	High	High	High
B2	Medium	Medium	High	High	High
B3	Medium	Medium	High	High	High
B4	Low	Low	Medium	Medium	Medium
B5	Low	Low	Low	Medium	Medium

Cycling - Peak	P1	P2	P3	P4	P5
C1	High	High	High	High	High
C2	High	High	High	High	High
C3	High	High	High	High	High
C4	Medium	Medium	Medium	Medium	Medium
C5	Medium	Medium	Medium	Medium	Medium

Cycling - Off-peak	P1	P2	P3	P4	P5
C1	High	High	High	High	High
C2	High	High	High	High	High
C3	Medium	Medium	High	High	High
C4	Medium	Medium	Medium	Medium	Medium
C5	Medium	Medium	Medium	Medium	Medium

Walking - Peak	P1	P2	P3	P4	P5
W1	High	High	High	High	High
W2	High	High	High	High	High
W3	Medium	Medium	Medium	Medium	Medium
W4	Medium	Medium	Medium	Medium	Medium
W5	Medium	Medium	Medium	Medium	Medium

Walking - Off-peak	P1	P2	P3	P4	P5
W1	High	High	High	High	Medium
W2	High	High	High	Medium	Medium
W3	Medium	Medium	Medium	Medium	Medium
W4	Medium	Medium	Medium	Medium	Medium
W5	Medium	Medium	Medium	Medium	Medium

Figure 4 Movement and Place – levels of encouragement

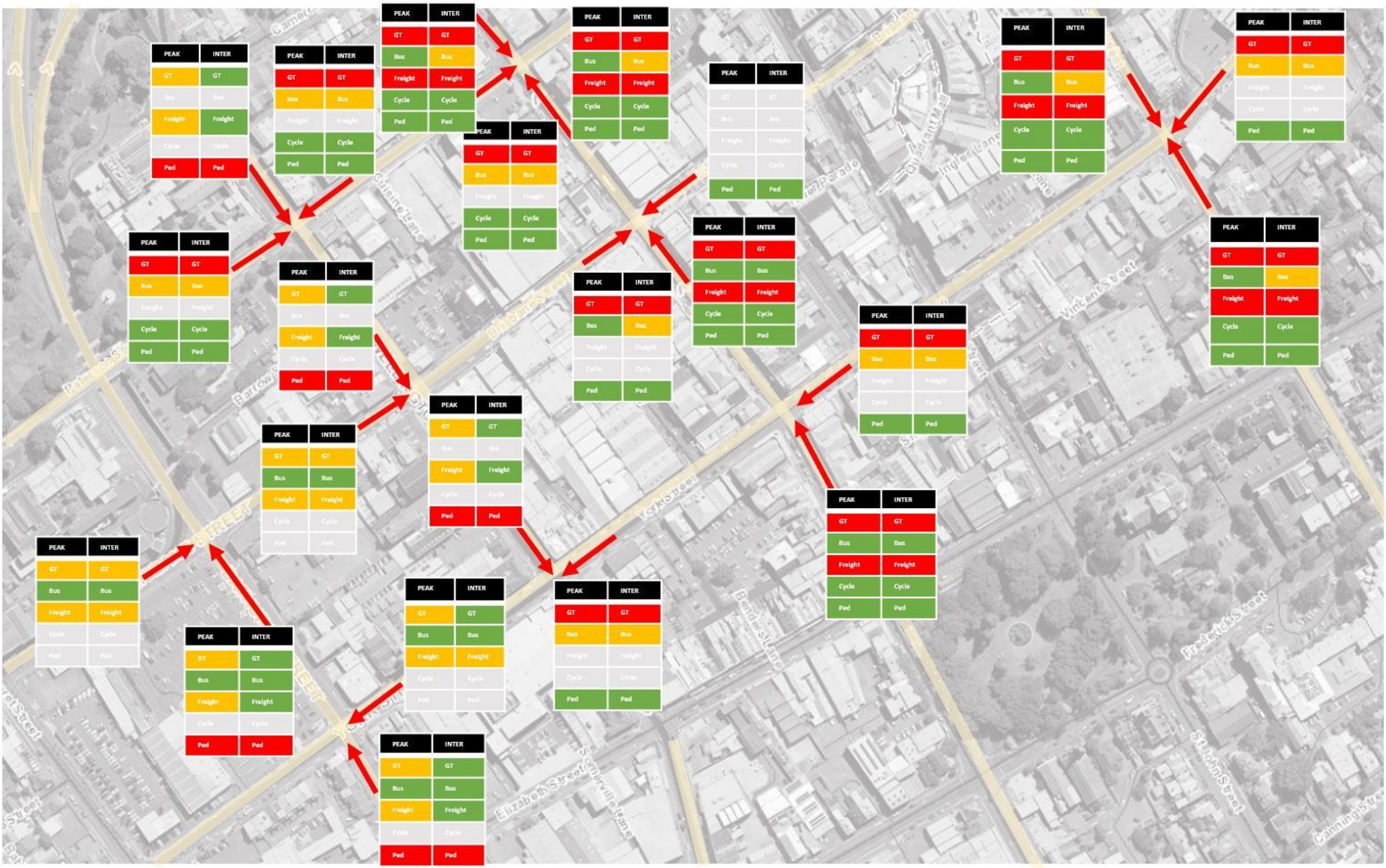


Figure 5 Intersection levels of encouragement

NETWORK PERFORMANCE ASSESSMENT

3. Network performance assessment

3.1 Overview

During the second stage of developing Launceston Network Operation Plan, an assessment tool was developed to assess competing priorities on the Launceston road network. When developing the assessment toolkit, it was important to consider multiple objectives other than simply addressing congestion reduction. Casualty reduction, place objectives, and encouraging public and active transport options were also considered and included as an important part of the whole network performance assessment.

This approach recognises that street networks perform functions beyond the movement of people and goods. Streets are an extension to land use, and attract activities and are destinations in their own right. The network operations process undertaken takes into account the competing demands of travel and freight, as well as destination and place-based activities.

The *Launceston Network Operating Framework, GHD, 2020* spatially represents the priority of the different Movement modes, Place and Safety. Each of the identified key roads had a defined set of place classifications and transport modal priorities assigned during the first stage of the project. The combination of the place classification and assigned transport modal priorities determines the desired function of the road and the target level of service.

Level of Service indicators have been developed to help measure the existing performance of different Movement modes, Place as well as Road Safety. The existing conditions and performance were assessed against the current level of service as well as the target level of service.

The Level of Service indicators as well as further detail regarding the Network Performance Assessment can be found in the *Launceston Network Operations Plan, Network Performance Assessment, 2020.*

The assessment consisted of two main elements, **Level of Service (LoS) Gap Analysis** and **Network Significance Score**.

The **LoS Gap Analysis** provides information on how the network is performing by transport modes against the desired minimum level of service that can be determined by the assigned place and transport mode classifications for each road. When the target minimum LoS is higher than the existing LoS, the LoS Gap Analysis returns a positive score and the higher the gap is the higher the score will be.

The **Network Significance Score (NSS)** is a relative measure of how the network is currently performing against the target performance that was determined by its assigned level of transport modes classifications as well as the targeted minimum LoS. The higher the strategic importance to the road network each classification has, the higher the strategic score. A road section with high significance score generally means it has been assigned with one or multiple high-level transport mode classifications.

Roads with both a high LoS Gaps Analysis result and a high Network Significance Score indicate that more focus should be provided to improve network performance on these network segments. The combination of these scores provides a level of priority when considering road upgrades, as there is an indication of not only a gap in performance compared to operational aspirations but also what role it plays in the network in supporting either Movement or Place or both.

3.2 Methodology

In order to identify which parts of the Launceston network would benefit from upgrade or operational strategies, the results of the network assessment were interrogated to identify modal and safety performance at a whole of network level, then further by specific transport mode. The results of this assessment were then compared back to the spatial mapping undertaken as part of the Framework development to confirm areas of network conflict. The combination of these methods allow for identification of performance issues within the network, or where there is a conflict between network functions or users (i.e. if Place is classified as high, and there is also a high General Traffic and Freight function).

Understanding the issues and conflict at a more detailed level, allowed for the identification of appropriate strategic upgrades or operational strategies to reduce the gap in performance or to manage any conflicts on the network.

The methodology undertaken is shown in Figure 6, with a high level summary of the assessment results included in Section 3.3.

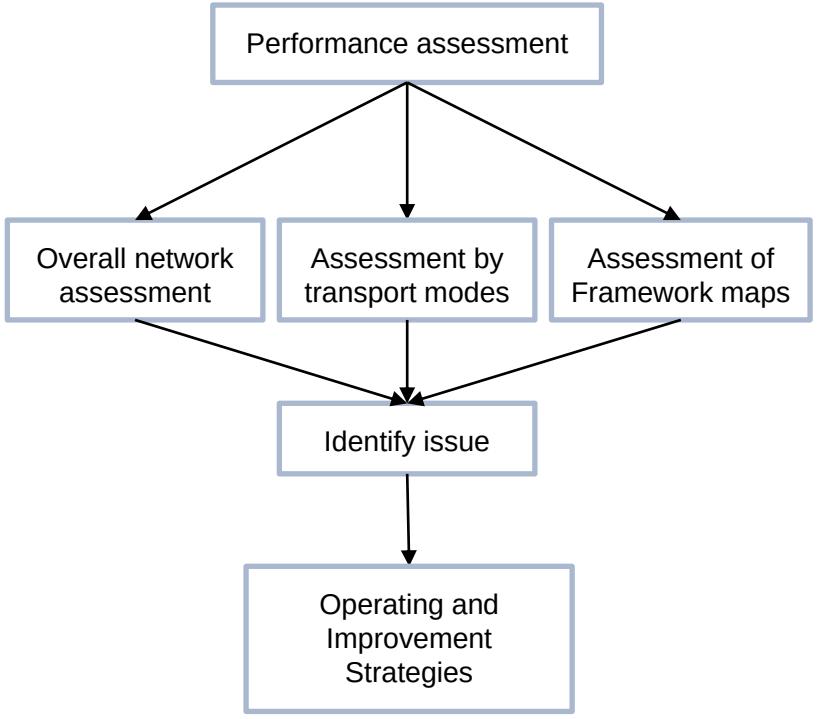


Figure 6 Methodology to determine network strategies

3.3 Assessment results

3.3.1 Overall network significance

A visualised plot of the Network Significance Score is provided in Figure 7. The NSS plot highlights the street / road segments with the highest combined NSS. This provides a quick reference to identify key streets that scored highly in regards to network significance. The top nine road segments are highlighted on the plot, and these include:

- West Tamar Highway, Brownfield Lane to Margaret Street;
- Paterson Street, Charles Street to George Street;
- York Street, Wellington Street to West Tamar Hwy;
- Tamar Street, Lindsay Street to Brisbane Street;
- Charles Street, Cameron Street to York Street; and
- Goderich Street, Forster Street to Lindsay Street.

The NSS result highlights the major transport modes on a corridor and its importance level. However, the NSS result does not provide a direct relationship between the LoS Gap. Thus, this level of result does not provided details of whether there is a performance gap to resolve.

The combination of NSS and LoS Gap is discussed further in the next section.

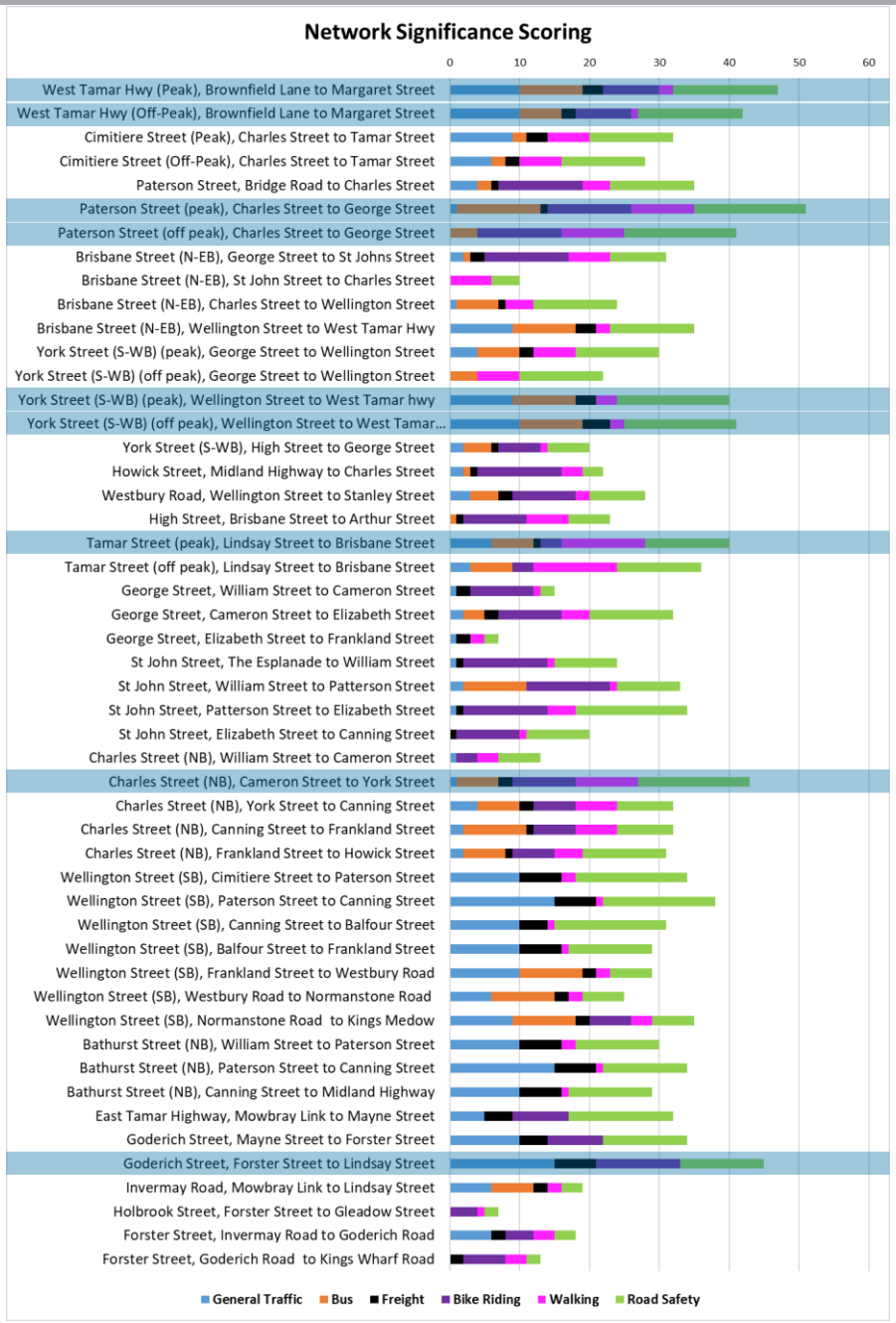


Figure 7 Network Significance Scores (NSS)

3.3.2 Assessment of performance gaps

A visualised comparison of level of service gap and network significance is presented in Figure 8. The graph is divided into four quadrants based on the data scattering. This provides visualised results identifying the road segments where initial investment or operational changes should be focussed.

Index	Road section	Gap Score	Significance Score
1	Bathurst Street (NB), Canning Street to Midland Highway	3	29
2	Bathurst Street (NB), Paterson Street to Canning Street	4	34
3	Bathurst Street (NB), William Street to Paterson Street	3	30
4	Brisbane Street (N-EB), Charles Street to Wellington Street	3	24
5	Brisbane Street (N-EB), George Street to St Johns Street	5	31
6	Brisbane Street (N-EB), St John Street to Charles Street	3	10
7	Brisbane Street (N-EB), Wellington Street to West Tamar Hwy	5	35
8	Charles Street (NB), Cameron Street to York Street	6	43
9	Charles Street (NB), Canning Street to Frankland Street	2	32
10	Charles Street (NB), Frankland Street to Howick Street	1	31
11	Charles Street (NB), William Street to Cameron Street	3	13
12	Charles Street (NB), York Street to Canning Street	1	32
13	Cimitiere Street (Off-Peak), Charles Street to Tamar Street	2	28
14	Cimitiere Street (Peak), Charles Street to Tamar Street	4	32
15	East Tamar Highway, Mowbray Link to Mayne Street	1	32
16	Forster Street, Goderich Road to Kings Wharf Road	2	13
17	Forster Street, Invermay Road to Goderich Road	1	18
18	George Street, Cameron Street to Elizabeth Street	2	32
19	George Street, Elizabeth Street to Frankland Street	0	7
20	George Street, William Street to Cameron Street	2	15
21	Goderich Street, Forster Street to Lindsay Street	6	45
22	Goderich Street, Mayne Street to Forster Street	1	34
23	High Street, Brisbane Street to Arthur Street	4	23
24	Holbrook Street, Forster Street to Gleadow Street	0	7
25	Howick Street, Midland Highway to Charles Street	3	22
26	Invermay Road, Mowbray Link to Lindsay Street	0	19
27	Paterson Street (off peak), Charles Street to George Street	7	41
28	Paterson Street (peak), Charles Street to George Street	9	51
29	Paterson Street, Bridge Road to Charles Street	4	35
30	St John Street, Elizabeth Street to Canning Street	2	20
31	St John Street, Patterson Street to Elizabeth Street	6	34
32	St John Street, The Esplanade to William Street	2	24
33	St John Street, William Street to Patterson Street	4	33
34	Tamar Street (off peak), Lindsay Street to Brisbane Street	8	36
35	Tamar Street (peak), Lindsay Street to Brisbane Street	9	40
36	Wellington Street (SB), Balfour Street to Frankland Street	2	29
37	Wellington Street (SB), Canning Street to Balfour Street	3	31
38	Wellington Street (SB), Cimitiere Street to Paterson Street	4	34
39	Wellington Street (SB), Frankland Street to Westbury Road	1	29
40	Wellington Street (SB), Normanstone Road to Kings Medow	5	35
41	Wellington Street (SB), Paterson Street to Canning Street	5	38
42	Wellington Street (SB), Westbury Road to Normanstone Road	1	25
43	West Tamar Hwy (Off-Peak), Brownfield Lane to Margaret Street	1	42
44	West Tamar Hwy (Peak), Brownfield Lane to Margaret Street	3	47
45	Westbury Road, Wellington Street to Stanley Street	2	28
46	York Street (S-WB) (off peak), George Street to Wellington Street	5	22
47	York Street (S-WB) (off peak), Wellington Street to West Tamar Hwy	4	41
48	York Street (S-WB) (peak), George Street to Wellington Street	7	30
49	York Street (S-WB) (peak), Wellington Street to West Tamar hwy	7	40
50	York Street (S-WB), High Street to George Street	1	20

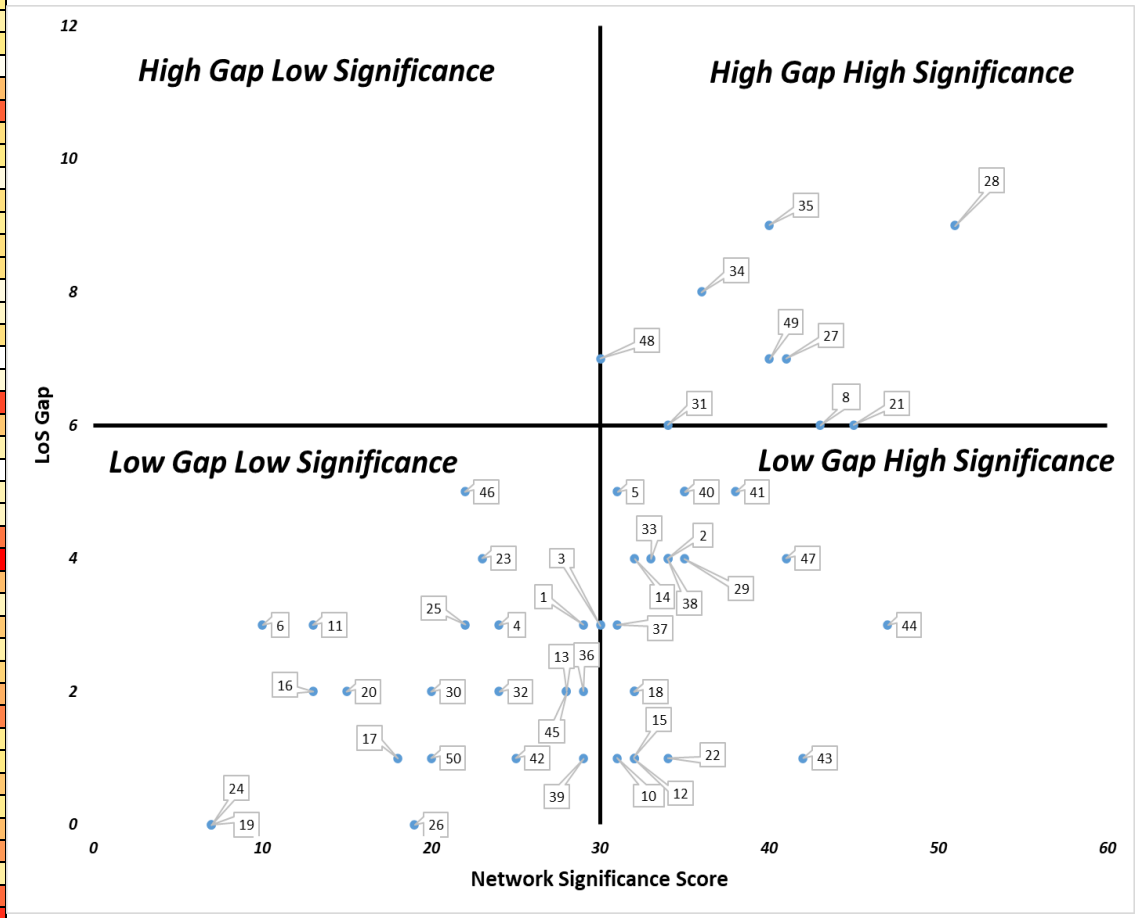


Figure 8 LoS Gap vs Network Significance Score

3.3.3 Key findings

Some key findings from the assessment are as follows:

- Across all of the assessed road segments, bike riding and road safety have the highest gaps in performance as well as network significance.
- Road corridors identified as having a high combined NSS and LoS Gap include Paterson Street, York Street, Tamar Street and Goderich Street.
- Road segments with a high performance gap for General Traffic and Freight and high network significance are Wellington Street and Bathurst Street between Paterson Street and Canning Street, and Goderich Street between Lindsay Street and Forster Street.
- A number of road network upgrades including new signals at Gleadow Street and right turn bans at Lindsey Street have recently been carried out along Goodrich Street. However, at the time of the assessment, they were still only proposals and therefore not considered in the existing network performance. It is anticipated that, with the upgrades in place, the performance gap shall be reduced.
- For bus performance, Tamar Street between Lindsay Street and Brisbane Street had the highest LoS gap, with Paterson Street between Charles Street and George Street being identified as having the highest network significance combined with a gap in performance.
- Opportunities to improve bike riding facilities have been identified for the following sections to further complete the primary and secondary bike networks:
    - Paterson Street between Bridge Road and George Street
    - George Street between Cameron Street and William Street
    - Howick Street between Midland Highway and Charles Street
    - Brisbane Street between George Street and St John Street
    - St John Street between Elizabeth Street and the Esplanade
- A number of operating gaps were identified for pedestrians within the CBD. The road segment with the highest network significance and LoS Gap for pedestrians is Tamar Street between Lindsay Street to Brisbane Street.

To improve the Launceston network performance, a focus should be placed on:

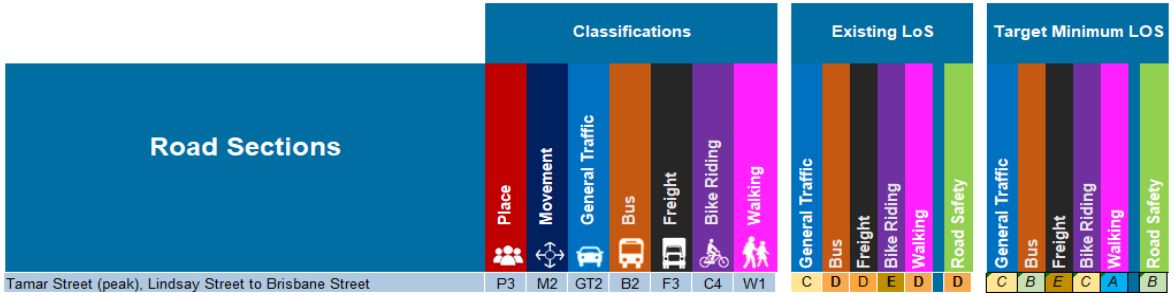
- ***Improving Road Safety across all routes***
- ***Improving walking facilities on strategically identified walking routes***
- ***Improving bike riding facilities on strategically identified bike riding routes***
- ***Continue to provide for general traffic and freight***
- ***Provision of bus facilities, particularly for Paterson Street***

Case Study

Tamar Street, Lindsay Street to Brisbane Street

Performance Assessment

This section of Tamar Street was identified as needing to have a high movement function in the future, with pedestrians prioritised the highest. The road segment was classified as a secondary route for General Traffic and Buses, with Freight next then Bike Riding. The aspirational Place target is a P3, indicating in the future this area will be significant at a Municipal level including an increase in visible on-street staying activities (i.e. public seating and alfresco dining). Bike Riding was not classified as a high priority on this link due to other alternative routes being planned or constructed at the time of assessment (i.e. the pedestrian and bike riding bridge connecting to the new UTAS Inveresk campus). An extract of the network performance assessment tool is provided below:



Existing Level of Service was estimated using available data, qualitative assessments of on-site conditions and through consultation with the working group. Tamar Street is currently used by large volume of motor vehicles, particularly during the peak time. Therefore, it is expected that any non-motorised road users such as pedestrians and bike riders will experience some deficiency in performance. This has been reflected within the network assessment, and the highest level of service gap is evident for walking, which is currently estimated as being a LoS D, with aspirations to target a LoS A. Walking attracts a relatively high Network Significance Score based on its classification within the assessment, as well as the assigned Place score. This score indicates that walking is a key focus area for this road segment to continue to allow for high movement, as well as increase the place value of Tamar Street. The outcomes of the Network Performance Assessment for Tamar Street, between Lindsay Street and Brisbane Street for all transport modes are shown below:

	Walking	General Traffic	Bus	Freight	Bike Riding
Level of Service (LoS) Gap	-3	0	-2	+1	-2
Network Significance Score	12	3	2	1	6

Case Study

Tamar Street, Lindsay Street to Brisbane Street

Walking Existing Conditions – LoS D

Based on the LoS performance criteria developed as part of the Launceston Network Operating Framework, a LoS D for pedestrians would include the following characteristics:

- Freedom to select individual walking speed and to bypass other pedestrians is restricted.
- Walking area may be slightly impeded by street furniture, signs and other obstructions.
- Delay of around 30 to 60 seconds before an opportunity to cross.
- Walking routes experience moderate delay to travel to destination.

Walking Desired Condition – LoS A

A road segment performing at a LoS A would display the following characteristics:

- Walking speeds are freely selected, and conflicts between pedestrians are unlikely. Clear walking area free of obstructions.
- Paths are generous in widths and crossing opportunities within 25m of demand.
- Minimal or no delay in crossing.
- Walking routes experience minor delay to travel to destination.

Crash History

There were no pedestrian crashes reported on Tamar Street between Lindsay Street and Cimitiere Street.

Opportunities

1. Increased mid-block crossing opportunities

Currently there are no mid-block crossing facilities provided between Lindsay Street and Brisbane Street. Assuming that mid-block crossing of both lanes would be difficult on this street, particularly during peak times, distances between pedestrian crossings at signalised intersections are large (largest being 170 m between Esplanade and Cimitiere Street).

2. Signalised intersection delays

There is an opportunity to adjust signal timings and phasing to reduce the pedestrian delay at individual intersections at certain times of the day. This needs to be balanced with the other competing demands for each intersection. Other strategies may include; extended pedestrian crossing times, improved bicycle/pedestrian detection, exclusive or leading pedestrian phasing.

3. Footpath widths

Generally in the order of 2.3 m, however there are a large number of obstructions, and available waiting room at intersections is limited (particularly at the “Milk Bar” corner of Cameron and Tamar). Opportunity to widen the footpath, particularly at intersections, and to reduce street clutter.

NETWORK IMPROVEMENTS AND OPERATING PLANS

4. Network improvements and operating plans

4.1 Approach to operating strategies

Following the analysis of the Network Performance Assessment results, a number of focus areas were selected based on conflict area and opportunity discussions held with stakeholders. The focus areas are:

1. Overall Network Conflicts
2. Network Safety
3. Bike Riding

For these focus areas an initial approach to operational strategies for different modes in specific conflict areas are outlined below. These are intended to guide consideration of the types of operational and infrastructure responses that may be appropriate given the modal priorities defined by the stakeholder group.

The performance assessment indicated that of the roads assessed, bike riding and road safety both had the highest Level of Service Gaps, as well as having comparatively high Network Significance Scores.

A number of network strategies are available to manage network conflicts and improve operational performance, such as:

- Control of access onto the road network from abutting land
- Allocation of road space through management of traffic lanes, and parking
- Operation of traffic signals and the use of other intelligent transport systems
- Traffic re-routing
- Information provided to road users to make better decisions on mode, time and route choice
- Improving traffic flow trough particular corridors

In some cases, network performance cannot be maintained through operational strategies alone. In these cases improvements to transport infrastructure may be required.

High level network strategies have been developed for the three focus areas identified. The operational plans and strategies have been developed to guide how to implement the strategic objective and modal priorities, but not to specifically identify treatments.

Some case studies are provided throughout the next sections to illustrate how the operational plans and strategies could be applied to particular road segments.

A Traffic Signal Operating Plan is a key output of the Network Operations Plan for Launceston, as this is a current focus for investment and improvement in the Inner Launceston area. The following section provides more details regarding this specific plan.

4.1.1 Traffic signal network operating plans

Austroads outlines how the application of a Network Operating Plan (NOP) can provide guidance for day-to-day signal operations and for reference during signal optimisation reviews. The aim is to provide a link between day to day operations and decision making for a range of elements including but not limited to public complaints, new project strategic setting, operation reviews, and to operationalise the multi-stakeholder agreed network priorities linked to place function.

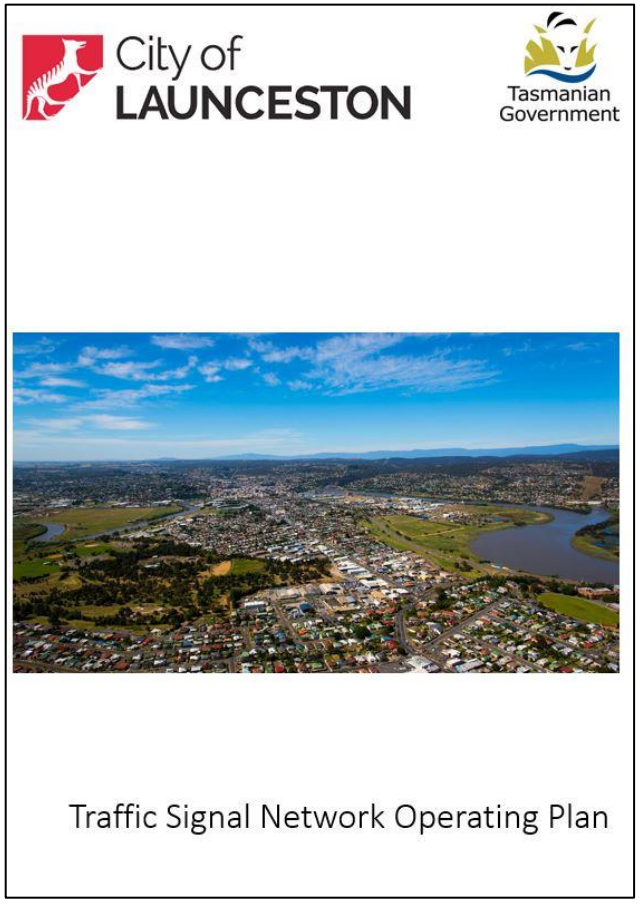
More specifically, a NOP can be utilised by operations staff to:

- Align day-to-day signal operations with the strategic network intent (i.e. align with network strategy for user priority).
- Assess and inform decision making regarding the 'network fit' of proposed operational or infrastructure changes which may involve signal changes.
- Assist in managing stakeholder expectations for operational outcomes for performance of non-priority modes on certain sections of the network.

Importantly, the development of a NOP does not remove the ability or need for operations staff to make day-to-day decisions regarding operation of the traffic signal network based on network conditions, events or other considerations.

The Launceston Traffic Signal Network Operating Plan draws on the Movement and Place levels of encouragement (refer Section 2.5) to guide trade-off decision-making for traffic signal planning, operation, and monitoring.

The Launceston Traffic Signal NOP is a supporting standalone document.



4.2 Focus Area 1 – Network Conflicts

4.2.1 Identifying the performance gap

The outcomes of network significance and level of service gap as discussed in Section 3, have been combined and spatially represented in Figure 9. This provides visualised results identifying the road segments where initial investment or operational changes should be focussed. The following road segments provided the highest values for network significance and performance gaps:

- Tamar Street (between Lindsay Street and Brisbane Street)
- York Street (between Wellington Street and West Tamar Highway)
- Paterson Street (between Charles Street and St John Street)

This analysis considers the impacts of Road Safety performance as well as the individual modes. However, whilst Place is considered in the NSS score, a LoS gap was not assessed as part of this study and therefore not directly included.

The legend used in the spatial map represents a percentile weighting of the product of the NSS score and LoS Gap as shown below.

Legend		
A	Top 10%	High NSS x Gap score
B	Top 25%	
C	Top 50%	
D	Top 75%	
E	Remainder	Low NSS x Gap score

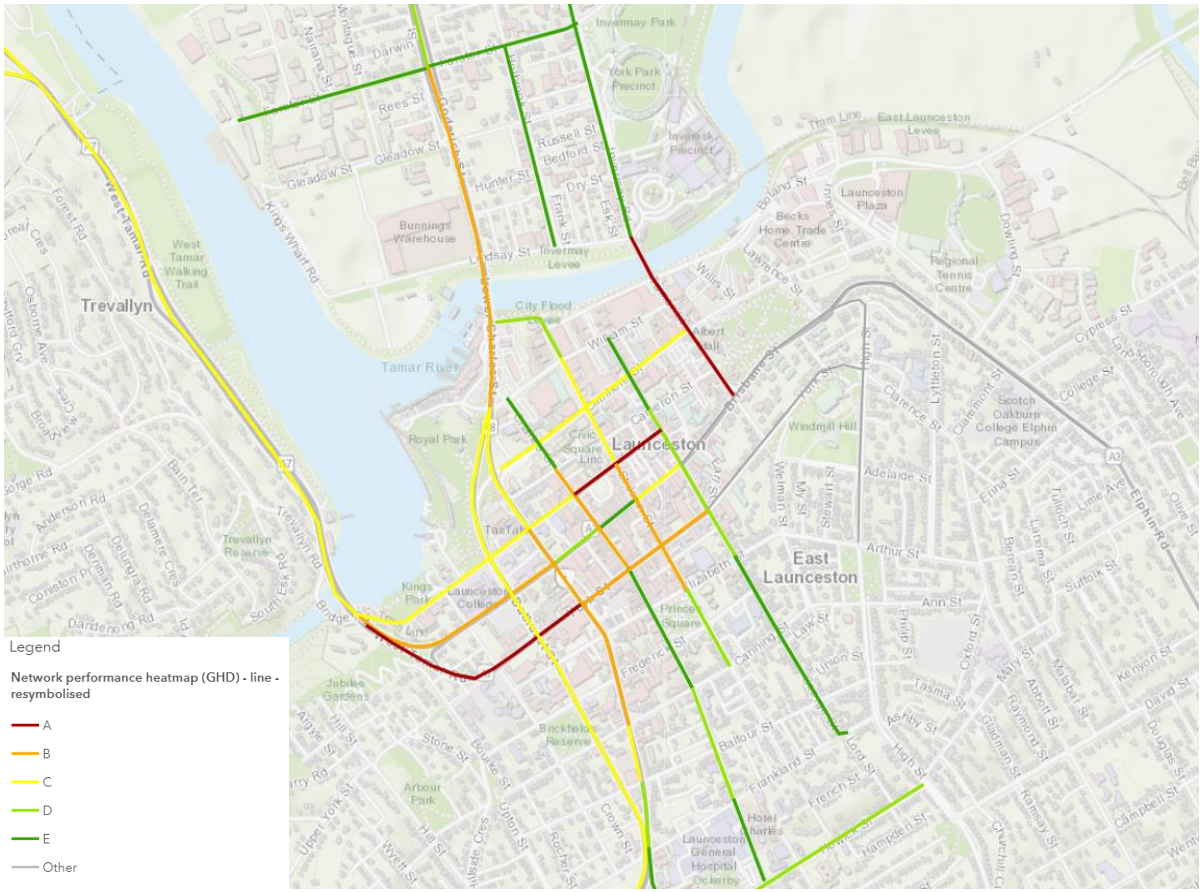


Figure 9 Network significance and performance gap mapping

4.2.2 Potential operational plans and strategies

An overview of the potential operating plans and strategies that could be adopted to reduce the conflict and performance gaps identified for the three priotiy road segments is provided below. The Paterson Street segment is explored in more detail in the following Case Study.

Road	Operation Gap	Potential operating plans strategies
Paterson Street (between Charles Street and George Street)	High place combined with high movement (bus, walking and bike riding) function. Performance gap identified for buses, walking and bike riding. Adjusted weighting for buses on this segment in light of plans to relocate bus interchange between Charles Street and St John Street.	Temporal access restrictions for general traffic between Charles Street and St John Street (AM and PM peaks). Prioritise bus access between Charles Street and St John Street at peak times as part of Traffic Signal Network Operating Plan. Encourage general traffic to make alternative route choices, particularly for access to Paterson Street East carpark during peak times. Identify Cimitiere Street as being main access point from the west and north into the CBD for General Traffic.
York Street (between Wellington Street and West Tamar Highway)	Moderate place combined with high movement (general traffic and buses) function. Performance gap identified for buses.	Signal operating plan to optimise vehicular throughput and to reduce delay for buses during peak times. Consider allocation of traffic lanes on York Street for bus only movement. Consider alternate east west routes to reduce general traffic reliance on York Street – particularly to resolve conflict on York Street between George Street and Wellington Street (High Place, Low GT) which feeds into this segment.
Tamar Street (between Lindsay Street and Brisbane Street)	Moderate place combined with high movement (walking and bus) function. Performance gap identified for walking, also bus and bike riding.	Increase mid-block crossing opportunities for pedestrians. Improve signalised intersection delays for pedestrians and bike riders, or identify alternate routes (such as proposed St John Street to Holbrook Street active transport bridge). Increase available footpath widths by reducing obstructions, and increasing available waiting room at intersections. Prioritise buses during peak times on Invermay Road/Tamar Street Primary route.

Case Study

Paterson Street, George Street to Charles Street

Paterson Street is currently functioning as a major urban arterial road within Launceston CBD, providing key access to large on and off-street parking areas. Following the allocation of priorities by the stakeholders, Paterson Street was identified as an area with an aspirational place score of P1 which has a national to state level of attraction. The future Launceston bus interchange has been proposed to relocate to Paterson Street with reduced competing demand for general traffic and freight. Paterson Street was identified as a primary bus route, primary walking and primary bike riding route. The high transport modal classification generally leads to high desired LoS and this may lead to multiple network conflicts while improving the network environment.

Paterson Street is currently being used as one of the major east-west transport corridors within the Launceston CBD with high daily traffic movements. It has a typical cross section width of 12 metres kerb to kerb between Wellington Street and George Street and changes from two-way to one-way eastbound at Paterson Street / Charles Street intersection. The Paterson Street cross section is shown in Figure 10. Currently, it is used by a mix of general traffic, delivery and service vehicles, buses, bike riders and pedestrians. On-street parking is also currently provided on both sides of Paterson Street.

Figure 10 Paterson Street cross section

Case Study

Paterson Street, George Street to Charles Street

Bus

Based on the aspirational transport modal plans Paterson Street will become part of the future primary bus network (B1), and as such, has been allocated a target level of service C. To achieve the desired LoS C, based on the LoS criteria that was developed in the Framework, traffic is required to be cleared within one cycle at signalised intersections or less than 30 seconds at unsignalised intersections. The travel times for buses should have a variance less than 2 to 3 min to the planned timetable. Currently Paterson Street is estimated to be operating at a LoS D for buses during peak times.

The existing bus interchange is proposed to be relocated from St John Street to the at-grade carpark on Paterson Street between Charles Street and St John Street. As a result, it is proposed that Paterson Street may become two-way between Charles Street and St John Street.

There is opportunity to improve the operation and efficiency of bus services within this section of Paterson Street.

General Traffic

This section of Paterson Street has been identified in the Framework as a GT4 route, providing local secondary access, and as such, a low level of encouragement for this use. This provides an opportunity to allocate road space to the other users requiring access and movement in this road segment. Particularly between Charles Street and St John Street which will have strong encouragement for bus movement and access. Access to the CBD and the Paterson Street east carpark will still be possible via Cimitiere Street and St John Street.

Active transport

Paterson Street is classified as a primary walking (W1) and bike riding (C1) route with desired LoS targets of A an B respectively. Currently, there is limited bike priority infrastructure and crossing opportunities for pedestrians on Paterson Street between George Street and Charles Street.

Paterson Street provides direct access to a large number of businesses, shops, offices, and community centres. It also provides a crucial role linking between the Mall and Civic Square, as well as east/west between Kings Park (and beyond) and Launceston College to the CBD centre.

With the reallocation of road user priorities within the segment of Paterson Street there is opportunity to improve performance for pedestrians and bike riders, with the allocation of greater road space and priority through the Traffic Signal Network Operating Plan.

Potential Operating and Improvement Strategies

- Restrict general traffic access between Charles Street and St John Street during peak times. Outside of peak times, local access only should be encouraged for general traffic (similar to Rosny Bus Mall in Clarence municipality).
- Wayfinding plans and traffic management plans to inform road users of changed traffic conditions and provide alternative access routes.
- Bus lanes and/or signal priority phases for buses at signalised intersections.
- Median islands and levelled crossing could be considered for pedestrians to provided more crossing opportunities where necessary.
- Separated bike lane.

4.2.3 Network Conflicts - Next Steps

The following next steps have been identified as forming part of an implementation plan to action the identified operating plans and strategies:

1. Develop a CBD wayfinding and access plan to identify key access routes into the CBD.
2. Incorporate network operational strategies into the Launceston Transport Strategy currently being developed.
3. Undertake a transit corridor study to identify key locations for bus priority and efficiency improvements.
4. Incorporate identified plans and strategies into Traffic Signal Network Operating Plan.
5. Develop Design Guidelines for the urban Launceston area – a translation of network priorities and objectives into performance measures and design solutions.

4.3 Focus Area 2 – Network Safety

4.3.1 Identifying the performance gap

The network performance analysis indicates that the road segments with a high safety performance gap and high network significance are concentrated within the Launceston CBD area.

The top five road segments with the highest safety LoS Gap and Network Significance Score are highlighted in Figure 11 and listed below:

- Paterson Street (between George Street and Wellington Street)
- St John Street (between Paterson Street and Elizabeth Street)
- Wellington Street (between Cimitiere Street and Canning Street)
- York Street (between West Tamar Street and George Street)
- Charles Street (between Cameron Street and York Street)

Historic crash data utilised to identify the existing safety performance of the network indicates that a large number of serious and fatal crashes are occurring at intersections within this area. Crashes at intersections are not uncommon in city environments and where there is an increased number of conflicts, also not exclusive to the Launceston city is the occurrence of incidents involving pedestrians. However, the location of previous incidents combined with the strategic objectives and modal priorities can provide insight into strategies to improve the safety performance.

Crash data for the network, and for vulnerable users can be seen in Figure 12 and Figure 13.

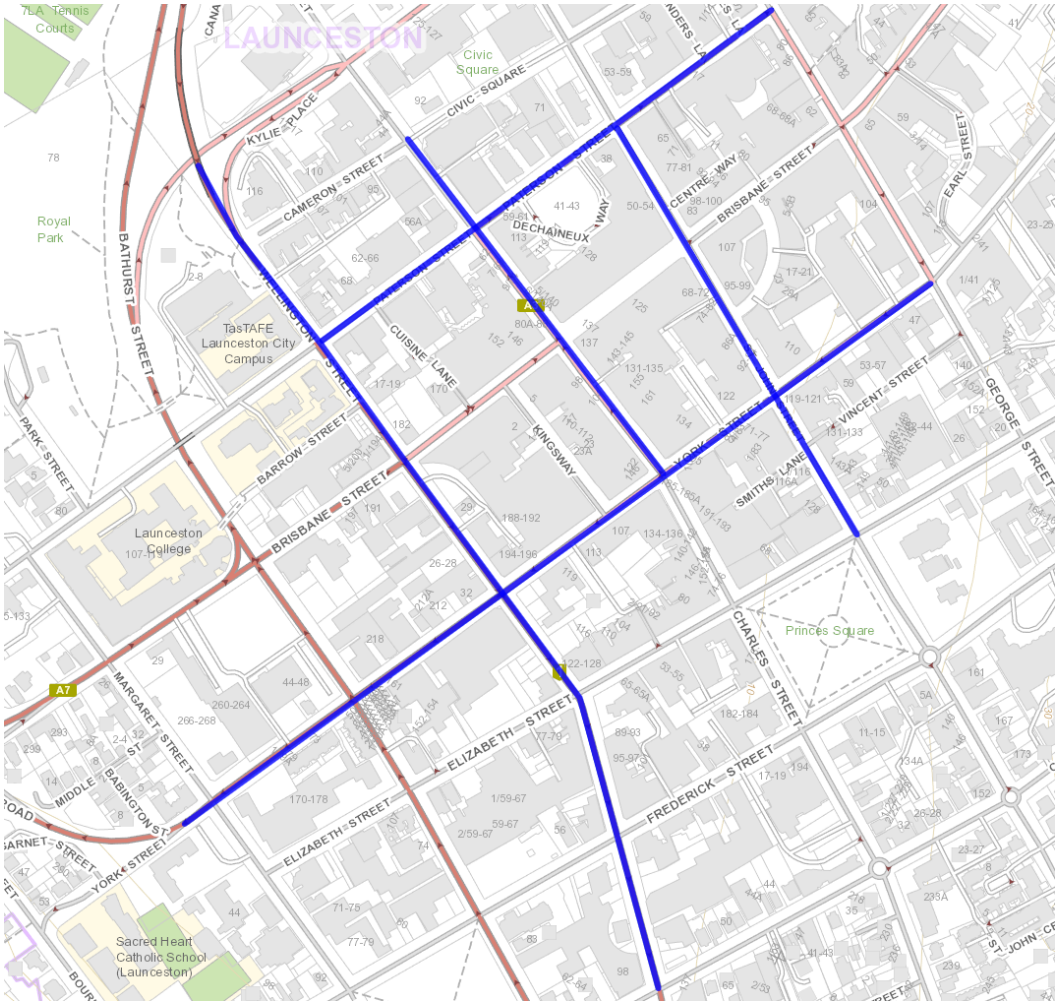


Figure 11 High network safety performance gaps

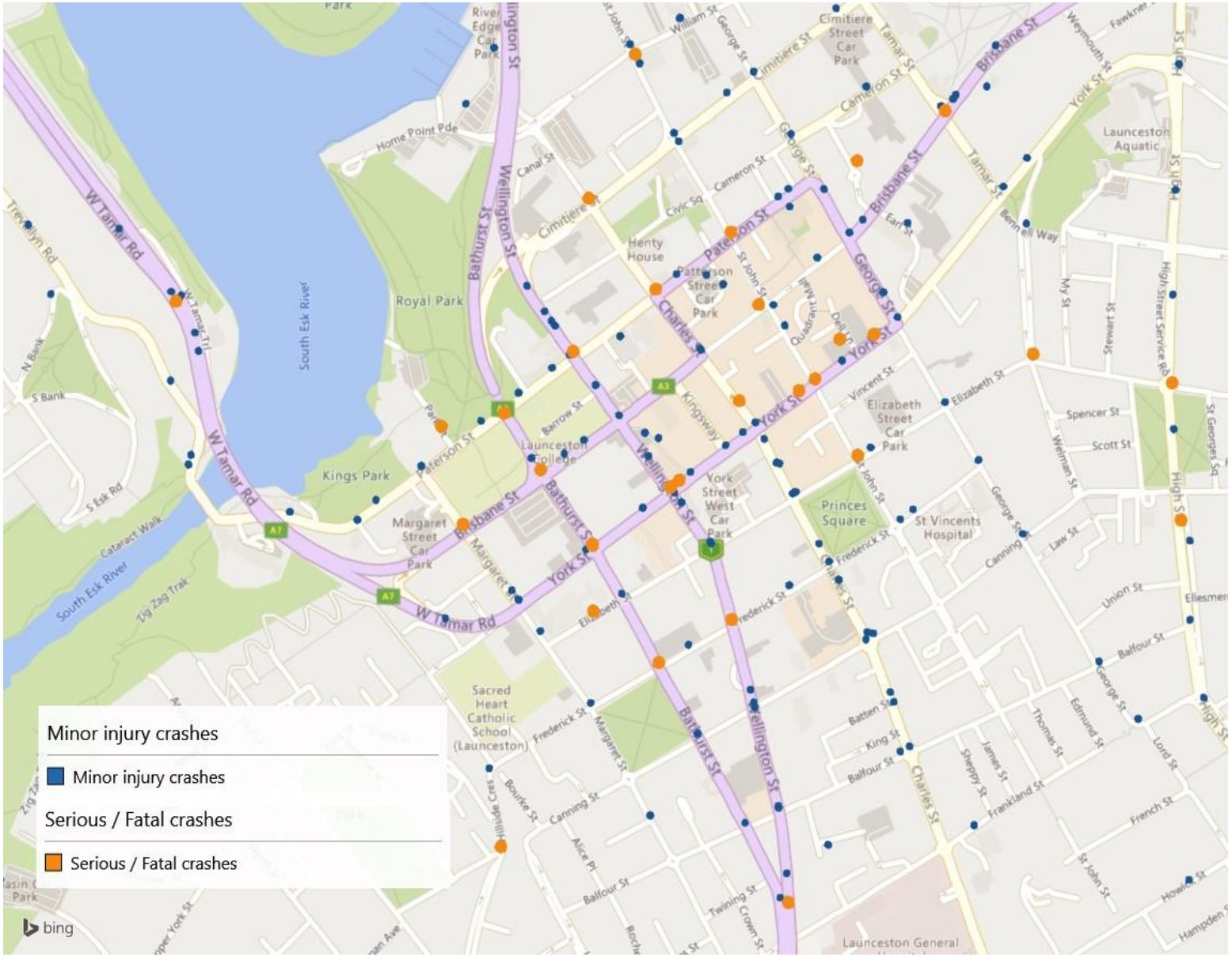


Figure 12 Casualty crash locations – all traffic modes (2015 – 2020)

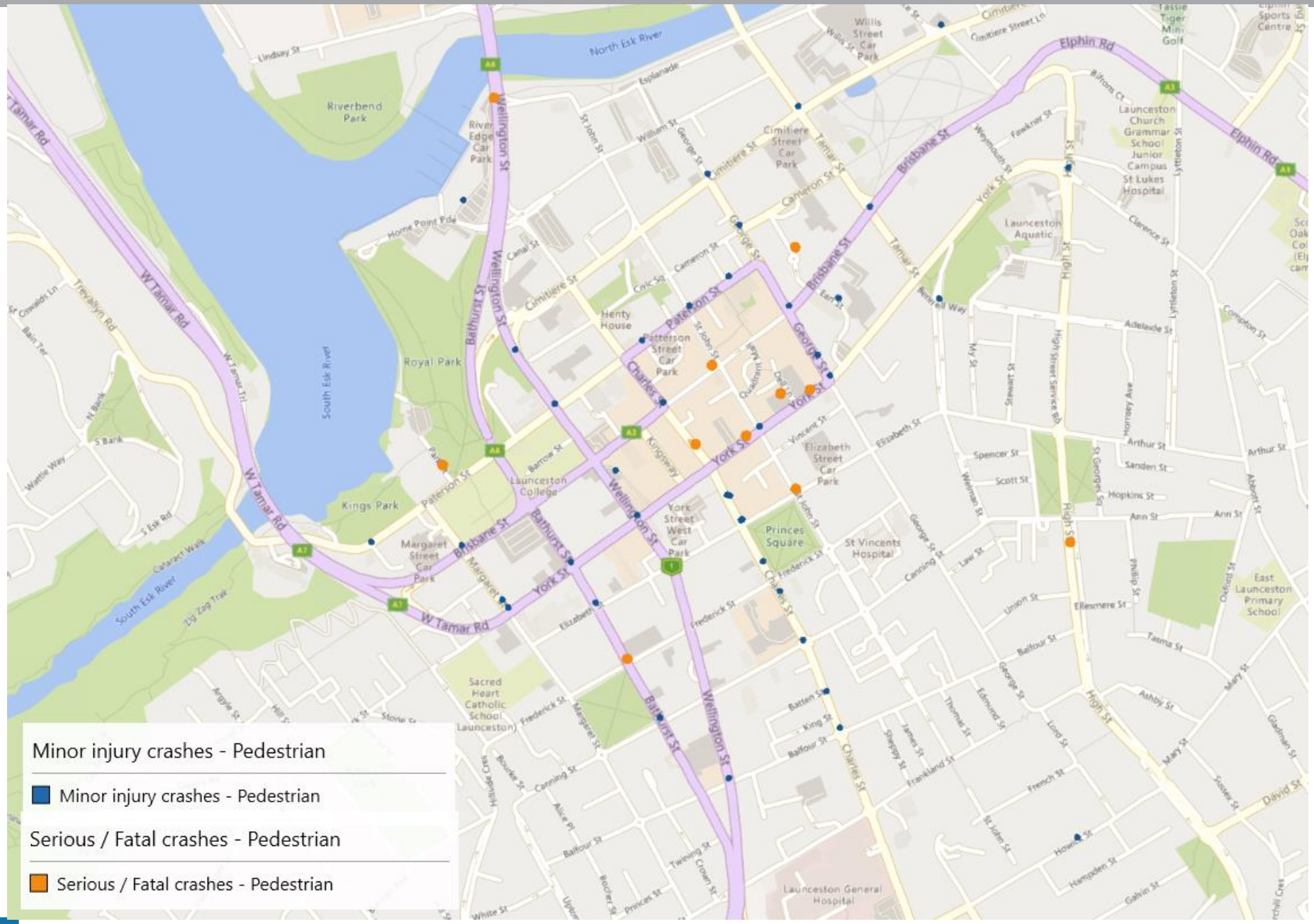


Figure 13 Casualty crash locations – pedestrians (2015 – 2020)

4.3.2 Potential operational plans and strategies

An overview of the potential operating plans and strategies that could be adopted to reduce the safety performance gaps identified for the road segments identified is provided below.

Pedestrians and Bike Riders

Pedestrians and bike riders are among the most vulnerable road users. In collisions with other road users they suffer the most severe consequences because their level of personal protection compared to persons in a vehicle is very low. Addressing vulnerable road user safety performance deficiencies would not only improve their safety experience but also improve their commuting experience.

For example, on Charles Street there are higher number of pedestrian injury crashes compared to other roads. York Street has the second highest number of incidents involving pedestrian, however, Charles Street is classified as a primary walking route. So a greater focus should be placed on addressing pedestrian road safety on the Charles Street corridor in the immediate term to assist in achieving the overall network objectives.

Improving the level of service for bike riders within an urban network is best achieved through separation from motorised traffic, or by a reduction in speed limit if separation cannot be provided.

Improving safety for pedestrians can be achieved through a variety of measures, such as mid-block crossing facilities, vehicle speed reductions, signal operation changes such as leading pedestrian intervals or all pedestrian phases or even through a reduction in wait times so pedestrians don't attempt to cross mid-block or cross during the red phase.

Modal Conflict

Road safety performance may be compromised where there are high numbers of different users all trying to utilise the same space. In an urban environment it is difficult to provide enough road space for all of the users to achieve desired level of service targets, therefore, it is often necessary to restrict access for a particular mode or reallocate it to another route.

Section 2.4 and 2.5 provide direction relating to the priority of users on various road segments. This can provide a useful decision making tool when designing infrastructure modifications or in developing operating plans.

Movement and Place Conflict

Areas such as Charles Street, York Street and Paterson Street are transforming into areas of high place value due to the expansion of the CBD boundary and key movement connections between land uses and other areas of significance, such as the Charles Street connection of the CBD to the Launceston General Hospital. This transformation can take time, and in the meantime the conflict requires management to reduce incidents. Access management into properties and carparks is another potential conflict area between vehicles-vehicles and vehicles-pedestrians.

Resolution of desired function for these key roads would allow for the road space to be designed appropriately for the required users. Design guidelines developed for Launceston could be used to translate level of encouragement and strategic objectives into performance criteria and design solutions for new roads, upgrades and maintenance.

4.3.3 Network Safety - Next steps

The following next steps have been identified as forming part of an implementation plan to action the identified operating plans and strategies:

1. Undertake further crash analysis investigation into key intersections.
2. Undertake network wide road safe auditing, concentrating on areas of high priority.
3. Incorporate identified pedestrian and cyclists strategies into Traffic Signal Network Operating Plan
4. Develop Design Guidelines for the Launceston urban area to translation the network priorities and objectives into performance measures and design solutions.
5. Incorporate network operational strategies into the Launceston Transport Strategy currently being developed, taking a safe systems approach to managing safety performance issues.

4.4 Focus Area 3 – Bike Riding

4.4.1 Identifying the performance gap

Improvements to bike riding infrastructure was a strong theme throughout the development of the Framework and through discussions with stakeholders.

Figure 14 highlights the difference between the planned aspirational bike routes (red) and the implemented bike riding infrastructure within Launceston area (green). The gaps highlight where there is opportunity to improve connectivity across the network. In order to assist in prioritising where investment could be focussed initially, road sections with the highest bike riding performance gap and high network significance were extracted from the network performance assessment. These roads are highlighted in purple in Figure 14, and were identified as:

- Paterson Street (Bridge Road to George Street)
- St John Street (Esplanade Street to Elizabeth Street)
- George Street (William Street to Paterson Street)
- High Street (Elphin Road to Arthur Street)
- Brisbane Street (St John Street to George Street)
- Howick Street (Charles Street to Wellington Street)
- Goderich Street (Gleadow Street to Lower Charles Street)
- Westbury Road (Wellington Street to Stanley Street)
- Hobart Road (Wellington Street to Opossum Road)

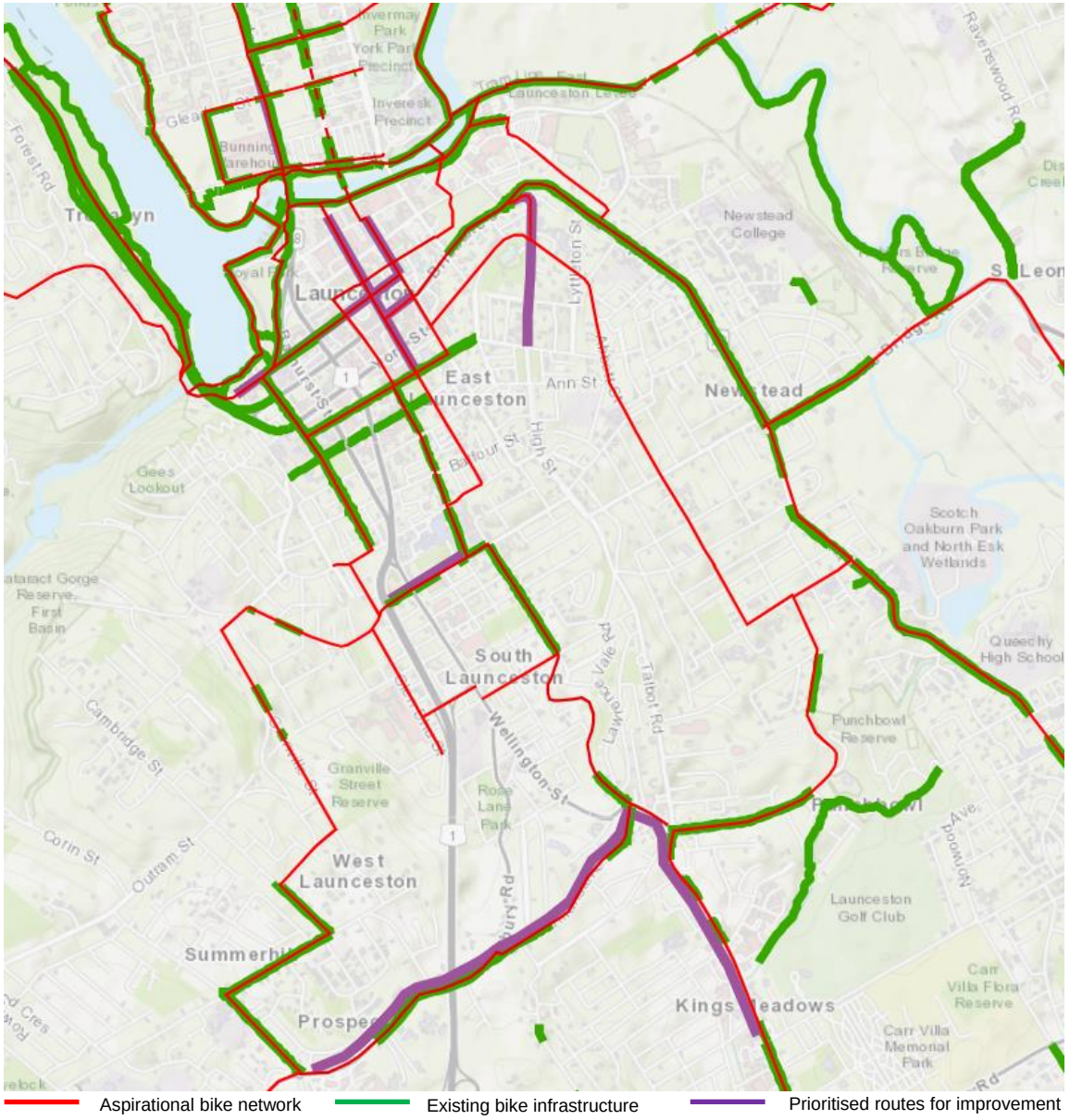


Figure 14 Aspirational bike network vs existing infrastructure

4.4.2 Prioritising road segments with low user conflict

To understand where in the network there is opportunity for improving bike riding infrastructure that is not opposed by the conflicting need to provide for general traffic and freight movement, a comparison of the active transport (bike riding and walking) and general traffic transport (general traffic and freight) was undertaken for all road sections assessed. Figure 15 provides a visualise interpretation of the trade-off between varying users on each road segment. A number of roads have been highlighted where there is a high Network Significance Score for active transport, and a low significance score general traffic. Incorporating this result with the road segments indicating a high performance gap, it enables key road segments to be further prioritised based on ease of implementation.

Index	Road Section
1	Bathurst Street (NB), Canning Street to Midland Highway
2	Bathurst Street (NB), Paterson Street to Canning Street
3	Bathurst Street (NB), William Street to Paterson Street
4	Brisbane Street (N-EB), Charles Street to Wellington Street
5	Brisbane Street (N-EB), George Street to St Johns Street
6	Brisbane Street (N-EB), St John Street to Charles Street
7	Brisbane Street (N-EB), Wellington Street to West Tamar Hwy
8	Charles Street (NB), Cameron Street to York Street
9	Charles Street (NB), Canning Street to Frankland Street
10	Charles Street (NB), Frankland Street to Howick Street
11	Charles Street (NB), William Street to Cameron Street
12	Charles Street (NB), York Street to Canning Street
13	Cimitiere Street (Off-Peak), Charles Street to Tamar Street
14	Cimitiere Street (Peak), Charles Street to Tamar Street
15	East Tamar Highway, Mowbray Link to Mayne Street
16	Forster Street, Goderich Road to Kings Wharf Road
17	Forster Street, Invermay Road to Goderich Road
18	George Street, Cameron Street to Elizabeth Street
19	George Street, Elizabeth Street to Frankland Street
20	George Street, William Street to Cameron Street
21	Goderich Street, Forster Street to Lindsay Street
22	Goderich Street, Mayne Street to Forster Street
23	High Street, Brisbane Street to Arthur Street
24	Holbrook Street, Forster Street to Gleadow Street
25	Howick Street, Midland Highway to Charles Street
26	Invermay Road, Mowbray Link to Lindsay Street
27	Paterson Street (off peak), Charles Street to George Street
28	Paterson Street (peak), Charles Street to George Street
29	Paterson Street, Bridge Road to Charles Street
30	St John Street, Elizabeth Street to Canning Street
31	St John Street, Patterson Street to Elizabeth Street
32	St John Street, The Esplanade to William Street
33	St John Street, William Street to Patterson Street
34	Tamar Street (off peak), Lindsay Street to Brisbane Street
35	Tamar Street (peak), Lindsay Street to Brisbane Street
36	Wellington Street (SB), Balfour Street to Frankland Street
37	Wellington Street (SB), Canning Street to Balfour Street
38	Wellington Street (SB), Cimitiere Street to Paterson Street
39	Wellington Street (SB), Frankland Street to Westbury Road
40	Wellington Street (SB), Normanstone Road to Kings Medow
41	Wellington Street (SB), Paterson Street to Canning Street
42	Wellington Street (SB), Westbury Road to Normanstone Road
43	West Tamar Hwy (Off-Peak), Brownfield Lane to Margaret Street
44	West Tamar Hwy (Peak), Brownfield Lane to Margaret Street
45	Westbury Road, Wellington Street to Stanley Street
46	York Street (S-WB) (off peak), George Street to Wellington Street
47	York Street (S-WB) (off peak), Wellington Street to West Tamar Hwy
48	York Street (S-WB) (peak), George Street to Wellington Street
49	York Street (S-WB) (peak), Wellington Street to West Tamar hwy
50	York Street (S-WB), High Street to George Street

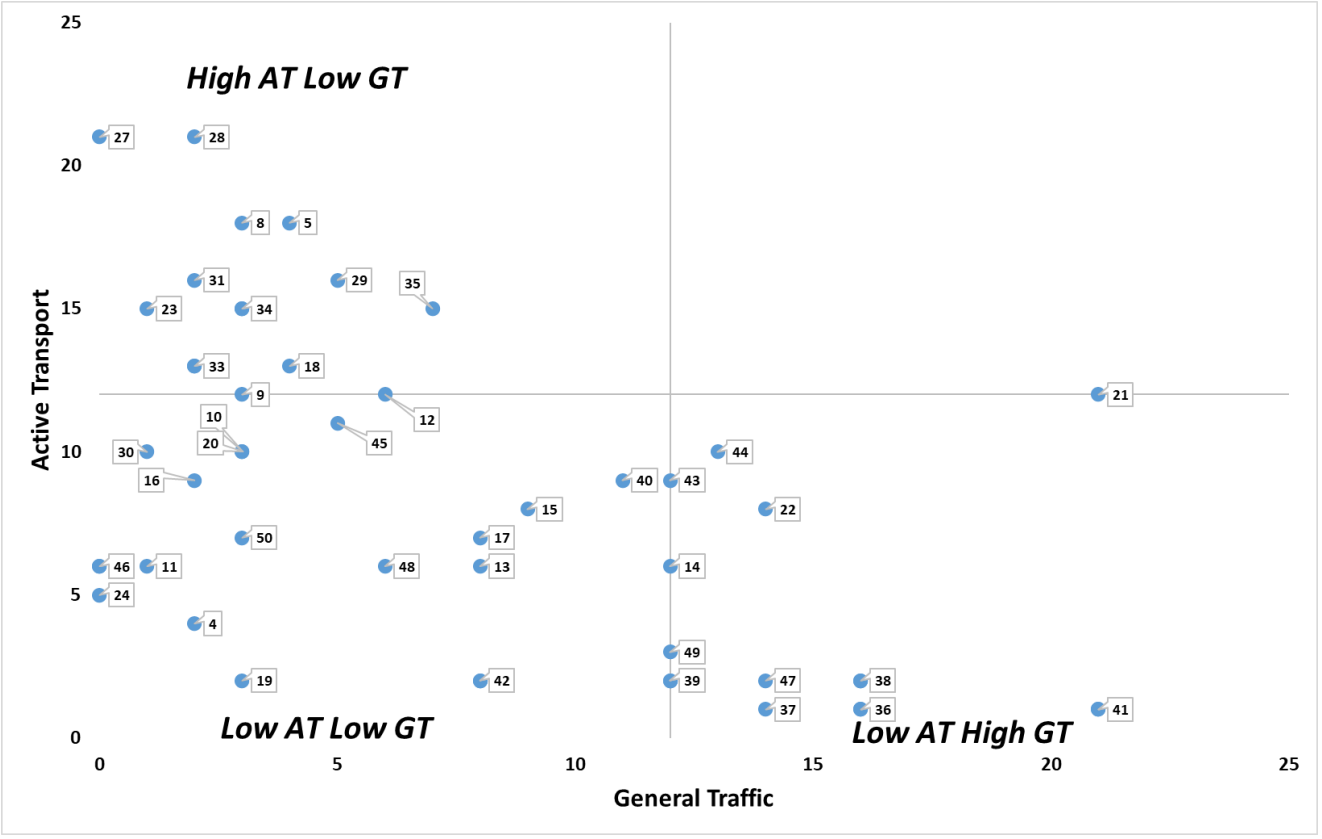
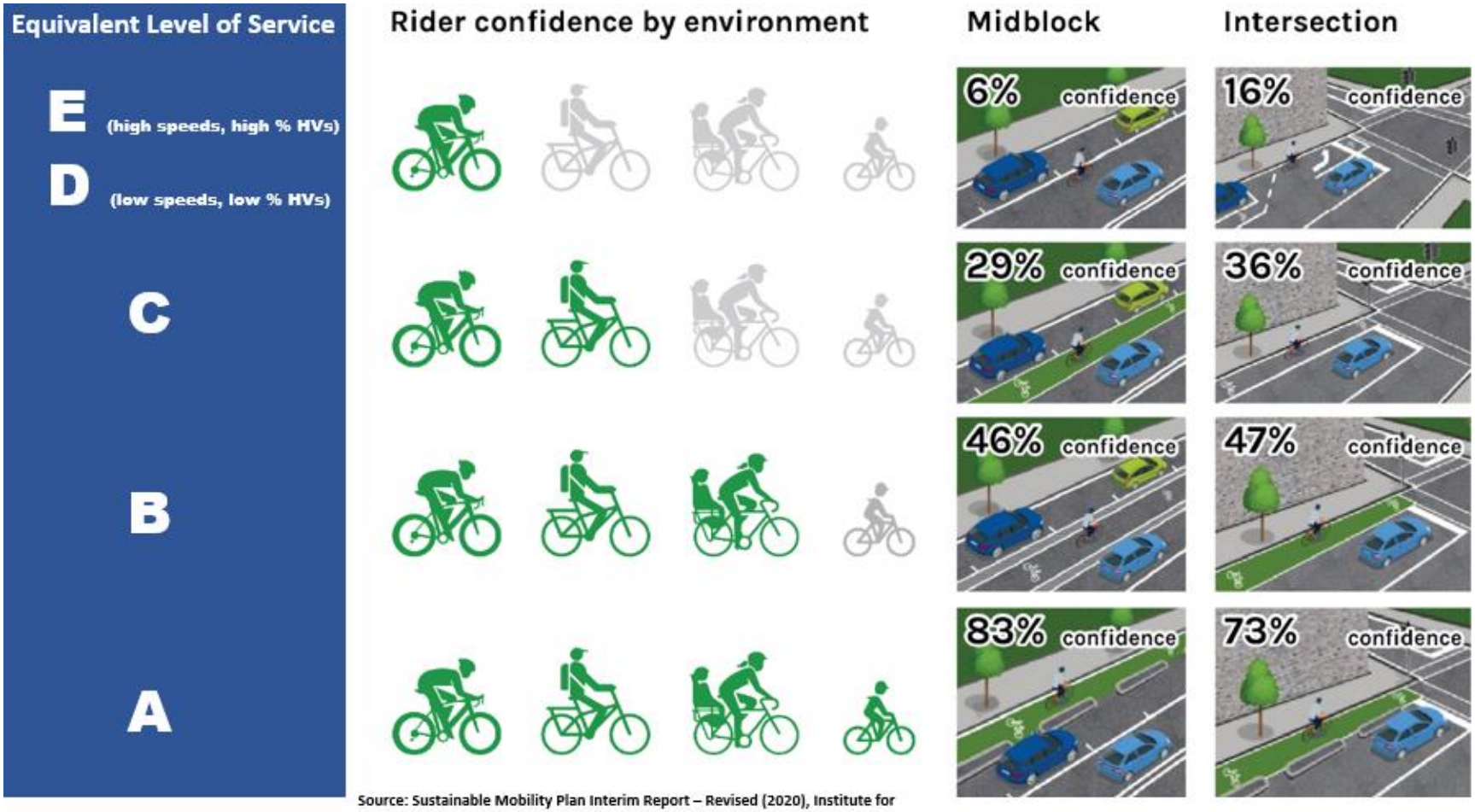


Figure 15 Active transport versus general traffic Network Significance Score

4.4.3 Level of Service Targets for Bike Riding

Level of service targets for bike riding has been derived from the table shown in Figure 16 which indicates the propensity to ride for various rider confidence levels. This was used as a guide to assess existing levels of service in the network, as well as target infrastructure improvements to achieve objectives.



Source: Sustainable Mobility Plan Interim Report – Revised (2020), Institute for Sensible Transport

Figure 16 Bike riding Level of Service table

4.4.4 Potential Operational Plans and Strategies

An overview of the potential operating plans and strategies that could be adopted to reduce the conflict and performance gaps identified for the road segments prioritised for bike riding is provided below.

Road	Operation Gap	Potential operating plans strategies	Level of priority
Paterson Street	Identified performance improvement from LoS D to LoS B. High aspirational Place combined with high Movement (bus, walking and bike riding) function. Bus interchange proposed to be relocated to Paterson Street	Separated bike lane with some clearance to traffic lanes. Discourage through traffic between Charles Street and St Johns Street, particularly during peak times.	Tranche 1
St John Street	Identified performance improvement from LoS D to LoS B. Bus access reduced in the future with the relocation of bus interchange to Paterson Street.	With the relocation of the bus interchange to Paterson Street, opportunity to discourage general traffic and create bike boulevard or shared space or similar. Review operating speeds with a view to implement appropriate traffic calming and speed management to increase awareness of shared space for all users.	Tranche 1
George Street	Identified performance improvement from LoS D to LoS B. No bike infrastructure currently provided.	Separated bike lane with some clearance to traffic lanes. Review operating speeds with a view to implement appropriate traffic calming and speed management to increase awareness of shared space for all users.	Tranche 1
High Street	Identified performance improvement from LoS D to LoS B. No bike infrastructure currently provided.	Separated bike lane with some clearance to traffic lanes.	Tranche 1

Road	Operation Gap	Potential operating plans strategies	Level of priority
Brisbane Street (Between George Street and St John Street)	Identified performance improvement from LoS D to LoS B. No bike infrastructure currently provided. As a continuation of the city centre mall on Brisbane Street with significant place value and located between the two primary bike corridors.	Opportunity to discourage general traffic and create bike boulevard or shared space or similar. Review operating speeds with a view to implement appropriate traffic calming and speed managementto increase awareness of shared space for all users	Tranche 1
Howick Street	Identified performance improvement from LoS D to LoS B. No bike infrastructures provided as a primary bike route.	Separated bike lane with some clearance to traffic lanes.	Tranche 2
Goderich Street	High movement (general traffic, freight and bike riding) function. Low connectivity to other bike routes.	Off road bike facilities are provided. However, connection between the primary bike corridor should be separated from the primary general traffic and freight route, especially over the Charles Street bridge. An alternative crossing for active transport could be considered.	Tranche 2
Westbury Road	Identified performance improvement from LoS D to LoS B. High movement (general traffic, freight and bike riding) function.	Separated bike lane with some clearance to traffic lanes. Speed reduction required if separation cannot be achieved.	Tranche 2
Hobart Road	Identified performance improvement from LoS D to LoS B. High movement (general traffic, freight and bike riding) function.	Separated bike lane with some clearance to traffic lanes.	Tranche 2

4.4.5 Bike Riding - Next steps

The following next steps have been identified as forming part of an implementation plan to action the identified operating plans and strategies:

1. Update Launceston Arterial Bike Route Network
2. Incorporate operational and improvement strategies into the Launceston Transport Strategy currently being developed.
3. Develop Design Guidelines for the urban Launceston area – a translation of network priorities and objectives into performance measures and design solutions.

4.5 Summary

As a result of the network performance assessment of key roads in Launceston, three focus areas were identified for application of network improvements and operating plans. The following next steps have been identified to assist in implementation of the identified network strategies:

4.5.1 Network conflicts

1. Develop a CBD wayfinding and access plan to identify key access routes into the CBD.
2. Incorporate network operational strategies into the Launceston Transport Strategy currently being developed.
3. Undertake a transit corridor study to identify key locations for bus priority and efficiency improvements.
4. Incorporate identified plans and strategies into Traffic Signal Network Operating Plan.
5. Develop Design Guidelines for the urban Launceston area – a translation of network priorities and objectives into performance measures and design solutions.

4.5.2 Network safety

1. Undertake further crash analysis investigation into key intersection.
2. Undertake network wide road safety auditing, concentrating on areas of high priority.
3. Incorporate identified pedestrian and cyclists strategies into Traffic Signal Network Operating Plan
4. Develop Design Guidelines for the Launceston urban area to translation the network priorities and objectives into performance measures and design solutions.
5. Incorporate network operational strategies into the Launceston Transport Strategy currently being developed, taking a safe systems approach to managing safety performance issues.

4.5.3 Bike riding

1. Update Launceston Arterial Bike Route Network
2. Incorporate operational and improvement strategies into the Launceston Transport Strategy currently being developed.
3. Develop Design Guidelines for the urban Launceston area – a translation of network priorities and objectives into performance measures and design solutions.

5. Future Application

5.1 Launceston Network Operating Framework

The Launceston Network Operating Framework is a live document which can be used to to inform strategic planning through future Master Planning exercises, development of a suite of programme interventions (programme business case approach), and strategy and policy development. Conversely, changes in policy, land use and the network, as well as outcomes from Master Planning and Programme Business Case activities may alter thinking with more refined understanding. As such, the Network Operating Framework is live and an iterative approach is undertaken so that the framework compliments and supports outcomes. This may result in changes to primary or secondary routes for modes of transport; however, these would be justified and informed at future stages.

Given its strategic nature, updates to the strategic objectives and principles could be undertaken every 5-10 years.

5.2 Network Performance Assessment and Network Strategies

The network assessment tool developed as part of this project can be used to readily update existing level of service conditions on key roads, following the completion of network improvements or changes to operating plans. The analytic graphs developed as part of the spreadsheet can assist in identifying new road segments that require future focus and funding by mode, as well as potential strategies to address performance gaps or network conflict.

Given the ease of undertaking an update of this nature, a review of network performance could be undertaken on a 1-2 year routine basis, or following a road upgrade, land use change, or operational plan.

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