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Borough of Queenscliffe

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Planning

Transport

Urban Design

Waste Management

Queenscliff Traffic Management Strategy

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Acknowledgement of Country

Bellawiyin is the Wadawurrung name for the lands where the Borough of Queenscliffe is located.

We acknowledge the Traditional Custodians of these lands, waters and skies, the Wadawurrung People.

We acknowledge and respect their continuing connections to their lands, waters, skies, culture and the contribution they make to the life and spirit of our community.

We pay respect to their past and present Elders and their emerging leaders and extend this respect to all Aboriginal and Torres Strait Islander peoples.

Project
Queenscliff Traffic Management Strategy

Prepared for
Borough of Queenscliffe

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1. Introduction

1.1. Background and Purpose

Ratio Consultants were engaged by the Borough of Queenscliffe to develop a Traffic Management Strategy for the township of Queenscliff.

The project is being undertaken in response to a range of community feedback relating to vehicle speeds, traffic volumes and road safety. Where identified issues are validated with data and observations, a range of traffic management strategies will be recommended.

All recommendations will have consideration of other strategic work, such as the Active Transport Strategy, and align with Movement & Place and Safe System principles.

1.2. What is a Traffic Management Strategy?

A 'Traffic Management Strategy' is a process of identifying existing transport and road safety issues and developing recommendations to improve the safety, amenity and access within a defined study area.

Common issues which will be addressed through this study include 'rat-running', speeding, and safety at key intersections or lengths of road.

Approaching traffic management at a precinct or township wide level allows for a holistic approach to recommending treatments rather than the often reactive and piecemeal approach.

1.3. The 'Design Event'

In designing a transport network for Queenscliff, consideration needs to be given to the seasonal nature of visitation and hence traffic.

During the peak-season, the Borough of Queenscliffe is a hub of tourism visitation and accommodation. It is understood that the permanent population of approx. 3,000 (for the whole of the Borough of Queenscliffe) swells to over 17,000 during peak times.

Furthermore, ABS Census data from 2016 indicated that approximately 56% of houses are unoccupied during off-peak periods. This number is expected to significantly fluctuate during weekends, long-weekends and school holidays.

Any increase in tourism and visitation is likely to occur during the off-peak and shoulder seasons, consistent with Council's strategic priorities.

By determining a 'design event' we ensure that the road network and transport networks are not overdesigned to cater for absolute peak conditions, but instead consider a 'peak repeatable event'.

The peak repeatable event is considered as the 85th percentile time of the year in terms of visitation and traffic volumes. A review of transport data available from the Department of Transport identified this time period as being the last week of January incorporating Australia Day and the adjacent weekend.

1.4. Study Process

The process adopted for this study included a range of data collection, on-site observations, engagement with key stakeholders, and analysis. The outcomes included the preparation of draft and final recommended traffic management plans for the study area.

The broad process used in the preparation of the Traffic Management Strategy is listed below:

- Background review (including previous community engagement / feedback);
- Traffic surveys and other data collection;
- Movement and Place framework review;
- Incorporate the findings of the Active Transport Strategy;
- Identify and validate issues;
- Develop a traffic management plan; and
- Prepared draft and final reports.

1.5. References

A range of data and information was relied upon in the preparation of this study, including but not limited to the following:

- Australian Standards;
- Austroads Guide to Road Safety;
- Austroads Guide to Traffic Management;
- On-site observations (in November 2021, January 2022 and December 2022);
- Community engagement including from previous projects and through Council's customer service database;
- Traffic classifier survey data collected during November 2021 and January 2022;
- Department of Transport open-source data including SCATS and Crashstat databases;
- Department of Transport Movement & Place classifications (accessed through VMaps); and
- Any other reports or information as referenced throughout this report.

2. Background and Context

2.1. Overview

The following section outlines and summarises the large amount of background and context as it relates to transport and traffic management within Queenscliff. This includes a range of infrastructure-based projects and other transport studies.

A significant amount of community engagement has been undertaken during recent times, which has been utilised to inform this study.

Of relevance to this study is a number of State government policies and frameworks which are important considerations to ensure that what is recommended is consistent with best practice planning and management practices.

2.2. Study Area

The study area includes the main township of Queenscliff, east of ‘the narrows’ including the arterial and all Council managed roads. The study excludes roads and off-street car parks within private or coastal foreshore managed land.

The study area is shown in Figure 2.1.

Figure 2.1 Study Area



2.3. Queenscliff Ferry Terminal Upgrade

As part of the Geelong City Deal, the Queenscliff Ferry Terminal has been redeveloped, with completion of the project occurring in 2023. The upgraded facilities aim to provide an improved visitor experience, including:

- Improved visitor facilities;
- Improved disability access;
- Safer access for pedestrians;
- Improved car parking areas; and
- Other supporting amenities.

The upgrade to the ferry terminal facilities and any potential longer-term upgrade to the fleet could be expected to increase visitation and also vehicular movements along the ferry route.

2.4. Recent and Current Transport Studies

Hesse Street Pedestrian Safety Strategy

The Hesse Street Pedestrian Safety Strategy was prepared in March 2021 by O'Brien Traffic. The aim of the study was to improve pedestrian safety and amenity in the Hesse Street commercial precinct, with a focus on the operation of its two existing designated pedestrian crossing points.

Key findings and recommendations of the study included:

- Implementing wombat crossings at the two existing designated crossing points within the core activity precinct in Hesse Street;
- Formalise the trial 40km/h speed limit to make it permanent;
- Further investigation to understand the appropriateness of implementing increased pedestrian priority at the roundabouts within Hesse Street; and
- Improved connections between Hesse Street and the ferry / harbour.

Since the preparation of the study, the two existing designated crossing points were upgraded to wombat crossings.

Other Recent Pedestrian Safety Projects

A number of other pedestrian safety projects have been completed within Queenscliff, including:

- Separated shared path along Hesse Street, south of King Street;
- Wombat crossing on Gellibrand Street, at Hobsons Street; and
- Pedestrian refuges on Flinders Street (near Cottage by the Sea) and King Street (near the small shopping strip).

These projects while focused on improved pedestrian safety and amenity, also act as traffic management devices within the road carriageway, in particular wombat crossings which have a traffic calming effect.

Borough of Queenscliffe Active Transport Strategy

The Borough of Queenscliffe has recently developed an Active Transport Strategy 2023-2033 (ATS) for the municipality. The ATS was adopted at the Ordinary Meeting of Council dated 13 December 2023.

The ATS is underpinned by a community vision and set of objectives which guide the development of strategies including infrastructure changes, advocacy and educations / communication. The community vision is outlined below with the objectives and how they will support the vision are shown in Table 2.1:

THE ACTIVE TRANSPORT VISION FOR THE BOROUGH OF QUEENSCLIFFE:

“A connected Borough, where walking, riding and wheeling are safe and enjoyable ways of moving to, from and around the Borough regardless of age, ability or gender.”

Table 2.1 Active Transport Strategy Objectives

Objective	What does this look like in the Borough of Queenscliffe?
“Connected Places and Destinations”	Develop a complete path and cycling network that connect people between places and destinations. This includes connections within the Borough, and adjacent places.
“Active Transport for All Ages and Abilities”	Active transport is available as a choice for everyone, regardless of age or ability.
“A Healthy Community”	The community is engaged and participating in active travel, contributing to healthier lifestyle.
“Designing for and protecting the natural environment”	The movement of people and supporting infrastructure is respectful of the natural environment.
“Creating Active Transport Networks which are inclusive and safe”	Active transport is safe, comfortable, and attractive for all users, in all places, at all times.

A number of strategies and actions have direct link to transport and traffic management within the Borough, with these outlined in greater detail in Section 5: Future Considerations.

2.5. Community Feedback

A range of feedback was reviewed in the development of this study, including but not limited to the following sources:

- Council Plan 2021-25 community engagement;
- Hesse Street Pedestrian Safety Strategy community engagement;
- Active Transport Strategy community engagement;
- Community feedback and requests regarding traffic management and road safety made directly to Council officers.

Feedback received both anecdotally or via formal submissions from the community as it relates to traffic management within Queenscliff includes:

- Instances of speeding and non-local through traffic along the western end of King Street, Queenscliff, between the Bellarine Highway and Nankervis Parade;
- Use of Gellibrand Street as a short-cut to access the Queenscliff Ferry instead of Hesse Street (the arterial road);
- Speeding along Gellibrand Street, in particular vehicles rushing to catch the ferry (e.g. in the last 5-10 minutes of each hour, in the northbound direction);
- Road safety at key intersections along Gellibrand Street including at Symonds Street and Wharf Street;
- There is a desire to attract more vehicles into the main Hesse Street precinct, at lower speeds to generate important pass-by trade and improved pedestrian safety;
- Anticipated increase in traffic generated by the Queenscliff-Sorrento Ferry when the new fleet of ferries comes online in 2024 (Estimated); and
- High vehicle speeds surrounding the two primary schools in Queenscliff (which are currently permanent 40km/h speed zones).

2.6. State Strategic Context

A number of State strategies and policies are relevant to the completion of a traffic management strategy within the Borough of Queenscliff. The key documents, including relevance to this study are outlined below:

MOVEMENT AND PLACE IN VICTORIA

The Movement and Place in Victoria framework was developed to address the inherent conflict which exists between movement links and streets which are destinations in their own right. The framework offers a common language for integrated transport and land use planning between different agencies and expertise.

The framework replaces historic and current transport planning practices, by also including land use and places of activity when considering the development and testing of potential transport interventions.

It is understood that the Borough of Queenscliff is currently in the process of reviewing the Movement & Place aspirations across the municipality with the Department of Transport. The draft aspirations of this review, which align with adopted Council strategies and policies will be used as part of this study to inform network or corridor specific interventions.

VICTORIAN ROAD SAFETY STRATEGY

The Victorian Road Safety Strategy 2021-2030 commits to the ambitious target of eliminating death from our roads by 2050, with the first step of halving road deaths by 2030. The strategy replaces the previous Towards Zero 2016-2020 Road Safety Strategy.

The strategy includes four objectives:

- Be safe: ensure all Victorians are safe and feel safe, on and around our roads.
- 10-year reduction: halve road deaths and progressively reduce serious injuries by 2030.
- A culture of safety: embed a culture of road safety within the Victorian community.
- Deliver initiatives: deliver a suite of initiatives that are achievable and have an impact in the short-term, but also prepare the state for the future.

The strategy's objectives will be achieved through a combination of methods using innovation, infrastructure improvements, communication / education, and other mechanisms available to the State government.

Delivery of the strategy relies on the Road Safety Partners within Victoria, of which the Borough of Queenscliffe has a role to partner and deliver on actions relating to its obligations as a road manager and authority.

THE SAFE SYSTEM

The Safe System principles and assessment framework aims to incorporate different elements of the transport network working together to aid in the elimination of fatal and serious crash injuries.

The framework is aimed at both road users and road managers and the shared duty to protect and enforce safety, so that if driver errors occur, they do not result in high severity outcomes.

The framework is used in the design and operation of roads to achieve the safe system objectives:

- To identify whether a project or solution will produce a Safe System outcome,
- To identify the degree of a project's alignment with the Safe System objectives,
- To document issues that mean the project will not be aligned (i.e., severe injury risks)
- To suggest solutions that would move the project closer towards, or in full alignment with Safe System Objectives.

Safe System assessments are typically undertaken at the design or feasibility stages of a project, including used to highlight different options alignment with Safe System principles. Notwithstanding, the recommendations of this Strategy will consider the alignment with Safe System principles.

3. Existing Conditions

3.1. Overview

The following section outlines the existing conditions from a transport network perspective, including for vehicular and non-vehicular traffic within the Queenscliff street network.

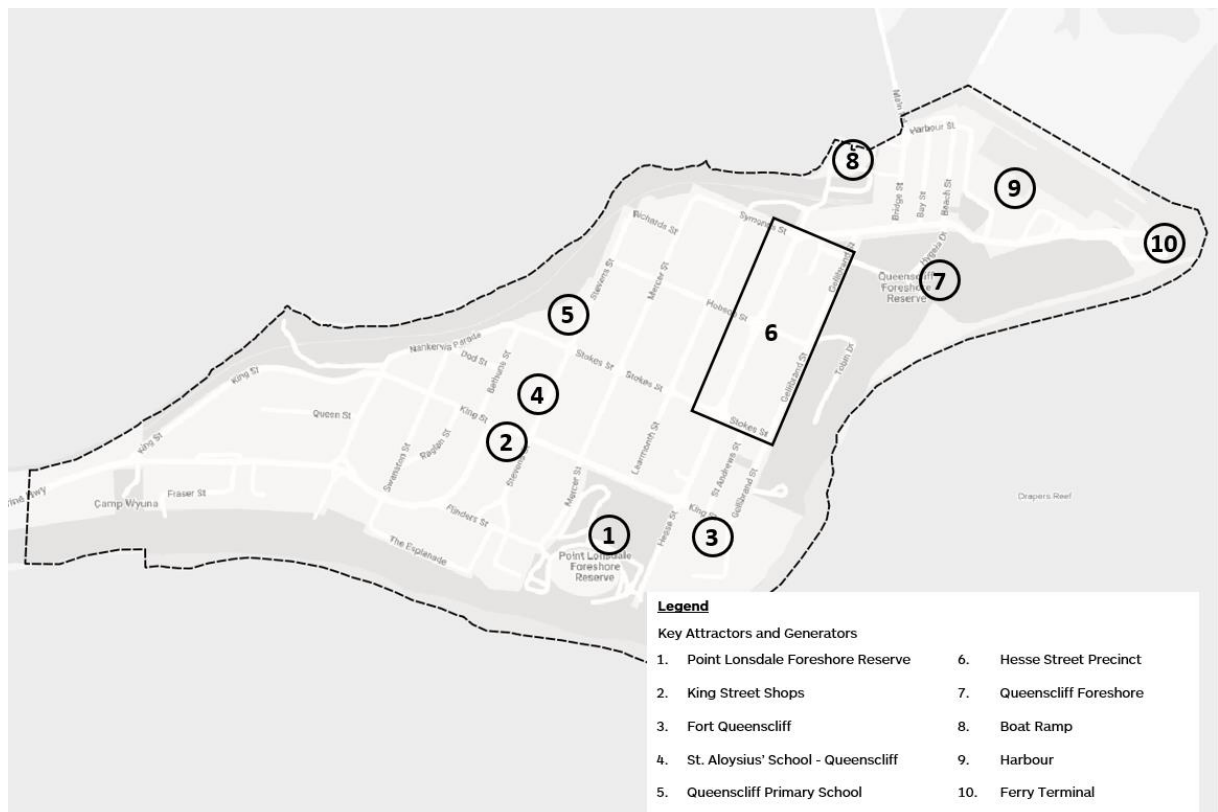
3.2. Local Area Context

The study area, which is replicated in Figure 3.1 below, is primarily residential in land use with a number of key traffic generators and attractors including commercial, educational and recreational. Queenscliff is also a key tourism destination and attracts a large proportion of traffic volumes during peak times from outside the municipality.

Another key traffic generator is the Queenscliff-Sorrento Ferry, which connects either side of Port Phillip Bay.

The location of key traffic generators in context of the study area and road network is shown in Figure 3.1.

Figure 3.1 Local Area Context

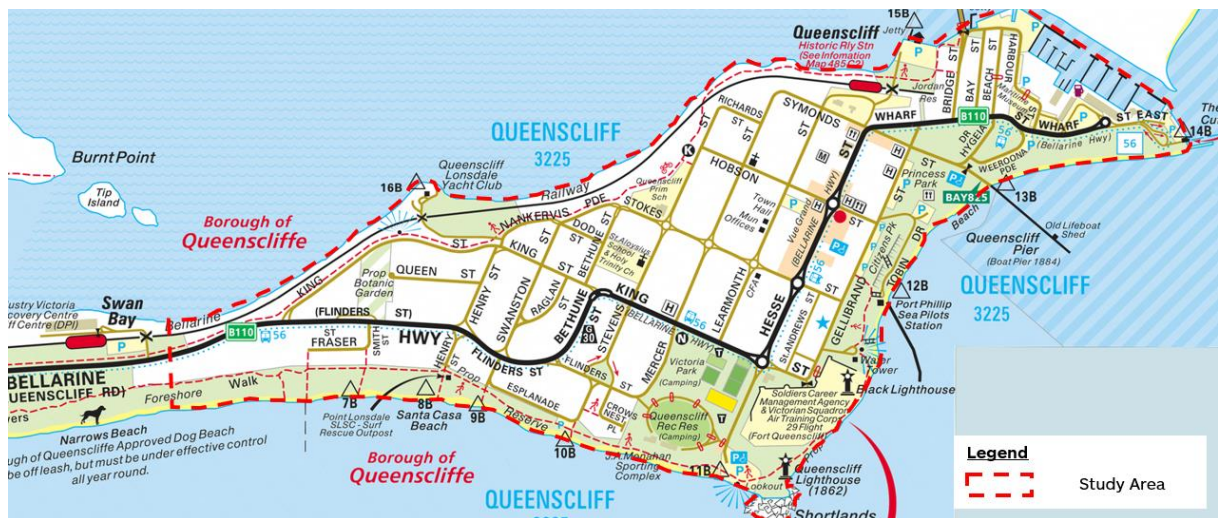


3.3. Road Network

The study area has a well-established local and arterial road network. Figure 3.2 shows the existing road network (from Melway) within the study area, including the following key roads / routes:

- Bellarine Highway (B110) which is the state arterial road, also consisting of sections of King Street, Bethune Street, Flinders Street, Hesse Street, and Wharf Street;
- Gellibrand Street, a higher-order Council road which provides access to key tourism destinations, open space and commercial developments, while also serving as the route for oversized vehicles travelling to / from the harbour;
- Other local residential streets, typically accessed directly from the arterial road network or in limited circumstances via other local streets.

Figure 3.2 Road Network



Source: Melway

3.4. Speed Limits

Data was obtained from the Department of Transport showing the speed limits on roads within the study area, presented in Figure 3.3.

The majority of speed limits within Queenscliff are currently 50km/h with the exception of some sections of the Bellarine Highway which are 60km/h, and some localised implementations of 40km/h around schools or other high activity areas.

A section of Bellarine Highway on Flinders Street at King Street, to Bethune Street at King Street was changed from 60km/h to 50km/h during March 2023.

Figure 3.3 Speed Limits



3.5. Pedestrian and Bicycle Facilities

Within the study area, footpaths are typically provided on both sides of each street, with the exception of some areas towards the south west which have limited pedestrian path provisions.

There are a number of pedestrian crossings that exist throughout the study area, including within Hesse Street and Gellibrand Street.

Other pedestrian infrastructure is provided within existing traffic management such as splitter islands and pedestrian refuges, both on the Bellarine Highway (B110) and in the local street network. These include both supervised school crossings, and pedestrian refuges within roundabouts.

In addition to pedestrian path and crossing infrastructure, key bicycle facilities are provided in the following locations:

- Bellarine Rail Trail regional shared path;
- On-road bicycle lanes on Hesse Street; and
- Off-road shared path along Hesse Street south of King Street.

The location of key pedestrian pathways and cycle routes are shown in Figure 3.4.

Figure 3.4 Key Pedestrian and Bicycle Facilities



3.6. Ferry

The ferry connects the townships of Queenscliff and Sorrento, including state arterial route B110 which forms both the Bellarine Highway and Point Nepean Road.

The ferry, which is privately owned and operated runs on an hourly schedule in both directions between 7am and 6pm all throughout the year.

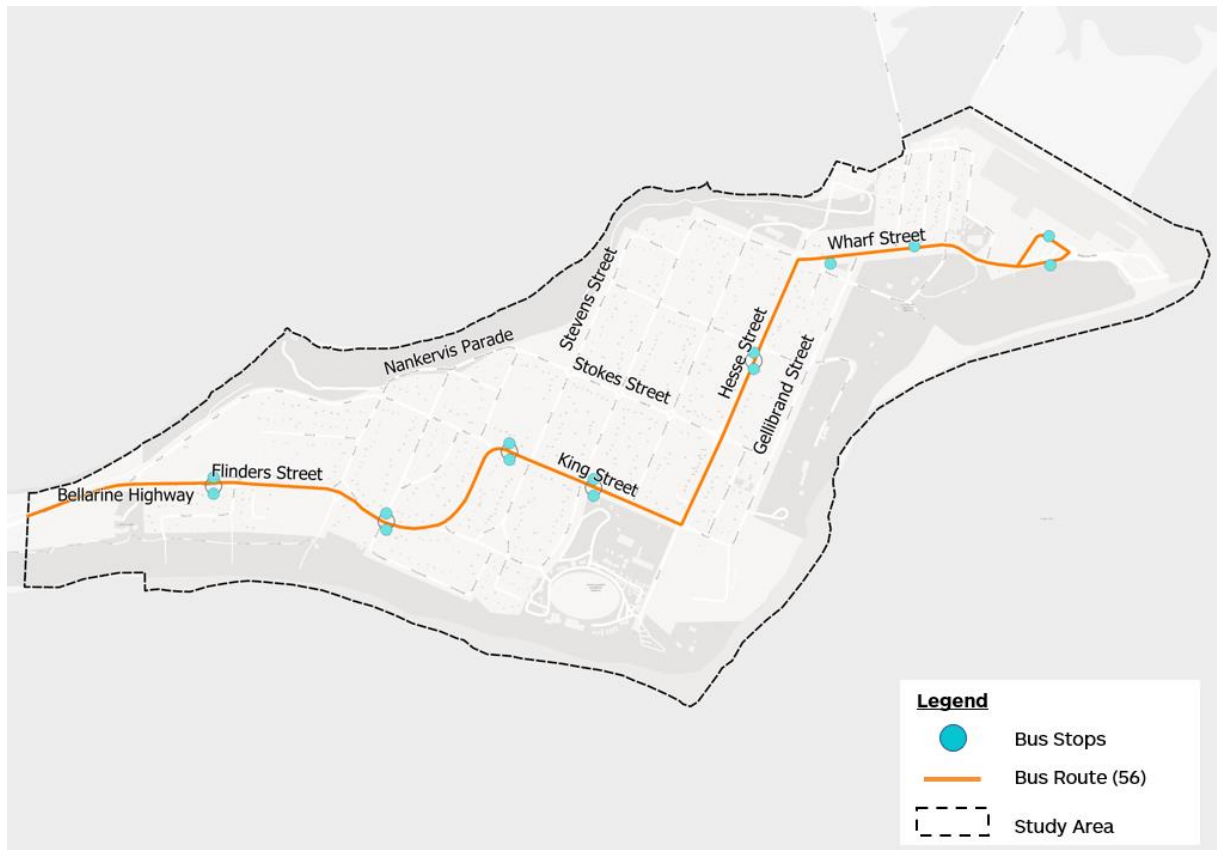
3.7. Bus Network

The Borough of Queenscliffe and township of Queenscliff is serviced by a single bus service which operates between Geelong Railway Station and the Queenscliff Ferry Terminal.

The bus follows the arterial road network within the study area with bus stops located intermittently and operates typically on a 1 hour and 1 hour 40-minute frequency during peak and off-peak times respectively.

Figure 3.5 shows the existing bus network including location of bus stops within the study area.

Figure 3.5 Bus Network



3.8. Existing Traffic Management

A range of existing traffic management is currently provided within the study area, including physical (such as islands, roundabouts, pedestrian crossings) and signage & line marking (such as wayfinding, speed limits, and directional signage).

The location of physical traffic management treatments, including traffic management restricting movements are shown in Figure 3.6.

Figure 3.6 Existing Traffic Management



4. Analysing the Data

4.1. Overview

The following section outlines the available data sources including analysis showing the traffic speeds, volumes and recorded casualty crash history. This analysis has had regard to accepted industry and engineering best practice parameters for establishing traffic issues, as outlined in the Table 4.1.

Table 4.1 Traffic Data Analysis

Category	Analysis	Objective	Typical Threshold for Intervention
Traffic Volume	Annual average daily traffic volumes (weekday)	Identify where traffic volumes on a road exceeds the 'environmental capacity' ¹	>2,000 - 3,000 vehicles per day for a local residential street. A daily traffic volume of between 3,000 – 7,000 is considered acceptable for higher order Council roads
Traffic Speeds	85 th percentile speed which is the speed at which 85% of vehicles travel at or below	Identifying a road or street which has a high proportion of excessive speeds.	85 th ile speed greater than the speed limit ^{2,3}
Crash History / Road Safety	Instances of casualty crashes within the road network in the past 5 years	To identify location and trends of casualty crashes to identify any prevailing road safety issues.	Location of fatal and serious injuries

¹The environmental capacity for a street represents the suitable maximum daily traffic volume, having regard to a range of geometric, amenity and land use factors.

² The 85th percentile speed is the accepted engineering threshold for establishing whether a street has a potential speeding problem.

² Note only: the 85th percentile speed is not an effective or accepted method of establishing the safest speed or speed limit for a street. Under the 'Safe System' approach, safe speeds in local streets are in the order of 30-40km/h.

4.2. Data Sources

A range of data sources were utilised in the preparation of this study and analysis outlined in this section. The range of data sources are outlined in Table 4.2.

Table 4.2 Data Sources

Type	Description	Date Range	Source
Traffic classifier data (tubes)	Collects the speed, volume and classification of vehicle	24 November 2021 - 1 December 2021	Ratio Consultants
		20 January 2022 -27 January 2022	
		2 February 2021 - 8 February 2021	O'Brien Traffic
		20 February 2019 - 27 February 2019	Borough of Queenscliffe
SCATS Data (traffic signal detector loops)	Collects the volume and direction of traffic travelling through traffic signals	December 2019 and January 2020 (2-months)	Department of Transport (SCATS)
Crashstats	Database of all recorded casualty crashes within Victoria	Last 5 years of available data (between 2017 and 2021)	Department of Transport

The location of traffic data outlined in Table 4.2 is presented in Figure 4.1.

Figure 4.1 Location of Traffic Surveys and Data Sources



4.3. Traffic Volumes and Speeds

Overview

The following section presents the analysed data, including traffic volumes and speeds along surveyed streets. Data for some streets is provided in both the peak and off-peak periods, to identify seasonal changes in conditions.

The location of surveys and data collection were chosen primarily based on historic community engagement and feedback.

Traffic Volumes and Speeds

The traffic volumes and speeds for surveyed streets outlined in Section 4.2 in summarised in Table 4.3.

Table 4.3 Existing Traffic Speeds and Volumes

Location	Road Authority	Speed Limit	Survey end date	Traffic Volumes (veh per day)		85 th percentile speed ¹
				Weekday	Weekend	
Bethune Street (No.8)	Council	40 km/h	1/12/2021	201	160	40.9 km/h
Flinders Street (No. 53)	DOT	60 km/h ²	1/12/2021	7,880	10,977	64.1 km/h
			27/1/2022	10,709	13,752	62.6 km/h
Gellibrand Street (No. 16)	Council	50 km/h	27/1/2022	3,165	4,209	49.2 km/h
Gellibrand Street (No. 30)	Council	50 km/h	27/2/2019	1,714	3,234	Not available
Gellibrand Street (No. 38)	Council	50 km/h	27/1/2022	3,263	4,297	48.8 km/h
Gellibrand Street (No. 60)	Council	50 km/h	1/12/2021	1,942	3,670	51.2 km/h
			27/1/2022	3,039	4,051	50.5 km/h
Hesse Street (No. 103)	DOT	50 km/h	1/12/2021	3,871	5,790	47.7 km/h
			27/1/2022	5,659	7,003	47.3 km/h
Hesse Street (Stokes / Hobson)	DOT	40 km/h ³	8/2/2022	4,077	8,915	36.3 km/h
Hesse Street (Hobson / Symonds)	DOT	40 km/h ³	8/2/2022	2,829	7,335	42.9 km/h
King Street (No. 89)	Council	50 km/h	1/12/2021	640	614	50.0 km/h
			27/1/2022	522	592	51.0 km/h
Nankervis Street (No. 10)	Council	50 km/h	1/12/2021	327	402	35.3 km/h
			27/1/2022	375	456	35.9 km/h

Location	Road Authority	Speed Limit	Survey end date	Traffic Volumes (veh per day)		85 th percentile speed ¹
				Weekday	Weekend	
Stevens Street (No. 9)	Council	40 km/h	1/12/2021	427	433	46.7 km/h
			27/1/2022	501	613	44.8 km/h
Stevens Street (No. 33)	Council	40 km/h	1/12/2021	509	287	43.2 km/h
Stokes Street (No. 59)	Council	40 km/h	1/12/2021	451	506	38.4 km/h
Wharf Street (East of Harbour Street)	Council	40 km/h	1/12/2021	2,228	3,487	45.2 km/h
			27/1/2022	3,378	4,343	43.2 km/h

¹Streets where the 85th percentile speed exceeds the speed limit are coloured in red

² Speed limit at the time of surveys along this section of Bellarine Highway (Flinders Street) was 60km/h and was lowered to 50km/h during March 2023.

³ Temporary speed limits of 40km/h were in place on Hesse Street at the time of survey which remain in place at the time of this study in March 2023.

DOT = Department of Transport

4.4. Crash Statistics

The Department of Transport collects data on crashes that occur within Victoria and result in a casualty including injury or fatality. Crashes which result in damage to property only, and near misses, are not included within this database.

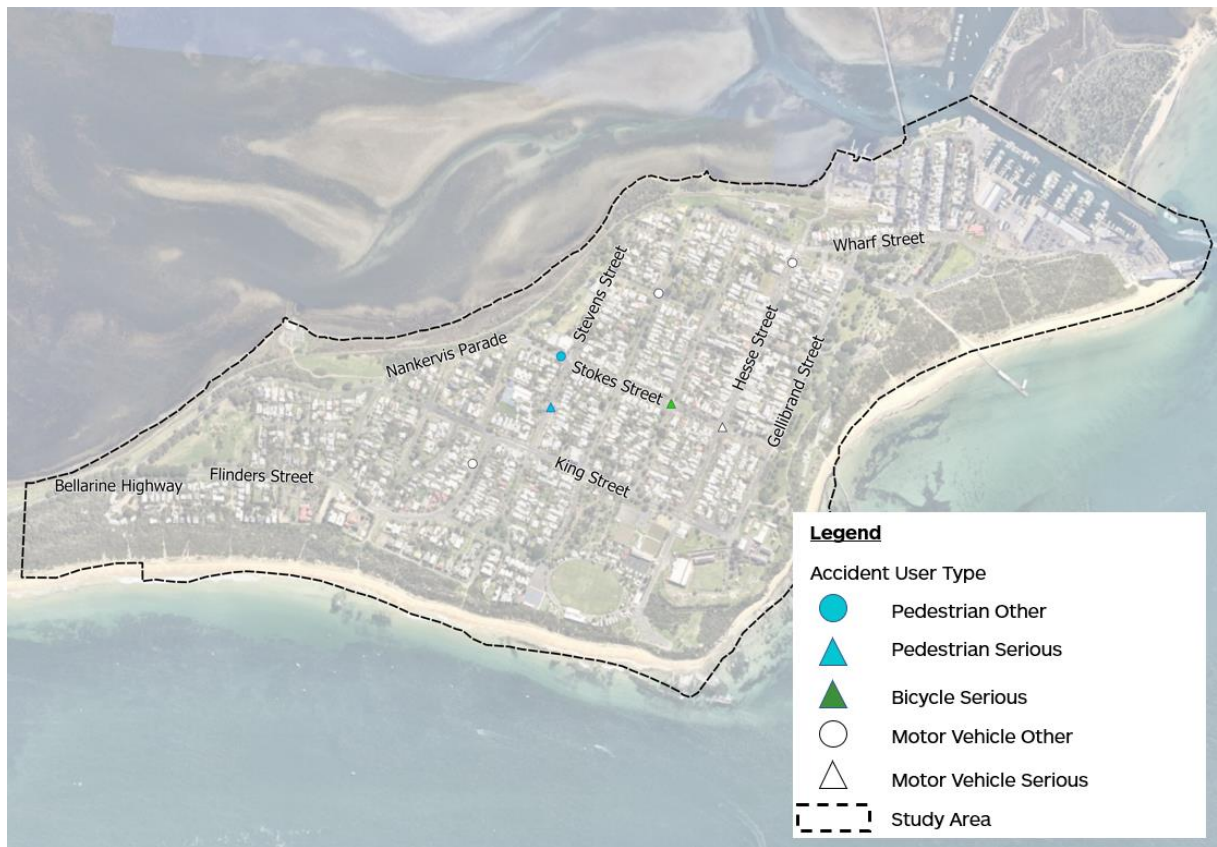
The data was reviewed for Queenscliff, with the location and severity of casualty crashes within the last 5 years of available data (2017 to 2021) are shown in Figure 4.2.

Figure 4.2 Crashstats Locality and Severity



Further analysis was undertaken to identify the type of road user, including pedestrian, bicycle and motorised vehicle users for the same time period and study area shown in Figure 4.3.

Figure 4.3 Crashstats Locality and User Type



The data indicates that there have been 3 serious injury crashes and 4 other injury crashes within the Queenscliff study area in the past 5 years of available data.

These crashes included a serious injury crash involving a pedestrian in Stevens Street, and a serious injury crash involving a cyclist at the roundabout of Stokes Street and Learnmonth Street. There was also a casualty crash recorded with an 'other injury' along Stokes Street near the intersection of Stevens Street.

There were three motor-vehicle only casualty crashes occurring along the Bellarine Highway arterial road, including a serious injury at the roundabout of Stokes Street and Hesse Street, which involved a motorcyclist losing control, as well as two 'other injury' crashes along Bethune Street and at the northern end of Hesse Street.

There is no identifiable pattern of crashes occurring which would indicate a major road safety issue at a particular location in the study area.

As outlined above, Crashstat data does not include any crashes that result in property damage only, or near misses.

5. Future Considerations

5.1. Overview

The following section outlines proposed projects and aspirations for the transport network within Queenscliff, which need to be considered in the preparation of this Strategy.

5.2. Active Transport Strategy

The Borough of Queenscliffe Active Transport Strategy 2023-2033 (ATS) identifies a number of actions including infrastructure changes that are recommended within the next 10 years to achieve the overarching vision for active transport within the Borough.

The following sets out a number of the key strategies, as considerations in the preparation of a traffic management strategy for Queenscliff.

PEDESTRIAN SAFETY IMPROVEMENTS

The ATS sets out a recommended pathway plan including aspirational walking networks and infrastructure. Relevant to this study, the ATS recommends upgrades and new crossings at the following locations:

- Upgraded roundabouts along Hesse Street to incorporate pedestrian priority or better pedestrian refuge provisions;
- Upgraded pedestrian crossings on Bellarine Highway at Flinders Street and King Street;
- New crossing on Gellibrand Street at Stokes Street;
- New crossings along the south side of Wharf Street, including crossing Gellibrand Street, Hygeia Drive, and Little Hesse Street; and
- New crossing on Wharf Street at Harbour Street;

The pathway plan including recommended pathway and pedestrian crossing infrastructure is shown in Figure 5.1.

Figure 5.1 Pathway Plan (ATS)



FUTURE CYCLING NETWORKS

The ATS recommends a future cycling network for Queenscliff including on and off-road routes, shown in Figure 5.2.

Figure 5.2 Bicycle Network Plan (Draft ATS)



The routes including the existing Principal Bicycle Network incorporating Bellarine Highway and Gellibrand Street, while also creating new local cycling streets on Stokes Street and Stevens Street (including Symonds Street).

Further, the individual routes make recommendations in terms of speed limits and supporting infrastructure. Relevant to this study, a 40km/h speed limit is recommended for Gellibrand Street to support the safe movement of cyclists adjacent to traffic lanes.

5.3. Movement and Place

REVIEW OF EXISTING CLASSIFICATIONS

A review of the current Department of Transport Movement & Place classifications was undertaken, having consideration to the range of plans and projects that are relevant to transport, land use or public realm in Queenscliff.

The review including consideration of the draft Active Transport Strategy, noting the recommendations and actions outlined in Section 5.2 above.

MOVEMENT AND PLACE STREET TYPOLOGIES

The Department of Transport (DOT) have grouped Movement & Place classifications into various road and street types which reflect similar uses and functions from a Movement, Place and surrounding land use perspective.

These general groupings can then be used to inform the types of interventions or mitigations to achieve the Movement & Place vision, as well as benchmarking options and solutions against other similar places.

The DOT Movement & Place Framework document sets out six general road and street types, with the matrix used to determine each category replicated from the document in Figure 5.3.

Figure 5.3 Movement and Place in Victoria - Street Typologies



The resulting Movement & Place street typologies for Queenscliff based on the review are outlined in Figure 5.4.

Figure 5.4 Queenscliff Movement and Place Street Typologies



Source: Department of Transport and Planning

CURRENT NETWORK PERFORMANCE

A preliminary assessment of the current Movement & Place network performance was undertaken to identify the gaps between existing and target levels of service within the core commercial precinct, incorporating Hesse Street, Learmonth Street and Gellibrand Street in Queenscliff.

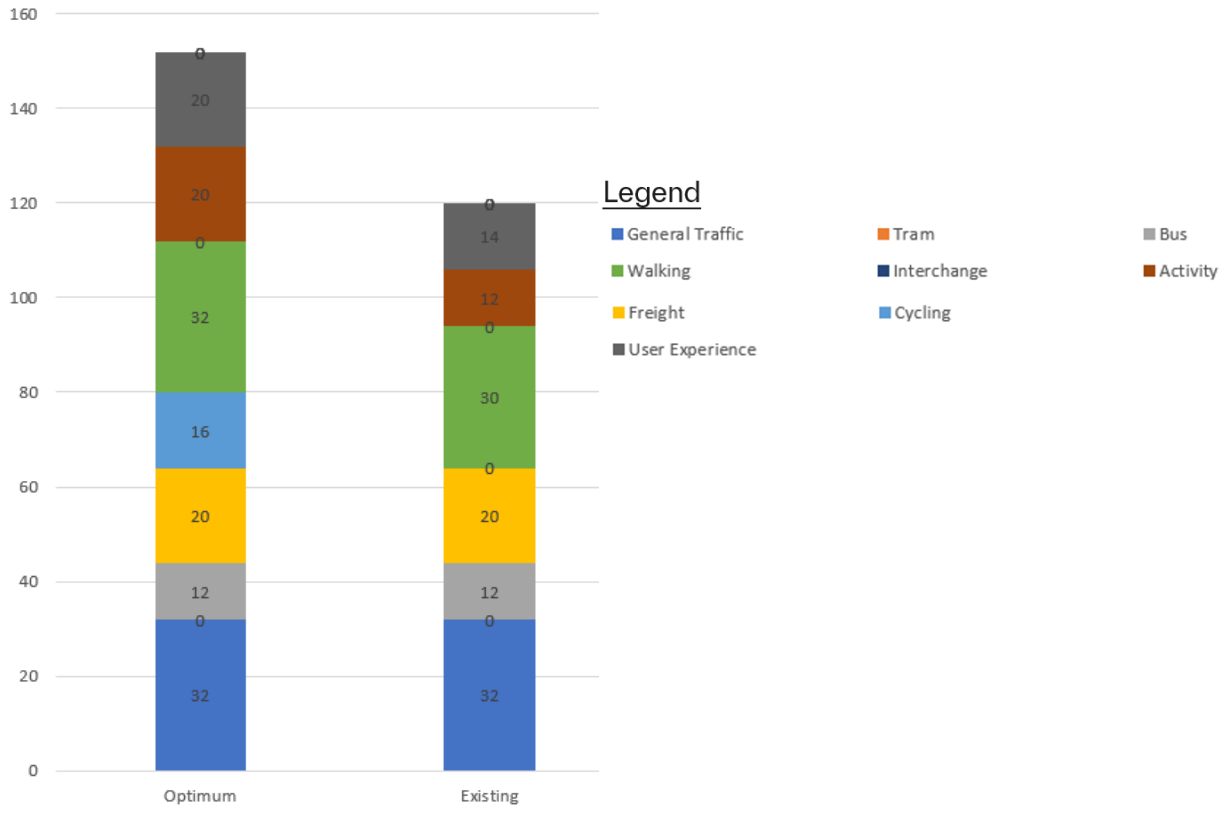
This included an assessment of the **movement functions** (all modes, including walking, cycling, freight, general traffic and public transport) and **place function** (user experience and activity).

Each **movement and place function** was assessed and given a Level of Service rating (from A to E) based on the current conditions against the set definitions provided by the Department of Transport in the Movement & Place Technical Appendix.

The results of the assessment are shown in Figure 5.5.

The graph shows both the optimum scores for each mode shown, as well as the results of the existing conditions assessment. For this particular graph, it is highlighted that the results of the performance assessment cannot exceed the optimum scores shown.

Figure 5.5 Target and Existing Movement & Place Performance



The assessment found that for most **movement and place functions**, the network is currently performing to (or above) its optimal performance, with the exception of the following:

CYCLING

- There is currently no appropriate infrastructure that supports safe and comfortable cycling in on-street locations within the study area, and hence a significant gap exists between the existing and optimum level of service of cycling.

WALKING

- There is a minor gap in the existing and optimum level of service for walking, which exists along Wharf Street.

PLACE – ACTIVITY

- There is a moderate gap between existing and optimum performance for ‘place activity’, which includes indicators such as safety, comfort, walkability and identity of the place.

PLACE – USER EXPERIENCE

- There is a moderate gap between existing and optimum performance for user experience which includes indicators such as the attractiveness of public realm, built form design, cleanliness and wayfinding.

5.4. Application of Movement & Place Objectives to this Study

Having regard to the above, the following Movement & Place objectives were identified:

- Improving cycling comfort and safety on the identified cycling corridors and routes.
- Improving walking function within high activity areas, in particular along higher order / traffic roads.
- Improving pedestrian experience and walkability along Hesse Street.

The identification of traffic management treatments and strategies should have consideration of the above Movement and Place objectives.

6. Issues and Opportunities

6.1. Overview

The following outlines the traffic management issues and opportunities, which have been identified through a range of activities and sources, including but not limited to:

- Community engagement including through previous projects and customer requests;
- Data collection and analysis;
- On-site observations; and
- Best practice guidance and principles, including compliance with relevant standards.

6.2. Issues & Opportunities

Traffic Speeds Around Schools

High speeds of traffic were recorded within the school zones where the permanent speed limit is 40km/h (not timed to school times only).

In particular, Stevens Street and Bethune Street recorded 85th percentile speeds higher than the posted speed limit. Most significantly, during the late November 2021 traffic count, the 85th percentile speed in Stevens Street (outside property No. 9) was 46.7 km/h. Figure 6.1 outlines the streets identified with high speeds.

Figure 6.1 High Speeds in the School Precinct



The exception within the school precinct was Stokes Street, where recorded speeds were within the acceptable threshold (e.g., lower than the speed limit).

There are opportunities in streets around school for traffic calming, including converting existing school crossings into raised school crossings.

Traffic Speeds and Volumes in Gellibrand Street

Traffic surveys were undertaken along Gellibrand Street and various locations and across a number of time periods. The surveys indicated that traffic speeds along the northern sections were lower than the southern section.

Surveys near house No. 60 identified that recorded 85th percentile speeds exceeded the posted 50km/h speed limit, albeit by only 1.2 km/h at most which occurred during the late - November 2021 survey period.

The surveys also indicated that speeds were typically lower during January 2022 survey period, when traffic volumes were also higher. This pattern is consistent as greater numbers of vehicles are cruising at lower speeds looking for parking or destinations.

Gellibrand Street is on a downhill slope from south to north, and therefore limited in the ability to implement traditional traffic calming devices such as speed humps. Further investigation will be required to identify gradients and the most appropriate location for any traffic calming devices along this street. Gellibrand Street, looking north from near Stokes Street, is shown in Figure 6.2.

Figure 6.2 Gellibrand Street (near Stokes Street)



The traffic volumes within Gellibrand Street are consistent with the use of the road as providing important access to key destinations and places such as Fort Queenscliff, parks and open space, car parking and commercial developments at the northern end of the street.

Traffic Speeds along the Arterial Road Network

The traffic surveys identified that except for Hesse Street between King Street and Hobson Street, the recorded 85th percentile speeds exceeded the speed limit on the Bellarine Highway arterial road. This included the following sections of road (also highlighted in Figure 6.3):

- Wharf Street east of Harbour Street (40km/h speed limit);
- Flinders Street, between King Street and Henry Street (60km/h speed limit¹); and
- Hesse Street between Hobson Street and Symonds Street (40km/h speed limit).

Figure 6.3 Identified Speed Problem Locations along the Bellarine Highway (B110)



It was noted that the traffic surveys along Hesse Street were undertaken prior to the raised wombat crossing being installed between Hobson Street and Symonds Street.

Traditional forms of traffic calming on arterial roads are difficult to implement and may result in greater levels of 'rat running' into local streets. All traffic calming and road related infrastructure on arterial roads is the responsibility of the Department of Transport.

Traffic Speeds and Volumes along King Street

Traffic surveys were undertaken across a range of different time periods, including in late November 2021 and late-January 2022.

The traffic counts identified that the recorded 85th percentile speeds were exceeding the speed limit of 50km/h during the January survey period by 1.0km/h, while in the November survey period, the 85th percentile speed was exactly 50km/h.

These results indicate that there is a minor speeding issue in the street. The counts were placed along the residential property frontage, and speeds are potentially higher towards the west, in the longer, straight section.

The recorded traffic volumes across the two survey periods were relatively consistent, with weekly average volumes of 640 and 522 vehicles in the November and January respectively. There was minimal variation between weekdays and weekends.

The level of traffic is consistent with a street of this type and well within the accepted environmental capacity and threshold for local residential streets (typically between 2,000 to 3,000 vehicles per day).

Based on the level of traffic recorded, it is likely that the vast majority of vehicles using King Street are from the surrounding local area, including school related traffic. It is highly unlikely

¹ Flinders Street (Bellarine Highway B110) was 60km/h at the time of the surveys, and reduced to 50km/h permanently during March 2023.

that traffic is utilising King Street as an alternative to the Bellarine Highway to access the core commercial precinct in Queenscliff or foreshore / harbour areas.

While there are other direct routes to properties north of the Bellarine Highway in this local area, it is not considered unreasonable from a traffic engineering perspective for vehicles to utilise King Street to access their property or the local schools given it is a public road, and the overall level of traffic is well within its environmental capacity.


Notwithstanding the above, there is an opportunity to reduce traffic volumes and speeds through the use of traditional traffic calming methods such as speed humps.

Y-Intersections and Slip Lanes

There are a number of locations throughout the study area where intersections are either aligned in a Y- intersection arrangement or provided with slip lanes. These types of intersections experience higher speeds and can impact sight lines for exiting vehicles.

The following streets in Table have been identified as having poor geometry or design:

Location	Current Condition	Aerial Image
Henry Street and Flinders Street (Bellarine Highway)	Y-intersections, provided with entry / exits creating 4 individual intersections along the arterial road	
King Street into Henry Street	Slip lane in a local street with no line marking indicating priorities	
Nankervis Parade, Swanston Street and Dod Street	Unclear priority for vehicular traffic, substandard line marking and lane widths / clearances	
Raglan Street into Swanston Street	Slip lane and Y-intersection with unclear priority	

Location	Current Condition	Aerial Image
Stevens Street into Flinders Street (southern approach)	Slip lane / Y-intersection with unclear priority	

Roundabouts in Stokes Street

Three of the seven casualty crashes (resulting in injury) that have been recorded in the past 5-years in Queenscliff occurred in Stokes Street. This included serious injury crashes at the intersection of Learmonth Street and Hesse Street.

There is an opportunity to improve the design of the three roundabouts along Stokes Street and Bethune Street, Mercer Street and Learmonth Street to reduce speeds and angles of conflict. These improvements may include wider pedestrian refuges, kerb outstands and larger islands.

The typical current design of the roundabout in Stokes Street, is shown in Figure 6.4 (aerial image of Mercer Street and Stokes Street), and Figure 6.5 (Stokes Street and Stevens Street).

Figure 6.4 Mercer Street and Stokes Street

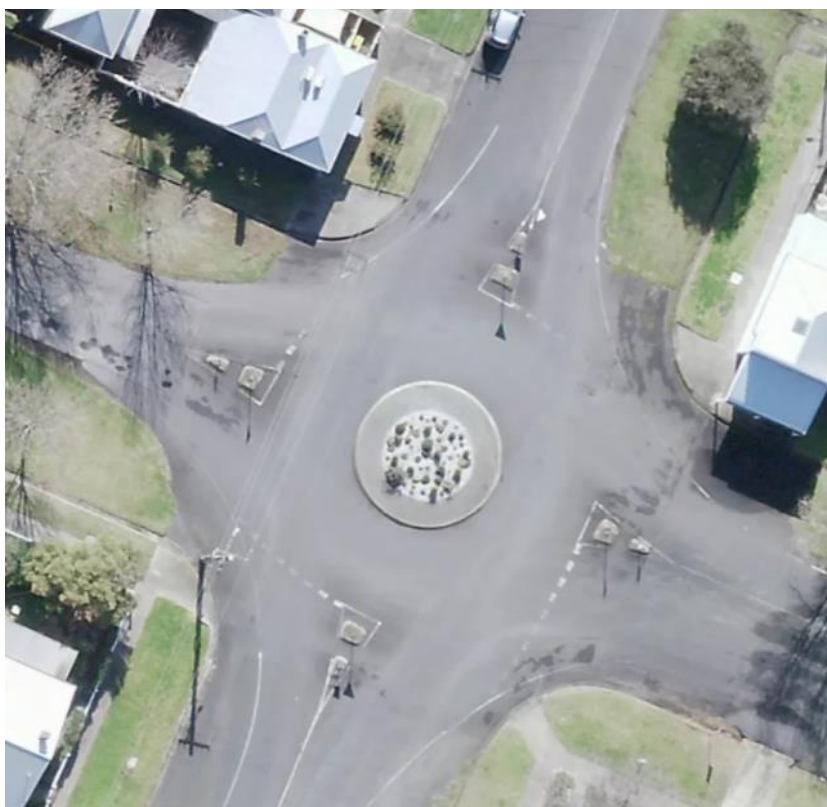


Figure 6.5 Stokes Street and Stevens Street



Gellibrand Street Intersection Safety

An issue identified through the review of community engagement and feedback included the safety of intersections along Gellibrand Street at Symonds Street and Wharf Street.

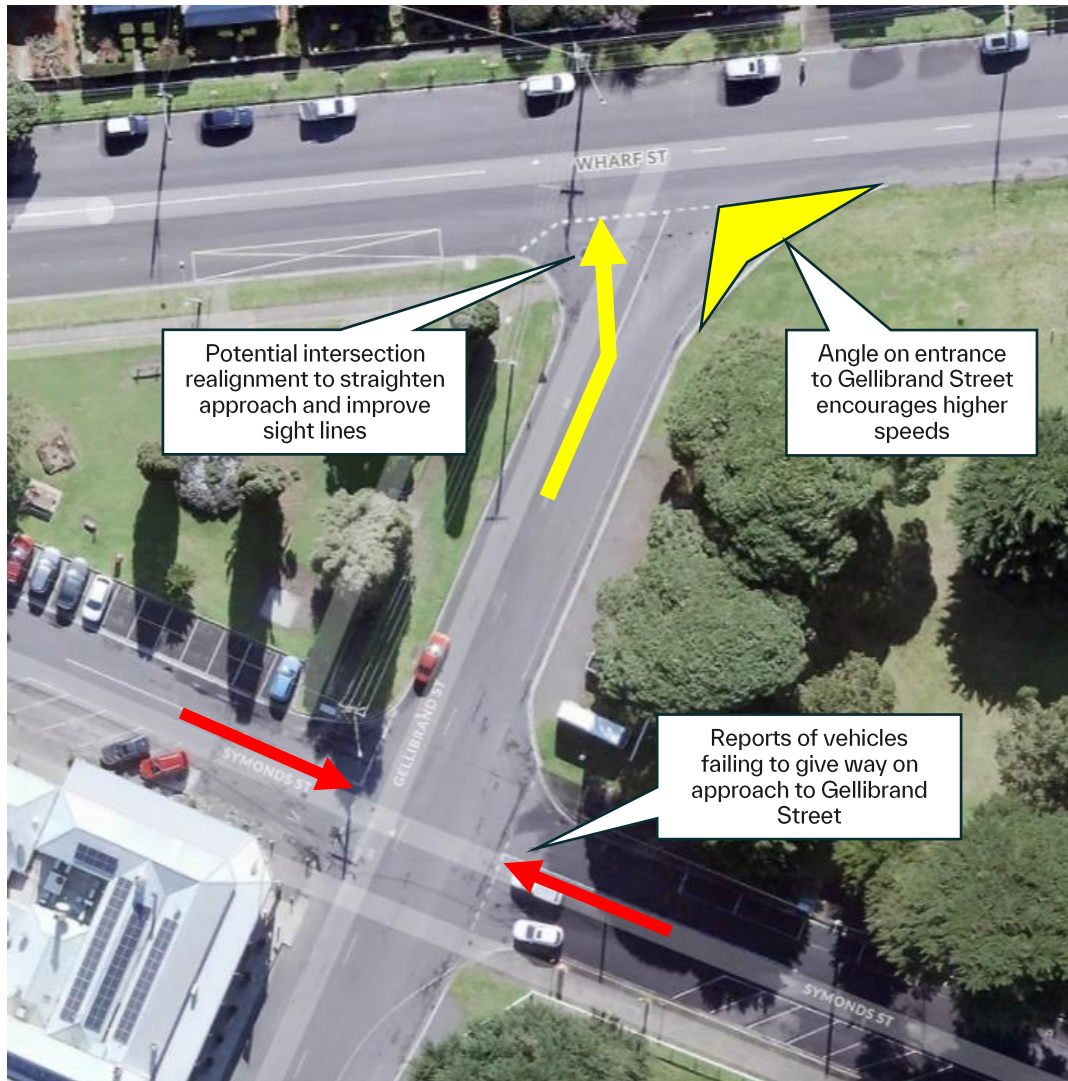
The intersection of Gellibrand Street and Wharf Street joins two higher order roads, and the alignment is not directly perpendicular, with the majority of movements exiting Gellibrand Street occurring to the east. Further the majority of movements occurring from Wharf Street into Gellibrand Street also occur from the east, as observed on site.

There is an opportunity to either realign the intersection and implement turn lanes or other design-based improvements to better control movements in and out of the street. In the long term, an option may include a roundabout or traffic signals however this would be low priority at the moment given there is no capacity issue at the intersection.

The intersection of Gellibrand Street and Symonds Street is aligned in a cross-intersection arrangement. Signage and line marking is provided on both minor road approaches however there are reports of vehicles failing to give way which could not be confirmed on-site.

The identified issues and opportunities outlined above on Gellibrand Street are illustrated in Figure 6.6.

Figure 6.6 Gellibrand Street Intersections



Pedestrian and Cyclist Infrastructure

Pedestrian and cyclists' treatments and infrastructure can incorporate traffic calming or other benefits to reducing road safety risk.

Key opportunities include the infrastructure identified through the draft Active Transport Strategy (as outlined in Section 5.2).

Placemaking Opportunities

There is an opportunity to incorporate placemaking and other streetscape or public realm initiatives such as WSUD, planting / trees, and other pedestrian amenities into traffic management treatments, improving the amenity of the local area.

6.3. Summary of Issues and Opportunities

The issues and opportunities described above are summarised in Table 6.1 and spatially within Figure 6.7.

Table 6.1 Summary of Issues and Opportunities

No.	Location	Description
1	School Precinct	High speeds along Stevens Street and Bethune Street within the existing 40km/h speed zoned areas around schools.
2	King Street	High speeds recorded demonstrating a potential speeding issue. In addition, there were reports of 'rat-running', although recorded volumes are well within the street's environmental capacity.
3	Gellibrand Street	High speeds in the southern section of Gellibrand Street, between King Street and Stokes Street, a posted 50km/h area and future cycling link with significant adjacent land uses and places generating pedestrian activity. Opportunities for improved alignment and / or priority at intersection with Symonds Street and Wharf Street.
4	Arterial Road (Bellarine Highway – B110)	High speeds on the arterial road network along Flinders Street and Wharf Street.
5	Roundabouts in Stokes Street	Sub-standard design of roundabouts results in potential high speeds and poor outcomes for cyclist, pedestrian and vehicular safety.
6	Y-Intersections and Slip Lanes	Poor design, unclear priorities and substandard linemarking or signage can contribute to higher speeds and increased risk of crashes between vehicles.
-	Placemaking and Traffic Management (General Opportunity)	There is an opportunity to incorporate placemaking and other streetscape or public realm initiatives such as WSUD, planting / trees, and other pedestrian amenities into traffic management treatments, improving the amenity of the local area.
-	Pedestrian and Cyclist Infrastructure (General Opportunity)	Pedestrian and cyclists' treatments and infrastructure can incorporate traffic calming or other benefits to reducing road safety risk.

Figure 6.7 Location of Issues and Opportunities



7. Traffic Management Plan

7.1. Overview

The following section outlines the treatments and strategies required to address or mitigate the various issues and deficiencies in the road network from a traffic management perspective.

The recommendations take into account a range of best practice, data analysis, community feedback and alignment with traffic management objectives.

7.2. Types of Traffic Management Treatments

The following Table 7.1 outlines a range of suitable traffic management treatments for Queenscliff, including based on an understanding of the local conditions.

Please note that not all treatments will be relevant to the issues identified in this strategy, and instead the list is provided as a toolkit of all likely potential options, with some for further consideration in the longer term.

Table 7.1 Traffic Management Treatment Types and Suitability

Treatment Type	Issue or Objective Addressed	Suitability in Queenscliff		
		Local Streets	Activity Precincts	Arterial Road Network
Speed Humps	Reduce traffic speeds		*Bus friendly on bus routes	
Roundabouts	Improve vehicle safety at intersections by reducing the angle of conflict	*Must be designed appropriately to reduce approach speeds, implemented at location where volumes are consistent on approaches, and be supported by pedestrian infrastructure in high activity areas.		
Chicanes or slow points	Reduce traffic speeds			
Modified T-intersection	Change priority of traffic and reduce vehicle conflicts			
Kerb Outstands / Road Narrowing	Reduce traffic speeds and crossing distances for pedestrians			
Splitter Islands	Reduce speeds and vehicle conflicts at intersections or bends			
Raised Intersection	Reduce speeds at intersections		*Bus friendly on bus routes	
Speed Limit Reductions (40 km/h)	Improve pedestrian and vehicular safety to within Safe System thresholds			*School zones only
One-Way	Reduce non-local traffic volumes	*Local access impacts must be considered		
Road Closure	Reduce non-local traffic volumes, eliminate vehicle conflict points and improve safety	*Local access impacts must be considered		

Treatment Type	Issue or Objective Addressed	Suitability in Queenscliff		
		Local Streets	Activity Precincts	Arterial Road Network
Traffic Lights	Improve capacity and control traffic movements at an intersection			
Pedestrian Operated Signals	Provide pedestrian priority along high usage pedestrian routes			
Wombat Crossing / Raised School Crossing	Provide pedestrian priority and improve safety while also lowering speeds		*Bus friendly on bus routes	
Zebra Crossing (with or without flashing lights)	Provide pedestrian priority and improve safety			*To be provided with flashing lights
Pedestrian Refuge	Shorten crossing distances for pedestrians by allowing them to stop halfway	*At roundabouts only		

Legend

Suitability of Treatments

	Preferred Treatment Type
	Suitable in some circumstances and subject to further consideration (see notes)
	Not appropriate in particular road environments

Street Types

Local Streets = Streets that are residential in nature that carry low volumes of traffic

Activity Precincts = Streets with high pedestrian activity and / or traffic generating land uses

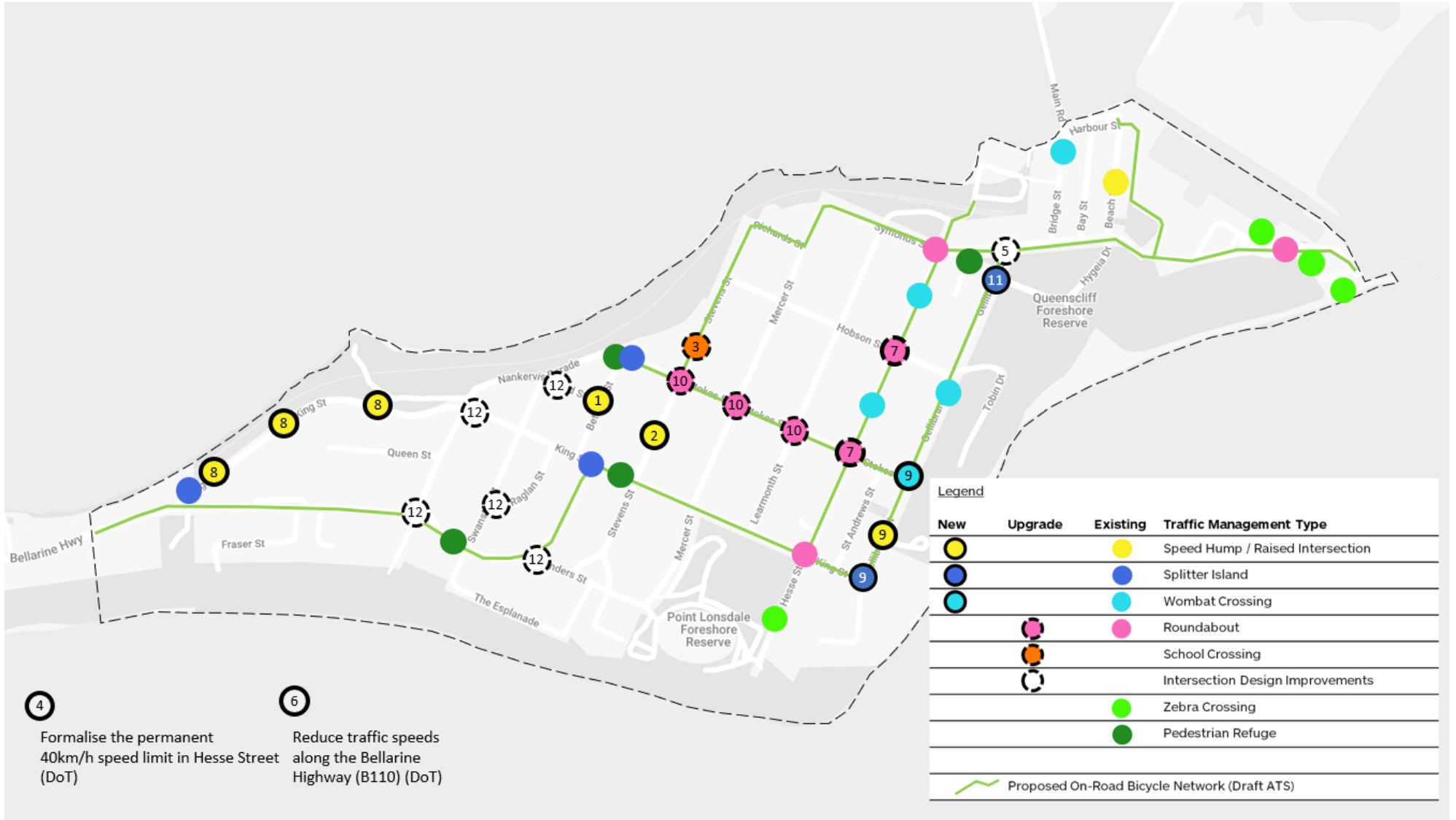
Arterial Road Network = Bellarine Highway outside of high activity areas (such as King Street shopping strip and Hesse Street)

7.3. Recommended Traffic Management Plan

The recommended traffic management plan for Queenscliff is shown in Figure 7.1.

The plan identifies the location of existing traffic management infrastructure, as well as the location of new or upgraded infrastructure.

Figure 7.1 Recommended Traffic Management Plan for Queenscliff (Overview)



8. Implementing the Plan

8.1. Overview

The following section outlines the implementation considerations, including priority, timing and approvals for the traffic management plan and treatments identified in the previous section.

8.2. Implementation and Staging

The implementation of traffic management treatments as identified in this plan will occur over a number of years and be reliant on a number of external factors such as approvals and funding. Detailed design and further engagement with affected stakeholders may also be required.

All works should have consideration of future plans for key actions from the draft Active Transport Strategy.

8.3. Prioritisation

The priority of suggested treatments was established having regard to a number of factors including:

- The level of importance to the community and stakeholders, as determined through discussions with Council officers and review of community feedback;
- The level of demonstrated safety risks to road users;
- The likely cost associated with the delivery of a project; and
- The ability and extent of mitigation against the relevant issues.

Priorities were subsequently identified as either being:

- **High priority** - projects which will provide high levels of benefit to community safety that should commence as soon as possible with delivery within 1-2 years;
- **Medium priority** - projects that provide will provide a potential safety benefit to the community that should be delivered within short to medium term (3-5 years); and
- **Low priority** - projects which are required to provide a safe road environment but have lesser potential benefit than high or medium priority projects (5+ years).

8.4. Additional Traffic Management Considerations

The following sets out a range of additional considerations to be factored in with the delivery and implementation of traffic management treatments:

PUBLIC TRANSPORT

The Bellarine Highway including Hesse Street is on a public bus route. To ensure passenger comfort and efficiency of public transport services, any traffic management treatments shall

be designed to be bus-friendly, including consideration of swept paths and gradients on ramps at speed humps / wombat crossings.

FREIGHT AND HEAVY VEHICLE

Gellibrand Street (including King Street east of Hesse Street) is the designated 'Oversize / Over mass (OSOM)' route to the harbour, as an alternative to Hesse Street. A minimum trafficable width of 6.0m must be maintained as part of any road redesign and intersections must be able to cater for the largest anticipated size vehicle.

ROAD TOPOGRAPHY

Speeds humps or other vertical deflection devices should be carefully considered in areas with steep gradients. This includes where sight distance is poor on road crests. The implementation of these types of treatments will require further detailed sight investigations to establish the most suitable treatment type and location.

LIGHTING

All traffic management treatments which incorporate elements of vertical or horizontal displacement shall have appropriate street lighting to ensure that they can be seen at night, and do not present an additional road safety hazard. Reflective signage and pavement markers should also be considered, to highlight hazardous locations.

RELEVANT STANDARDS AND GUIDES

All recommendations outlined in this section will be subject to further concept and detailed design. Treatments shall be designed in accordance with best practice guidance and relevant standards, including but not limited to:

- Austroads Guide to Traffic Management;
- Austroads Guides to Road Design;
- Australian Standard AS1742, Manual of Uniform Traffic Control Devices; and
- Relevant VicRoads supplements to AS1742 and Austroads guides.

8.5. Additional Approvals

The delivery and funding of treatments identified through this study will be the responsibility of the relevant coordinating road authority. In this regard, all projects which intersect or occur on the arterial road network will be the responsibility of the Department of Transport.

Further, the implementation of any Major Traffic Control Devices including speed limit signage (and speed limits) will require authorisation from the Department of Transport prior to implementation.

Table 8.1 Implementation Plan

ID	Location	Recommendation	Issue or Objective Addressed	Responsibility	Priority
1	Bethune Street	Raised intersection treatment at intersection with Dod Street	Traffic speeds (40km/h area)	Council	High
2	Stevens Street, between King Street and Stokes Street	Localised kerb outstands and speed hump (mid-block)	Traffic speeds (40km/h area)	Council	High
3	Stevens Street, between Stokes Street and Hobson Street	Raised school crossing (existing location)	Traffic speeds (40km/h area)	Council	High
4	Hesse Street (between Stokes Street and Symonds Street)	Advocate to Department of Transport to permanently reduce speed limits to 40km/h through the core activity centre precinct.	Improved pedestrian safety	Council	High
5	Intersection of Gellibrand Street and Wharf Street	Realignment of kerbing to narrow intersection and straighten the minor road approach on Gellibrand Street	Improved safety including sight lines and reduced speeds	Department of Transport	Medium
6	Bellarine Highway (Wharf Street, Flinders Street, Bethune Street)	<p>Work with Department of Transport and Victoria Police to improve safety including reducing speeds through traffic management and enforcement along the major arterial road through Queenscliff.</p> <p>Updated traffic speed surveys should be undertaken to understand how the reduced speed limit has impacted vehicle speeds.</p>	Reduce speeds and improve road safety	Council / Department of Transport	Medium

ID	Location	Recommendation	Issue or Objective Addressed	Responsibility	Priority
7	Hesse Street (roundabout with Hobson Street and Stokes Street)	Implement wombat crossings on all legs of roundabouts of Hesse Street with Hobson Street and Stokes Street	Improved pedestrian safety and amenity. Reduced speeds.	Department of Transport	Medium
8	King Street	Speed Humps (at three locations aligning with street lighting and power pole locations)	Traffic Speeds and Perceived Traffic Volumes	Council	Low
9	Gellibrand Street (between King Street and Stokes Street)	Splitter island at the corner of King Street and Gellibrand Street. Speed hump mid-block between corner and Stokes Street Raised pedestrian wombat crossing near intersection of Stokes Street (*subject to further site investigations)	Traffic speeds (future on-road cycling route)	Council	Low
10	Stokes Street (between Stevens Street and Learmonth Street)	Improved roundabout designs (larger islands, pedestrian refuges to increase deflection and lower speeds)	Traffic speeds, vehicular and bicycle safety (future on-road cycling route)	Council	Low
11	Intersection of Gellibrand Street and Symonds Street	Implement pedestrian refuges (splitter islands) on minor roads and improved signage / line marking	Improve visibility and safety	Council	Low
12	Y-intersections and slip lanes (as per Section 6.2)	Re-align or re-design intersections to remove Y-angle approaches and slip lanes in local streets.	Reduce vehicle speeds at intersections and improve safety	Council / Department of Transport	Low

8.6. Ongoing Monitoring and Assessment

To ensure that the objectives of the strategy are achieved, ongoing monitoring and analysis should be carried out.

This may include undertaking post-implementation traffic surveys in streets where speeding was highlighted as a potential issue.

A regular check and review of Crashstats data should also be undertaken to ensure intersection treatments achieve their desired effect and that the overall traffic management plan does not detrimentally impact road safety.