Record 1

State Roads Division – File Note

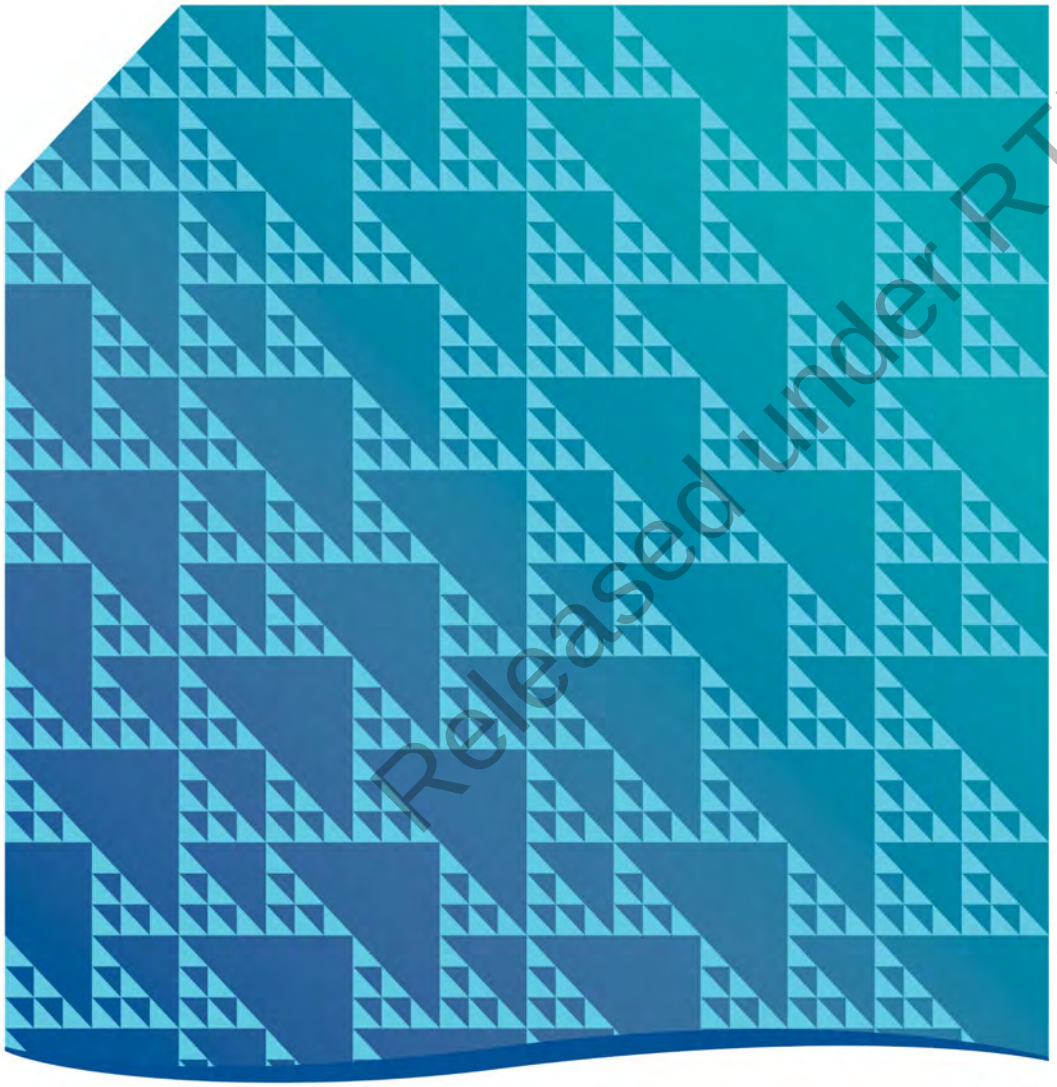
Tasmanian Government

Date:	6 December 2022
File/Record No.:	CE30727
Subject:	Mornington Roundabout
Name:	s36 [redacted]
Email Address:	Click here to enter customer email address or delete if not applicable.
Phone No.:	s36 [redacted]
Address:	Click here to enter customer address or delete if not applicable.
Notes:	s36 rang about the roundabout in particular coming from Bellerive to Flagstaff. She was almost wiped out today and she thinks the infrastructure is wrong and as we are the experts we should fix it. Please call her back to discuss.
Action:	I talked to s36 for 14 minutes about her experience on 6/12/2022. Near miss performing the eastbound from Cambridge Road, left lane to right lane, to Flagstaff Gully movement. Fast moving Ford Ranger in right hand lane went through roundabout without consideration of indicating car ahead and near miss resulted. (This movement is the behavioural issue acknowledged in Figure 5.5. of Jacobs Options Report.) Near misses similar to this have happened to her 3 times. She had talked to her husband and daughters and friends and everyone acknowledged the safety issue with the roundabout. I talked to s36 about the 2021 study on the roundabout and the associated public consultation where we received feedback about the safety issues on the roundabout. I explained to s36 that while technically the roundabout infrastructure doesn't need improving (pavement and signage - Road Safety Audit 2019), people still find it confusing to use and a lack of driver awareness and courtesy leads to near misses and crashes. I said to s36 that the roundabout is performing well from a safety standpoint with only 80 casualty crashes out of 364 crashes over the last ten years and that there have been no serious or fatal injuries, just mainly property damage, fender benders. We discussed that there is an election commitment of $30 million to improve the roundabout and that options are being considered by State and Federal Ministers. I said that changing it too traffic lights is one option but it is complicated due to houses we would need to acquire. s36 said my response didn't solve the issue but the call had given her some hope that something would happen eventually. In the meantime s36 is going to spend 2 minutes extra of her time driving to Shoreline roundabout and enter the South Arm Highway there northbound, so she avoids the problematic movement, and keeps her and her family safe. I gave s36 my phone number in case she thinks of something else to tell me.
Action Officer:	

Mornington Traffic Solution Study

August 2022

Community Consultation and Feedback Report



Department of State Growth

Tasmanian Government

Contents

Executive Summary

The Mornington Traffic Solution Study aims to investigate and identify safety and congestion improvements for a 750m section of the South Arm Highway which includes the Mornington Roundabout junction with Cambridge Road, the Mornington Road junction with the South Arm Highway, and the Mornington Interchange on the Tasman Highway. The study started with an examination of the current characteristics and functionality of the Mornington Roundabout.

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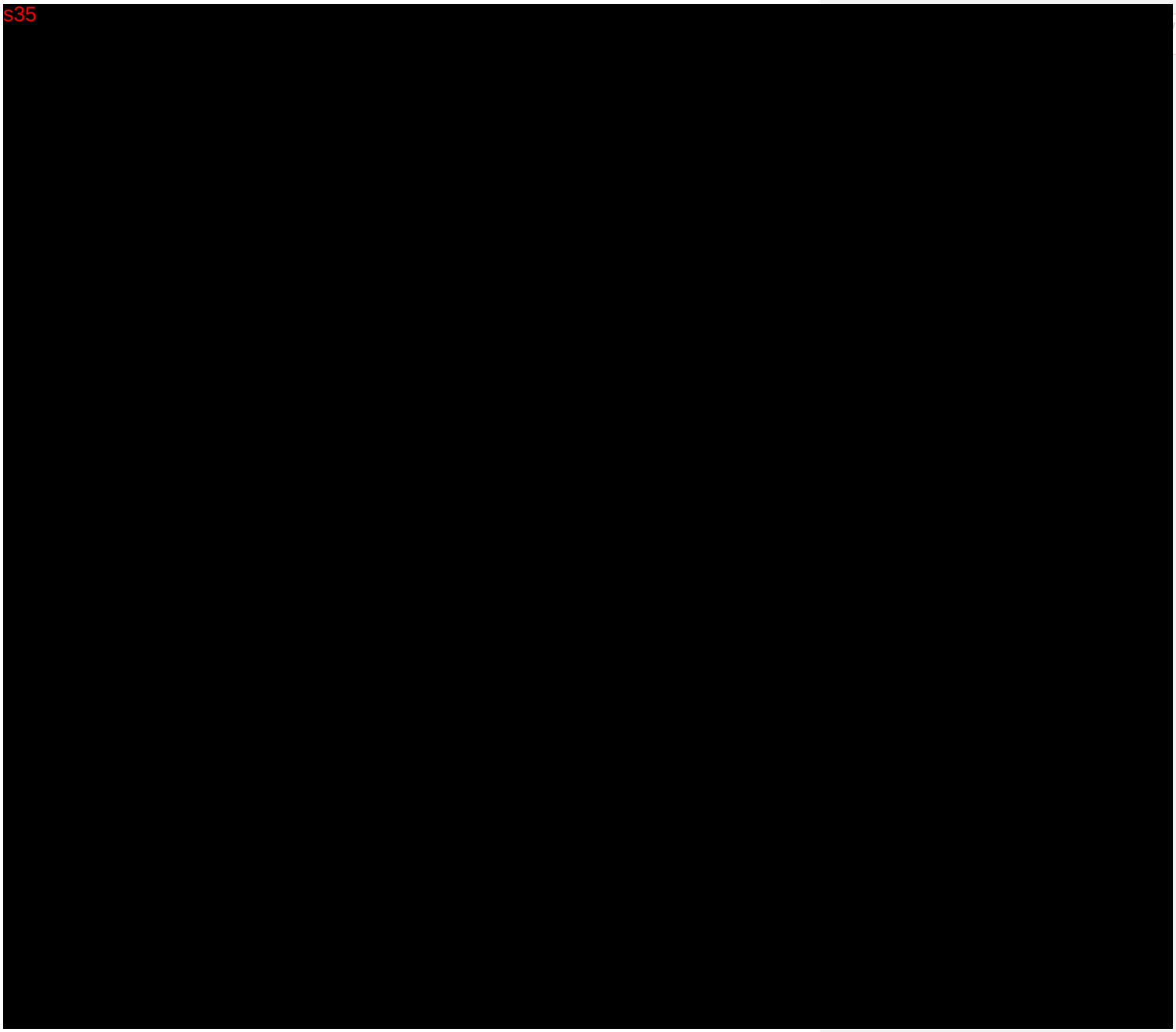

Project overview

The aim of the Mornington Traffic Solution Study was to identify a single preferred design solution to improve the safety and traffic performance outcomes of the Mornington Roundabout for all road users from motorised vehicles, to freight, to active transport users.

The planning study for the Mornington roundabout has:

- completed a traffic study to investigate the current performance level of the road network in terms of transport efficiency, road user safety, as well as the current traffic management
- considered stakeholder and community ideas, concerns and feedback
- looked at upgrade options and how they could improve safety for the community and travel times both through the Mornington Roundabout and along the South Arm Highway from the Tasman Highway to Pass Road.
- developed concept drawings for some upgrade options.

The study used extensive traffic surveys and traffic modelling, as well as stakeholder consultation and engineering investigations to assess options for the Mornington Roundabout.

The location of the study is in the Clarence Council local government area, and Tasmanian Government electorate of Franklin. The project study area and associated intersections are shown in Figure 1.

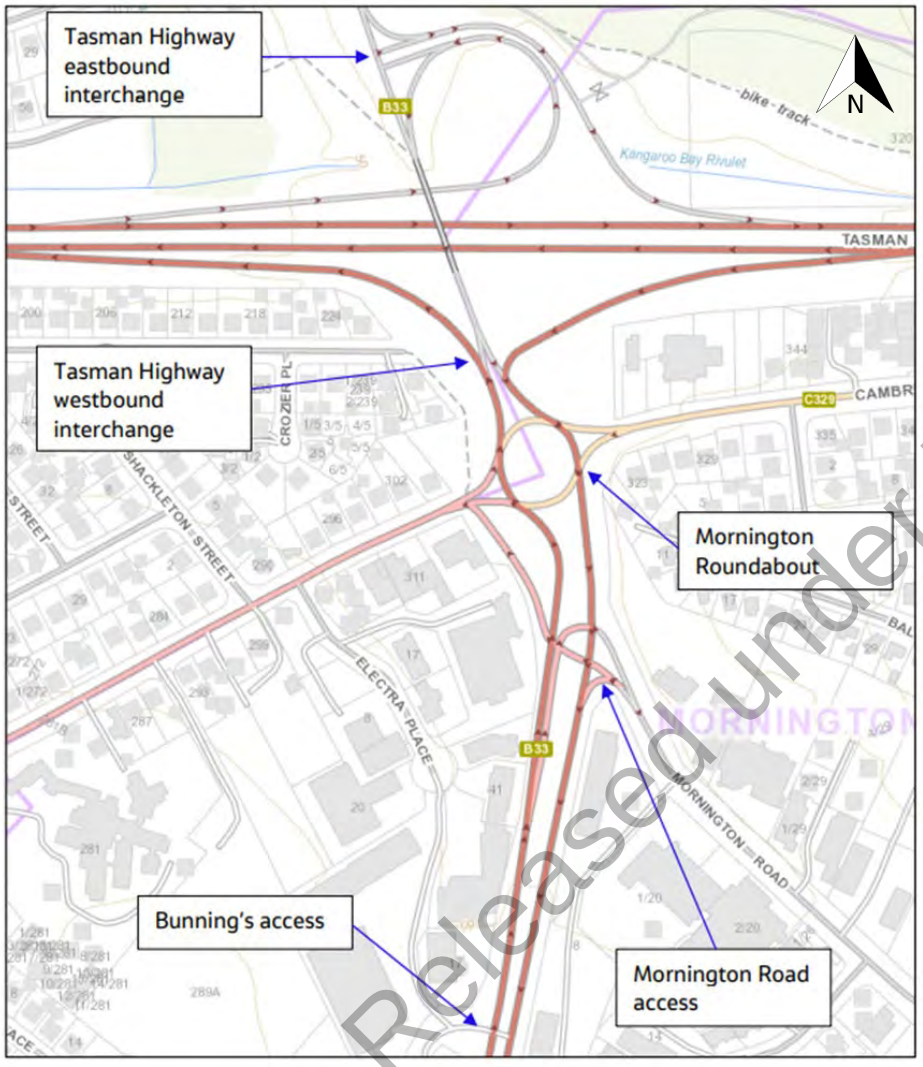

Figure 1 – Project study area

Consultation objectives

The consultation engagement objectives of this project were to:

- listen to and understand key issues, ideas and concerns from the community that need to be considered
- provide a forum for the community and stakeholders to provide input on design solutions for the Mornington Roundabout
- inform stakeholders and the community about decisions and actions being undertaken during the planning process; and how their feedback has influenced the outcome
- engage with, and provide advance notice, including direct contact where required, to local businesses, residents, about traffic surveying works.

Considerations

The Sorell to Hobart Corridor Plan (2020) identified that the Mornington interchange and roundabout formed a key bottleneck along the Tasman Highway and that the roundabout was considered by the community to be unsafe and confusing for people to use. A focus of the Mornington Traffic Solution Study will be on addressing community concerns around safety and movement.

Local residences, landholders and businesses were notified of a period of public consultation. Notifications letters were sent to 173 addresses within the highlighted purple zones of Figures 2, 3 and 4.

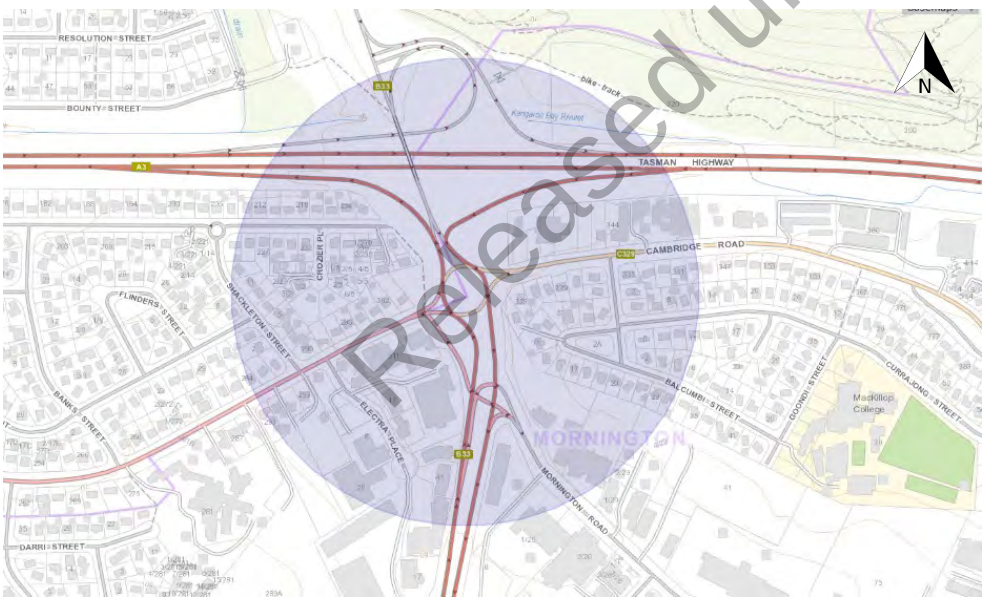

Figure 2 - Properties within a 250m radius of the Mornington Roundabout

Figure 3 – Properties notified along Cambridge Road

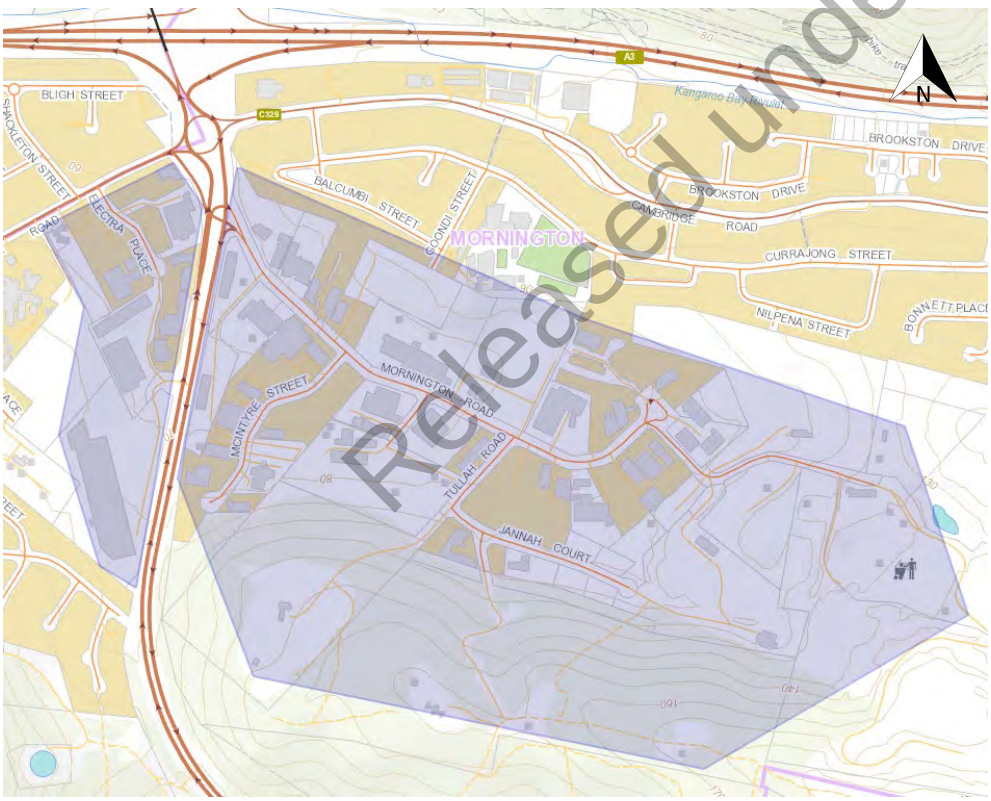

Figure 4 - Businesses notified in Electra Place and the Mornington Road industrial area

Consultation summary

Consultation was designed to engage as many people as possible using an interactive online map on Social Pinpoint, where people could locate an area of concern and pin a comment or idea. As this project is only at the planning stage, no proposals or ideas were presented. Participants were asked to give their thoughts about what currently works well and what does not work well, to help to identify and prioritise areas for improvement.

A summary of engagement activities undertaken is provided in Table 1, with more detail provided in the sections to follow

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Jacobs

Mornington Traffic Solution Study

Options Assessment Report

| A

26 July 2022

Department of State Growth

3100F-6-3

Mornington Traffic Solution Study

Project No:	IA250211
Document Title:	Options Assessment Report
Document No.:	1
Revision:	A
Date:	26 July 2022
Client Name:	Department of State Growth
Client No:	3100F-6-3
Project Manager:	s36
Author:	s36
File Name:	IA250211-0006-TRAF-REP-0002 - MD review.docx

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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
A	26/7/22	Draft	s36	s36	s36	s36

Contents

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to document the outcomes from the options analysis assessment undertaken as part of the Mornington Traffic Solution Study in accordance with the scope of services set out in the contract between Jacobs and the Department of State Growth (the Department). That scope of services, as described in this report, was developed with the Department.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Department and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information and traffic models sourced from the Department and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of the Department and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Department. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Introduction

1.1 Background and key objectives

In April 2021 Jacobs was commissioned by the Department of State Growth (the Department) to undertake the Mornington Traffic Solution Study (the Study). The purpose of the study is to investigate options that address issues associated with the Mornington Roundabout, the roundabout controlled intersection of Cambridge Road and South Arm Highway The Mornington Roundabout is subject to predominantly northern flows of traffic which pass through the roundabout and onto the Tasman Highway, with volumes of around 10,000 AADT and almost 4,000 vehicles per hour traversing the intersection in the morning peak. Local traffic volumes have seen significant growth in recent years; increasing by around 40 per cent in the last decade, with this trend likely to continue as more developments are approved in south-east Clarence.

The roundabout suffers from some operational issues, which are partially attributed to the roundabout's location within the wider network. The Tasman Highway westbound off-ramp is located close to the roundabout, leading to frequent long queues extending back onto the Tasman Highway, necessitating the construction of an extension to the ramp. The Mornington Road intersection is also close to the roundabout and has inadequate median storage, making it hard to exit safely. The *Sorell to Hobart Corridor Plan* (2020) recognised these issues, noting that the Mornington interchange and roundabout formed a key bottleneck along the Tasman Highway.

There is a local perception from both members of the community and political stakeholders that the Mornington Roundabout is confusing to use and unsafe for all road users, with one petition organised by Labour MP Ms Jo Siejka asking for the roundabout to be made safer, attracting hundreds of community signatures. Clarence City Council's (CCC) Mayor also wrote to the Minister in September 2020 stating that a Mornington Interchange upgrade was the top road transport issue for the Council. Lane configurations and line marking around the roundabout have been attributed to the crash history of the roundabout, which though high in number, fortunately mostly result only in property damage. Whilst a 2019 Road Safety Audit (RSA) did not find any significant safety or performance deficiencies, it did note that the proximity of the Tasman Highway does increase the intersection's complexity.

Several Stakeholders have recommended potential improvements to the roundabout, these include signalisation, configuration changes and additional walking and cycling facilities.

The Department has therefore proposed four options to upgrade the Mornington Roundabout, which were analysed as part of this study, these include:

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s39 [redacted]

In assessing the options and enabling works, the conclusions of the assessment need to consider the performance-based objectives (listed in order of importance) of:

1. Improving safety for all road users
2. Helping to manage the congestion, such as providing improvements to travel time reliability.

1.2 Reference materials

The following documents were utilised in the writing of this report:

- *Gordons Hill Road Ramps Microsimulation Modelling and Reporting – Ramp Performance Assessment* (GHD, 2020)
- *Greater Hobart Urban Travel Demand Model: Land Use Inputs Technical Report* (SGS Economics & Planning, 2020)
- *Guide to Road Safety Part 8 – Treatment of Crash Locations* (Austroads, 2015)
- *Guide to Traffic Management Part 3 – Transport Study and Analysis Methods* (Austroads, 2020)
- *Hobart Traffic Efficiency Corridor Function Report* (GHD, 2018)
- *Mornington Interchange Problem Definition* (GHD, 2020)
- *Mornington Traffic Solution Study – Traffic Model Calibration and Validation* (Jacobs, 2022)
- *Natural Values Atlas Report* (Department of Primary Industries, Parks, Water and Environment, 2017)
- *Road Safety Audit for the Mornington Roundabout* (Midson Traffic, 2019)
- *Sorell to Hobart - 2019 Concept Sketches-Mornington and Pass Road Options*
- *Sorell to Hobart Corridor Plan* (2020)
- *State Road Hierarchy* (Department of State Growth)
- *Tasman Highway - Rosny Ramp Access Study Rosny Ramp Access Traffic Study Summary* (Jacobs, 2020)
- *Tasmanian Road Hierarchy Operational Parameter Analysis* (Jacobs, 2021)
- *Transit Capacity and Quality of Service Manual* (Kittelson Assoc. et al, 2003)

1.3 Report purpose and structure

The purpose of this report is to document the options assessment process for the four options and four enabling works detail in Section 1.1. The report also sets out information and activities that were undertaken to support the assessment including current and future performance reviews, issue and opportunity identification and stakeholder engagement. The assessment process is outlined in the following sections:

- **Section 2: Study area –** details the boundaries of the road network included in the study.
- **Section 3: Project context** – details the context in which the scope and objectives for the project were developed.
- **Section 4: Corridor review –** describes the elements that comprise the corridor.
- **Section 5: Corridor performance –** details the current performance of the corridor.
- **Section 6: Future traffic conditions –** details the estimated future performance of the network.
- **Section 7: Issues and opportunities –** lists the identified issues and opportunities from the assessment of the current and future corridor performance.

- **Section 8: Options assessment –** details the performance of each of the options and enabling works and the selection of a preferred option
- **Section 9: Conclusions and Next Steps –** outlines the conclusions of the assessment, recommendations, and next steps.

2. Study area

The area of interest for this study focusses on the interchange between the South Arm Highway and the Tasman Highway at Mornington on Hobart's eastern shore. Five intersections are present along the South Arm Highway within approximately 750m; the intersecting roads are Cambridge Road ("the Mornington Roundabout"), Mornington Road, the signalised intersection at the access to Bunnings (Bunnings Junction), and the eastbound and westbound ramp terminals from the Tasman Highway. The performance of each intersection is directly influenced by the others and as such all identified intersections are considered as part of this study.

Figure 2.1: Mornington Traffic Solution Study Area

The Rosny Hill Road and Cambridge Road/Belbins Road interchanges, located on the Tasman Highway to the east and west of the South Arm Highway also influence the operation of the study interchange. There are potential future interchanges with Gordons Hill Road and Pass Road also planned or being investigated within proximity of the study area (see Section 3). These locations are highlighted in Figure 2.2.

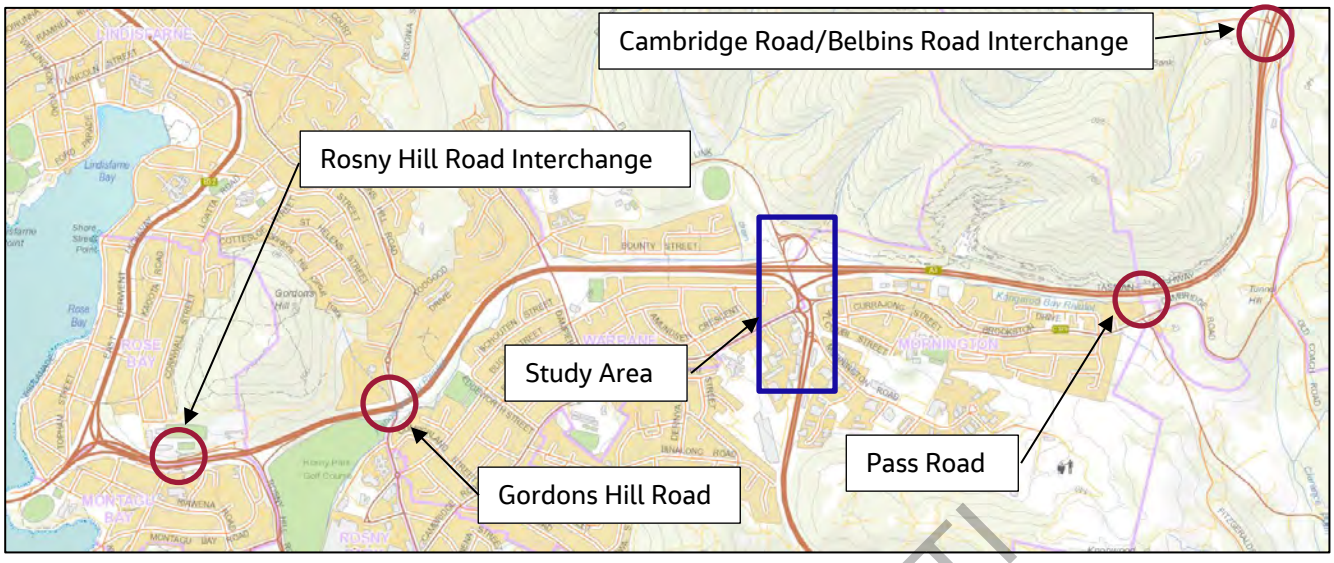

Figure 2.2: Mornington Traffic Solution Study Area

3. Project context

The Mornington Roundabout and the surrounding area has been subject to many changes and studies that have shaped both community sentiment of the area and the objectives of this study. The following describes the history of the area and provides context for the current assessment.

3.1 Construction history

The interchange between the Tasman Highway and the South Arm Highway was constructed in 1986, including the overpass and on-ramp and off-ramp. The roundabout connecting Cambridge Road to the South Arm Highway was constructed in 1989. Modifications were made to the roundabout in late 2008 / early 2009, including a slip lane for northbound traffic turning westbound onto Cambridge Road, formal pedestrian and cyclist footpaths and crossing points on all legs and a second circulating lane on the southern side of the roundabout. Overhead signage gantries were installed on the Cambridge Road (west approach) to the roundabout in 2010.

Extension of the westbound off-ramp from the Tasman Highway to the South Arm Highway occurred in 2018.

3.2 Previous and concurrent studies

The Sorell to Hobart Corridor Planning Study was undertaken in 2020 to better understand issues along the corridor, develop and assess a range of solutions including for passenger and active transport, and develop a prioritised list of solutions for delivery. The following options relevant to the current study were proposed:

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The Sorell to Hobart Corridor Planning Study indicated that the area needed to be considered using a broader lens and as such the Department have commissioned three interrelated projects:

- The Mornington Traffic Solution Study (this study)
- The Clarence Network Operating Plan
- Tasman Highway Transit Lanes and Pass Road Interchange

As detailed in Section 1.2, the outcomes of the Clarence Network Operating Plan and Tasman Highway Transit Lanes and Pass Road Interchange have been considered in the assessment of the Mornington Roundabout.

As part of the Sorell to Hobart Corridor Planning Study, feedback from public consultation indicated that community stakeholders perceived there was value in the provision of an interchange between Gordons Hill Road and Tasman Highway. To investigate the feasibility of an interchange between Gordons Hill Road and Tasman Highway, the Department commissioned two reports, *Tasman Highway - Rosny Ramp Access Study Rosny Ramp Access Traffic Study Summary* (Jacobs, 2020) and the *Gordons Hill Rosny Ramps Microsimulation Modelling and Reporting Ramp Performance Assessment* (GHD, 2020).

3.3 Stakeholder Engagement

Previous Stakeholder Engagement

The South Arm Highway is recognised locally as a route that is perceived to experience both safety and operational issues. Lane configurations and line marking around the roundabout have been attributed to the crash history of the roundabout, which though high in number, fortunately mostly result only in property damage.

This has resulted in several formal responses by both the public and political leaders in recent years. As detailed in Section 1.1 key political interest in the Mornington Roundabout includes:

- A petition organised by Labour MP Ms Jo Siejka; and
- Clarence City Council's (CCC) Mayor writing to the Minister in September 2020.

These safety concerns were recognised and in 2019, a Road Safety Audit (RSA) was commissioned by the Department. The Audit did not find any significant operational or safety issues, noting that the intersection's operational performance was aligned to expectations for a roundabout of its type, and that roundabouts tend to see a higher rate of collisions than signalised intersections, but that the collision severity is generally lower. The Audit recommended some minor improvements to the intersection, all of which have now been completed.

Formal Consultation

The Mornington Traffic Solution Study collected information and feedback from the community and key stakeholders in a two-week period of public consultation from 11 to 24 October 2021 via Social Pinpoint, email and phone. The Social Pinpoint site collected feedback via comments pinned on the map and via a survey. A total of 157 ideas and comments were received on the Social Pinpoint interactive map, with users also identifying their support for ideas.

The highest ranked themes include:

- Cyclist and pedestrian crossing / underpass – 59 submissions supported by 390 users
- Lane change difficulty, lane allocations and line marking – 49 submissions supported by 261 users
- Traffic congestion and queuing – 35 submissions supported by 162 users
- Installation of traffic signals – 30 submissions supported by 130 users
- New Mornington interchange (underpass / flyover) – 25 submissions supported by 81 users
- Pedestrian access and safety – 21 submissions supported by 151 users
- Additional access onto Tasman Highways – 20 submissions supported by 101 users
- Difficulty accessing Mornington Road industrial estate – 14 submissions supported by 80 users
- Active transport access to Meehan Ranges – 11 submissions supported by 78 users

More detailed analysis of comments revealed that respondents were concerned that the configuration of the Mornington Roundabout was difficult to comprehend and thus created an unsafe environment for vehicular traffic. Additionally, the area was considered unsafe for pedestrians and cyclists which some respondents reported would cause them to avoid active transport use in the area.

Many respondents thought that the intersection should be upgraded to traffic signals and additional or improved accessibility should be provided, such as improved accessibility to/from Mornington Road, or a new access onto the Tasman Highway.

Whilst respondents expressed concerns with the roundabout, surveys of the users of the Social Pinpoint site indicated that most people travel through the area daily nonetheless; indicating that it is the most direct route to

their destination. Only one response to the survey indicated that they avoided the area. When travelling through the Mornington Roundabout, survey responses indicated a mixed use, as shown in Figure 3.1.

The Stakeholder Engagement exercise therefore reiterates previously identified community sentiment that the Mornington Roundabout is unsafe and that there is support for future upgrades to improve safety and performance. The engagement also confirms the significance of this interchange for the local area, supporting a variety of social, educational and economic trips.

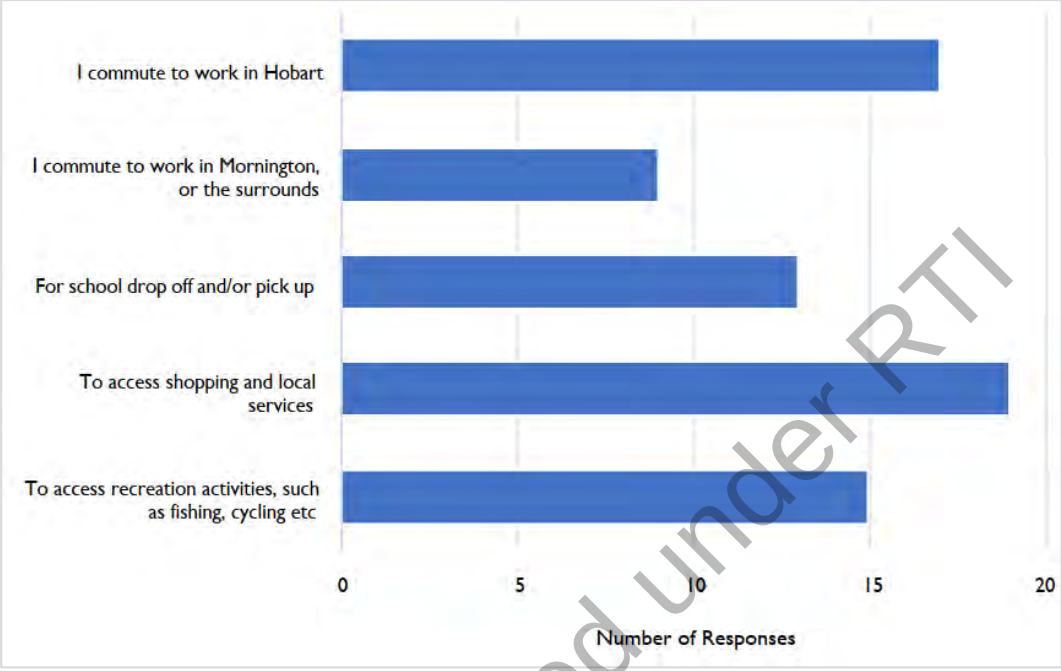

Figure 3.1: Surveyed use of the Mornington Roundabout

4. Corridor review

4.1 South Arm Highway overview

4.1.1 Road category and function

Within the study area, the South Arm Highway is classified as a Category 2 road based on the *State Road Hierarchy* (Department of State Growth). The State Road Hierarchy defines Category 2 roads as Tasmania's major regional roads for carrying heavy freight and identifies Category 2 routes as being the preferred heavy freight vehicle routes even where alternative routes exist. They link major production catchments to Category 1 roads, and provide safe and efficient access to Tasmania's regions for both heavy freight and passenger vehicles.

Category 2 roads facilitate:

- Heavy inter-regional and sub-regional freight movement
- Passenger vehicle movement
- Commercial interaction
- Tourist movement

This report considers that the South Arm Highway is accurately classified as it links both freight and passenger vehicle movements from the southeast of the Clarence Municipality to the Tasman Highway. Additionally, it supports commercial/industrial interaction through access to Mornington, Warrane and Flagstaff Gully.

4.1.2 Planning scheme zoning

The land use adjacent to the South Arm Highway can provide information of the trip types and temporal demand for the South Arm Highway. The land use zoning is presented in Figure 4.1 and shows a high proportion of residential land, which typically results in high commuter peak traffic. While general residential is the dominant land use in the area, adjacent to the South Arm Highway there is also a significant amount of commercial, industrial and recreational land use. Therefore, while the demand for the South Arm Highway is highest in typical commuter peaks, due to the variety and scale of other land uses in the area, the South Arm Highway also facilitates trips for all times of day and days of the week. This is supported by traffic surveys taken on the use of the corridor as detailed in Section 3.3.

The *Greater Hobart Urban Travel Demand Model: Land Use Inputs Technical Report* (SGS Economics & Planning, 2020) indicates that residential areas are set to expand in the Tranmere, and Glebe areas, potentially increasing population levels by several thousand by 2050. This will likely impact on the future demand for commuting capacity in the local area.

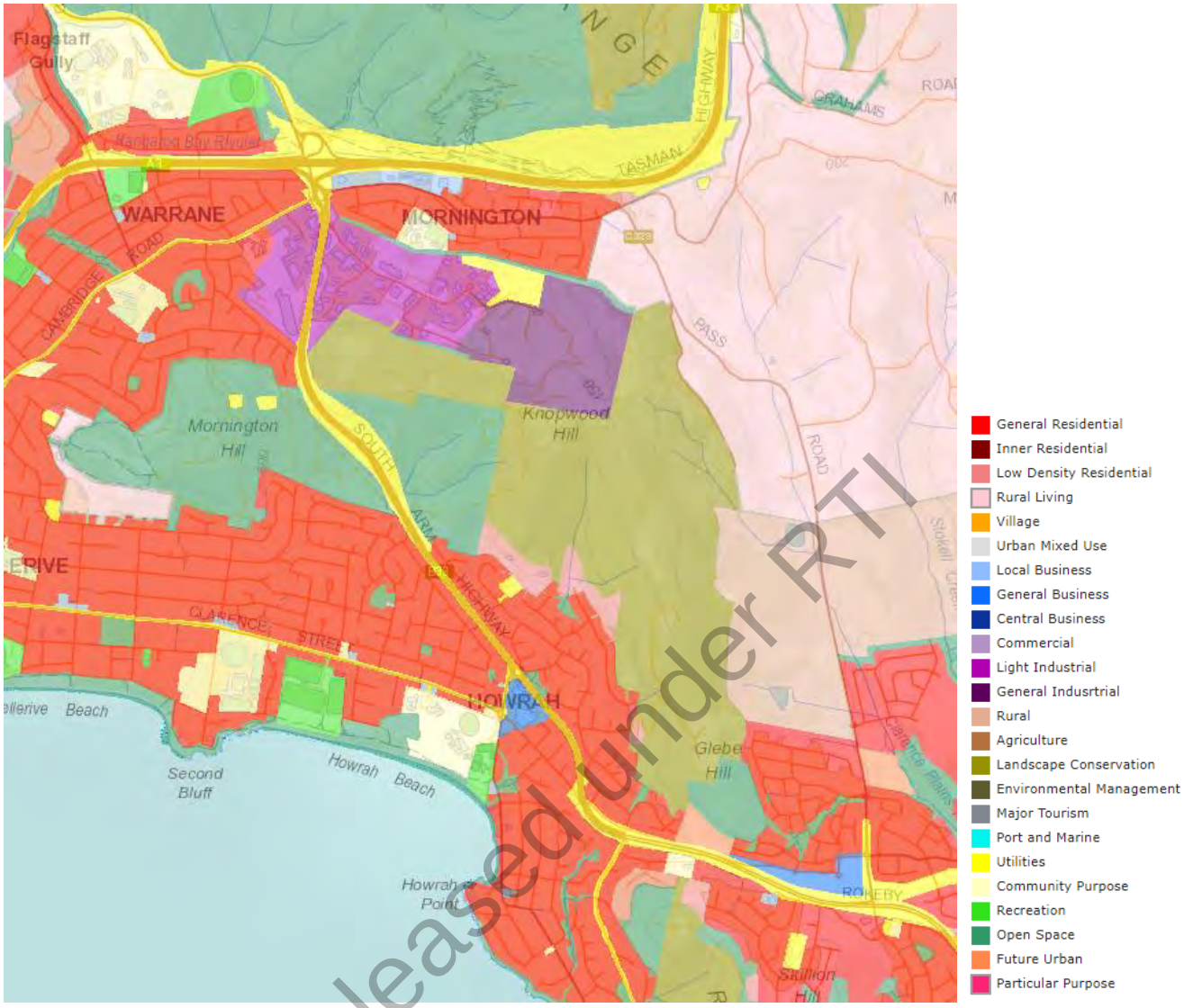

Figure 4.1: Land Use Zoning (maps.thelist.tas.gov.au)

4.1.3 Environment and Heritage

An understanding of the environment and heritage within the study area is important to identify opportunities and constraints in utilising the area. Typical considerations include:

- European and Aboriginal heritage
- Flora and fauna
- Geotechnical conditions
- Noise

<u>European and Aboriginal heritage</u>

At this stage of the Study's development, the scope of work does not cover heritage assessments, however a review of the LISTmap heritage register layer and a Dial Before You Dig (DBYD) request was undertaken, and subsequently did not identify any significant European or Aboriginal heritage items in the area.

Flora and fauna

The *Natural Values Atlas Report* (Department of Primary Industries, Parks, Water and Environment, 2017) for the Tasman Highway corridor (which covers Mornington Roundabout and Interchange) was reviewed and did not identify any threatened or endangered flora or fauna in the area.

Geotechnical considerations

A desktop geotechnical investigation was undertaken to collate and review information to understand the existing subsurface conditions within the study area. A review of geological mapping indicated that the Tasman Highway runs along an alluvial channel associated with the Kangaroo Bay Rivulet which generally comprises of Quaternary age alluvial (gravel, sand, clay), with the South Arm Highway, close to the Tasman Highway, comprising of Quaternary age alluvial deposits (gravel, sand, clay) and talus. There is also some dolerite at the southern extent of the South Arm Highway study area, predominantly Triassic age sedimentary rock is present to the west (sandstone, siltstone, and mudstone), and Permian age glacial deposits to the east (siltstone, sandstone).

Historic bore holes align with the geological mapping, with the bore holes comprising of top layers of gravel or clay for 0.4 to 1.6m, on top of layers of sand down to 3 to 4m.

No landslide or Acid Sulphate Soils risk was identified, however one of the bore holes had a petroleum odour.

While the desktop geotechnical assessment did not indicate any major issues, the presence of a petroleum odour may indicate the requirement of further assessment of soil chemistry to inform contaminated land status as part of future investigations.

Noise

The noise environment along the South Arm Highway was reviewed against the Department of State Growth Tasmanian State Road Traffic Noise Mitigation Guidelines (SRTNMG). Whilst this desktop assessment primarily focused on determining if noise mitigation measures may be required for each of the preferred project options detailed in Section 8, and to recommend the scope of any further noise impact assessment to be undertaken during Concept Design Phase, the assessment also identified deficiencies in the current noise mitigation measures. It found that the current fencing of properties adjacent to the Tasman Highway and South Arm Highway are not acoustically effective and are unlikely to provide noticeable noise barrier shielding mitigation. It is considered likely that the noise levels at receivers on both the north and the south sides of the Tasman Highway (adjacent to the west facing ramps) and east of the existing Mornington Roundabout are already exceeding the SRTNMG criteria.

4.1.4 Services

The Mornington Roundabout and environs act as a concentration hub for services. These are summarised in Figure 4.2.

Of particular note are the transmission lines and towers that cross the Tasman Highway at the interchange and the South Arm Highway at the roundabout. As shown in Figure 4.2, the transmission lines cross the South Arm Highway at the Mornington Roundabout. Given that there are horizontal easement and vertical clearance requirements from transmission lines, these formed a major consideration when designing any changes in the area. Underground high voltage, low voltage and fibre optic cables are present near the roundabout, and Mornington Road intersection.

Sewerage infrastructure is also present in the study area. There is a major outlet point for the gravity reticulation sewer networks throughout the area. A pump station for water reticulation is present on the northern side of the Tasman Highway feeding large bulk transfer mains and smaller reticulation mains in multiple directions. Mains communication conduits cross the South Arm Highway south of the roundabout with smaller service conduits

connecting residential properties and businesses along Cambridge Road, Mornington Road and surrounding local roads.

Fibre optic cabling is also present, crossing the South Arm Highway at three locations between the westbound ramps and Mornington Road, as well as crossing Mornington Road itself, adjacent to the South Arm Highway and connecting to the TasNetworks Training Centre.

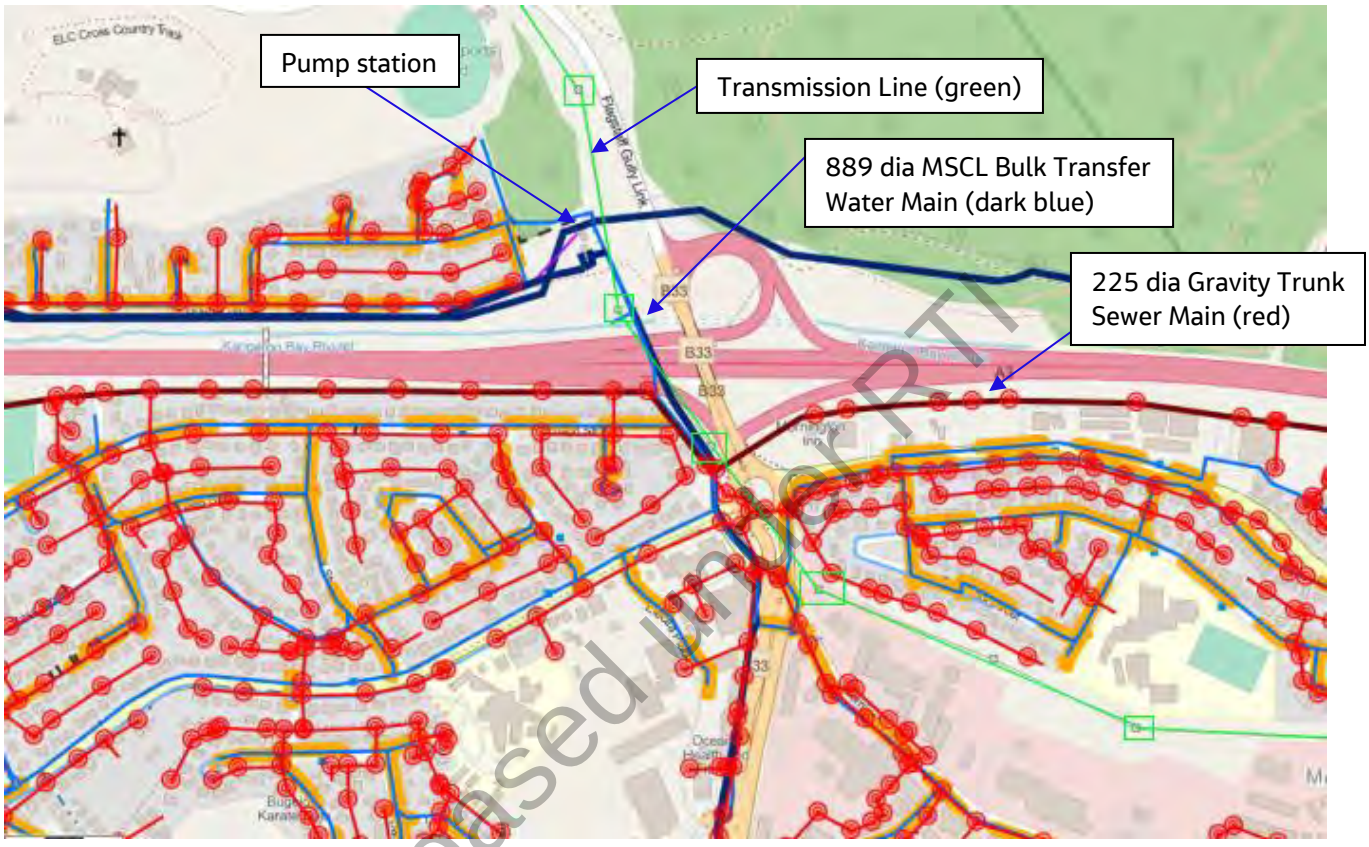

Figure 4.2: Major services

4.2 Existing traffic volume

The existing AADT on the South Arm Highway south of Mornington Road is approximately 26,770 veh/day with 6.9% heavy vehicles, recorded in 2019 (GeoCounts).

Turning movement data was obtained for the Mornington Roundabout through video capture survey undertaken by Matrix Traffic and Transport Data in June 2021. The AM peak hour (7:45-8:45) and PM peak hour (3:45-4:45) volumes for the Mornington Roundabout are shown in Figure 4.3 and Figure 4.4 respectively.

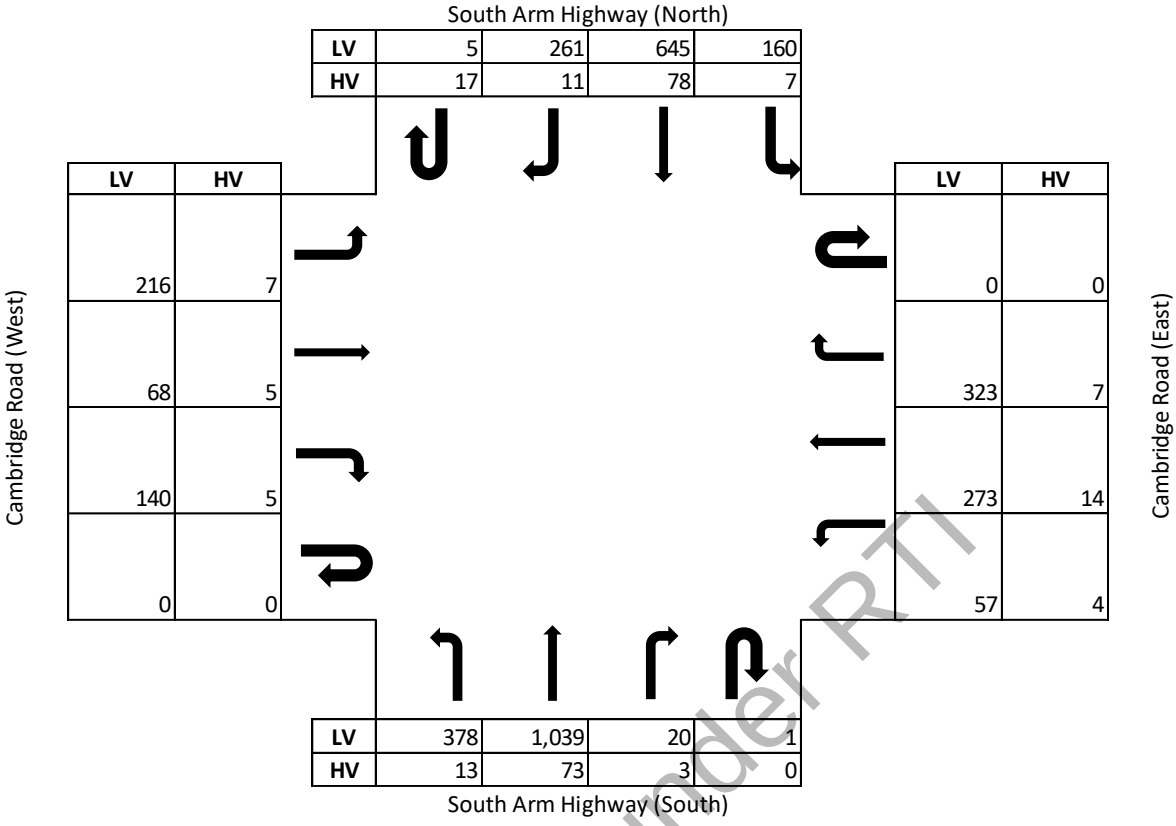

Figure 4.3: AM peak traffic volumes at Mornington Roundabout

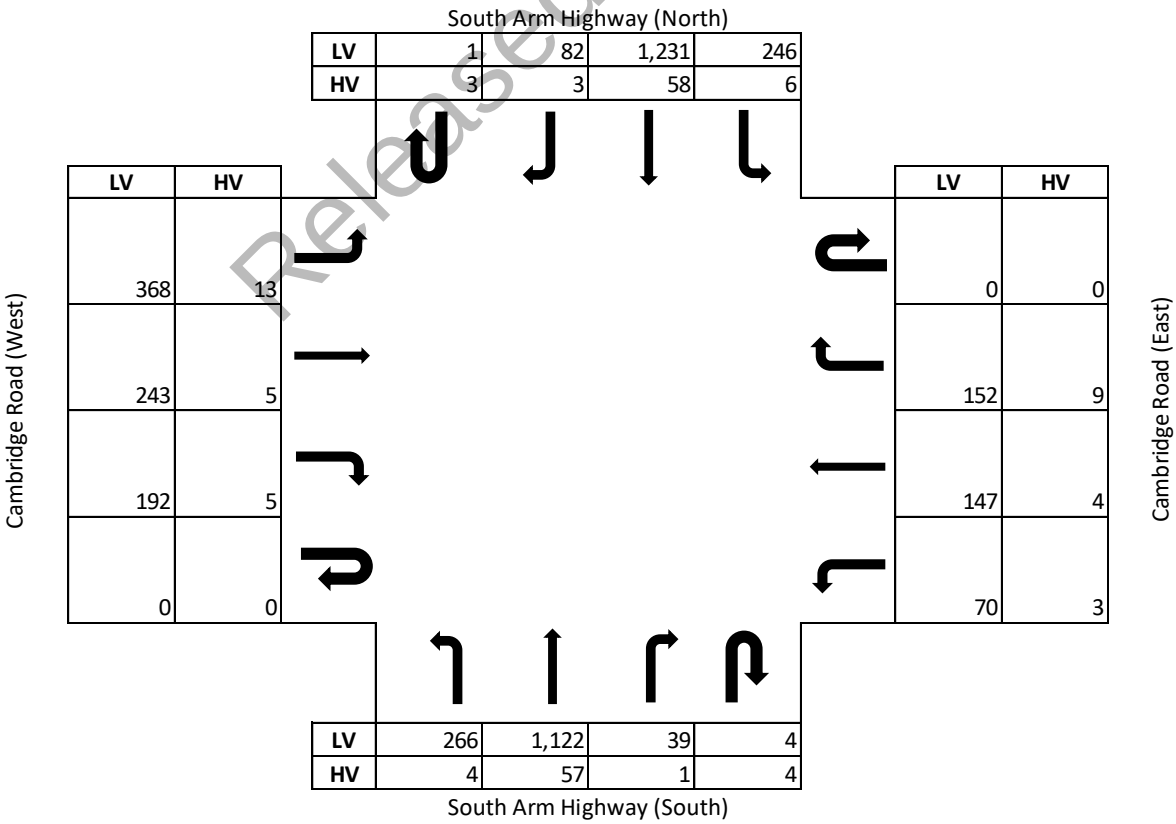

Figure 4.4: PM peak traffic volumes at Mornington Roundabout

For light vehicles, northbound movements are the highly dominant movement across both the AM and PM peak period, reflecting the significant demand to access the Tasman Highway and resulting wider regional areas during both time periods. The majority of these movements are made from south to north (and in the AM this south to north movement is 50% greater than any other movement during the time period), however there are also a significant number of northbound turns from Cambridge Road from both the east and west approaches. In the AM peak, the majority of northbound turning traffic comes from the east (travelling in the westbound direction and turning north), whilst in the PM the majority comes from the west (travelling in the eastbound direction and turning north). Southbound movements are more variable, with the number of vehicles travelling from north to south being nearly twice as high in the PM peak as in the AM peak, suggesting that traffic travelling from the Tasman Highway is more prevalent in the PM peak.

Eastbound and westbound volumes along Cambridge Road vary more temporally between peaks, with total westbound traffic being highest in the AM and total eastbound traffic being highest in the PM. This likely reflects the demand for local access to and from schools and employment in Rosny Park, which is located to the west of the roundabout.

For heavy vehicles, the major AM and PM peak movements are vehicles approaching the roundabout on the South Arm Highway from both the north and south and continuing through the roundabout. There is also a high U-turn movement from the north to the north of 17 vehicles and hour in the AM peak, which is attributed vehicles travelling from a quarry, situated on Flagstaff Gully Road, to the west, as shown in Figure 4.5. No other U-turn movements show a significant volume of traffic. This movement can attract up to 100 truck movements per day, and the quarry is expected to have another 40 years of life (Mornington Interchange Problem Definition, 2020).

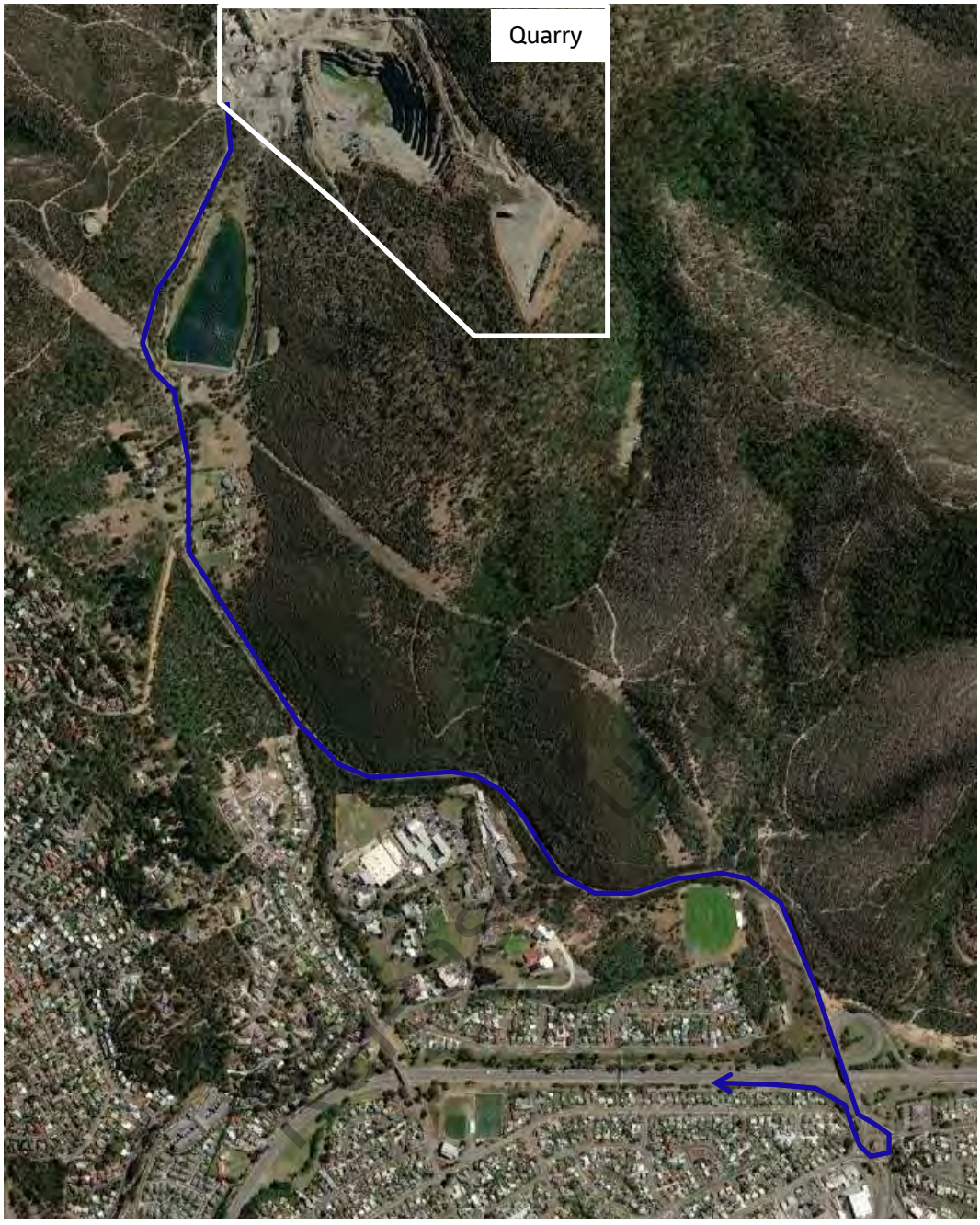

Figure 4.5: Westbound travel from quarry

4.3 Historic growth

Historical Average Annual Daily Traffic (AADT) counts and heavy vehicle percentages were obtained from the Department of State Growth's GeoCounts website [1]for the years shown below (2013-2019). The South Arm Highway has seen a historic growth of approximately 3% per year linearly, with heavy vehicles growing at a slightly faster rate than light vehicles, which is equivalent to other highways of similar function such as the Brooker Highway and Southern Outlet. Heavy and light vehicle counts have been extrapolated assuming consistent growth to project traffic volumes to 2040, shown in Figure 4.1.

[1] https://tasmaniatrafficdata.drakewell.com/publicmultinodemap.asp

If historic trends continue, by 2040 the AADT on South Arm Highway will be approximately 47,700 vehicles per day with a mix of 12% heavy vehicles. It is considered that the general AADT scenario is possible, as residential areas are expected to expand in the Tranmere, and Glebe areas, potentially increasing population levels by several thousand by 2050[2].

While 47,700 vehicles per day is not excessive for the current layout of the South Arm Highway (a 4-lane, 2-way highway) it is possible that operational performance could be limited by peak hour volume imbalances, and/or local intersections and the wider network if these are not able to accommodate the projected increase in vehicles. A large majority of this traffic is also travelling to and from the Tasman Highway, which is currently at an AADT of 73,000 vehicles per day. The estimated AADT on the South Arm Highway in 2040 is equivalent to the Brooker Highway at Howard Road at the time of its upgrade from a roundabout to traffic signals.

Figure 4.6: Historic and future traffic growth

4.4 Origin-destination data

An origin-destination (O-D) survey was undertaken by Matrix Traffic and Transport Data in June 2021 across the wider eastern shore network. Data was obtained over a 3-hour period in both AM and PM peak periods. The O-D stations are shown in Figure 4.1 and Table 4.2.

[2] *Greater Hobart Urban Travel Demand Model: Land Use Inputs Technical Report* (SGS Economics & Planning, 2020)

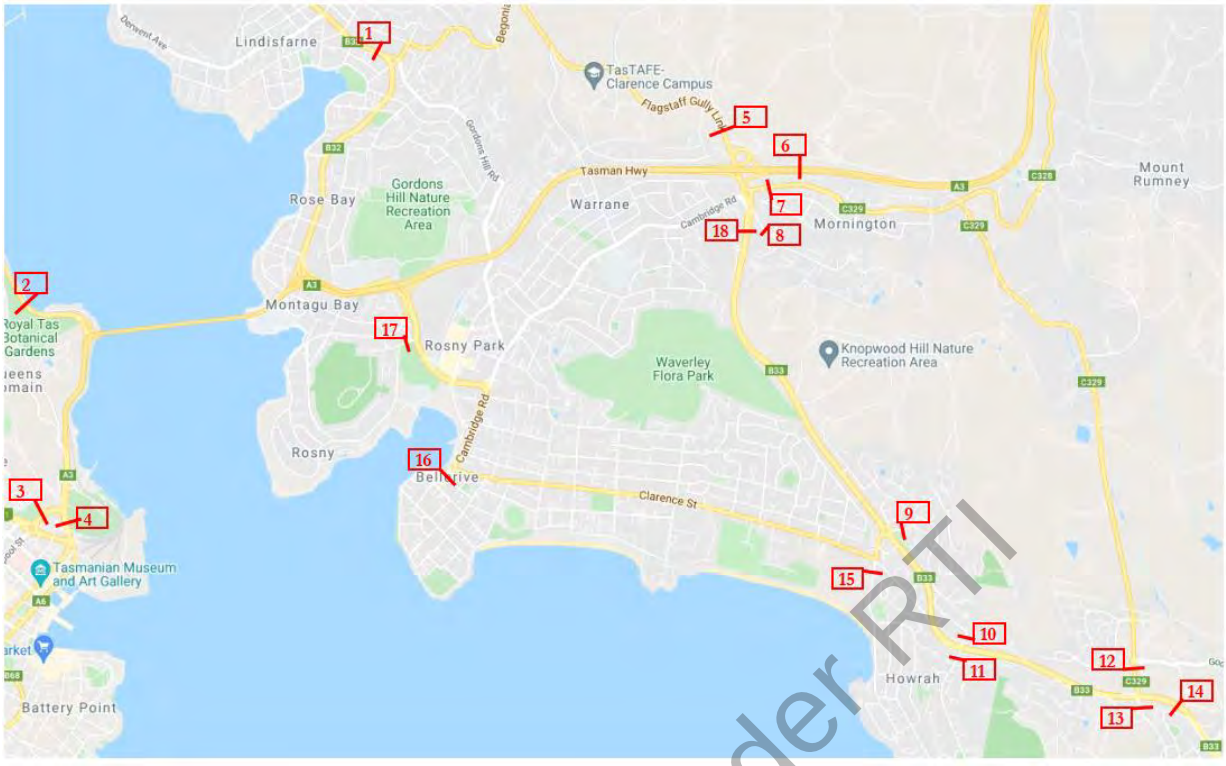

Figure 4.7: Origin-destination stations

Table 4.1: Origin-destination station descriptions

Station ID	Road	Location
1	East Derwent Highway	North of Gordons Hill Road
2	Domain Highway	West of Tasman bridge
3	Liverpool Street	West of Tasman Highway
4	Tasman Highway	South of Liverpool Street
5	Flagstaff Gully Link	North of Tasman Highway
6	Tasman Highway	East of South Arm Highway
7	Cambridge Road	East of South Arm Highway
8	Mornington Road	East of South Arm Highway
9	Shoreline Drive	North of South Arm Highway
10	Merinda Street	North of South Arm Highway
11	Oceana Drive	South of South Arm Highway
12	Pass Road	North of South Arm Highway
13	Tollard Drive	South of South Arm Highway
14	South Arm Highway	East of Pass Road
15	Howrah Road	South of Clarence Street
16	Cambridge Road	South of Clarence Street
17	Riawena Road	West of Rosny Hill Road
18	South Arm Highway	South of Mornington Road

Over 25,000 light vehicles in total were recorded entering the road network, and 24,000 light vehicles leaving the road network at the O-D stations shown in Figure 4.1. While the numbers of vehicles entering and leaving the network are similar, only 61% of these trips were able to be matched traversing between two O-D stations. The O-D survey indicated that 3% of trips were return trips (entering and leaving the network at the same O-D station, typically attributed to school drop-off/pick-up), with the remaining 58% traversing between two different O-D stations.

The remaining trips that were only recorded at one O-D station (approximately 10,000 entering the network and 9,000 leaving the network) could be trips starting within the road network and travelling externally for work or school, or travelling to an area not covered by an O-D station (parking at the Cenotaph or Davies Avenue), or trips commencing outside of the road network and entering to access employment (such as at Eastlands) or other trip generating activities within the road network.

The O-D station also includes Station 18, an intermediate station recording the number of origin-destination movements that occur via the Mornington Roundabout. This gives a broad understanding of the route drivers choose to take when travelling, generally either along the corridor or bypassing it. AM trips were recorded from 6:30am to 9:30am; PM trips were recorded from 3:00pm to 6:00pm.

Of the total vehicles that travel between Stations 2-4 (western shore) and Stations 9-15, up to 87% travel via the South Arm Highway. This value remains relatively consistent in the off-peak direction (eastbound in the AM peak, westbound in the PM peak). However, in the peak direction (westbound in the AM peak, eastbound in the PM peak) this percentage drops to 51% in the AM peak (8:00-8:30) and 65% in the PM peak (4:30-5:00). While some of this shift can be attributed to linked trips (detouring to school before continuing to work) the results could imply that a proportion of vehicles are avoiding the main times of congestion on the South Arm Highway. This is important to note, as any improvement in the capacity at the roundabout might induce additional peak-hour trips on the South Arm Highway, which will need to be taken into account in the concept design development stage. This finding is somewhat misaligned with the stakeholder engagement outcomes detailed in Section 3.3, which only had one respondent indicating that they avoid the area, and thus must be further investigated and carefully considered when undertaking further assessment

The O-D survey indicates a high preference for the South Arm Highway, with the results of stakeholder engagement in Section 3.3 indicating it is preferred as it is the most direct route to the majority of destinations. Examining the area more broadly, it is the most direct route for many suburbs in the Clarence Municipality adjacent to the South Arm Highway, commuting to Hobart, particularly for employment. From reviewing 2016 data from the Australian Bureau of Statistics, as shown in Figure 4.8, 28-37% of workers from these areas are travelling to Hobart for employment, which is the highest employment generator for the area, the second highest employment generator is the Rosny area with 5-10% of travellers. 15% of people work from home.

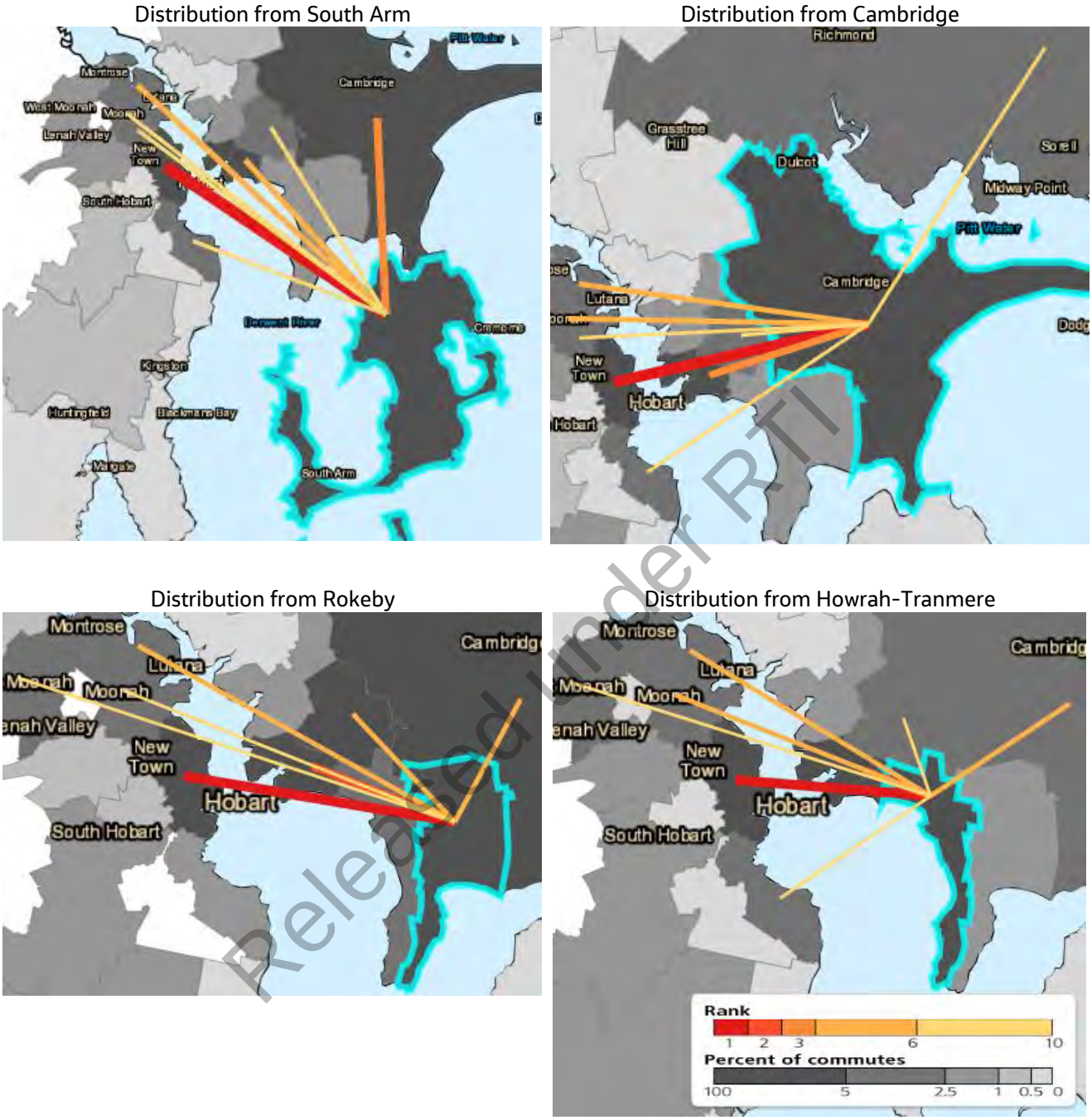

Figure 4.8: ABS 2016 Journey to work from usual place of residents

4.5 Speed zones

There are several variations to the posted speed limit across the relatively short study area. Due to the condensed nature of these variations, some of the resulting speed zones fall outside of the minimum lengths designated in the Department of State Growth's Tasmanian Speed Zoning Guidelines (October 2020) of 800m for 80km/h speed zones and 2.0km for 100km/h zones.

The southbound direction on the South Arm Highway has a posted speed limit of 60km/h through the Tasman Highway interchange and ramp terminals to south of the Bunnings Junction. The posted speed limit increases to 100km/h approximately 100m south of the Bunnings Junction and is approximately 1.4km long, before reducing to 80km/h on approach to the roundabout at Howrah.

The northbound direction on the South Arm Highway also has a posted speed limit of 100km/h for 1.1km to the south of the study area. The posted speed limit reduces to 80km/h approximately 400m south of the Bunnings Junction and is approximately 550m long. The posted speed limit then reduces to 60km/h prior to the Mornington Road intersection and continues through the Tasman Highway interchange.

The length of the 100km/h zone is limited at the southern end in both directions due to developed residential land adjacent to the highway, and at the northern end due to the Bunnings Junction, the unsignalised Mornington Road interseciont and the roundabout, and therefore conflict points and merging / turning traffic.

Cambridge Road approaches the roundabout with a posted speed limit 60km/h from both eastbound and westbound directions. Mornington Road has a posted speed limit of 50km/h. The Bunnings Junction access does not have a posted speed limit and therefore is considered to have the default limit of 50km/h.

4.6 Review of transport modes

The use of transport modes for travelling to work within the suburb of Mornington is shown in Table 4.4, for employed people over the age of 15. These statistics were obtained from 2011 and 2016 census data held by the Australian Bureau of Statistics.

The majority of trips were made by private car, with a small increase in single occupancy car trips from 2011 to 2016 seen across Mornington, the Clarence LGA and Greater Hobart. Local mode share splits in Mornington are similar to those seen more broadly in Clarence LGA and Great Hobart, with only minor variation seen. For example, the Mornington mode share for walking and working at home is slightly lower than the Greater Hobart average and whilst bus usage in the wider Clarence LGA and Greater Hobart areas has trended downward between 2011 and 2016, Mornington has seen an increase.

These smaller trends indicate that Mornington experiences a slightly lower demand for active walking commutes (generally associated with shorter commuting distances) but a slightly higher demand for sustainable modes like the bus (generally associated with mid-range commuting distances) compared to the wider area.

As the data in Table 4.2 (and available on the ABS website) only shows up to 2016, this data is unaffected by the COVID-19 pandemic. Anecdotally there has been an increase in new hybrid ways of working, with more people choosing to work at home, but also to avoid public forms of transport when commuting to work.

Table 4.2: Travel to work statistics from census data

Mode of transport	Mornington (TAS), 2011	Mornington (TAS), 2016	Clarence LGA (TAS), 2011	Clarence LGA (TAS), 2016	Greater Hobart (TAS), 2011	Greater Hobart (TAS), 2016
Car, as driver	64.9%	66.2%	64.7%	66.9%	60.5%	62.4%
Car, as passenger	8.3%	7.1%	7.2%	6.1%	7.5%	6.4%
Bus	5.2%	6.7%	5.3%	5.0%	4.5%	4.3%
Walked only	2.7%	2.2%	1.7%	1.8%	5.4%	5.5%
Worked at home	-	1.5%	-	3.5%	-	4%

4.7 Freight

The South Arm Highway is a B-double (26m) route from Oakdowns to the quarry at the end of Flagstaff Gully Road. Adjacent to the South Arm Highway, both Tasman Highway and Mornington Road (to the waste transfer station) are also B-Double routes. Even though the South Arm Highway is gazetted a B-double route, heavy vehicle movements are only in the order of 9% of total traffic, and across a typical day, freight movements are a small percentage of the total trips. As shown in Figure 4.9, the majority of heavy vehicle movements are by rigid heavy vehicles (Austroads Class 3-5) which are up to 16% of the vehicle fleet. Articulated vehicles (Austroads Class 6-9) and combination vehicles (Austroads Class 10-12) are less than 2% of the vehicle fleet.

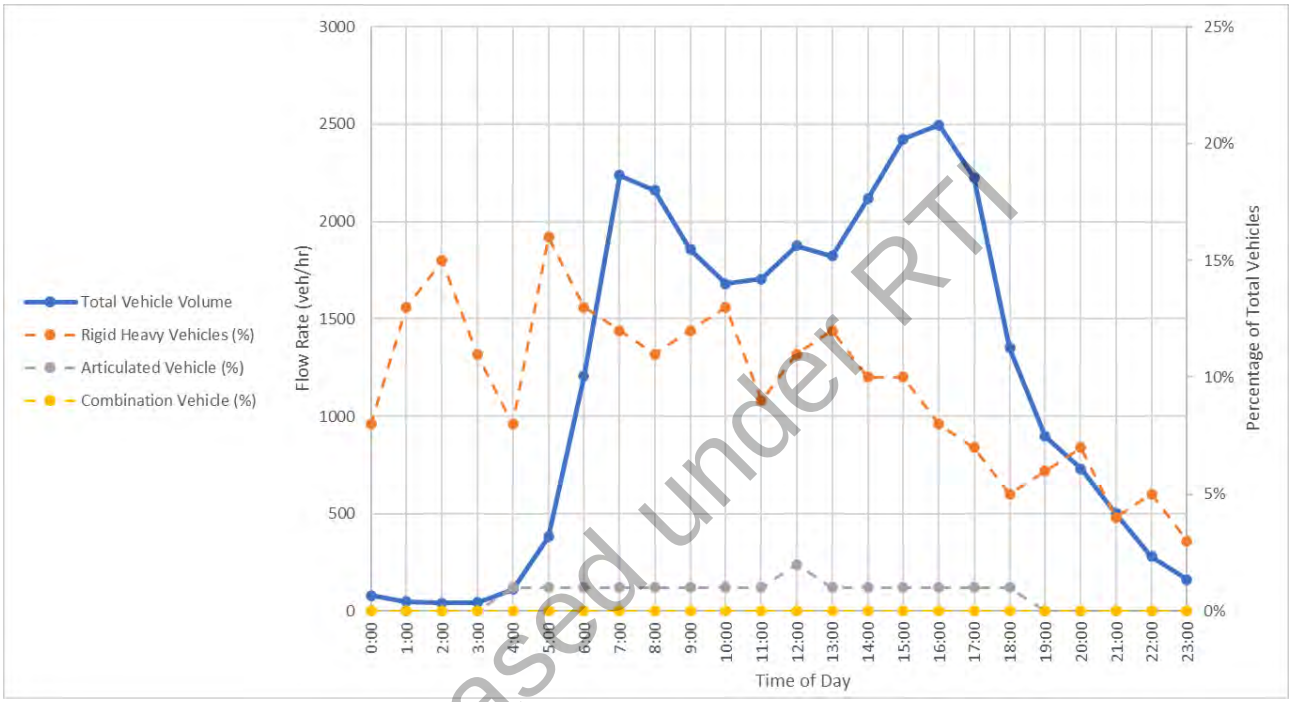

Figure 4.9: Heavy vehicle distributions

Of note is an active quarry on Flagstaff Gully Road. Due to the road network configuration, vehicles egressing the quarry and travelling west, are required to undertake a U-turn at the Mornington Roundabout, as highlighted in Section 4.2, this movement can attract up to 100 truck movements per day, and the quarry is expected to have another 40 years of life (Mornington Interchange Problem Definition, 2020).

5. Corridor performance

5.1 Current conditions

5.1.1 Site Observations

The performance of the Mornington Roundabout and environs was visually assessed during two site visits, undertaken on Thursday 12th of August 2021 and Monday 16th of May 2022 respectively. These were supplemented by additional drive-through assessments undertaken across the project timeframe. A summary of the key observations is provided below:

AM Peak

Queuing was most prominent on the South Arm Highway southern approach, with queues extending past the Bunnings Junction, as shown in Figure 5.1. Anecdotal evidence suggests that queues can extend up to 400m past this point. The queuing on the South Arm Highway southern approach occurs in conjunction with the peak time for egress from the Cambridge Road eastern approach. This is because the Cambridge Road eastern approach has priority over the South Arm Highway southern approach, thus the South Arm Highway must yield and wait for a gap in Cambridge Road traffic before entering the roundabout.

The Cambridge Road eastern approach has a regular demand that extends for approximately an hour, encompassing both the morning commuter and school peak. During this peak, traffic cumulates and queues past Currajong Street, blocking traffic entering and exiting it (as shown in Figure 5.1). Access and egress demand from Currajong Street is high due to the presence of MacKillop College. MacKillop College is a major attractor to the area as well as a major generator of traffic egressing Cambridge Road at the Mornington Roundabout as many trips to MacKillop College are linked or return trips where travellers are travelling from home to work to school, or home to school to home.

Queuing was also observed on the Tasman Highway westbound direction, emanating back from the East Derwent Highway / Rosny Hill Road interchanges (as shown in Figure 5.1). This queuing was not observed to impact the performance of the Mornington Roundabout, as the queue is too far removed and is not observable until traffic is on the westbound on-ramp.

The Tasman Highway westbound off-ramp was also observed to queue, however this was contained within the available ramp storage. It is noted that the queuing on the westbound off-ramp was being abated through vehicles travelling southbound on South Arm Highway yielding to the ramp traffic. While this elevates some of the queuing on the ramp, it creates a safety issue as South Arm Highway, as shown in Figure 5.2.

PM Peak

In the PM peak extensive queuing was observed back from the northern approach to the Mornington Roundabout, extending through the Tasman Highway eastbound off-ramp and onto the Tasman Highway, as shown in Figure 5.1. This queuing is predominately in the left most lane, with the right most lane generally free flowing. Vehicles tend to prefer the left most lane as it is continuous and the right lane is require to yield to traffic on Flagstaff Gully Link.

Queuing in the PM peak was also observed on the Cambridge Road western approach to the Mornington Roundabout, as shown in Figure 5.1. This queue anecdotally can extend to Dampier Street. Both the queuing on the northern and western approach to the Mornington Roundabout occur at two time periods, the school peak at around 3:00-3:30pm and the commuter peak at 5:00pm. The reason for this movement is the high level of opposing flow, which is up to 1,390 vehicles an hour in the PM peak

Outside of peaks

Mornington Road and its intersecting streets reside within a commercial and light industrial zoned area (see Figure 4.1). The area is observed to have regular and frequent access and egress throughout the day from trips associated with the typical operation of these areas. To support this movement of vehicles, Mornington Road has parking restrictions in place at various locations along its length, to prevent the all-day parking of employees of the commercial and industrial areas. The all-day parking of employees was observed to be extensive, with minimal kerb side space available on Mornington Road or its intersecting streets where parking is not restricted, this made Mornington Road difficult to navigate.

On Saturdays at midday, the corridor is anecdotally said to be relatively well utilised, with higher usage of Mornington Road and the access and egress form the Bunnings Junction. As shown in Figure 5.3, the central median used to access and egress Mornington Road from the northbound carriageway of the South Arm Highway was observed to saturate. Anecdotally queues in the midblock have seen the rear of the last queued vehicle encroaching on the southbound carriageway of the South Arm Highway.

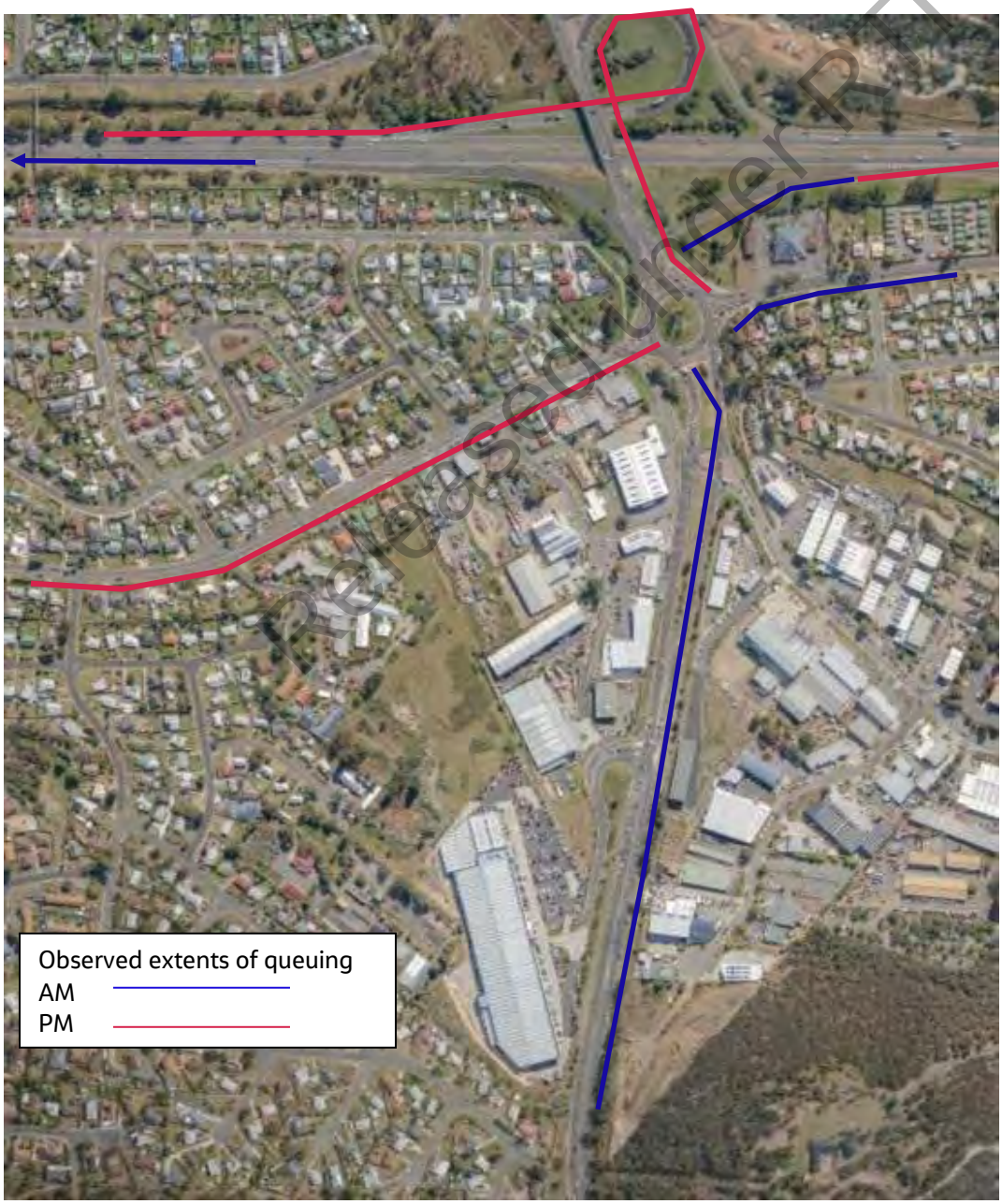

Figure 5.1: Observed Queuing

Figure 5.2: Westbound offramp egress.

In Figure 5.2, the green car is yielding to the red car, however the red car accesses the right most lane (which was frequently observed). The green car in turn blocks the red car's view of the yellow car and the yellow car's view of the red car, creating the potential for a collision.

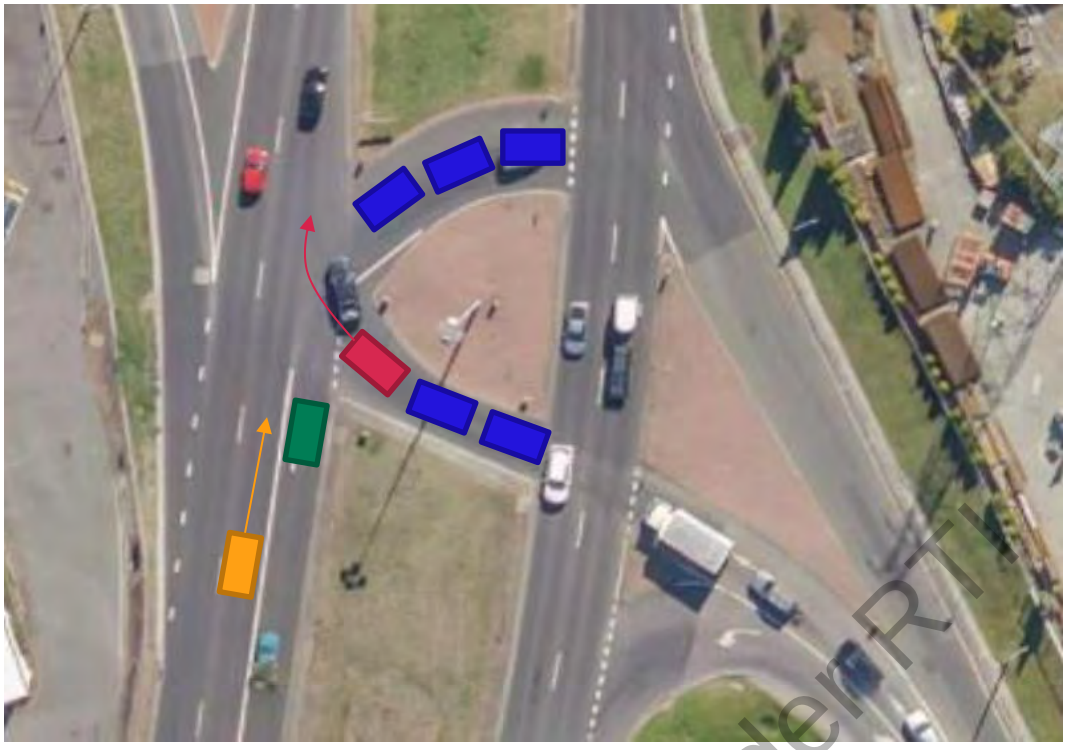

Figure 5.3: Mornington Road Egress.

In Figure 5.3, the central median used to access and egress Mornington Road from the northbound carriageway of the South Arm Highway was observed to saturate. This creates an unsafe condition whereby the green car is yielding to the red car, however the green car is blocking the red car's view of the yellow car and the yellow car's view of the red car, creating the potential for a collision.

There were also several driver behaviours observed which impacts the performance of the Mornington Roundabout. The first is that comprehension for vehicles at the northern approach to the roundabout is difficult. As shown in Figure 5.4, the circulating vehicles diverge into two lanes, however, it is difficult for the yielding vehicle to determine the trajectory of the circulating vehicle and often does not take an appropriate gap when it's presented.

The second issue is the comprehension of the lane lines for vehicles on the western approach. As shown in Figure 5.5, vehicles destined for the Tasman Highway (eastbound) typically undertake this movement in two stages. This can cause issues as the left most, northbound exit lane travels in a continuous lane onto the westbound Tasman Highway on-ramp, and so vehicles can slow down and/or stop in an attempt to merge into the right most lane.

Vehicles exiting the roundabout in the southbound direction were also observed starting their acceleration up to 100km/hr well in advance of the 100km/hr speed limit section, which is located 500m south of the roundabout. This not only causes a safety issue due to the excess in speed, it also makes it difficult for traffic egressing from Mornington Road to suitably judge a gap in the traffic.

Figure 5.4: Behavioural issue for northern approach.

Figure 5.5: Behavioural issue for eastern approach

5.1.2 Surveyed Performance

The travel time along the South Arm Highway corridor (Pass Road to the eastbound Tasman Highway on-ramp) was surveyed via the GPS floating car method by Matrix Traffic and Transport Data in June 2021 (see Figure 5.6 for route). The surveys provide insights into how the performance of the corridor changes as demand changes, and where, if any, capacity constraints exist.

Figure 5.6: South Arm Highway Surveyed Corridor

The results of the AM westbound and PM eastbound surveys are shown in Figure 5.7 and Figure 5.8 respectively, with each line denote one trip by a survey vehicle. 23 trips were performed in the AM peak (6:30-9:30AM) and 21 in the PM peak (3:00-6:00PM). Generally, Figure 5.7 show fairly consistent travel times up to Shoreline Roundabout, but then travel through to the Mornington Roundabout is highly variable. In Figure 5.8 travel times are highly variable through both Shoreline Roundabout and Mornington Roundabout.

For trips commencing before 7:15AM in the AM peak, it typically takes less than 6 minutes to traverse between Pass Road and the eastbound on-ramp to the Tasman Highway. However, as congestion increases, so do the travel times, peaking at 9 and a half minutes at 7:45AM, after which travel times decrease until they are once again typically below 6 minutes at 8:45AM. In the PM peak, two distinct peaks were observed, one at 3:30PM, and the other at 4:50PM where travel times increased to over 9 minutes, corresponding to the school and commuter peak periods respectively. Most trips in the PM were between 6 and 8 minutes in length.

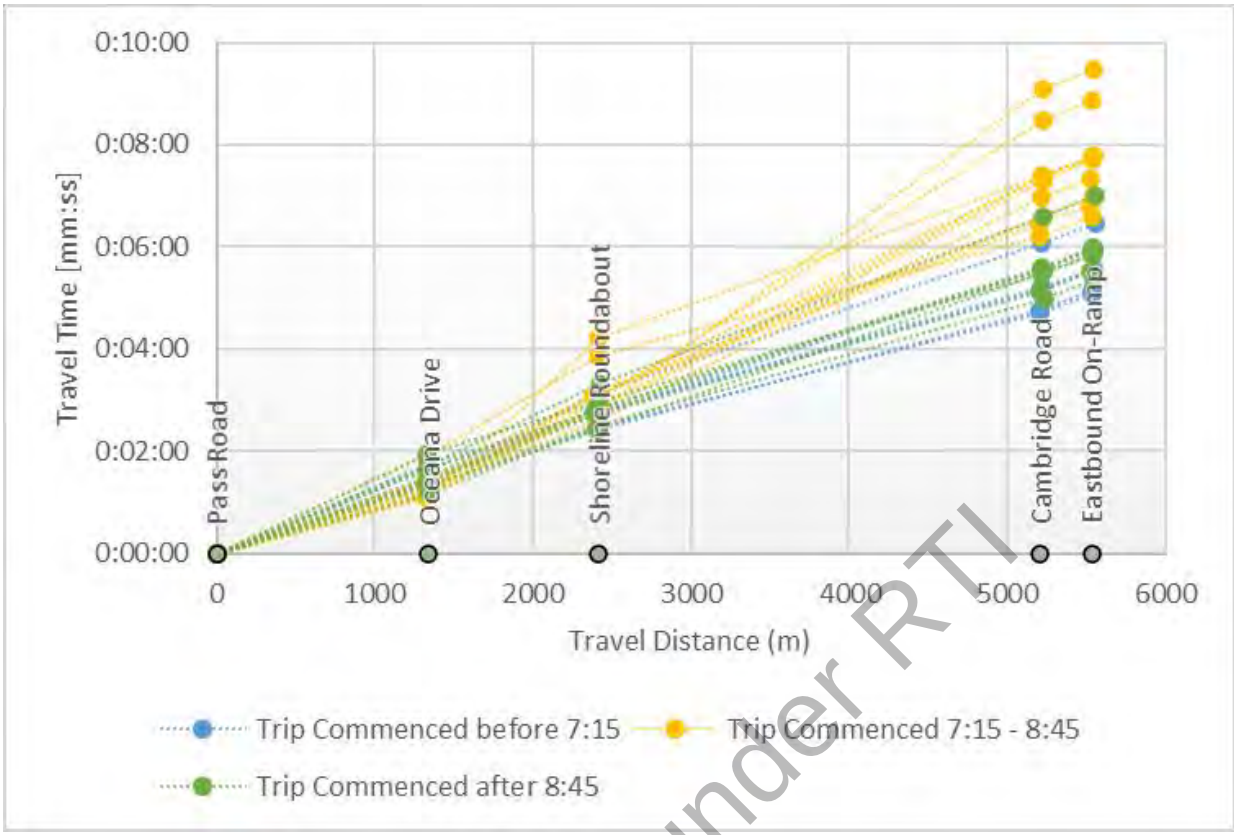

Figure 5.7: Travel time variation per trip across AM peak survey period

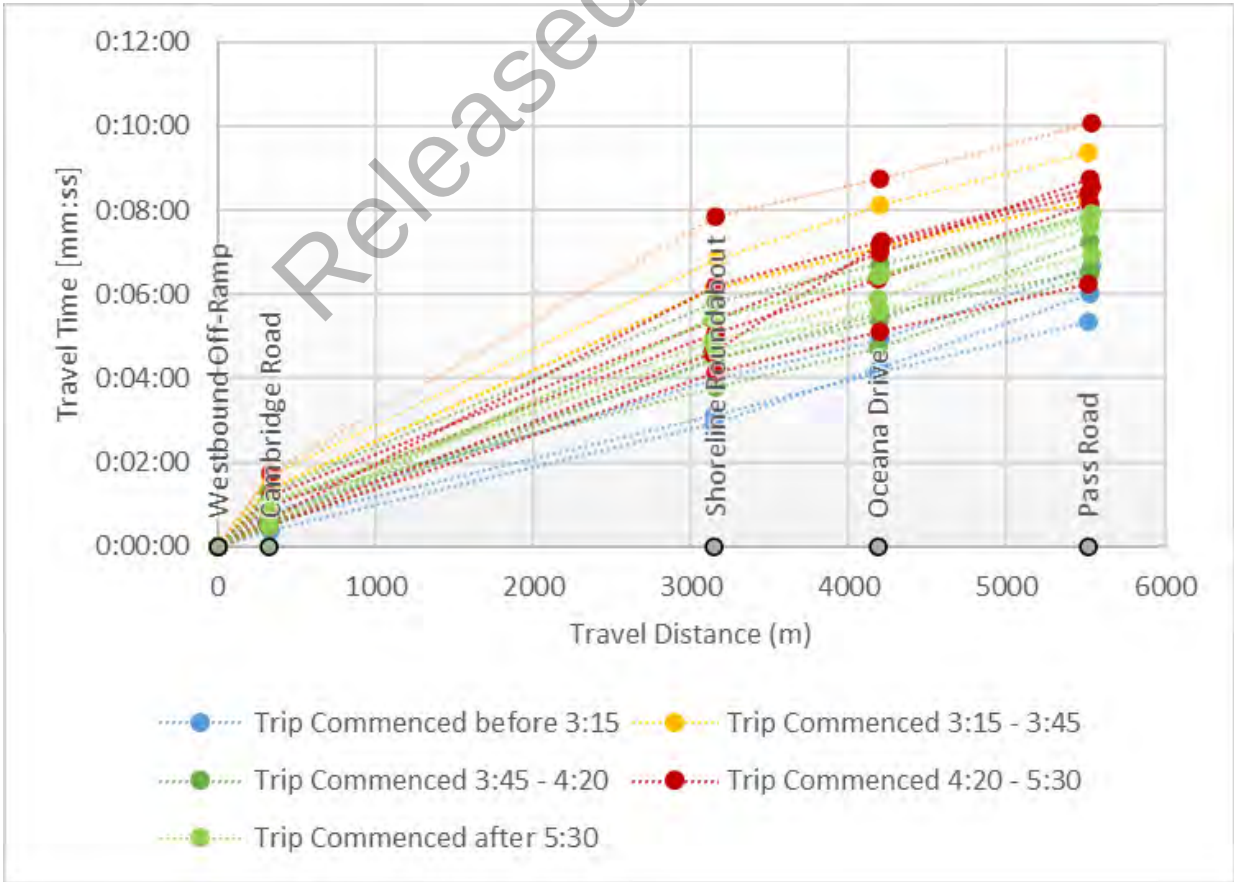

Figure 5.8: Travel time variation per trip across PM peak survey period

In order to qualify the performance of the network, a Level of Service (LOS) assessment was undertaken. LOS is 'a qualitative measure for ranking operating conditions or service quality, based on service measures such as speed, travel time, delay, density, freedom to manoeuvre, interruptions, comfort and convenience'[3].

LOS is typically described in six levels ranging from the best, LOS A (at or close to free flow), to the worst, LOS F (forced flow or break-down flow). It is noted that LOS C is generally targeted within an urban environment, though LOS D would be acceptable in peak periods. Given the nature of the South Arm Highway corridor between Pass Road and the Tasman Highway, it has been assessed as an interrupted urban road corridor. Based on Austroads (2020) such a road system should be assessed based on speeds obtained relative to the Base Free Flow Speed (BFFS), with the LOS criteria shown in Table 5.1. In this instance the Base Free Flow Speed has been assumed to be equal to the posted speed limit.

Table 5.1 Urban Arterial Roads with Interrupted Flow (*Guide to Traffic Management – Part 3: Traffic Studies and Analysis*, Austroads, 2020)

Level of Service	Percentage of Base Free Flow Speed
LOS A	≥ 85%
LOS B	67 - 85%
LOS C	50 - 67%
LOS D	40 - 50%
LOS E	30 - 40%
LOS F	< 30%

The performance of the South Arm Highway corridor was assessed in two ways. The first was by segment, whereby the performance of each section of the corridor, between major intersections, was assessed by each survey trip. The second was the change in performance of the corridor as a whole was assessed over the survey period.

The performance of the corridor in the AM peak is shown in Figure 5.9, with each line representing a trip by a survey vehicle. Figure 5.9 indicates that in general, over the survey period the corridor is performing better than LOS C (denoted by the solid red line). However, LOS E or worse is experienced for trips commencing between 7:30AM and 7:45AM between the Shoreline Roundabout and the Mornington Roundabout, and LOS D experienced for trips commencing between 7:15AM and 8:30AM. This means that delays are likely to be felt by drivers travelling at these peak times.

When examining the corridor as a whole (see Figure 5.10) it indicates that while there is a drop in performance which peaks at trips commencing at 7:45AM, in general the whole corridor is performing better than LOS C (denoted by the solid red line) for the entire AM peak survey period.

[3] *Guide to Traffic Management – Part 3: Traffic Studies and Analysis*, Austroads, 2020

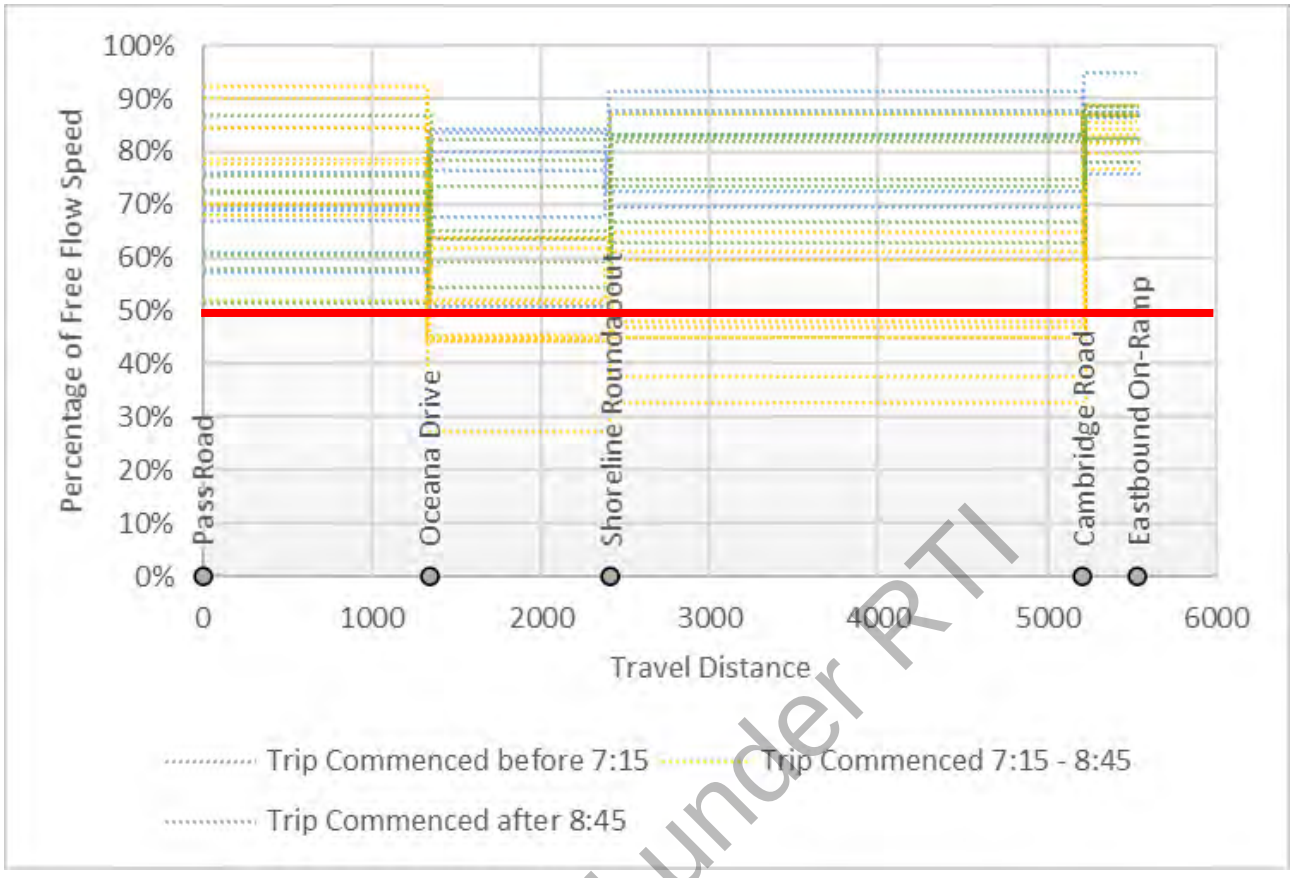

Figure 5.9: Percentage of free flow speed variation per trip across AM peak survey period

Figure 5.10: Change in percentage of free flow speed over the AM peak survey period

As detailed in Section 4.2, demand for the South Arm Highway is higher in the PM peak in comparison to the AM peak. As shown in Figure 5.11, between exiting the Tasman Highway and the Shoreline Roundabout, the majority of surveyed trips were LOS D or worse, with LOS E or worse experienced at 3:30PM and 4:45-5:15PM between Cambridge Road and Shoreline Roundabout. On the approach to the Mornington Roundabout, LOS E was also experienced at 3:15-3:30PM and 4:15-5:00PM.

When examining the corridor as a whole (see Figure 5.12) it shows two distinct dips in performance which correlate to the typical school and commuter peak periods respectively, resulting in LOS D for the corridor. While outside these two dips in performance, in general, the whole corridor is performing better than LOS C.

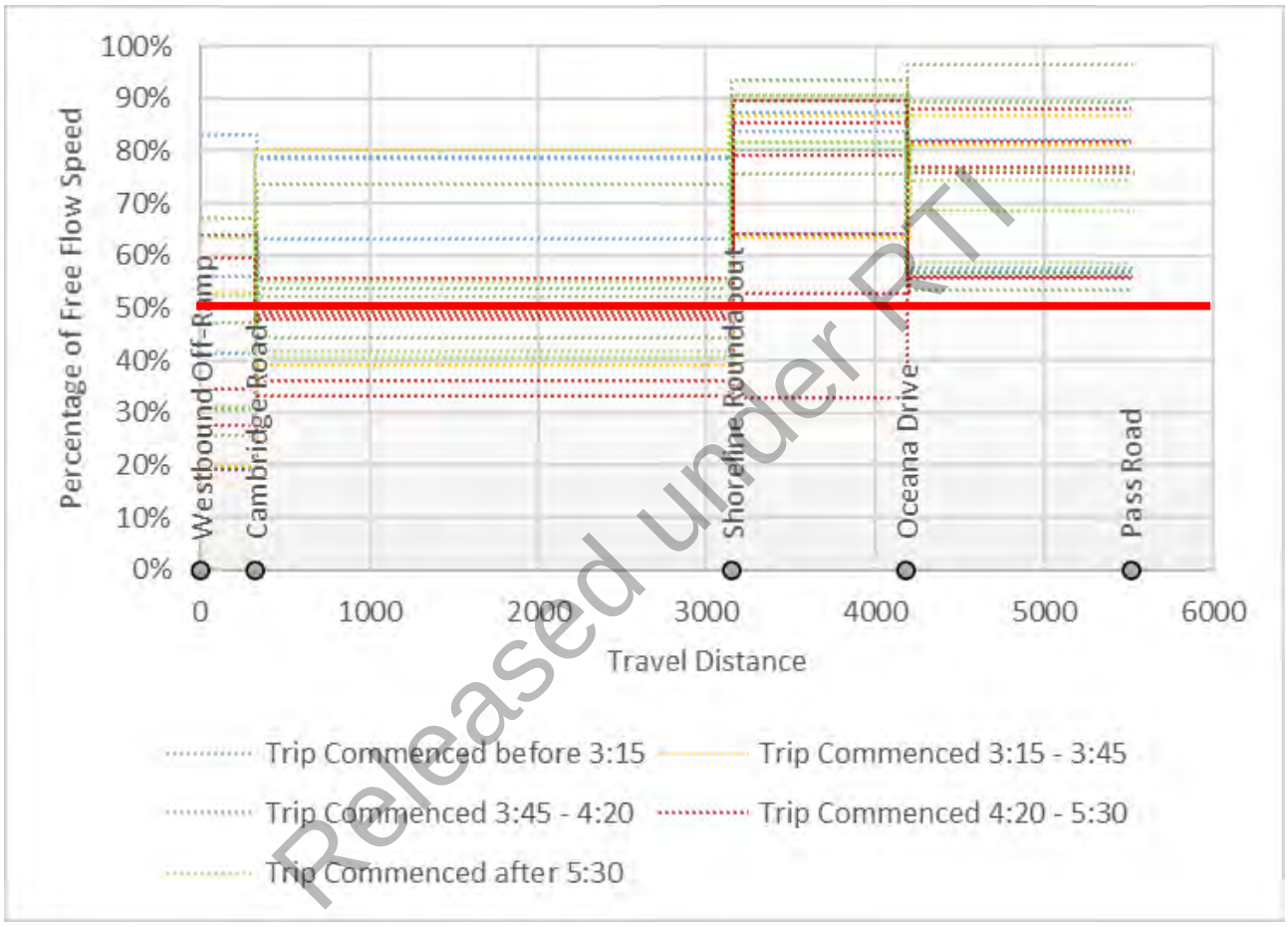

Figure 5.11: Percentage of free flow speed variation per trip across PM peak survey period

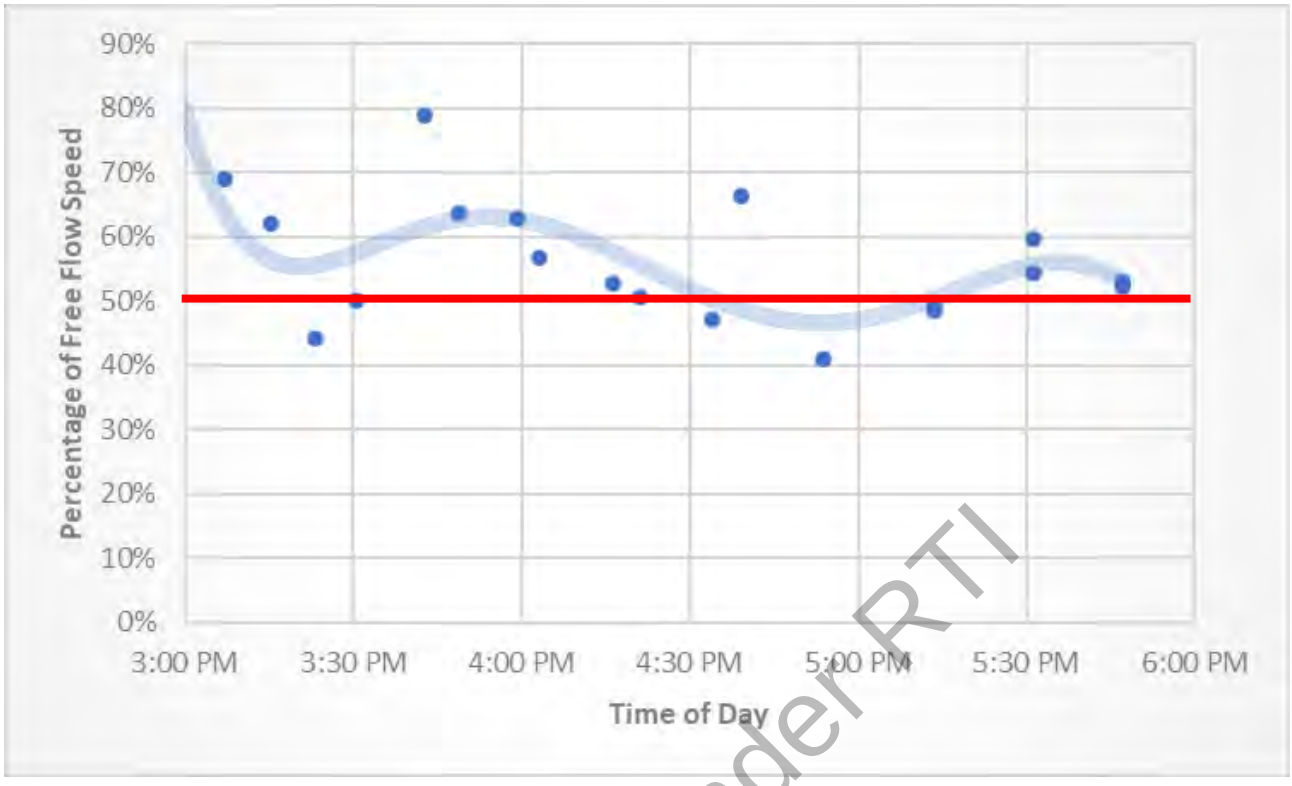

Figure 5.12: Change in percentage of free flow speed over PM peak survey period

5.2 Road safety performance

A review of available crash data was undertaken for the Mornington interchange corridor, over the period from January 2011 to July 2021. The area reviewed extends from just south of the Bunnings Junction to the Tasman Highway, including the on and off ramps. A total of 364 crashes were recorded in this period, with 80 of those being casualty crashes. The casualty crashes are shown graphically in Figure 5.13. Crash types are in accordance with Austroads Guide to Roads Safety Part 8: Treatment of Crash Locations.

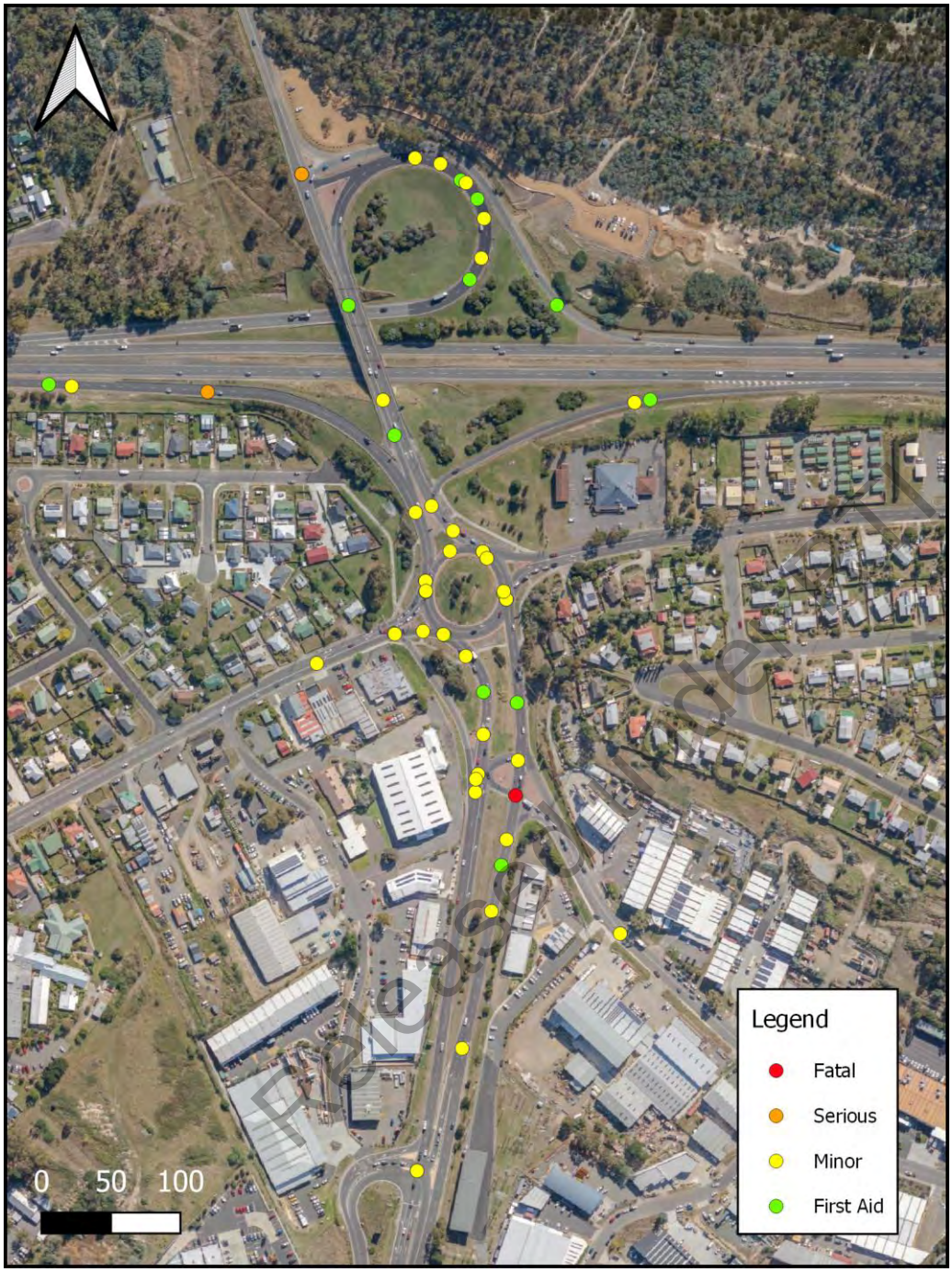

Figure 5.13: Casualty crash locations

One crash has been omitted from this summary as it occurred prior to the Bunnings development and the installation of traffic signals. The crash type at this location (DCA121 – right through) is mitigated by the installation of the traffic signals.

The key findings of this review include:

- Vehicles from same direction (DCA130) is the most frequent crash type (51.8%), more than four times the number of recorded crashes than the next most frequent crash types; off path on curve (DCA180) (12.9%), vehicles from adjacent directions (intersections only) (DCA110) (12.6%) and vehicles from opposing directions (DCA120) (11.2%).
- Crashes of all types are generally concentrated to three areas: the roundabout, the intersection between Mornington Road and the South Arm Highway and the eastbound off ramp from the Tasman Highway.

- Vehicles from same direction (DCA130) crashes are concentrated at the roundabout on the South Arm Highway in both directions.
- Off path on curve (DCA180) crashes are concentrated on the eastbound off ramp from the Tasman Highway to Mornington, with a smaller concentration at the roundabout.
- Vehicles from adjacent directions (intersections only) (DCA110) crashes are concentrated at the roundabout and the Mornington Road intersection with the South Arm Highway.
- Vehicles from opposing directions (DCA120) crashes are concentrated on the eastbound off ramp from the Tasman Highway to Mornington and at the roundabout.
- One fatality has occurred from crash type vehicles from adjacent directions (intersections only) (DCA110) at the Mornington Road intersection with the South Arm Highway.
- One serious pedestrian on foot (DCA100) crash occurred on the westbound on ramp to the Tasman Highway.

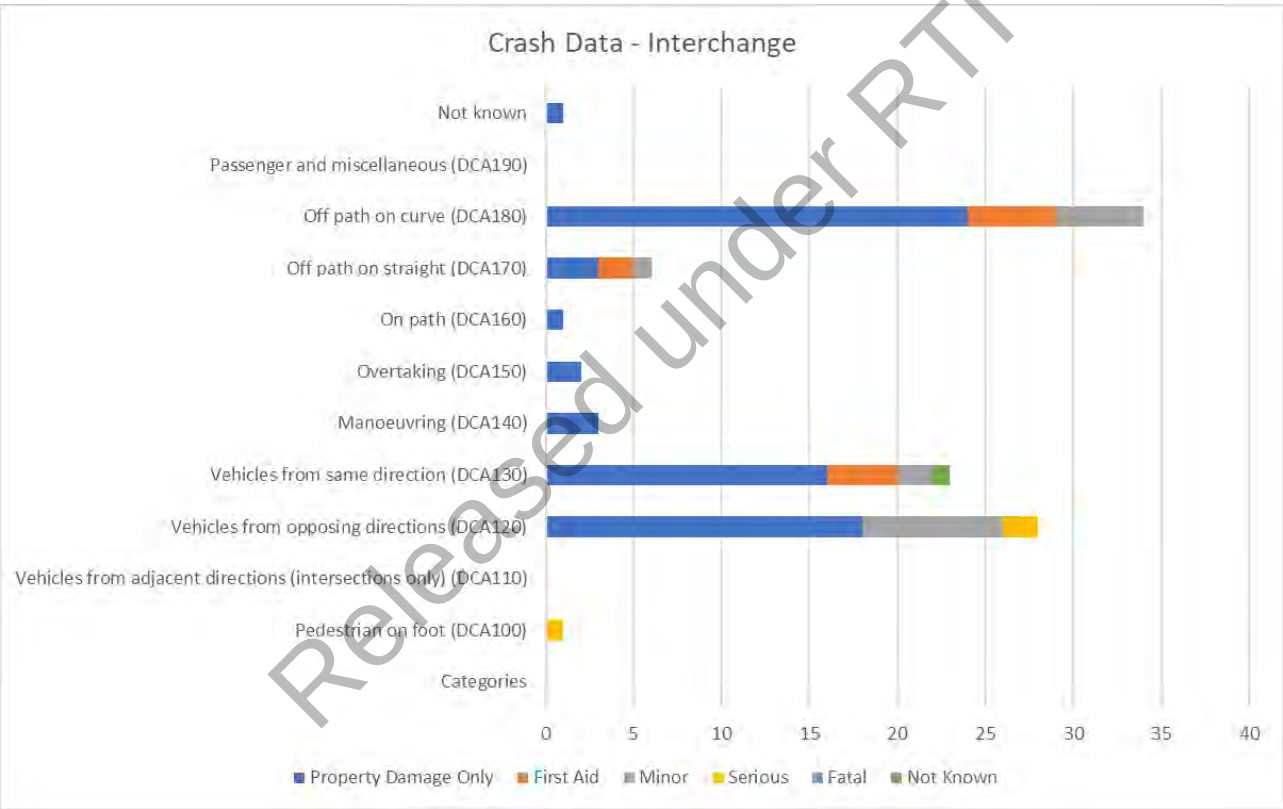

Figure 5.14: Crash data for the Mornington interchange

Overall, the crash history of the Mornington Roundabout does not highlight a significant safety issue with the roundabout, with crash types consistent of the intersection arrangements present and very low casualty crash rates. However, given the high use of the Mornington Roundabout, even a minor crash, would have significant performance impacts across the wider network, which would exacerbate any perception of it being unsafe. Additionally, as detailed in Section 3.3, there are local concerns about legibility, active user access and safety. From the lack of pedestrian and cyclist activity observed during peak times (see Section 4.2 and Section 4.6) and unusual behaviours observed during the site visits (see Section 5.1.1), it appears that cyclists and pedestrians are avoiding the area, and that vehicular traffic are compensating for their lack of comprehension of the area with more conservative driving practices.

While a Road Safety Audit commissioned by the Department in 2019 indicated that the roundabout's permissible lane movements are well defined through the line markings (pavement arrows) and signage, it is evident from stakeholder engagement that some members of the community would not agree with these

findings. Thus, even though the configuration, line marking and supporting infrastructure of the Mornington Roundabout meets the warrants of guiding documents and is acceptable to road and traffic professionals, it is likely that it is still failing to be understood by the general public which results in a perception of poor safety performance.

5.3 Public transport

Buses are the only form of public transport that operate along the South Arm Highway corridor. During traffic surveys undertaken in June 2021 between 6:30-9:30AM and 3:00-6:00PM, 47 buses were recorded travelling via the Mornington Roundabout in the AM peak; and 34 buses were recorded in the PM peak.

Express services operate directly between the Hobart City and Shoreline Plaza interchanges, commencing/terminating at Tranmere and east of Rokeby and travelling through the Mornington interchange to and from the Tasman Highway. Regular bus services also depart from Shoreline Plaza and travel via Clarence Street and the Rosny Park interchange. A map of the Eastern Shore bus routes serviced by Metro are shown in Figure 5.15.

Regular services for Mornington, Warrane, Acton and Seven Mile Beach operate eastbound and westbound along Cambridge Road via the roundabout with the South Arm Highway. Services to Acton and Seven Mile Beach operate approximately 16 times per day in each direction; services around Mornington and Warrane operate approximately 35 times per day in each direction.

Services to Cambridge, Sorell, Dodges Ferry, Richmond and Campania travel to and from the Rosny Park interchange along Cambridge Road and the Tasman Highway via the Mornington interchange. Services to these outer suburbs operate approximately 25 times per day in total in each direction.

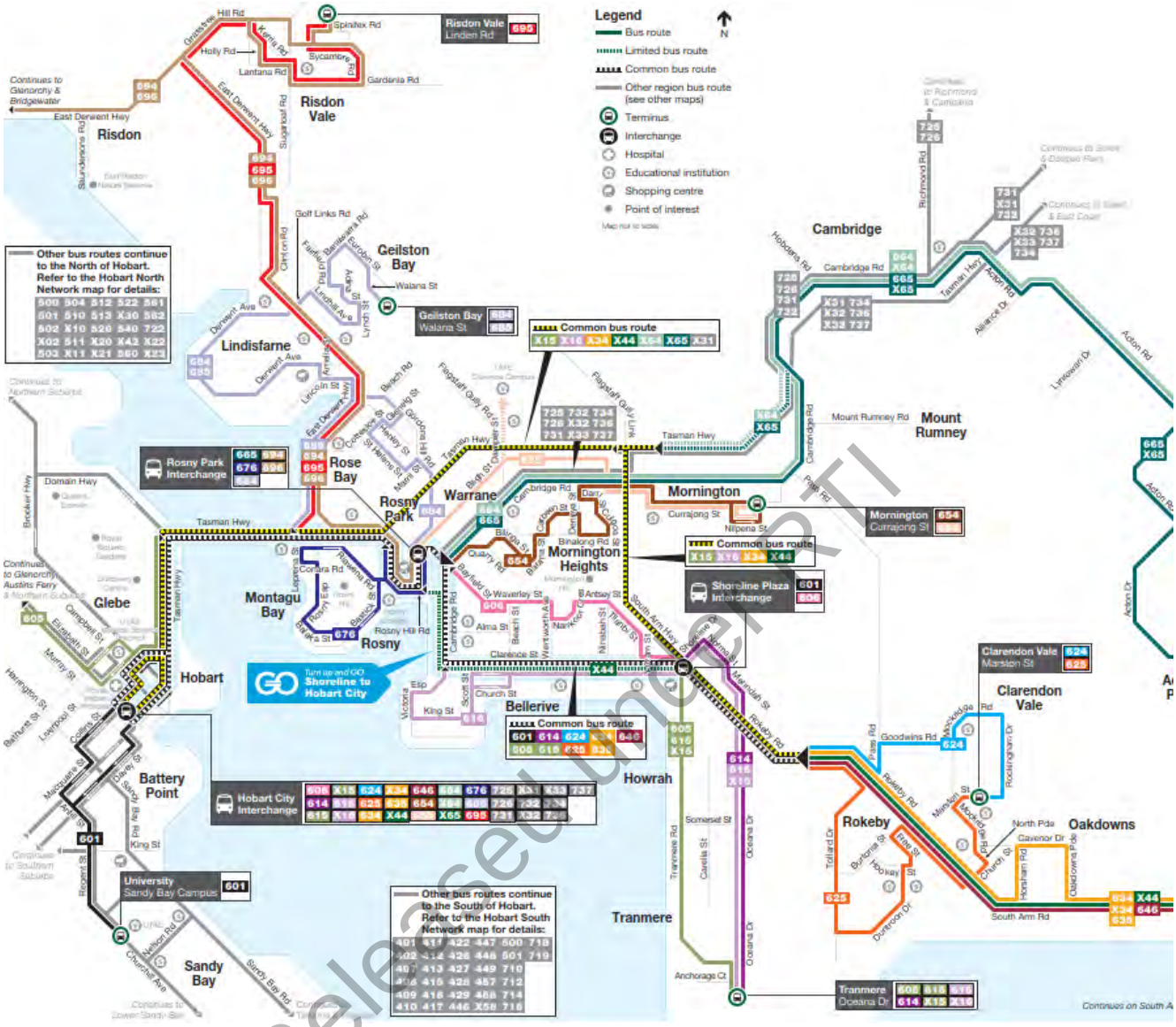

Figure 5.15: Metro bus routes

Due to the presence of schools in the vicinity of the study area, such as MacKillop College, Warrane Primary, and others that are accessed via the Mornington Roundabout and South Arm Highway corridor, there are several Metro and general access school services routes within the area, as shown in Figure 5.16.

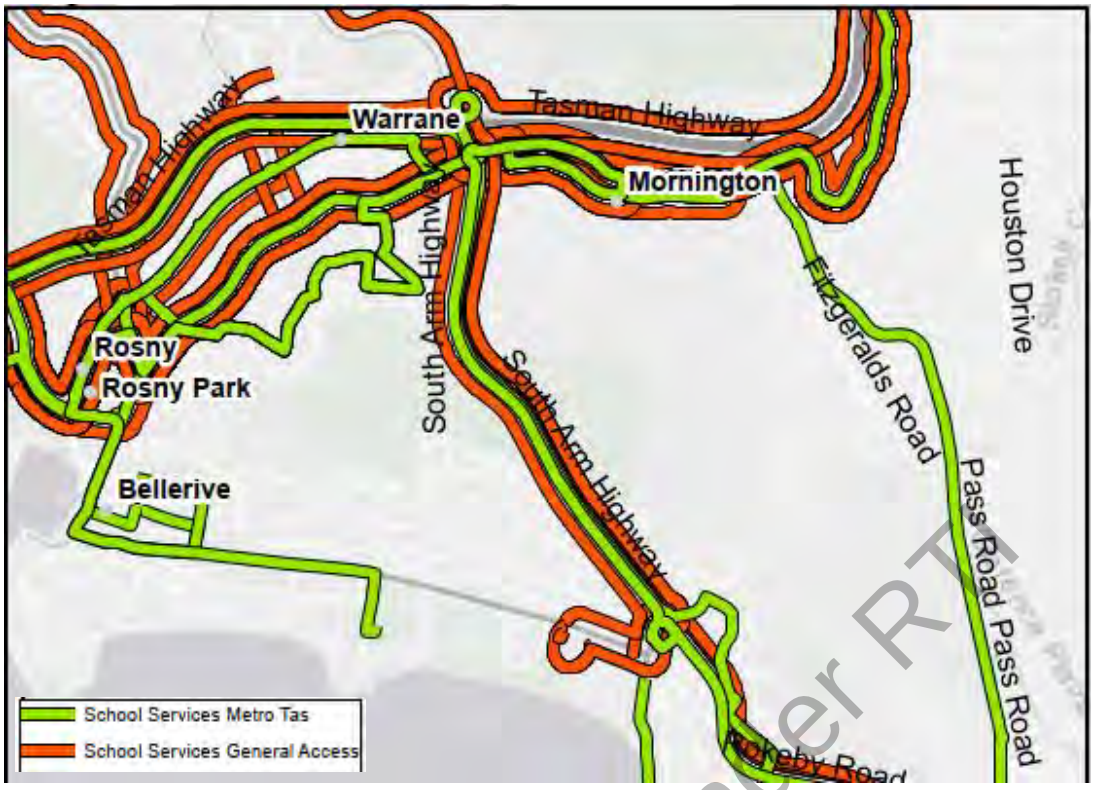

Figure 5.16: School bus routes (source: Department of State Growth)

The operators of these services and the frequencies of these services are shown in Table 5.2. While there are some services between the bus interchanges of Rosny Park and Shoreline to MacKillop College, the majority of school services are aimed at out-of-area or rural students.

Table 5.2: School bus service frequencies

Operator	AM Services		PM Services	
Metro	▪ Compton Downs - Lindisfarne North - Lindisfarne Primary - Rose Bay High - Mackillop College - Warrane Primary	1	▪ Rose Bay High - Mackillop College - Montagu Bay/Rosny Point	1
			▪ Mackillop College - Howrah Sunshine	1
			▪ Mackillop College - Rosny Park (Express)	1
	▪ Rosny Park - Mackillop College - Bellerive Primary	1	▪ Corpus Christi Primary - Mackillop College - Acton Park	1
	▪ Clifton Beach Terminus - MacKillop College	1	▪ Clarence High - MacKillop College - Seven Mile Beach	1
	▪ Lauderdale - St Virgil's College	1	▪ St Virgil's College - Lauderdale	1
RSB Travel	▪ Brighton to Howrah	1	• Campania to Rose Bay	1
	▪ Campania to Rose Bay	1		
	▪ Orielton to Mornington	1		

Operator	AM Services		PM Services	
Roberts Coaches	▪ Cygnet to Mount Nelson	1	▪ Cygnet to Mount Nelson	1
Redline Coaches	▪ Dodges Ferry to Hobart	4	▪ Dodges Ferry to Hobart	5
			▪ Dunalley to Hobart	1
O'Driscoll Coaches	-	-	▪ Penna/Brinktop Road to Sorell via Midway Point	1

For the purpose of assessing the attractiveness of the public transport for travellers, it is common to utilise frequency of service as the metric for LOS, as developed in the *Transit Capacity and Quality Service Manual* (Kittelson Assoc. et al, 2003), as shown in Table 5.3

Table 5.3 Frequency Level of Service – Urban Scheduled Services (*Kittelson Assoc. et al, 2003*)

Level of Service	Headway (min)	Veh/hr	Comments
LOS A	< 10	> 6	Passengers don't need schedules
LOS B	10-14	5-6	Frequent service, passengers consult schedules
LOS C	15-20	3-4	Maximum desirable time to wait if bus/train missed
LOS D	21-30	2	Service unattractive to choice riders
LOS E	31-60	1	Service available during the hour
LOS F	> 60	< 1	Service unattractive to all riders

When examining the express service operating along the corridor, six services operate in the AM peak (7:30 and 8:30AM) for the Shoreline Bus Interchange to Hobart CBD and eight services in the PM peak (3:30 and 6:00PM) in the counter direction. This would seem to indicate a LOS B in the AM peak, and LOS C in the PM peak. However, this is at the confluence of several routes. As there is limited parking around the Shoreline Bus interchange, and the length of the trip to/from the Hobart CBD is relatively short, it is unlikely that users will drive to the interchange or use it to transfer to other services in any great numbers. Therefore, when disaggregating the express services, they split between South Arm Highway east of Pass Road, Tranmere Road, and Oceana Drive, resulting in a LOS D and LOS E in the AM and PM peaks respectively for each route.

Additional services run regularly along Clarence Street at approximately every 10 minutes between 7:00AM and 7:00PM, resulting in a LOS B for users adjacent to Clarence Street. In the off-peak periods, bus speeds are comparable to car travel, however in the peak periods, bus travel times are up to 10 minutes longer than car travel or the express services.

However, the services along Clarence Street do not run at the same time as the express services in the AM peak. Also, as with the express services, services along Clarence Street are split between South Arm Highway east of Pass Road, Tranmere Road, and Oceana Drive, lowering the LOS of bus services to residents of these areas.

Therefore, the frequency of bus services to/from areas that have a high demand for the use of the South Arm Highway is not attractive to choice users, encouraging the use of private vehicles.

5.4 Active transport

The South Arm Highway corridor does not specifically cater for active transport. Between the Shoreline Roundabout and Mornington Road intersection, there are no active transport facilities on the corridor. At the Mornington Roundabout, as shown in Figure 5.17, crossing points are located at each approach to the roundabout, which connect to the footpaths on Cambridge Road, Mornington Road, Bligh Street, and the bridge across the Tasman Highway. There is also a cycleway proposed to run parallel to the Tasman Highway on the south side, which would connect into the Mornington Roundabout on the north-east side, as shown in Figure 5.18.

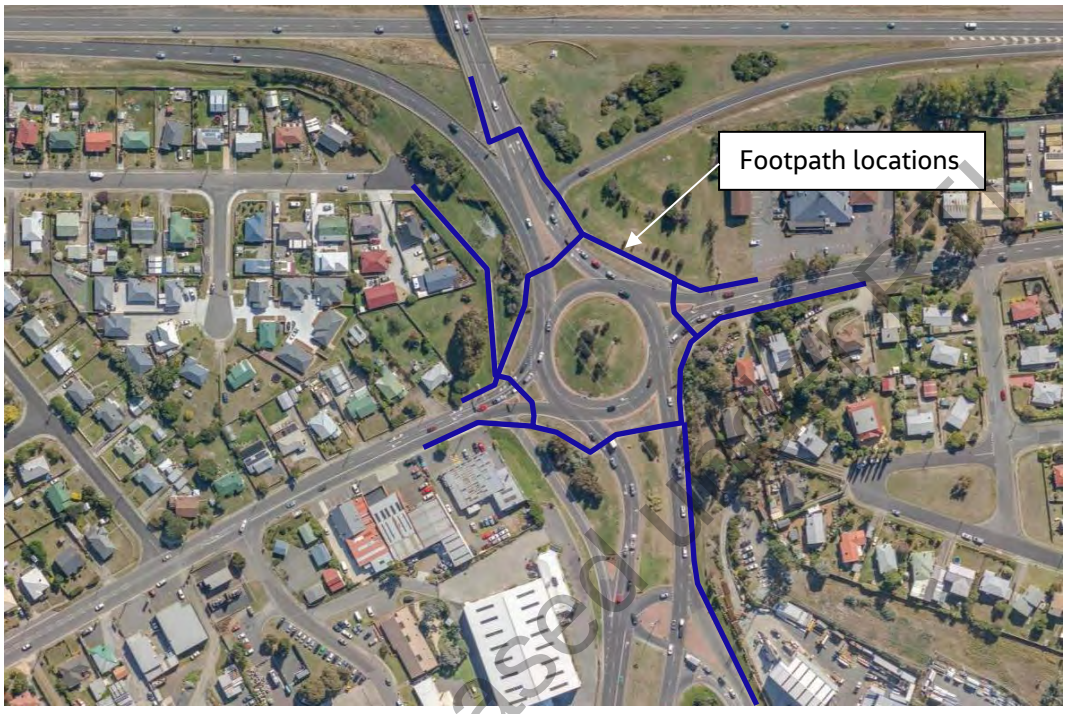

Figure 5.17: Active Transport Links

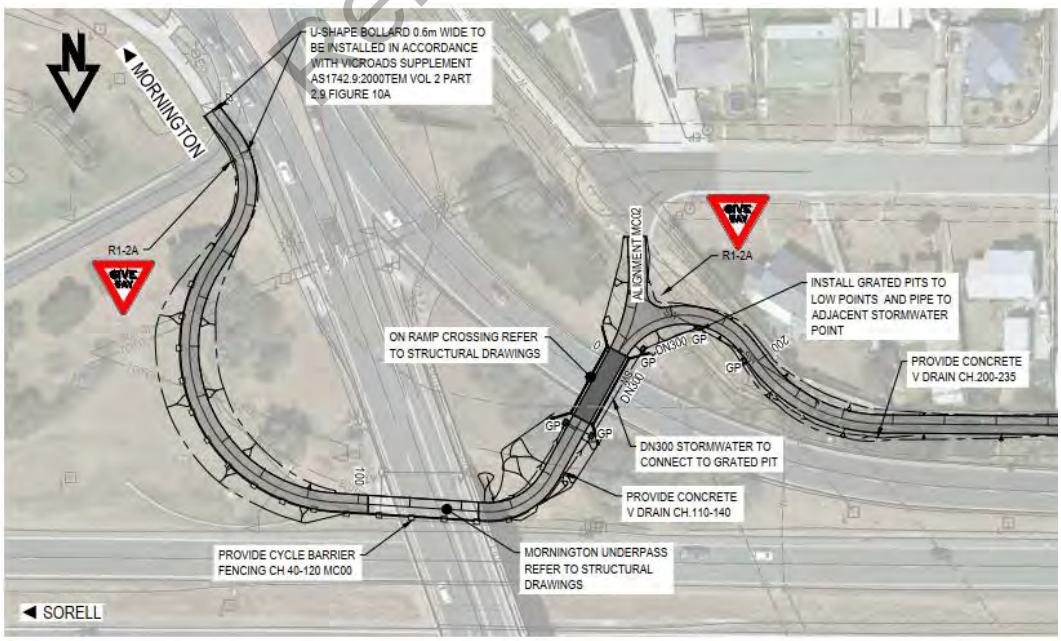

Figure 5.18: Proposed Tasman Highway Cycleway

While facilities are provided for active transport at the Mornington Roundabout, as detailed in Section 3.3, public consultation indicated that there is a general sense that the Mornington Roundabout is unsafe for active transport users.

This attitude is supported by traffic surveys undertaken by Matrix Traffic and Transport Data, and drone footage of the intersection recorded by Jacobs on the 21June 2021 in both the AM (6:30-9:30) and PM (3:00-6:00) peak periods. In the Matrix surveys, no pedestrian or cyclist movements were recorded traversing the Mornington Roundabout or crossing at the hold lines. The drone footage obtained of the Mornington Roundabout recorded 9 pedestrians in the AM peak period and 19 in the PM peak period travelling in various directions through the roundabout. Six bicycles were recorded in the AM peak period and three in the PM peak period; cyclist movements vary between footpaths and on-road movements.

When compared to other areas of the network, heat maps shown in Figure 5.19 and Figure 5.20 (obtained from Strava on the 28 September 2021) indicate a lower use for the Mornington Roundabout particularly for pedestrians, as indicated by the duller lines (the brighter the line the higher the use).

While it is acknowledged that Strava is more likely to be used by recreational walkers and runners, Figure 5.19 shows a clear avoidance of the area. Figure 5.20 shows that cyclists utilise Cambridge Road to traverse the Mornington Roundabout to access Bligh Street, with a preference in utilising the roadway, rather than the footpaths. There is very little cycling activity elsewhere in the corridor. Given the low number of cyclists recorded in the beforementioned traffic surveys, this cyclist demand for the area is likely occurring outside of the commuter peak times, aligning with more recreational cycling. While there is only one report crash in the area associated with active transport, this avoidance of the area by active transport users demonstrates an area of concern.

The Meehan Ranges on the northern side of the Tasman Highway is home to many popular mountain biking trails, however, they are generally accessed by vehicle to the carpark rather than by cycling.

Figure 5.19: Strava running/walking heat map

Figure 5.20: Strava cycling heatmap

6. Future traffic conditions

Included in the scope of works for the study was the development of the Mornington Traffic Model (MTM) a combined Mesoscopic-Hybrid traffic model of the Mornington area, and inclusive of the areas of Bellerive, Rosny Park and Lindisfarne, see Figure 2.1. The design of the MTM was such that it was able to analyse the performance of the Mornington Roundabout with current and future traffic conditions, as well as with possible changes to the type of control at the intersection between Cambridge Road and South Arm Highway.

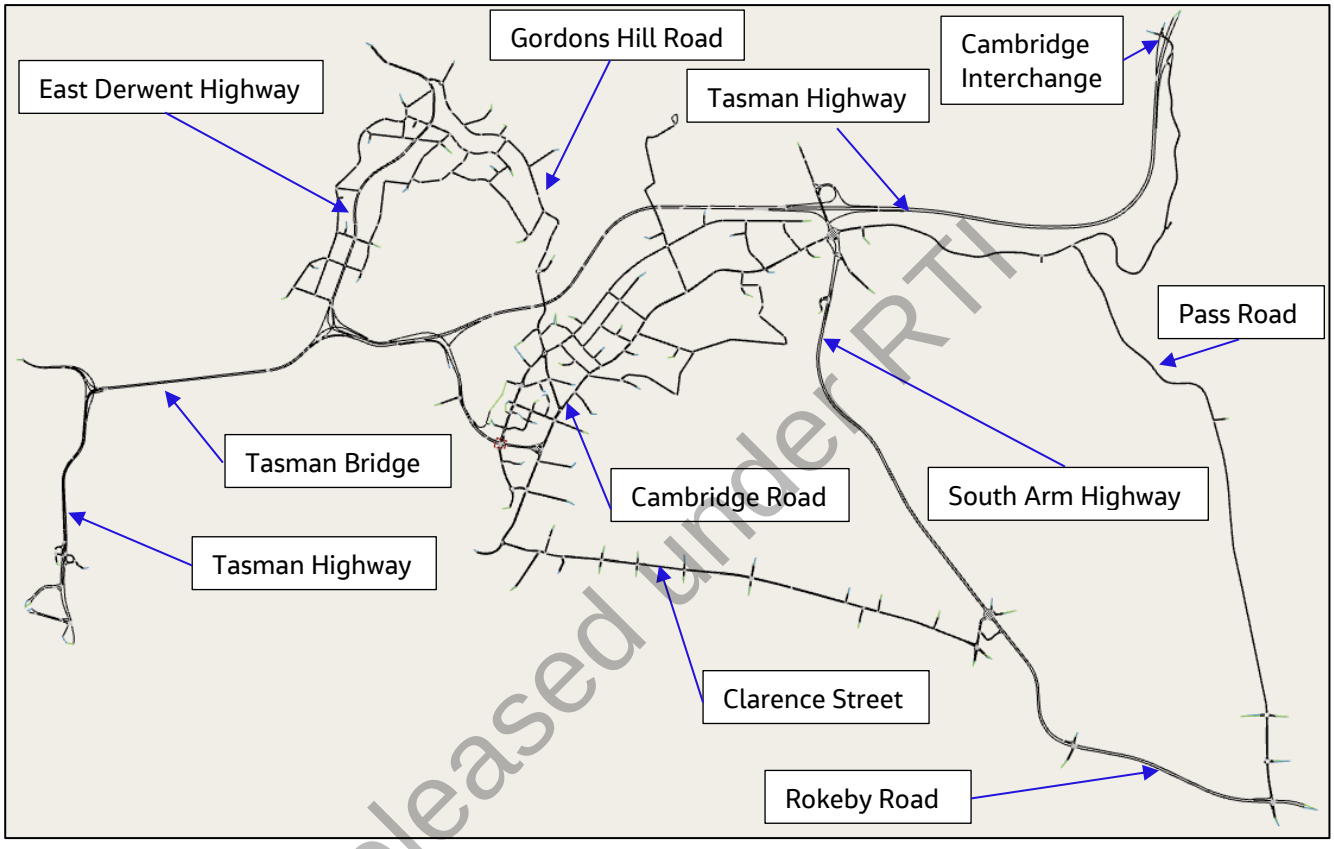

Figure 6.1: Traffic Model Area

6.1 Traffic model development

The MTM has been developed using the Aimsun Next traffic modelling software package Version 20.0.2 (Python 3). The functionality coded into the model allows the simulation of the transport network at both the mesoscopic level (for determining route choice), as well as at a meso/micro hybrid level (for determining dynamic performance).

This required not only accurate representation of the current demand and distribution of traffic at the intersection, but also evaluation of possible changes in route choice as a result of any performance changes. More information on the development of the MTM can be found in *Mornington Traffic Solution Study – Traffic Model Calibration and Validation* (Jacobs, 2022).

6.2 Do-minimal assessment

In order to understand the performance of the nominated options and enabling works over a design period of 20 years, the MTM was used to assess the road network performance utilising estimated future 2041 traffic conditions. The MTM used the estimated peak hour traffic demands for the 2041 high growth scenario from the Department's Greater Hobart Urban Travel Demand Model (GHUTDM).

The GHUTDM is the Department's strategic model, developed in version 6.1.1 of CUBE Voyager software, and is used for the long-term planning and development of the transport network. One of the main functions of the GHUTDM is to forecast traffic generation, distribution and mode choice. This enables the model to be used to support the development of the MTM's base and future traffic demand matrices. Using land use data provided by SGS Economics and Planning, 2019 Greater Hobart Household Survey of Travel data and the Australian Bureau of Statistics Census data, the resulting forecast traffic demand results are shown in Table 6.1

The GHUTDM is adopted to estimated peak hour traffic demands for the 2041 (as opposed to historic AADT growth rates detailed in Section 4.3) for the following reasons:

- The GHUTDM is based on known developments and changes in demographic data and therefore provides a more realistic prediction of growth than past trends;
- The growth in the GHUTDM is determined separately for each zone considered in the model, providing a more realistic distribution of traffic;
- The GHUTDM considers peak growth and daily growth separately and as such provides a more realistic prediction of growth in the peak hour; and
- The GHUTDM considers changes in mode choice on growth.

The 20-year growth is estimated to be in the order of 3,000 veh/hr across the modelled network, which is a growth in the peak hour of 16 to 20% (0.8 to 1% per annum).

Table 6.1: Forecast traffic demand comparison

Year	AM Peak [6:30AM to 9:30AM]			PM Peak [3:00PM to 6:00PM]		
	Light Vehicles	Heavy Vehicles	Total	Light Vehicles	Heavy Vehicles	Total
2021	42,935	2,455	45,390	54,393	1,785	56,178
2041	51,006 (+19%)	3,276 (+33%)	54,282 (+20%)	62,165 (+14%)	3,172 (+78%)	65,337 (+16%)

A comparison of the network statistics for the future base model to the base year (2021) model is shown in Table 6.2. Network level statistics such as Vehicle Kilometres Travelled, Vehicle Hours Travelled, Average Network Speed enable options to be compared relative to each other by comparing the impacts of the proposed option on all road users.

The Vehicle Kilometres Travelled (VKT) statistic is a measure of the total distance travelled by all vehicles in a given area during a given period of time. VKT can increase in proportion to demand (i.e. more vehicles travelling equals more total distance travelled), when demand is stagnant a change in VKT is reflective of a change a vehicle is required to travel between its origin and destination (i.e. a bypass has shortened the trip, or a road closure has lengthened it), or a change in capacity has resulted in a change in congestion (more congestion results in less vehicles being able to complete their trip in the given time frame, less congestion results in more vehicles being able to complete their trip in the given time frame)

The Vehicle Hours Travelled (VHT) statistic is a measure of the total time spent be all vehicles travelling in a given area during a given period of time. Changes in VHT typically align with changes with VKT, but when they differ it may indicate improved or worsening conditions.

The quotient of VKT and VHT calculates an average network speed, this is the average speed of all vehicles within the given area during a given period of time. This metric provides a clear indication of the impact of a given option on travel efficiency within a network.

Table 6.2: Network statistic comparison

Year	AM Peak [6:30AM to 9:30AM]			PM Peak [3:00PM to 6:00PM]		
	VKT	VHT	Average Network Speed [km/hr]	VKT	VHT	Average Network Speed [km/hr]
2021	217,914	4,354	50.0	257,727	4,655	55.4
2041	225,665	6,499	34.7	271,872	7,084	38.4

The model indicates there will be a decrease of approximately 17 km/hr in average network speed across the network considered in the MTM. The primary cause of the reduction in performance is as follows:

- Westbound travel on the Tasman Highway in the AM peak, particularly between the Rosny Hill Road Interchange and the East Derwent Highway Interchange having limited capacity to accommodate additional demand for travel to the Hobart CBD resulting in longer delays and queues, as shown in Figure 6.2
- Southbound through movement at the Mornington Roundabout in the PM peak, queuing back from this intersection extends onto the Tasman Highway blocking eastbound travel, as shown in Figure 6.3.
- Westbound Tasman Highway off-ramp onto the South Arm Highway in the PM peak, queuing on this ramp extends onto the Tasman Highway blocking westbound travel, as shown in Figure 6.3.

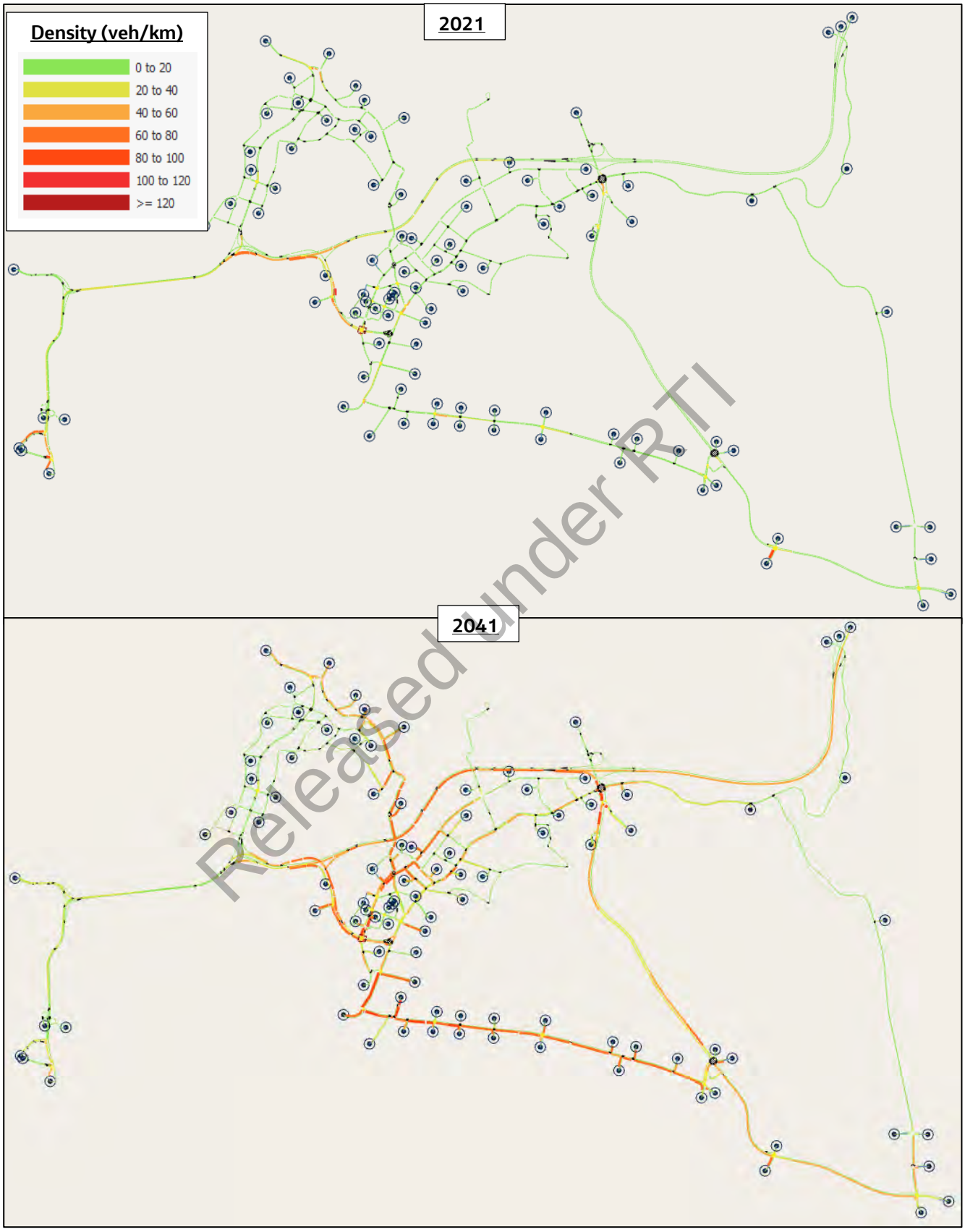

Figure 6.2: AM peak maximum density

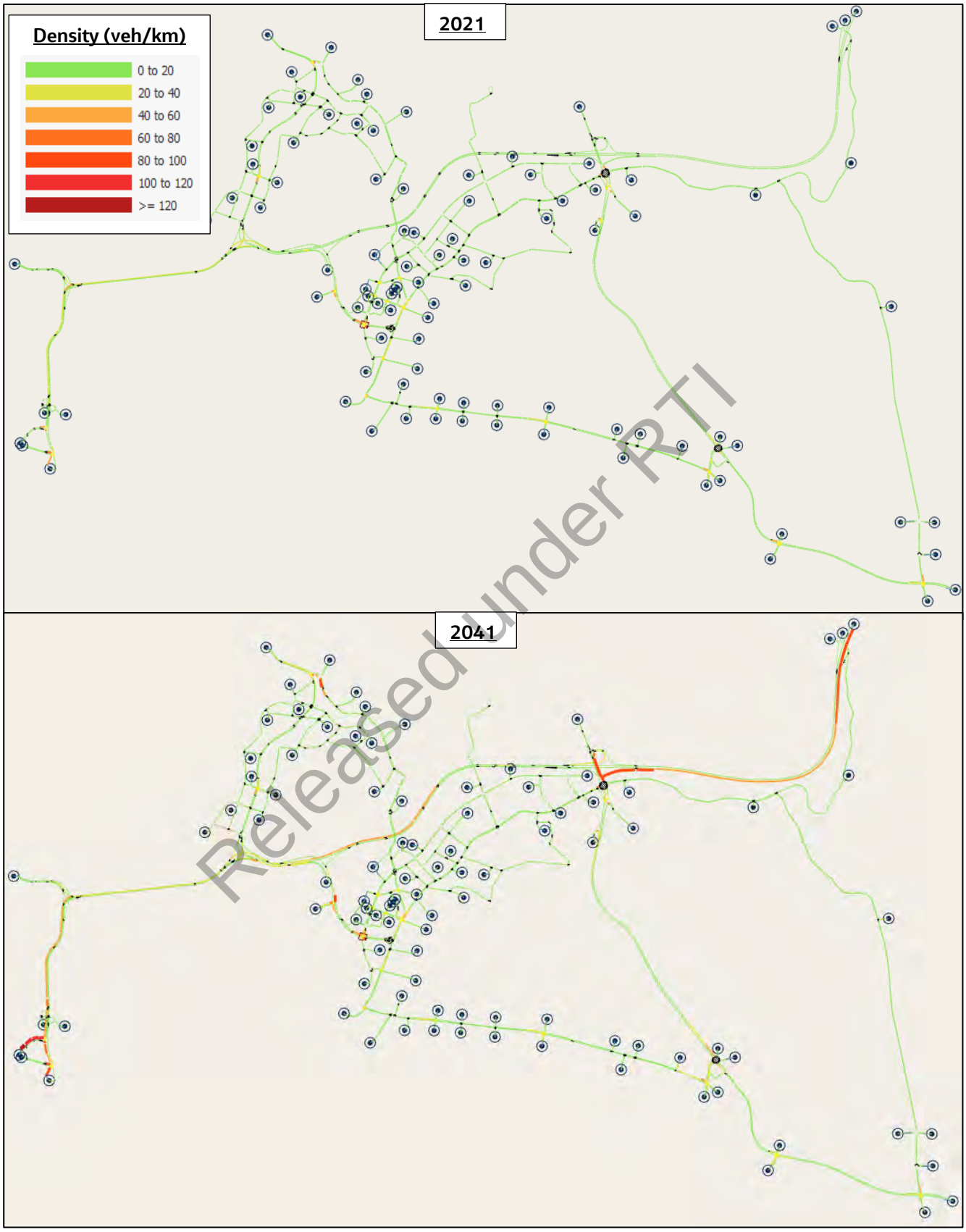

Figure 6.3: PM peak maximum density

The performance of the westbound travel on the Tasman Highway in the AM peak described above has adverse impacts on the ability of the MTM to isolate the performance of the South Arm Highway. This is because with estimate 2041 traffic volumes, the queuing from the Rosny Hill Road and the East Derwent Highway Interchanges extends back and through the Mornington Roundabout nullifying any potential performance benefits that may be present from upgrading the intersection.

6.3 Traffic model modifications

In order to provide a viable comparative assessment of future conditions between project options and enabling works, hypothetical upgrades to the Rosny Hill Road and the East Derwent Highway Interchanges were applied based on *Hobart Traffic Efficiency Corridor Function Report* (GHD, 2018). The *Hobart Traffic Efficiency Corridor Function Report* (GHD, 2018) details the performance of options investigated as part of the Hobart Traffic Efficiency Project. The objective of the options were to improve the efficiency of existing road infrastructure across Greater Hobart. Through consultation with the Department, Scenario 10 from the *Hobart Traffic Efficiency Corridor Function Report* (GHD, 2018) was applied to all future traffic conditions in the MTM, the changes to the network include:

- East Derwent Highway free flowing onto the Tasman Bridge, the intersection of Rosny Hill Road and Tasman Highway converted to a signalised intersection at existing Rosny Hill Road on ramp
- Number of lanes onto the Tasman Bridge from the Tasman Highway reduced to two lanes and from East Derwent Highway reduced to one lane
- During tidal flow conditions, East Derwent Highway directed into the middle (third) lane on the Tasman Bridge, outside this time the East Derwent Highway merges into the second lane on the Tasman Bridge.

The impacts of the hypothetical upgrades to the Tasman Highway to the existing road network are shown in Figure 6.4. When compared to the unmodified road network (Figure 6.2), the hypothetical upgrades significantly reduce densities on the Tasman Highway, removing the cascading impact the poor performance on the Tasman Highway has on the performance on the South Arm Highway. The result shows that conditions on the South Arm Highway will be significantly queued in the northbound direction upstream of the Mornington Roundabout back to the Shoreline Roundabout.

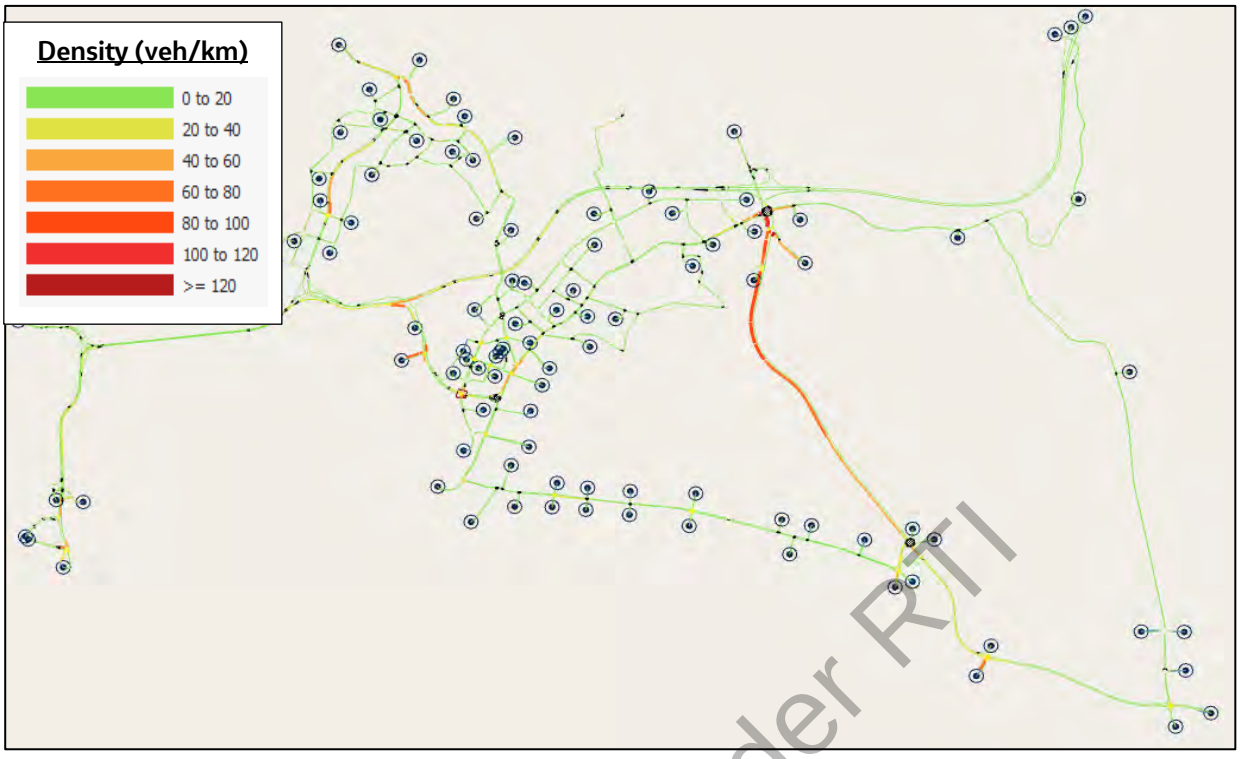

Figure 6.4: AM peak maximum density with hypothetical Tasman Highway upgrades

7. Issues and opportunities

Based on the assessments undertaken in Sections 4, 5, and 6, issues (both current and emerging) were identified the Mornington Roundabout and environs. All these issues present opportunities to improve the road network, through the integration of infrastructure, management, administration, and policy changes.

7.1 Current issues

The consultation with the community and the qualitative and quantitative assessment of the South Arm Highway identified several themes occurring across the different assessment types used. These are summarised as follows:

- **Comprehension of the Mornington Roundabout** – There is a local view that Mornington Roundabout is difficult to understand, which results in the perception that the roundabout is unsafe. The comprehension of the Mornington Roundabout was one of the most popular topics raised during consultation. This concern was corroborated by observations of conservative driver behaviours at the roundabout, suggesting hesitancy. While a Road Safety Audit commissioned by the Department in 2019 found no deficiencies in the signage and line marking, and collision data does not demonstrate any inconsistencies with similar intersections, it is acknowledged that these user perceptions remain valid. Perceptions contribute to the user experience of the roundabout and can impact accessibility.
- **Accessibility for active transport** – Stakeholder feedback indicated that the safety of active transport users was a major concern in the community. This is corroborated through turning movement counts, journey to work data and Strava data which show high volumes of car traffic and low active transport use. This indicates that active transport users could be avoiding the area.
- **High unbalanced flows** – Roundabouts function most efficiently when they have balanced flows creating consistent gaps in traffic and balancing the intersections capacity across each approach. Traffic surveys and observations indicate that this is not the case at the Mornington Roundabout creating an imbalance of capacity and large queues at some approaches.
- **Low bus service levels** – The frequency of bus services to/from areas that have a high demand for the use of the South Arm Highway is not likely to be an attractive choice to potential users, encouraging the use of private vehicles and providing a lower quality of service to those that are dependent on public transport.
- **Mornington Road access** – Both stakeholder feedback and site observations identified issues with accessing and egressing Mornington Road, with the geometry and location of the intersection creating unsafe conditions for both local Mornington Road traffic and passing traffic on the South Arm Highway. This is also the location of the one fatal crash within the study area.
- **Tasman Highway off-ramp congestion** – Both Tasman Highway off-ramps at the interchange with South Arm Highway were observed to queue back onto the Tasman Highway, particularly in the PM peak. This condition impacts the flow of traffic on the Tasman Highway as well as creating a safety issue.

7.2 Emerging issues

From observing historical traffic volume trends, population predictions and the performance of the MTM, several emerging issues were able to be identified. Extrapolation of AADT trends on the South Arm Highway is estimated to result in a 60% increase by 2040, to an AADT of 47,700. With the Hobart CBD being the major employment area for the south-eastern suburbs of Clarence, the predicted increase in population will result in an increase in demand for the South Arm Highway and Tasman Highway and thus there is a risk that the performance of these two critical corridors will reduce. The following elements are also key contributors to this risk:

- The Tasman Highway is reaching capacity in the peaks, additional growth will further decrease performance of this critical corridor and may impact on the South Arm Highway.
- Buses have a comfortable seating capacity of approximately 40, due to the low public transport frequency provided to the south-eastern suburbs of Clarence (approximately two to three services per hour) this equates to only 80 to 120 person trips per hour. If adequate bus services are not provided in growing population areas, this could result in more trips being undertaken by private vehicle – resulting in further pressure on the network.
- Increase use of the South Arm Highway will ultimately result in increases in delay. This will result in more trips diverting onto Clarence Street in the AM peak to travel west, merging at the Rosny Hill Road / Tasman Highway interchange, further exacerbating the poor performance of the Tasman Highway.

The Mornington Roundabout is a major conduit of traffic for the Clarence municipality suburbs facilitating the movements of trips associated with work, shopping, recreation and school. As shown by the modelling undertaken in the MTM, the predicted growth in private vehicle use will exacerbate existing issues and create new pinch points in the transport network, ultimately posing a potential barrier to the timely delivery of aspirational growth by limiting trips. The key emerging issues identified at the Mornington Roundabout include:

- Northbound flows on the South Arm Highway in the AM peak are likely to exceed the capacity of the Mornington Roundabout, resulting in queueing extending back to the Shoreline Roundabout.
- Southbound flows on the South Arm Highway in the PM peak are likely to exceed the capacity of the Mornington Roundabout, resulting in queueing extending back onto the Tasman Highway.
- Demand for the South Arm Highway from the Tasman Highway westbound off-ramp will exceed the egress capacity of the ramp resulting in queuing extending back onto the Tasman Highway.

s39

Deputy Premier
Treasurer
Minister for Infrastructure and Transport
Minister for Planning

Level 10, Executive Building, 15 Murray Street, Hobart
Public Buildings, 53 St John Street, Launceston
GPO Box 123, Hobart TAS 7001
Phone: (03) 6165 7701; Email: Michael.Ferguson@dpac.tas.gov.au

Tasmanian Government

21 JUL 2022

s36 [redacted]

Dear s36 [redacted]

I refer to your letter of 5 July 2022 regarding your concerns with trees and safety near the Mornington Roundabout.

First, I would like to apologise that my reply to your previous letter didn't reach you in time. I hope you have since received this letter, that was posted to you on 1 July 2022.

The Department of State Growth has advised me they recently removed most of the vegetation in the area. This should help with the lines of sight for drivers.

There is currently one wattle tree left in this location, which will be removed by the end of this month. At the same time, the contractor will paint all tree stumps with a herbicide to prevent the trees from growing back.

The Department has also advised me that extending the safety barrier in this location would not improve safety. Vehicles enter the on-ramp from the junction with Flagstaff Gully Road. This on-ramp has a large, wide curve and the risk of a vehicle losing control on this curve is low. The bend limits vehicle speeds along the on-ramp and there is no pattern of loss-of-control crashes at this location.

I trust this information is of assistance to you.

Yours sincerely

Michael Ferguson MP
Deputy Premier
Minister for Infrastructure and Transport

Deputy Premier
Treasurer
Minister for Infrastructure and Transport
Minister for Planning

Level 10, Executive Building, 15 Murray Street, Hobart
Public Buildings, 53 St John Street, Launceston
GPO Box 123, Hobart TAS 7001
Phone: (03) 6165 7701; Email: Michael.Ferguson@dpac.tas.gov.au

Tasmanian Government

s36 [redacted]

30 JUN 2022

Dear s36 [redacted]

Thank you for your letter of 18 April 2022 regarding trees and safety near the on-ramp from the Mornington interchange to the east-bound Tasman Highway.

The Department of State Growth has advised me that extensive clearing has been done next to the ramps with a small amount of further work to be completed in the coming weeks.

The Department further advises that a safety barrier between the eastbound on-ramp and the eastbound Tasman Highway would be unusual for the location. The on-ramp has a large, wide curve, and the risk of a vehicle losing control on this curve is low. Additionally, to enter the on-ramp, traffic uses the junction with Flagstaff Gully Link. This effectively limits vehicle speeds along the on-ramp and there is no pattern of loss-of-control crashes at this location.

As such, the Department does not consider it necessary to insert a safety barrier between the eastbound on-ramp and the eastbound Tasman Highway.

I trust this information clarifies the matters you have raised.

Yours sincerely

Michael Ferguson

Michael Ferguson MP
Deputy Premier
Minister for Infrastructure and Transport

From: s36 stornoway.com.au>
Sent: Tuesday, 7 June 2022 12:02 PM
To:
Cc: s36
Subject: RE: Mornington Roundabout pedestrian Sight Distance - RN15411
Attachments: 20220607_115637.jpg; 20220607_115250.jpg; 20220607_115327.jpg; 20220607_115219.jpg

Hi

Defect entered for sight distance trimming. Will get it completed this week/early next at the latest.

Cheers,

s36

-----Original Message-----
From:
Sent: Tuesday, 7 June 2022 10:29 AM
To: s36 @stornoway.com.au>
Cc: s36 @stornoway.com.au>;
Subject: RE: Mornington Roundabout pedestrian Sight Distance - RN15411

This message was sent from outside your organisation. Do not click links or open attachments unless you know the content is safe.

Hi s36

Just following up on the below email regarding sight distance complaints at the Mornington Roundabout.

Regards

State Roads Department of State Growth
4 Salamanca Place, Hobart, TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3437
https://aus01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.stategrowth.tas.gov.au%2F&data=05%7C01%7CMat.Page%40stategrowth.tas.gov.au%7C534bf55986214a87de9b08da4829b260%7C64ebab8accf44b5ca2d32b4e972d96b2%7C0%7C0%7C637901641190238322%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=XQTYTXHeT2tjBAcy3%2FrZPMwfMCIk7WOogC%2Bxe0hSMqY%3D&reserved=0

Current work pattern: In office/field everyday.

-----Original Message-----

Sent: Friday, 13 May 2022 3:52 PM
To: s36 [redacted]@stornoway.com.au>
Cc: s36 [redacted]@stornoway.com.au>;
Subject: Mornington Roundabout pedestrian Sight Distance - RN15411

Hi s36 [redacted]

Can you please have a look at the Mornington roundabout and add defects for sight distance for all entrances and exits. We seem to be getting a few requests for this lately.

Have a good weekend.

Regards

State Roads Department of State Growth
4 Salamanca Place, Hobart, TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3437
https://aus01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.stategrowth.tas.gov.au%2F&data=05%7C01%7CMat.Page%40stategrowth.tas.gov.au%7C534bf55986214a87de9b08da4829b260%7C64ebab8accf44b5ca2d32b4e972d96b2%7C0%7C0%7C637901641190238322%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=XQTYTXHeT2tjBAcy3%2FrZPMwfMCIk7WOogC%2Bxe0hSMqY%3D&reserved=0

Current work pattern: In office/field everyday.

-----Original Message-----
From: Technical Support <ae_support@civica.com.au>
Sent: Friday, 13 May 2022 2:20 PM
To:
Subject: A Request Has been Allocated To You Within The Reflect System - RN15411

THIS IS AN AUTOMATED EMAIL NOTIFICATION. PLEASE DO NOT REPLY TO THIS EMAIL AS THE INBOX IS NOT MONITORED

Request Number: RN15411

Request Type: TREES - NON URGENT

Received By:

Entered By: s36 [redacted]

Primary Location: A0498
Location: 07

Comments:

PUBLIC REPORTED THAT TREES ARE HINDERING VISIBILITY FOR PEDESTRIANS WHEN CROSSING THE SLIP LANE AT THE MORNINGTON ROAUNDABOUT - SLIP LANE REFERRING TO IS WHEN LEAVING THE SOUTH ARM HWY AND HEADING TO ROSNY ON CAMBRIDGE RD

Action Required:

Requestors Name:

Requestors Phone:

Callback Required: No

Thankyou,

The Reflect System
Asset Edge Pty Ltd
support@assetedge.com.au
https://aus01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.assetedge.com.au%2F&data=05%7C01%7CMat.Page%40stategrowth.tas.gov.au%7C534bf55986214a87de9b08da4829b260%7C64ebab8accf44b5ca2d32b4e972d96b2%7C0%7C0%7C637901641190238322%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=txD0QL3aMa8z78TWCFRGJNzmz1HLea5vtCL0HP39Ejw%3D&reserved=0


CLENNETT'S
TradeCentre
EXIT ONLY

Record 8

From: Clarence City Council
To: info stategrowth
Cc: s36 [redacted]
Subject: Overgrown bushes at Mornington Roundabout
Date: Tuesday, 3 May 2022 2:35:47 PM
Attachments: image001.png
image002.png

Good afternoon

We have received information from a resident about overgrown bushes at the Mornington Roundabout. They are obstructing visibility for pedestrians attempting to cross Cambridge Road at the crossing points. The bushes in question are on the section bordered by the South Arm Highway heading from Howrah to the roundabout, and the slip lane that turns left onto Cambridge Road Warrane. The bushes prevent the pedestrians from seeing vehicles coming around onto Cambridge Road.

Kind regards

s36 [redacted]
Customer Contact Officer | Clarence City Council

a 38 Bligh Street | PO Box 96 Rosny Park TAS 7018
p 03 6217 9500
e clarence@ccc.tas.gov.au | **w** www.ccc.tas.gov.au

Record 9

From: s36
To: info stategrowth
Subject: Grass
Date: Sunday, 9 January 2022 7:39:58 PM

I know it's been raining heaps and grass has gone mad but the roundabout at Mornington has been almost smothered in long grass to the stage it is starting to black vision of other cars .

Many thanks. s36
Sent from my iPhone

From: Ferguson, Stategrowth
To: secretariat
Subject: REQUEST FOR DIRECT CONTACT AGAIN - Further phone call - s36 - Long grass near and surrounding areas of Mornington roundabout - MIN21/43654 - DUE DATE: 8/1/22
Date: Wednesday, 5 January 2022 10:00:58 AM
Attachments: image001.png
image002.jpg
Infra Transport.msg
DSG - FILE NOTE - s36 - Long grass on entrances to Tasman Bridge.DOCX

Hello

I have attached the file note we received yesterday from the Department after contact was made, however s36 phoned again yesterday – see attached email. Could the Department please contact s36 again and provide an update with file note advice please.

DUE DATE: 8/1/22
Thank you

s36
Executive Support Officer
Office of the Hon Michael Ferguson MP
Minister for Finance
Minister for Infrastructure and Transport
Minister for State Development, Construction and Housing
Minister for Science and Technology
Leader of the House
Liberal Member for Bass
Level 5, Salamanca Building, Parliament Square
4 Salamanca Place HOBART TAS 7000
Phone: s36
e-mail: s36 @dpac.tas.gov.au

www.premier.tas.gov.au

------< Content Manager Record Information >------

Record Number: MIN21/43654/3
Title: Further phone call - s36 - Long grass near and surrounding areas of Mornington roundabout

------< Content Manager Record Information >------

Record Number: MIN21/43654/2
Title: DSG - FILE NOTE - s36 - Long grass on entrances to Tasman Bridge

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Transport and Infrastructure Group – File Note

Tasmanian Government

Date:	23 December 2021
File/Record No.:	MR21/3343 (xrefD21/341783); MR22/10
Subject:	Long Grass - Tasman Highway
Name:	s36 [redacted]
Email Address:	Click here to enter customer email address or delete if not applicable.
Phone No.:	s36 [redacted]
Address:	Click here to enter customer address or delete if not applicable.
Notes:	23/12/21 7.50 am – I spoke to s36 [redacted] and explained that the contractor was behind in this year's current mowing program by approximately 2 -3 weeks and that I was waiting on an update for when they will be cutting the sections of concern. He did not seem very happy with my response, but was happy for the contact at least. s36 [redacted] asked if the works would be completed before Christmas and I informed him that it wouldn't be until week starting 10 January 2022. Again, he was not happy with this. 23/12/21 – 2.30 pm Tried calling several times but kept getting cut off so I sent a message to s36 [redacted] explaining the above. Gave my details for him to contact me, if required.
Action:	Asked Stornoway for date to be treated and received a reply for the week starting 10 January 2022. They also advised if needed they could bring it forward before, they start on Brooker Highway, which is also long and behind schedule. 12/1/22 – 7.30 am Have asked contractor to provide program when they expect to treat this area, I notice centre median was being treated 10/1/2022 as per above. Stornoway informed they will be starting Monday, 17 Jan with mowers etc. 12/1/22 – 10.30 am I called s36 [redacted] and left a message as he did not answer the phone. I left my details for him to call me back. I also left a brief message giving him a start timeframe for mowing in the area concerned. I will update file note if he calls me back.
Action Officer:	

From:
To: s36
Subject: RE: Mornington Roundabout
Date: Friday, 15 October 2021 9:07:00 AM
Attachments: Notification - Mornington Study - Public Consultation Sep2021.docx

Hi s36

Thanks for the information about the roundabout's issues and suggestions for a redesign.
As it happens we have a consultant looking at the issues and possible solutions at the moment.
Please see attached details about the study and how you can have your say.

Regards,

Infrastructure Tasmania Division ¦Department of State Growth
4 Salamanca Place, Hobart TAS 7000
Phone: (03) 6166 3392 | email: howard.mitchell@stategrowth.tas.gov.au
www.transport.tas.gov.au

From: s36 @gmail.com>
Sent: Thursday, 14 October 2021 6:48 PM
To: info stategrowth <info@stategrowth.tas.gov.au>
Subject: Mornington Roundabout

The roundabout now is as it was originally built many years ago.
Many accidents occurred because of poor design. To overcome this the left lane from Bellerive was blocked off.
As traffic volume increased over time the blocked off lane was reopened.
An then it was admitted that this intersection has a design fault.
This was some time ago and nothing has changed since.
It seems to me that roundabouts don't work very well with large traffic volumes.
I think it's time to completely redesign this intersection and maybe a traffic light system would be better and safer for all of us.

s36

Mornington Traffic Solution Study

October 2021

Public Consultation on the Mornington Traffic Solution Study

The Department of State Growth is starting the Mornington Traffic Solution Study to help identify design solutions to improve safety and traffic flow through the Mornington Roundabout and connecting streets. Your input is welcome.

This study aims to investigate the safety and congestion improvements for a 750m section of the South Arm Highway which includes the Mornington Roundabout junction with Cambridge Road, the Mornington Road junction with the South Arm Highway, and the Mornington Interchange on the Tasman Highway.

The community is invited to have their say on issues important to them including safety, public transport, walking, cycling, travel times and the environment.

Your feedback will help inform the development of potential design solutions to improve safety and traffic flow through the interchange. The Department of State Growth will provide further opportunities for the community to have a say on potential improvement solutions for the Mornington Roundabout as the project progresses.

How to view the proposals and give feedback

Public consultation is open from 11-24 October 2021. Tell us what matters to you.

From 11 October you can make comments online through an interactive map, or in any of the following ways:

Website	https://www.transport.tas.gov.au/projectsplanning/road_projects and go to 'Mornington Traffic Solution Study'
Social Pinpoint – interactive map	https://stategrowthtas.mysocialpinpoint.com/mornington-roundabout-solution#/
Email	consultationtasmania@Jacobs.com
Phone	s36 [redacted]

Record 12

From:
To: s36
Subject: RE: Mornington Roundabout
Date: Wednesday, 30 June 2021 8:40:00 AM
Attachments: Mornington Roundabout - 1.png
Mornington Roundabout - 2.png
image001.png

Dear s36,

Thank you for contacting the Department of State Growth with your query below.

When approaching the Mornington Roundabout from Cambridge Road, you must use the **left lane** when travelling towards Sorell, as instructed in the green road sign depicted in the **attached** images.

I hope this information is helpful to you.

Please note that the information provided in this email is intended for general information only. It is not professional legal advice and should not be relied upon as such.

Kind regards,

Road Safety | Department of State Growth
Salamanca Building, Parliament Square
Level 2, 4 Salamanca Place, Hobart, TAS 7000 |GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3218
www.stategrowth.tas.gov.au

-----Original Message-----
From: s36 [redacted]
Sent: Tuesday, 15 June 2021 3:47 PM
To: info stategrowth <info@stategrowth.tas.gov.au>
Subject: Mornington Roundabout

Good afternoon.

I would like to ask direction in the corresct usage of the Mornington roundabout, as this is difficult to understand and navigate.

A lot of other road users appear to feel the same.

I often visit Eastlands, and travel home through Mornington to head home towards Sorell.

When I arrive at the roundabout, there are 2 lanes.

The left lane has 2 arrows curved tight around to the left.

The right lane has 2 arrows - 1 pointing straight ahead, the other pointing tight to the right.

My question is: How should I approach the roundabout from Mornington,
when I need to travel towards Sorell?

Thank you in anticipation.

s36 [redacted]

QUESTION ON/ WITHOUT NOTICE

Question No. [number] of 2021
Legislative Council

ASKED BY: Hon Jo Seijka MLC

ANSWERED BY: Hon Leonie Hiscutt MLC, Leader for the Government in the Legislative Council

QUESTION:

My question is to the Honourable Leader,

The Mornington Roundabout is loathed by locals and fast outgrowing its capacity.
What work has been done to progress a fix to this confusing and chaotic roundabout?
Has a design solution been identified? If so, what is it?

What are the cost estimates to fix this intersection?

ANSWER:

The Sorell to Hobart Corridor Plan released in November 2020 identified, that the Mornington roundabout should be upgraded to address community concerns and improve capacity and control. The roundabout and the surrounding road network including the interchange with the Tasman Highway have been identified by the Government for future upgrades to meet projected demand growth.

The Government has tasked the Department of State Growth to develop potential upgrade solutions over the course of 2021 and share the outcomes with the community in 2022.

APPROVED/NOT APPROVED

Michael Ferguson MP
Minister for Infrastructure and Transport

Date: 24 March 2021

Minister for Finance
Minister for Infrastructure and Transport
Minister for State Growth
Minister for Science and Technology
Leader of the House

Level 5, 4 Salamanca Place, Hobart
Public Buildings, 53 St John Street, Launceston
GPO Box 123, HOBART TAS 7001
Phone: (03) 6165 7701; Email: Michael.Ferguson@dpac.tas.gov.au

Tasmanian Government

s36 [redacted]

17 FEB 2021

Dear s36 [redacted]

I refer to your letter dated 8 December 2020 to the Premier, Hon Peter Gutwein MP, regarding trees near the Mornington roundabout and safety for traffic entering the Tasman Highway. As the Minister for Infrastructure and Transport, I am responding to you on behalf of the Tasmanian Government.

The Department of State Growth has advised me that the Mornington interchange has been inspected and vegetation will be removed to improve visibility. These works have been scheduled to take place this year.

The Department has also advised me that a flexible safety barrier has already been installed along the median of this section of the Tasman Highway to prevent head-on crashes. Flexible safety barriers are preferred in this location as vehicle occupants are less likely to be injured in collisions with flexible safety barriers than with rigid barriers.

Flexible safety barriers can help reduce serious road trauma caused by head-on and run-off road crashes. They do this by catching out of control vehicles, absorbing their impact and preventing the vehicle from rebounding back into traffic.

The Department has further advised that provision of a safety barrier between the eastbound on-ramp and the eastbound carriageway would be an unusual arrangement for such a location. The on-ramp has a large, wide curve, and the risk of a vehicle losing control on this curve is low. Additionally, installing a safety barrier at this location could itself cause safety issues by restricting sight distance and making it more difficult for traffic entering the highway to select a gap in traffic.

I trust this information clarifies the matters you have raised.

Yours sincerely

Michael Ferguson

Michael Ferguson MP
Minister for Infrastructure and Transport

Thank you.

From:
To: s36
Subject: RE: Mornington Roundabout
Date: Tuesday, 9 February 2021 11:54:00 AM

---

s36 ,

Further to below I've just been advised that a few years ago the department did investigate concreting the central island closest to the travel lanes. This was more to reduce maintenance rather than for emergency vehicle use.
It was deemed to be not a good expenditure of funds.

I have also been informed that a study is planned to investigate if operation of the junction can be improved or if there is an alternative layout that would perform better.

Network Management | Department of State Growth
76 Federal Street, North Hobart | GPO Box 536, Hobart TAS 7001
Phone: (03) 61663319 | Mobile: s36
www.stategrowth.tas.gov.au

s36 [redacted]@protonmail.com]
Sent: Thursday, 4 February 2021 3:17 PM
To:
Subject: Re: Mornington Roundabout

I'll go into the station & ask.
Plenty of roundabouts are flat. For example: every roundabout on Bligh St.
Cheers.

Sent from ProtonMail mobile

-------- Original Message --------
On 4 Feb 2021, 15:11,
wrote:

> Thanks for the email s36 .
>
> Roundabouts and particularly larger ones often have mounds or vegetation in the middle by design. This is to improve visibility of the roundabout and can help keep vehicles off them. Mounds etc. can also simplify the driving task for entering vehicles by ensuring motorists are only observing what's happening to their right – i.e. the circulating vehicles they need to give way to. Traffic lights or movable bollards in the centre of the roundabout would be very unusual and not supported.

This roundabout has been the subject of an independent Road Safety Audit in recent years that did not identify any significant safety deficiencies.

In terms of emergency vehicles the department would welcome any feedback from emergency service agencies if it was forthcoming.

Happy to discuss,

Network Management | Department of State Growth
76 Federal Street, North Hobart | GPO Box 536, Hobart TAS 7001
Phone: (03) 61663319 | Mobile: s36 [redacted]
www.stategrowth.tas.gov.au

From: s36 [redacted] [mailto:s36 [redacted]]
Sent: Wednesday, 3 February 2021 4:37 PM
To:
Subject: Re: Mornington Roundabout

Dear

I suggest the govt flatten Mornington Roundabout to enable ambulance, fire engines, police & other emergency vehicles to use it. Ambulance & fire could drive onto a large flat space & go straight ahead, left or right & get to their destination faster.

In future when an accident happens at the roundabout, emergency vehicles can use the flat roundabout as a parking space, be safe & away from the flow of traffic. Accident scene supervisors & emergency workers will have a safe work space from which to do their measurements. The accident clean-up crew can park out of flow of traffic. The nearby ambulance & fire station can control bollards around the roundabout that sink & rise as required.

At present ambulance & fire trucks have trouble accessing the roundabout with vehicles lined up on all sides. A traffic light in the centre of the roundabout may be worth considering to ensure people stop for emergency vehicles. Being able to see across the roundabout would be good for all drivers. At present it's a hill with trees rather than a useful space.

Accident investigation vehicles parked on a purpose designed roundabout, with portable traffic signals, will speed up investigation times, & reduce the possibility of an emergency worker being hit by a negligent driver, after an accident. Flattening it &, perhaps, making it smaller could also add a lane.

I was watching an ambulance trying to get around 2 lanes of halted cars on the ambo station side of the roundabout. The pedestrian crossing railings mean they cannot go across the pedestrian island. Pedestrian crossing is hardly used & is badly located. Pedestrians tend to not be walking to or from Flagstaff Gully road as there's no footpath!

It's a problem roundabout for many reasons but can be a safe space for all

emergency vehicles.

s36 [redacted]

Sent from ProtonMail mobile

-------- Original Message --------
On 3 Feb 2021, 13:05,

> I'm happy to discuss s36 [redacted].

Network Management | Department of State Growth
76 Federal Street, North Hobart | GPO Box 536, Hobart TAS 7001
Phone: (03) 61663319 | Mobile: s36 [redacted]
www.stategrowth.tas.gov.au

From: s36 [redacted]
Sent: Tuesday, 2 February 2021 3:56 PM
To: info stategrowth <info@stategrowth.tas.gov.au>
Subject: Mornington Roundabout

To whom it may concern:

May I have an appointment with the person in charge of Mornington Roundabout?

I have a suggestion for it to be safer for the emergency services as it is known for accidents. But my idea would also make it far better for the Cambridge Road ambulance and fire engine station.

Yours faithfully,
s36 [redacted]

Sent from ProtonMail mobile

made for the destruction of the transmission, or its return at our cost. No liability is accepted for any unauthorised use of the information contained in this transmission.

Mornington Interchange
Problem Definition

The following is a high-level overview of the function of the Mornington Roundabout. The focus of the overview is the 5-intersection corridor between the signalised access to Bunnings, to the eastbound terminal of the Tasman Highway interchange, as shown in Figure 1. These five intersections are within 750m of one-another and as such the performance of each is intrinsically linked, and as such any project would need to consider all five intersections.

In terms of a total area of study, depending on the type of issues to be addressed, and the scope of scenarios willing to be accepted, the study area could extend west to the Tasman Bridge and east to the Belbins/Cambridge Road interchange with the Tasman Highway. This is discussed further below.

Figure 1 Overview Focus

1 Assessment

1.1 Summary of Issues / specifics

Based on the assessment below the following issues and restrictions relate to the Mornington roundabout:

- High flow rates toward the Tasman Highway.
- Unbalanced flows, which do not favour a roundabout type intersection control.
- A U-turn movement, for vehicles originating to the north, is currently required to travel westbound on Tasman Highway. Any changing to the intersection control at this intersection will require providing this accessibility, either at this location or at another.
- The divergence from one lane to two within the roundabout reduces drivers' ability to pick appropriate gaps to enter the roundabout from the north.
- The multilane configuration makes picking gaps difficult, as evidence by the high cross traffic crash rates at the roundabout entrances.
- Line marking causes confusion for vehicles entering the roundabout from the west and destined to travel eastbound on the Tasman Highway. Several cars undertake this as a two-stage movement.
- The eastbound Tasman Highway off-ramp has a high concentration of out of control crashes.
- The westbound Tasman Highway off-ramp is situated too close to the Mornington Roundabout.
- The volumes on the eastbound Tasman Highway off-ramp and westbound Tasman Highway on-ramp, are sufficient for a single free flow lane of traffic.
- The intersection is a convergent point for a large population centre.
- The interchange provides the only eastbound access point to the Tasman Highway for a considerable distance. Alternative eastbound access is available at the Acton Road Interchange 6.5km east on the Tasman Highway, Davies Avenue Interchange 6.3km west on Tasman Highway, or a u-turn at the signalised intersection of Ronnie Street and East Derwent Highway, 4km west on the Tasman Highway.
- Closure of Cambridge Road access to South Arm Highway redirects westbound travel onto Rosny Hill Road, which in the AM peak is already at saturation levels.
- Signalisation of the Mornington Road Roundabout may have a limited working life.
- Queuing on South Arm Highway with the signalisation of the Mornington Road Roundabout would block the westbound Tasman Highway off-ramp and the Mornington Road intersection, reducing the available gaps for egress from these side streets and worsening the queuing experienced.
- A future link road through Flagstaff Gully could increase usage of the intersection.
- Mornington Road is situated too close to the Mornington Roundabout.
- The median storage provided to exit Mornington Road is too short to accommodate the entire vehicle fleet that utilises Mornington Road.

1.2 Potential Improvements

Based on the assessment below the following upgrade scenarios relate to the Mornington roundabout:

- Upgrade intersection control with traffic signals being the simplest and cheapest option. However:
  - Queuing likely to block Mornington Road, and/or the westbound Tasman Highway off-ramp.
  - Signalised intersection may require excessive right turn infrastructure/capacity.
  - Signals may only operate satisfactorily for 20 years or less.
  - Therefore this option may need to be considered in conjunction with another option
- Metering Cambridge road to provide for the main movements on South Arm Highway. i.e. meter Cambridge Road east in the AM peak and Cambridge Road west in the PM peak. This is likely to have a limited useful life. Therefore this option may only be appropriate as an interim measure.
- Provide a left turn slip lane for southbound traffic (traffic from the north). This movement has similar volumes to that for the northbound slip lane, and may improve intersection performance
- Relocation of closely spaced intersections. i.e. Mornington Road, Tasman Highway westbound off-ramp.
- Removal of the need to U-turn from the north to travel west.
- Improvement of the geometry and/or infrastructure of the Tasman Highway eastbound off-ramp to reduce out-of-control crashes
- Closure of one or both Cambridge Road approaches and provision of an additional access onto the Tasman Highway. Provision of additional access is a must due to limited options for eastbound access to the Tasman Highway, and potential for oversaturation of Rosny Hill Road in the AM peak.
- Full or partial grade separation of the South Arm Highway, removal of any movements (particularly access/egress for Cambridge Road) will require provision of an additional access onto the Tasman Highway. Provision of additional access is a must due to limited options for eastbound access to the Tasman Highway, and potential for oversaturation of Rosny Hill Road in the AM peak.

1.3 Mornington Roundabout

1.3.1 Traffic Performance Assessment

Turning movement and origin-destination traffic surveys of the area were undertaken in February 2012 and April 2017. Intersection counts from April 2017, shown in Figure 2, indicate that 3,875 vehicles approach the intersection in the AM peak and 3,128 vehicles in the PM peak.

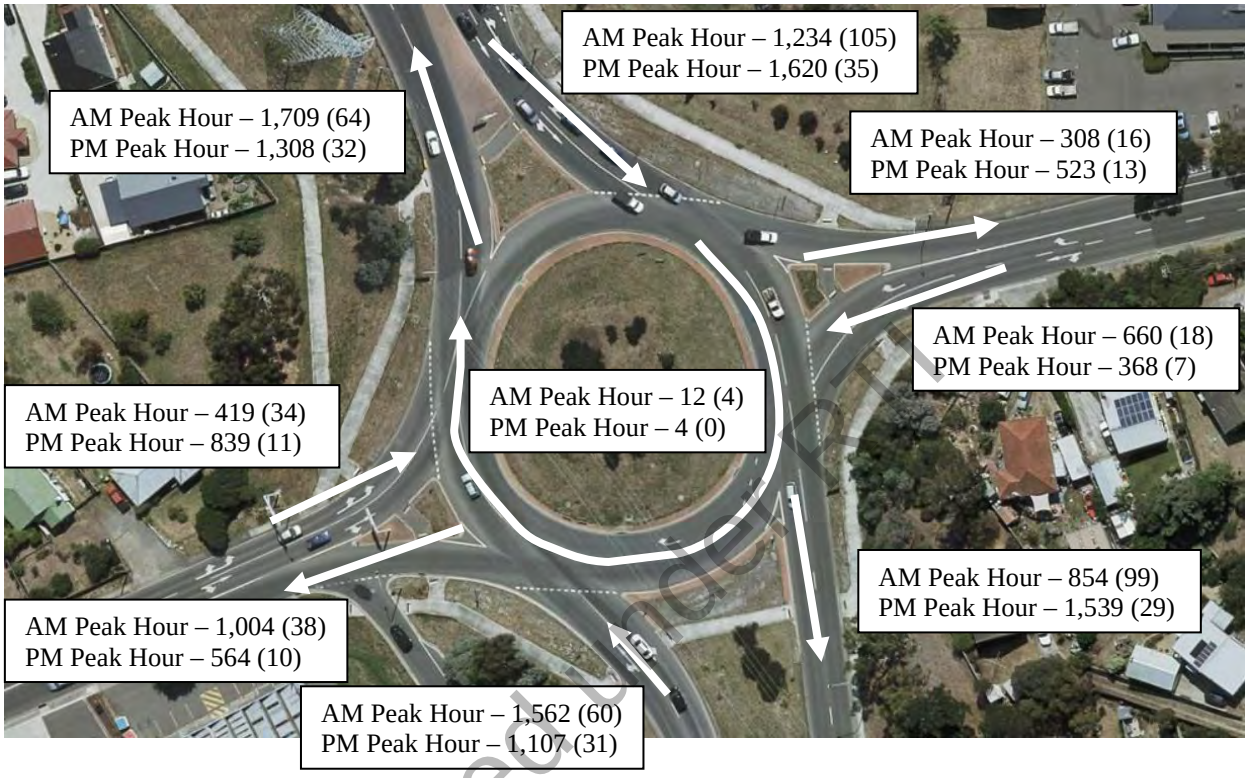


Figure 2 Approach and Exit Volumes

The primary movements are detailed in Table 1, which highlights a strong northbound flow. Noting that roundabouts typically perform best with balanced flows.

Table 1 Peak Hour Primary Movements

Approach	Primary exit direction (percentage of movement)	
	AM Peak	**PM Peak**
West	North (45%)	North (44%)
East	North (52%)	North (42%)
South	North (75%)	North (70%)
North	South (56%)	South (75%)

The daily traffic profile at site A0498090, situated 78m south of Mornington Road is shown in Figure 3 below. The graph shows that flows increase rapidly after 6am on a weekday, subsiding after 7pm. A similar trend occurs on the weekend with a sharp increase in flows between 8am and 7pm on a Saturday and 9am to 6pm on a Sunday.

Heavy Vehicles levels exhibit a similar trend as well maintain flows greater than 100 veh/hr between 6am and 6pm weekdays (approximately 10% of all traffic). Note these levels have decreased since 2017,

which is thought to be associated with a decrease in residential construction in suburbs adjacent to the South Arm Highway.

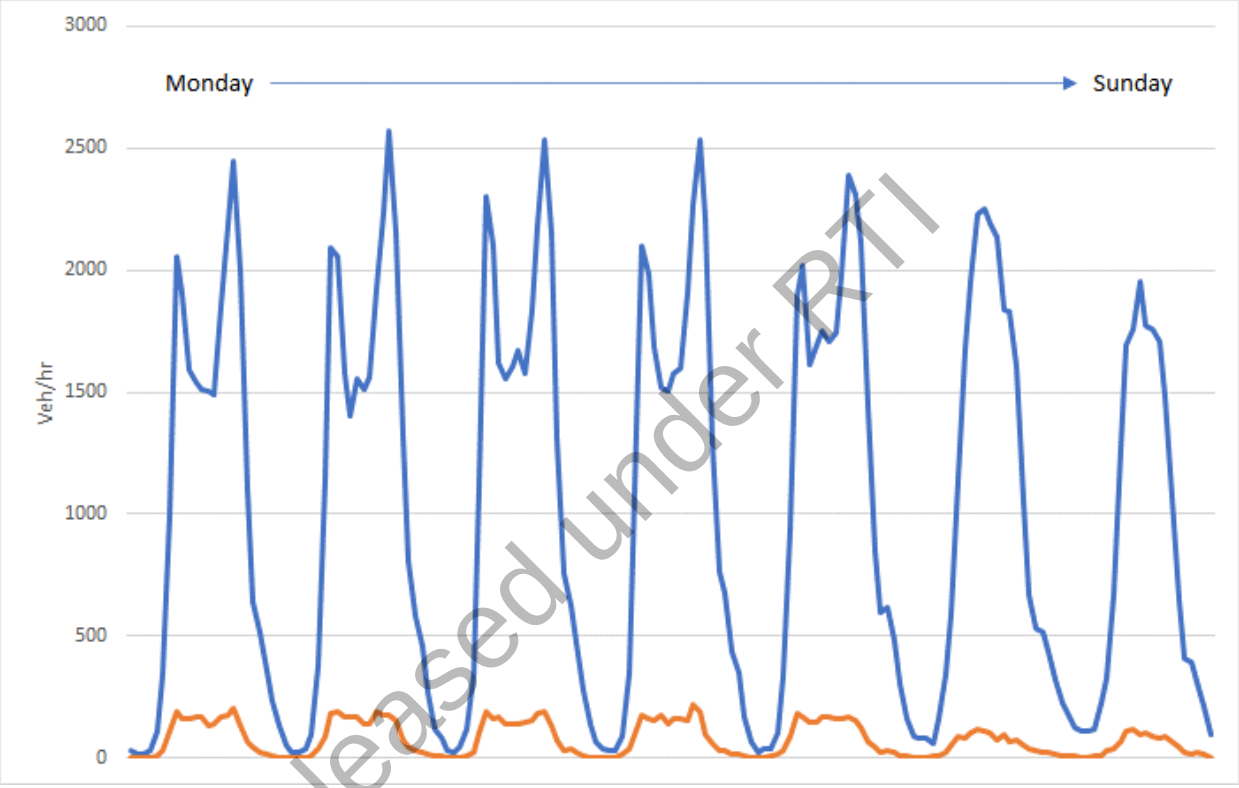


Figure 3 2019 traffic profile

From observing the performance of the roundabout, three key issues were identified. The first is that comprehension for vehicles at the northern approach to the roundabout is difficult. As shown in Figure 4 below, the circulating vehicles diverge into two lanes, however, it is difficult for the yielding vehicle to determine the trajectory of the circulating vehicle and often doesn't take an appropriate gap when it is presented.

The second issue is the comprehension of the lane lines for vehicles at the western approach. As shown in Figure 5, vehicles destined for the Tasman Highway eastbound, typically undertake this movement in two stages. This can cause issues as the left most, northbound exit lane travels westbound.

The third issue is that any vehicle from north of the Mornington Roundabout and wishes to travel westbound on the Tasman Highway, must undertake a U-turn at the Mornington Roundabout, as shown in Figure 6. While the volumes shown in Figure 2 indicate that this movement has low usage in the peaks, this movement can attract up to 100 truck movements per day from the quarry on Flagstaff Gully Road. With the quarry expected to have another 40 years of life, this movement is considered necessary to prevent trucks rerouting via Cambridge Road to travel west on the Tasman Highway.

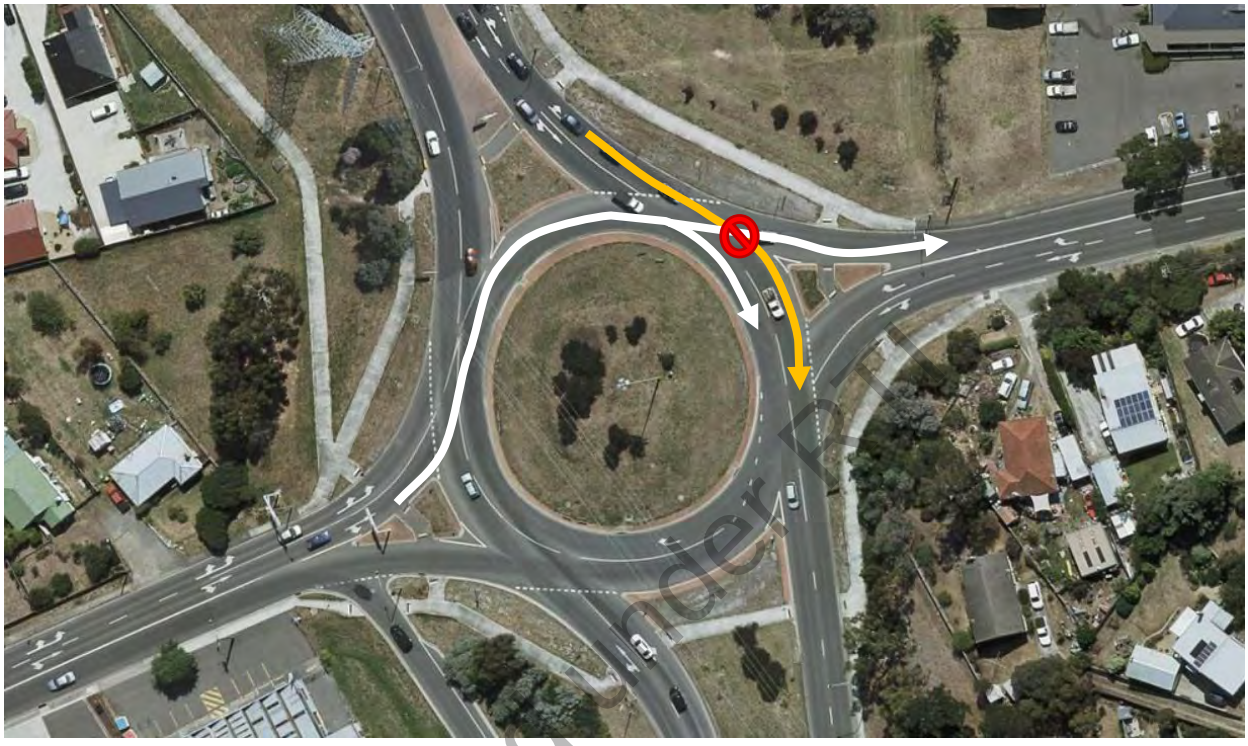


Figure 4 Behavioural issue for northern approach

Figure 5 Behavioural issue for eastern approach

Figure 6 Required U-turn movement

1.3.2 Demand

The Mornington Roundabout is a strategic route where numerous origin-destination pairs converge. The images in Figure 7 below show the areas that choose the Mornington Roundabout as the preferred route (based on google route selection) for travelling east (to areas such as the airport) and travelling west (to the Tasman Bridge and beyond).

Origin-destination survey recorded in 2012 was also reviewed. The survey indicated that in 2012 approximately 25% of cars on the South Arm Highway east of Pass Road (two-way), travel through the Mornington roundabout. This increases to 35% in the PM peak.

Another interchange with the Tasman Highway exists approximately 3km to the east of the Mornington Roundabout. Currently this interchange has west facing ramps only and due to the driveability of Cambridge Road and Pass road is not the preferred route for many travelling onto the South Arm Highway. An example of the path assignment from google maps is shown in Figure 8.

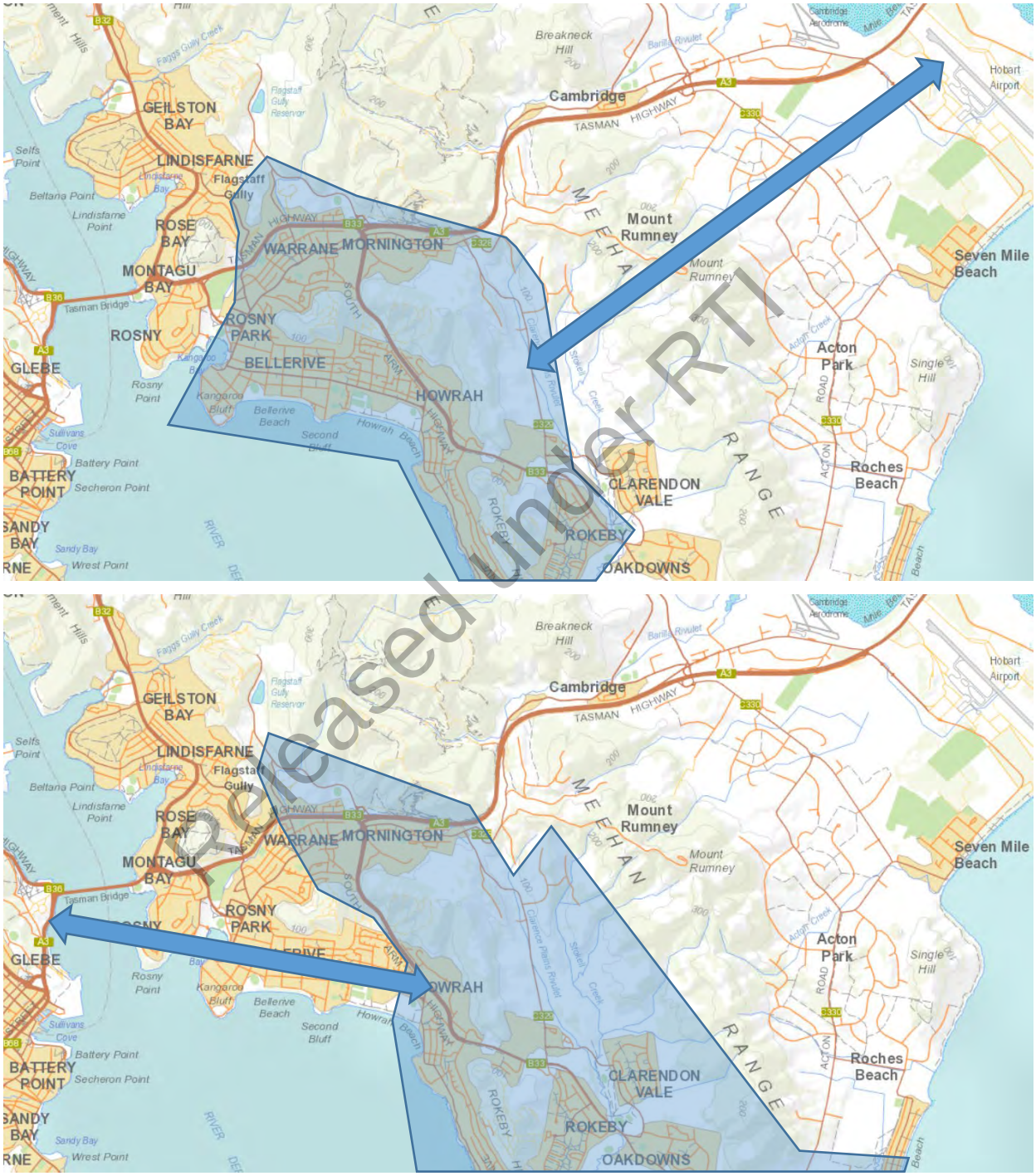


Figure 7 Travel demand for Mornington Roundabout

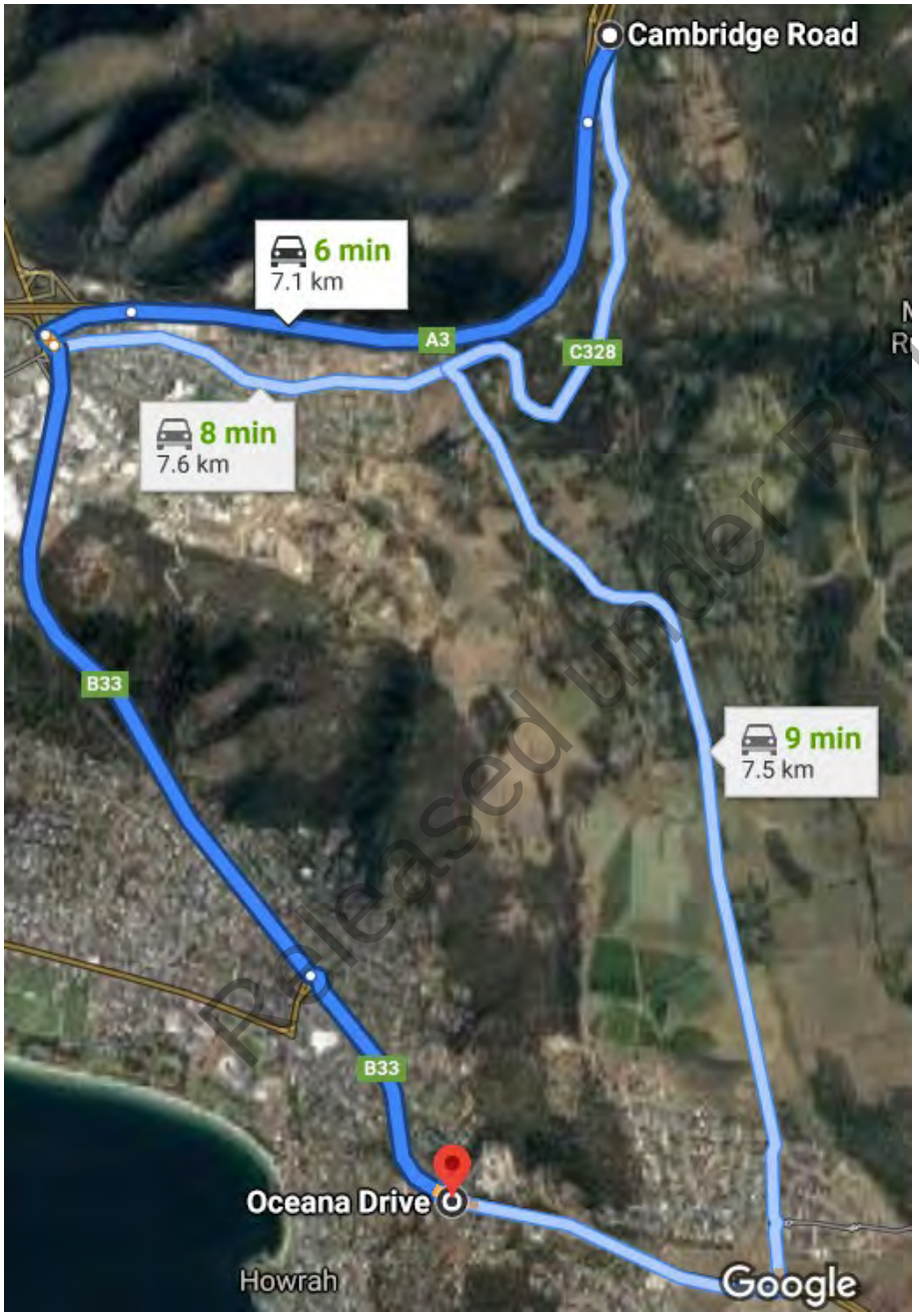


Figure 8 Alternative Path Assignment

1.4 Tasman Highway ramps

The peak hour volumes on the Tasman Ramps are shown in Figure 9. The predominate movements are on the westbound on-ramp in the AM peak and the eastbound off-ramp in the PM peak. The volumes are

sufficient for a single free flowing lane, however, if free-flow conditions are not able to be achieved then the two-lanes are required.

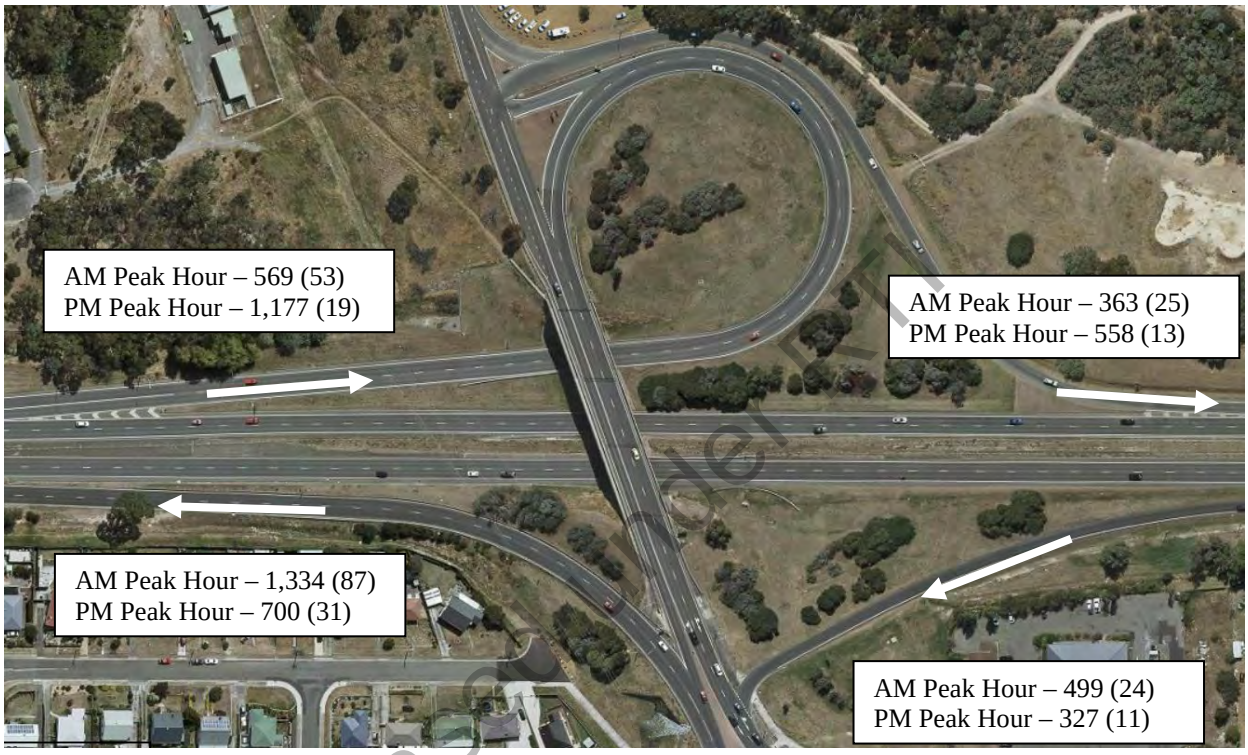


Figure 9 Tasman Ramps volumes

For the westbound off-ramp and the eastbound on-ramp the volumes are relatively low. However, queuing is still observed in the westbound off-ramp in the PM peak. Recently the department has extended the lane to contain the queue. The reason for the queuing is the proximately of the merge from the westbound off-ramp to the Mornington Road roundabout. As shown in Figure 10 the distance between the two intersections is approximately 40m, or a queue of 6 vehicles. Due to the high southbound volume in the PM peak the queue on the South Arm Highway is predominately greater than 6, which makes merging from the ramp difficult if no curtesy is provided, particularly for those vehicles needing the rightmost lane to travel west or north.

Figure 10 Intersection proximity

1.5 Mornington Road intersection

The peak hour volumes in and out of Mornington Road are shown in Figure 11 for 2012 traffic conditions (2017 values not available). The predominate movements are left in and right out. Due to the location of the intersection (See Figure 12) the right out movement is difficult and dangerous. At this location northbound vehicles are decelerating on approach to the intersection, thus reducing vehicle headways and available gaps, and southbound traffic is accelerating, making gap selection difficult. Vehicles do have the option of a two-stage crossing, with a 20m median storage provided, however Mornington Road is an approved 26m B-Double road, and land use along the road is a generator of larger vehicles, and vehicles with trailers, which may not fit within the median storage, and could protrude into either traffic stream on each side.

Figure 11 Mornington Road Intersection Volumes

Figure 12 Mornington Road Intersection Proximity

1.6 Road Safety

Within the study area, including the Tasman Highway ramps and their merges, a total of 365 crashes have occurred since 2011, 81 of which were casualty crashes. The breakdown of crash type is shown below in Table 2.

Table 2 Major crash types

Crash Type	All Crashes	Casualty Crashes	Fatal	Serious
Pedestrian	2	1 (50%)		1
Adjacent Direction	44	11 (25%)	1	
Head-On	35	10 (29%)		
Rear-End	195	33 (17%)		2
Manoeuvring	9	1 (11%)		
Overtaking	3	0 (0%)		
On-Path	5	0 (0%)		
Off-Path (straight)	17	9 (53%)		
Off-Path (Curve)	46	15 (33%)		
Other	9	1 (11%)		
TOTAL	365	81 (22%)	1	3

The predominant crash type is rear-end crashes, however, out-of-control crashes result in the highest casualty rates. The majority of read-end crashes occur at the roundabout, with out-of-control crashes mostly occurring on the Tasman Highway eastbound off-ramp, as shown in the image below. Of note are the two serious rear-end crashes occurring on the eastbound Tasman Highway on and off ramps which could indicate queuing within the ramp.

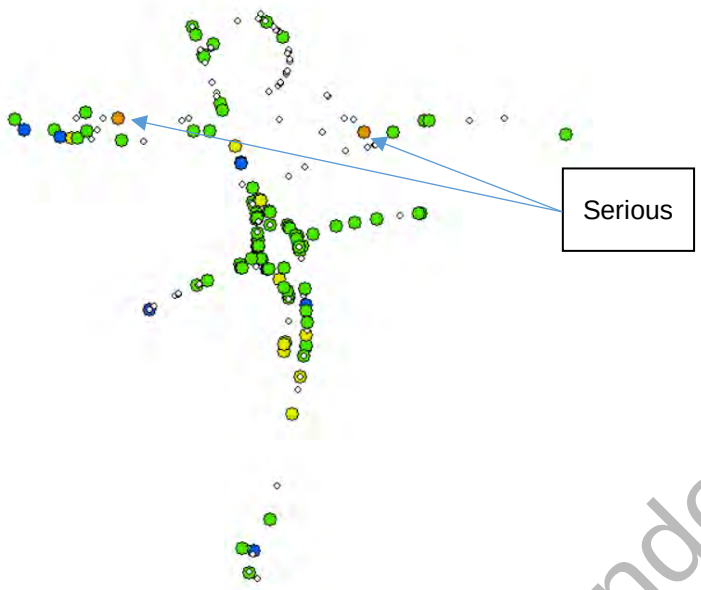


Figure 13 Rear-end crashes

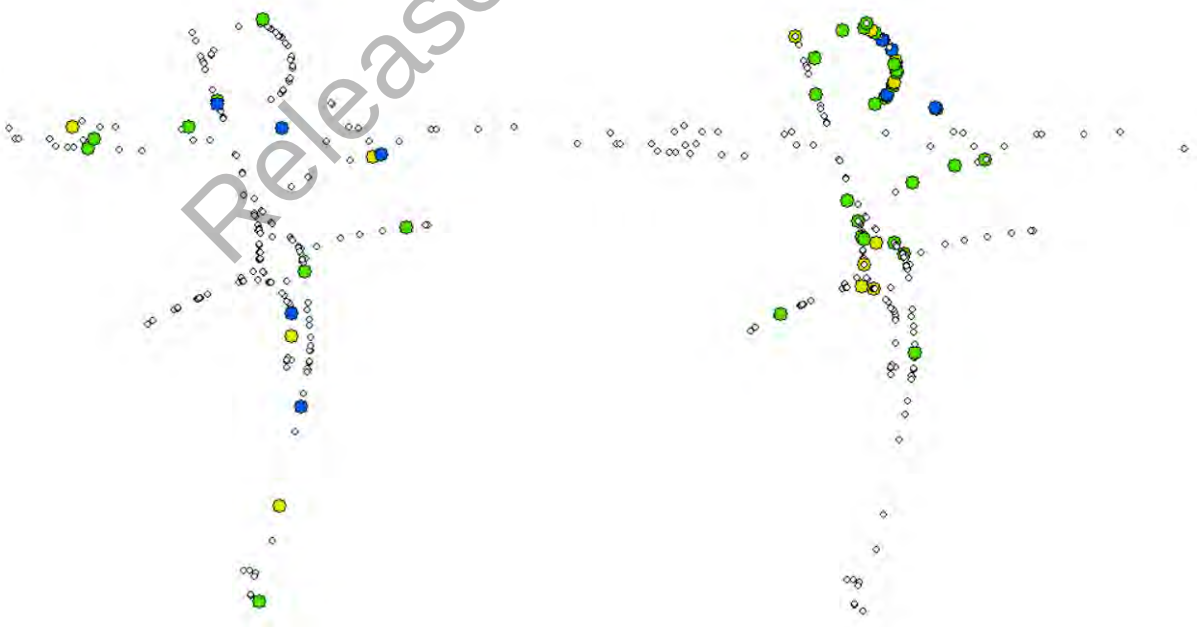


Figure 14 Out- of control crashes

Head-on crashes are the next highest casualty crash type, although given the location of crashes it is likely that many of these types of crashes are mislabelled adjacent direction crashes. The majority of

these crashes occur at each approach entrance, and the Mornington Road intersection, including a fatal crash at Mornington Road intersection.

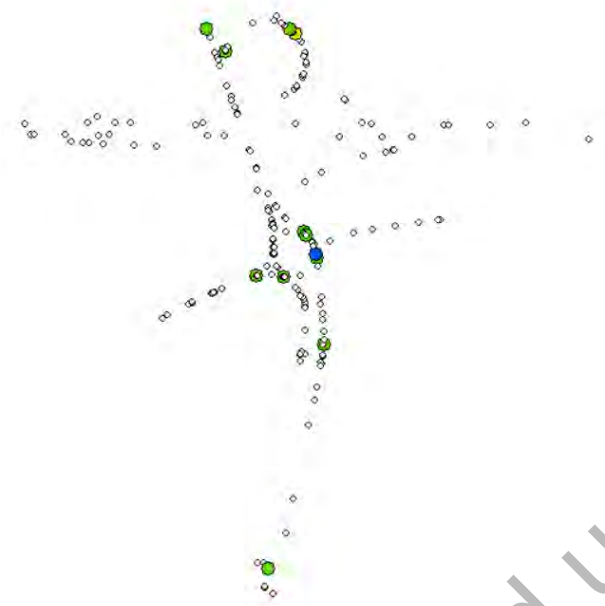


Figure 15 Head on crashes

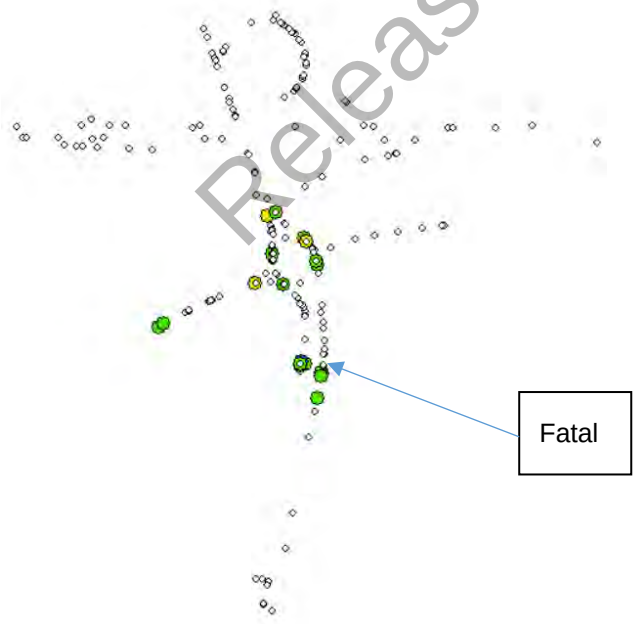


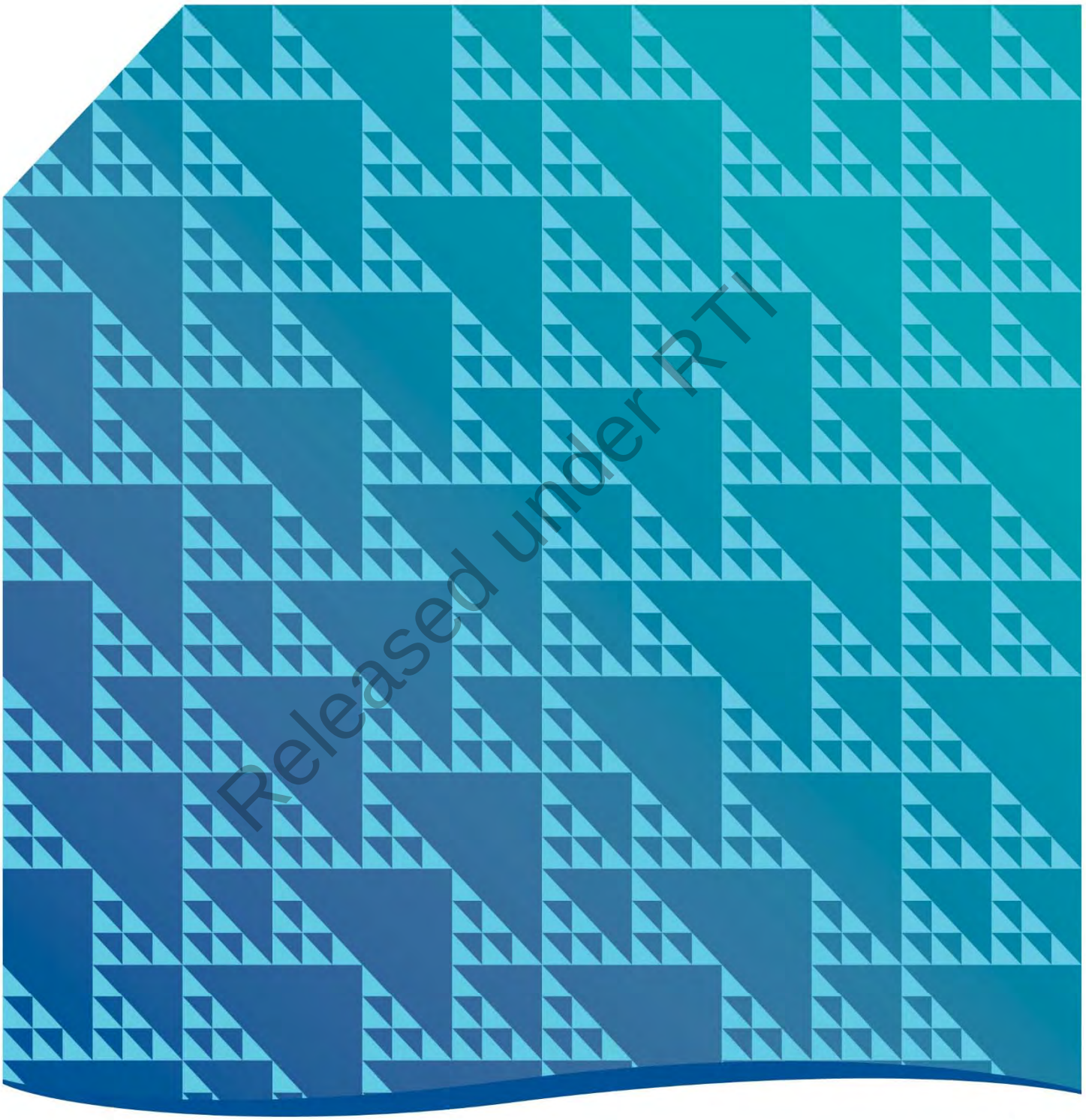
Figure 16 Adjacent direction crashes

Sincerely
GHD

s36 [redacted]
Senior Engineer – Civil & Transport
s36 [redacted]

Tasman Highway - Sorell to Hobart Corridor Plan

September / 2019



Department of State Growth

Tasmanian Government

Contents

Executive summary

The Sorell to Hobart Corridor Planning Study was commissioned by the Tasmanian Government to investigate ways to reduce congestion and improve travel time reliability on theTasman Highway between Sorell and Hobart through road infrastructure, public transport and active transport initiatives.

The overall objective was to develop a Corridor Plan identifying a staged plan of cost-effective improvement solutions for the corridor which will achieve a better level of service for all road users.

The Corridor Plan is based on the Sorell to Hobart Corridor Study - Options Analysis Report (Jacobs 2019), which identified potential solutions to address the highway congestion issues.

The objectives were to:

- Review the Sorell to Hobart Highway corridor and identify issues that contribute to traffic congestion and unsatisfactory travel time reliability
- Identify a range of solutions, including passenger transport and active transport options that could be implemented to help achieve a better level of service particularly in peak periods
- Undertake a multi-criteria assessment to determine the high-level benefits and impacts of the identified solutions
- Develop a Corridor Plan (this report) outlining a prioritised (high priority, medium priority and long term) list of solutions based on achieving a better level of service for all road users for delivery now and into the future.

During the Options Analysis study, stakeholder engagement was conducted to inform the community about existing projects being delivered along the corridor as part of the *South East Traffic Solution (SETS)* and gain an understanding of their concerns about or suggestions for additional improvement to the corridor.

The Options Analysis study identified potential solutions to address congestion issues across four themes:

- Road infrastructure
- Public and active transport
- Intelligent transport systems upgrade
- Land use

This Corridor Plan has been developed to identify a number of prioritised packages with cost effective improvement solutions spanning across these four themes. The packages, which are prioritised as either high priority, medium priority or long term, aim to improve the level of service, road safety, and to cater for the future transport needs of the growing councils of Sorell and Clarence. In summary, the high priority solutions are:

- Development of a network operating plan, in conjunction with stakeholders, to provide the strategic guidance for how the Clarence transport network is used, managed, and planned into the future
- The smarter use of existing infrastructure, mainly by utilising intelligent transport systems technology to improve the level of service of the network and manage demand
- Establishment of additional transit lanes between the Cambridge interchange and the Tasman Bridge. These transit lanes can be used by buses, taxis and other vehicles carrying multiple occupants.

- Providing alternatives to car travel by improving bus frequency, providing park and ride facilities at appropriate locations and providing higher standard facilities to complete missing cycle path links
- Upgrade of the Mornington roundabout to address community concerns and improve capacity and control. This may include metering certain approaches, or signalising the existing roundabout to increase the life span of the intersection in the short term, before upgrading to a fully signalised intersection as needed in the future
- Implement measures to prevent traffic from having to merge and cross the highway from Rosny Hill Road to East Derwent Highway in peak periods
- Work with key stakeholders to improve bus access from the Rosny bus mall onto the Tasman Highway
- Use the additional lanes built as part of the South East Traffic Solution between Sorell and the Airport interchange as peak time transit lanes. Outside of peak times, the lanes would be available for general use.

The medium priority and long-term solutions are to:

- Further expand the use of transit lanes to continue to encourage the use of public transport as an alternative to car travel
- Upgrade Mornington and Acton interchanges to support the growth of the Clarence and Sorell council areas and remove traffic away from local roads
- Provide an alternate access to the Tasman Highway at Pass Road, reducing the reliance on the current interchanges and connecting roads that are approaching capacity in the peak periods
- Create a new north-south connection to the Bowen Bridge via Flagstaff Gully to provide an alternate route into Hobart and reduce the reliance on the Tasman Bridge

Plans of the high priority, medium priority and long-term solutions are shown on the following pages.

HIGH PRIORITY SOLUTIONS

NOT SHOWN — Development of a Network Operating Plan to provide strategic guidance for the Clarence transport network

Implement measures to prevent traffic from having to merge and cross the highway from Rosny Hill Road to East Derwent Highway

Lane-use Management System (LUMS) & Variable Speed Limits (VSL) - Overhead electronic signs to change the speed limit or the use of each lane for safety or capacity reasons

Ramp signal at freeway interchanges - Signals to control access to the freeway and provide safe merging gaps during high levels of traffic

Upgrade of Mornington roundabout - Upgrade to a signalised roundabout to improve capacity and control (potential to upgrade to a signalised intersection in the future)

Solutions to encourage greater use of buses:

Transit Lanes - build additional lanes giving buses priority between Cambridge Road and the Tasman Bridge. These transit lanes can be used by buses, taxis and other vehicles carrying multiple occupants.

NOT SHOWN — Implement more high frequency bus corridors

NOT SHOWN — Investigate new park and ride facilities at appropriate locations

NOT SHOWN — Work with key stakeholders to improve bus access from the Rosny bus mall onto the Tasman Highway

NOT SHOWN — Use the additional lanes built as part of the South East Traffic Solution between Sorell and the Airport interchange as peak time transit lanes. Outside of peak times, the lanes would be available for general use.

Full cycle network between Tasman Bridge, Lindisfarne and Bellerive Ferry Terminal and Mornington Interchange - Completion of connected on-road and off-road trails:

Existing off-road cycleway

Existing on-road cycleway

Proposed off-road cycleway

Proposed on-road cycleway

Penna Road
N
Tasman Highway
Tasman Highway
Cambridge
Cambridge Road
Kennedy Drive
Airport
Lampton Avenue
Brooker Highway
Main Road
Albert Road
Risdon Road
Selfs Point Road
Derwent Avenue
Lincoln Street
Lindisfarne
Flagstaff Gully Link
Gordons Hill Road
Tasman Highway
Rosny Hill Road
Rosny
Mornington
Pass Road
Refer Inset
Creek Road
New Town Road
Park Street
Bellevue Parade
Domain Highway
Clare Street
Leitha Street
Augusta Road
Elphinstone Road
Pottery Road
Hobart
Elizabeth Street
Campbell Street
Argyle Street
Davey Street
Hill Street
Clarence Street
South Arm Highway
Howrah
Howrah Road
Rokeby Road
Pass Road

Inset

East Derwent Highway
Gordons Hill Road
Flagstaff Gully Link
Tasman Highway
Cambridge Road
Bligh Street
Bayfield Street
Bastick Street
Rosny Hill Road
Clarence Street

Tasman Highway Corridor Improvement Plan - Sorell to Hobart

Tasmanian Government

Medium Priority Solutions

- Mornington Interchange - Upgrade the interchange to provide more efficient and safer access to Tasman Highway
- Transit Lanes - build additional lanes giving buses priority from Cambridge Interchange to Hobart Airport Interchange

Long-term Solutions

- Addition of Interchange at Pass Road - New interchange to provide an alternative access to Tasman Highway and provide an alternative to South Arm Highway
- Acton Road interchange - Upgrade the interchange to provide more efficient and safer access to Tasman Highway
- Flagstaff Gully Link - New road link to provide an alternative route accessing Hobart CBD via Bowen Bridge
- Transit Lane on Tasman Bridge - to be implemented in conjunction withTasman Highway upgrades west of the bridge

Risdon
Lindisfarne
Rosny
Hobart
Howrah
Mornington
Cambridge
Airport
Goodwood Road
Grasstree Hill Road
East Derwent Highway
Sugarloaf Road
Clinton Road
Derwent Avenue
Lincoln Street
Gordons Hill Road
Flagstaff Gully Link
Tasman Highway
Dampier Street
Rosny Hill Road
Brooker Highway
Sunderland Street
Gormanston Road
Main Road
Albert Road
Risdon Road
Selfs Point Road
Creek Road
New Town Road
Bellevue Parade
Domain Highway
Park Street
Clare Street
Augusta Road
Letitia Street
Elphinstone Road
Elizabeth Street
Campbell Street
Argyle Street
Davey Street
Hill Street
Clarence Street
South Arm Highway
Howrah Road
Rokeby Road
Pass Road
Cambridge Road
Kennedy Drive
Holyman Avenue
Acton Road
Estate Drive
Seven Mile Beach Road
N

Tasman Highway Corridor Improvement Plan - Sorell to Hobart

Tasmanian Government

Introduction

Why has a Corridor Plan been developed?

This Corridor Plan communicates the outcome of the Sorell to Hobart Highway Corridor Planning Study. Commissioned by the Tasmanian Government, the study looks at ways to reduce congestion, improve level of service and travel time reliability on the Tasman Highway between Sorell and Hobart through public transport, active transport and infrastructure initiatives.

While the Tasman Highway is a critical road corridor for commuters, freight and tourists, the existing road infrastructure is at capacity. This has led to congestion and delays for users during both morning and afternoon peak periods. As the council areas of Clarence and Sorell grow, these traffic issues are expected to get worse.

The Corridor Plan is based on the Sorell to Hobart Corridor Study - Options Analysis Report (Jacobs 2019) which identified potential solutions to address this issue, based around four key themes:

- Road infrastructure
- Public and active transport
- Intelligent transport systems upgrade
- Land use

The Corridor Plan identifies a number of packages of prioritised, cost effective improvement solutions spanning across the four themes, which are recommended for implementation over the next 30 years. The packages, which are prioritised as either high priority, medium priority or long term, aim to improve the level of service, road safety, and to cater for the future transport needs of the growing councils of Sorell and Clarence.

Strategic Context

This section of the plan looks at the location of the Sorell to Hobart Highway corridor and the strategic policies that underpin Greater Hobart's planned growth.

Study area

Figure 1 Sorell to Hobart Highway corridor

The Sorell to Hobart Highway corridor starts at the Tasman Bridge and extends generally north-east along the Tasman Highway for approximately 21km. The corridor links the councils of Clarence and Sorell, as well as more regional locations in eastern Tasmania, to the inner regions of Greater Hobart. Figure 1 displays the location of the study corridor.

The corridor's existing road infrastructure is at capacity at peak times, and with limited alternative transport choices, congestion at the Tasman Bridge's eastern approach and the Mornington Interchange, is resulting in extensive queuing and delays during peak periods. The Tasman Bridge is also a major barrier being the only reasonable route into inner Hobart for most commuters from the east. These traffic issues are expected to get worse in the future because of further significant residential growth in the outer Clarence areas and the Sorell municipality.

Adjoining projects underway

Significant peak period congestion on the Tasman Highway also occurs between the Hobart Airport roundabout at Holyman Avenue and Sorell. To address this, the Tasmanian Government has committed to delivering the South East Traffic Solution (SETS), which consists of six key transport infrastructure projects along the Tasman Highway, as outlined in Figure 2.

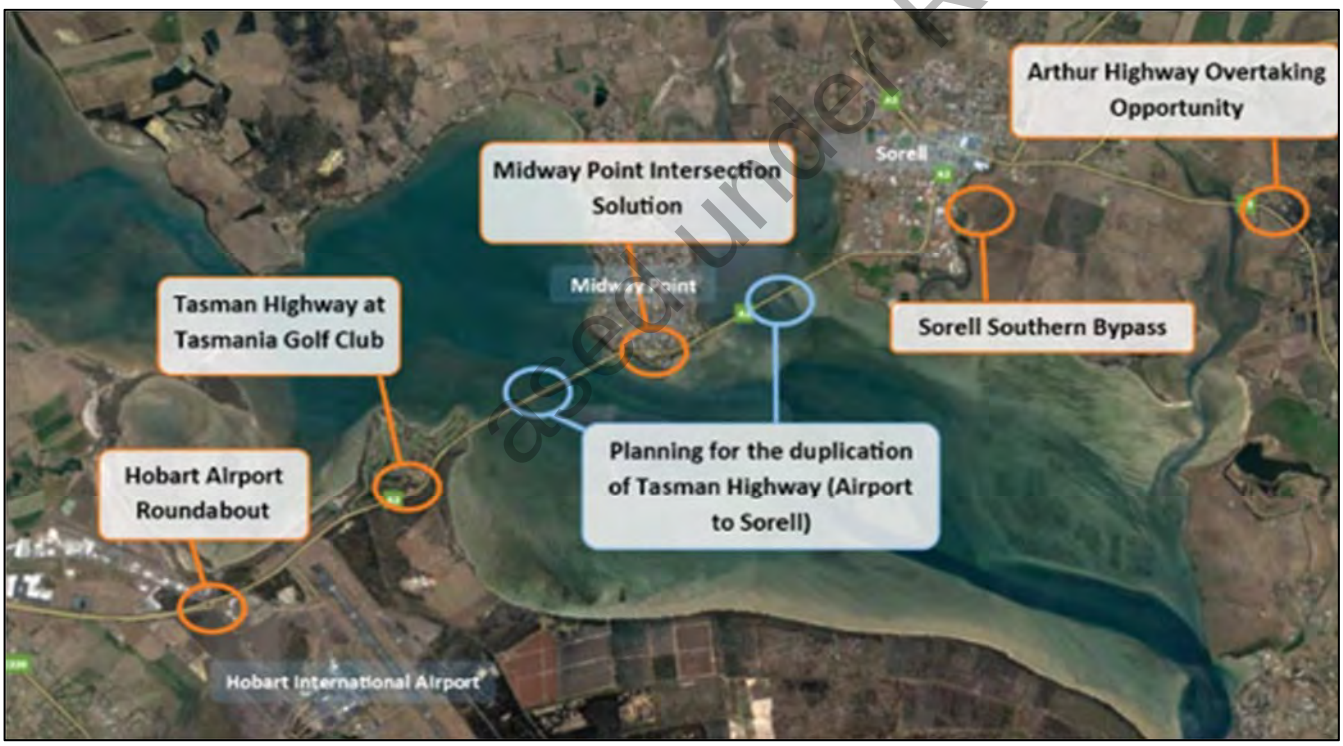


Figure 2 South East Traffic Solution Projects

This Sorell to Hobart Corridor Plan aims to integrate with the SETS road infrastructure projects to ensure that all solutions complement each other.

Public transport and active transport network improvements

This Corridor Plan will support the public transport improvements undertaken as part of the Public Bus Recontracting Project known as Project 2018. These improvements and some current public transport initiatives are further detailed in Section 3.2 of this report.

It will also support the improvement of the cycling network developed by Cycling South, the regional cycling body for southern Tasmania.

Importance of the corridor
The Sorell to Hobart corridor is fundamental to the accessibility and connections of the eastern metropolitan region of Greater Hobart. It is the only arterial road link providing access for commuter and freight traffic between the eastern and western sides of the River Derwent. It provides access to inner Hobart and also between townships and serves as the gateway to the East Coast and Tasman peninsula, which are both significant tourist attractions and significant agricultural and aquaculture production centres.

Planning Study Objectives

Objectives
The overall objective of the Planning Study was to identify and develop a staged plan of cost-effective improvement solutions for the corridor which will achieve a better level of service for all road users.

The objectives for Stage 1 – Options Analysis were to:

- Review the Sorell to Hobart Highway corridor and identify issues that contribute to traffic congestion and unsatisfactory travel time reliability
- Identify a range of solutions, including passenger transport and active transport options that could be implemented to help achieve a better level of service particularly in peak periods
- Undertake a multi-criteria assessment to determine the high-level benefits and impacts of the identified solutions

The objective for Stage 2 - Corridor Plan (this plan) was to:

- Develop a prioritised (high priority, medium priority and long term) list of solutions based on achieving a better level of service for all road users for delivery now and into the future

Potential Benefits
The key transport impacts and associated benefits from addressing the transport issues along the Sorell to Hobart corridor are listed below.

Transport impacts

- Increase in throughput of people and goods along the corridor effectively and efficiently
- Improve travel time reliability during peak periods along the corridor across the different user groups (bus passengers, private vehicles, cyclists and pedestrians)
- Reduced queues at intersections
- Safer opportunities for side road traffic to access the Sorell to Hobart Highway corridor
- More frequent and reliable bus services that makes public transport a more attractive commuter option
- A more connected active transport network with links both along the corridor and branching out to major land uses
- Safer and more attractive public and active transport facilities

Community benefits

- Improved travel experience for commuters and tourists
- Increased community satisfaction
- Reduced crash rate
- Improved health outcomes for all user groups who frequently use the Tasman Highway corridor

- Reduced reliance on private vehicles for residents and the associated financial and environmental costs

Community Consultation

During the options analysis stage of the study, stakeholder engagement was conducted to inform the community about existing projects being delivered along the corridor and gain an understanding of their concerns about or suggestions for improvement to the corridor.

The objectives of the stakeholder engagement were to:

- Understand "on the ground" where the significant traffic pinch points are between Holyman Avenue and Hobart CBD, and any perceived safety concerns
- Receive any suggestions for transport infrastructure upgrades between Holyman Avenue and Hobart
- Consider the acceptability or interest in utilising public transport and active transport, and to better utilise these alternatives, and what improvements to the overall transport system could be made with regards to public and active transport
- Understand whether there are any areas where works should not occur, i.e. areas that the community feels very passionate about protecting
- Help understand what role active transport can play in reducing congestion and improving travel time reliability
- Understand what is considered more important in any potential upgrades
- Provide an opportunity to inform the community about the scope and boundaries of this project and the need for staging depending on priorities, scale of the solution and funding availability

Consultation Methods Used

The methods used and response achieved for this engagement program are summarised in Table 1.

Method (number)	**Response**
Drop in sessions (4)	Over 30 people attended
Facilitated workshop (1)	10 people attended included members from the community and from key organisations such as Redline Buses and State Government departments
Interactive maps (Social Pinpoint)	• 34 individuals providing a total of 84 comments • 20 individuals providing a total of 31 survey responses
Two posts on social media (Facebook) providing information and seeking responses	65 responses to the two posts received
One-on-one engagement with key stakeholders	68 identified stakeholders contacted
General information and feedback • Project team available for phone conversations and email responses • Information posters erected at key locations • Update on Department of State Growth and council websites	Information received in above responses and some additional comments

Table 1

Compared to the high traffic volumes using the Sorell to Hobart corridor (around 40,000 vehicles per day at Mornington Interchange), the total number of respondents to the engagement program was low and the majority of the responses were from people living in Sorell Council rather than people living in

Clarence City Council. Given the small number of responses, the feedback received could not be considered to be an accurate measure of community sentiment.

Feedback summary

A summary of the findings from stakeholder consultation activities are outlined in Table 2.

Key themes and responses
Road infrastructure
The key bottlenecks on the Tasman Highway include Holyman Avenue, Mornington Roundabout and the Tasman Bridge
There is a need to keep traffic moving generally along the highway
Mornington Roundabout is considered unsafe and confusing for people to use
There should be consideration of alternative infrastructure solutions such as a bridge from 7 Mile Beach to Lewisham or from Cambridge to Shark Point Road
A range of small-scale ideas for infrastructure improvements were offered improving local connections onto the highway
Public Transport
Consider more frequent public transport between Hobart and Sorell and the Southern beaches
Public transport needs to be affordable. It is currently cheaper for people to drive their cars and pay for parking and therefore there is no financial motivation to use public transport
The timing of buses needs to be reconsidered to encourage people to use public transport. This is particularly relevant for school buses (departure times at both ends do not fit with school hours)
Consider the establishment of Park and Ride facilities in Sorell and Clarence
Investigate integration between buses and ferries
Consider expanding the "turn up and go" bus services to this transport corridor
Active Transport
There were concerns regarding how safe the corridor was for active transport, particularly cyclists
Generally, respondents consider the Tasman Bridge to be a major barrier in terms of cycling accessibility

Improve cycling connectivity across both Sorell and Clarence local government areas (LGAs) to the Sorell to Hobart Highway corridor
Provide separated cycle paths on the Tasman Highway
Significantly improve cycling and walking infrastructure in Sorell
Land use
There is a need for a more self-sustaining community in Sorell so fewer people need to leave the LGA
A strategic approach to planning and infrastructure provision to help manage traffic issues
Better social services such as schools and recreational facilities in Sorell will contribute to a reduction in traffic

Table 2

Figure 3 Key outcomes from social pinpoint and survey responses

Analysis of the online submissions found the following:

Social Pinpoint comments:

- 28% of comments advocate for improvements to active transport infrastructure and public transport
- 51% of comments advocate for targeted road infrastructure upgrades along the corridor with the most common areas for improvement being the Midway Point Infrastructure upgrades (10 comments), Sorell Bypass (9 comments), general road widening (6 comments), putting in a new bridge via Shark Point Road/7 Mile Beach (6 comments), and improvements to Rosny Hill/Tasman Hwy/East Derwent Hwy (4 comments)
- The most "liked" comments include a bridge tunnel between 7 Mile Beach and Lewisham (23 likes), expansion of public transport services (18 likes), Gordons Hill Road on/off ramps (18 likes), Flagstaff Gully Link (18 likes) and Rosny Hill Rd east bound on-ramp to Tasman Highway (11 likes).

Survey Responses

- 85% of people use the Tasman Highway for commuting to work
- 100% of respondents travel by car, with 14% on occasions using bus or bicycle
- 92% have never used public transport on the Tasman Highway, however 78% believe improvements could be made through improved timetables (71%), more buses (57%), express

buses (57%) and cheaper bus fares (50%). From this 64% of respondents indicated they may use public transport if the system was changed or improved

- 64% of respondents say that they would use a park and ride facility, with 35% of respondents saying that Midway Point would be a useful location for one
- 50% of respondents indicated that various improvements could be made to facilitate the transport corridor for cycling.

Addressing the feedback

The following table provides State Growth's response to some of the popular feedback received:

Feedback	**Department of State Growth Response**
Strong demand for expanded and improved public transport services and supporting infrastructure	The Corridor Plan includes establishment of transit lanes giving buses priority along the highway, investigation of new park and ride facilities and additional high frequency bus corridors.
Desire for alternatives to the Sorell causeways e.g. a bridge between Seven Mile Peninsula and Lewisham	The State Government is carrying out a feasibility study examining duplication of the Sorell Causeways. Traffic volumes from Lewisham, Dodges Ferry and Carlton are not sufficient to justify, on a cost benefit basis, the construction of the significant road and bridge infrastructure needed to establish an alternative to the Sorell Causeways. It is more cost effective to widen the existing causeways and duplicate McGees Bridge.
Desire to complete the Flagstaff Gully Link through to the Bowen Bridge	The State Government has committed funds for early planning of this link to commence in 2020.
Desire for Rosny Hill Road eastbound on ramp and Gordons Hill Road on/off ramps	The planning study generally concluded that additional ramps are not required at the eastern end of the highway on approach to the Tasman Bridge, however State Growth considers that on and off ramps to Gordons Hill Road may offer some travel time reliability benefits. Early planning for these ramps has commenced.
Mornington Roundabout considered unsafe and confusing for people to use	In March 2019, a road safety audit examining the roundabout was carried out and found no significant safety deficiencies. It is a high-volume intersection with more than 40,000 vehicles travelling through it each day and an average crash rate of 18 per year. The majority (87%) of crashes only involve property damage rather than injuries. The volume of traffic using the roundabout has increased by around 40% since 2009 and the increase in crashes observed is proportional to this traffic growth. The safety audit found that permissible lane movements were well defined by line markings and signage. It also found that it was not possible to reduce the complexity of the roundabout without substantially increasing the level of congestion. The corridor plan includes making this a signalised roundabout to improve capacity and control.

Feedback	Department of State Growth Response
Desire for a Sorell Bypass and duplication (4 lanes) of the highway between the Airport roundabout to Sorell, including addressing the Midway Point bottleneck.	These projects are part of the South East Traffic Solution (SETS) jointly funded by the Australian and State Governments. Included within SETS is the Sorell Bypass and Midway Point duplication projects as well as completion of a Feasibility Study examining duplication of the Sorell causeways.
Desire for immediate construction to relieve congestion	Construction of new road infrastructure often involves some negative impacts such as land acquisition, environmental disturbance, increased noise and traffic disruptions and detours during construction. The Government must ensure that new road works are designed appropriately, that affected communities are consulted and that relevant approvals are obtained. Depending on the scale of the project, these processes can take a number of years to complete before construction can commence.
Desire to improve the corridor for cycling	The corridor plan includes for completion of a connected cycle network between Mornington Interchange and the Tasman Bridge, including connection to the planned Bellerive Ferry Terminal. For these connections, off-road cycle ways are the preferred solution where practical.

Table 3

Key Corridor Challenges

The key challenges facing the Sorell to Hobart corridor are related to its current design and growing transport demand. These challenges impact both local resident and tourist traffic, particularly around access to Hobart International Airport. The Sorell to Hobart Corridor Planning Study has identified four broad challenges:

- Congestion – increasing delays and trip times
- Transport options – limited alternative transport options
- Land use planning – to support residential growth
- Road safety – risk taking leading to more crashes

Congestion

Increasing congestion along the Tasman Highway during peak periods is resulting in longer delays, limited connections to the surrounding network and reduced mobility for motorists, a problem that comes to a head on the Tasman Bridge, the only reasonable route into inner Hobart for most commuters from the east.

Over the morning peak, more than 8,000 vehicles make the westward journey across the Tasman Bridge within a two-hour period. The capacity of the bridge is limited to 4,500 vehicles per hour and at times the demand exceeds the bridge capacity, due to the time that commuters choose to travel. There is generally spare capacity at the beginning of the two-hour morning peak period.

Congestion on the corridor has several causes including:

- Growing traffic volumes due to population growth in the Sorell and Clarence councils. The two regions have some of the highest growth rates in Tasmania (1.32% and 0.62% per annum respectively)
- Lack of route choice for vehicle users, as the Tasman Highway is the only arterial standard road along the corridor and the Tasman Bridge is the most direct river crossing into the CBD
- Poor road configurations along the highway result in vehicles having to make cross highway merge and weave manoeuvres which impacts negatively on efficiency and safety. For instance, the East Derwent Highway-Rosny Hill Road Interchange where, approximately 3% (80) of trips in the AM peak and 13% (355) of trips in the PM peak are making such manoeuvres, a problem that slows the flow of vehicles upstream.
- Limited intelligent transport and demand management techniques (such as ramp metering and lane-use management systems) exist along the corridor

Transport options

Limited active and public transport options along the corridor reduce movement, user satisfaction and safety. With a restricted amount of road capacity, the Sorell to Hobart corridor must transition towards more active and public transport options, as these have the potential to move more people in a way that is both cost-effective and more sustainable. For cycling as a transport option, there is a need for more separated pathways which, combined with the advent of E-bikes, would help this mode of transport to be more viable for a larger portion of the population.

The Tasmanian Government significantly improved the frequency of buses to Sorell and Midway Point in January 2019, including the introduction of express routes and additional student services from Sorell to Hobart. The public transport network in Sorell will continue to be monitored and network and timetable adjustments will be made where required. Additional public transport initiatives being undertaken in 2019 include a statewide fares and concessions review, and investigations into the introduction of a common ticketing system to allow passengers to use a range of Tasmanian passenger transport systems on a single ticket. A framework is also being developed to inform how park and ride facilities can successfully be incorporated into the public transport system.

There are particular challenges faced by public and active transport, which are detailed below.

Public transport challenges

- A reliance on private vehicles in Sorell as public transport was supplied at low frequencies prior to service improvements in January 2019.
- It takes time for the community to change travel behaviour and see public transport as a viable alternative to car travel.
- Bus travel times are not competitive with car travel times. While buses are subject to the same traffic flow issues as cars, this is compounded by the picking up and dropping off of passengers and buses may experience difficulty re-entering the traffic flow.
- The perceived cost of bus travel in terms of fare prices is often viewed as not being competitive with car travel, as parking costs are low in Hobart CBD and Rosny and car users typically ignore the fixed costs of car ownership in assessing the cost of car travel.
- Provision of express bus services, may not meet the broader transport need due to limited stops in order to provide a faster service.
- It is not cost effective for public transport to serve low density development patterns particularly in outer urban fringe areas.

Active transport challenges

- Low use of cycling as a means of commuting to work or school due to disconnected and relatively low standard cycling infrastructure feeding into the corridor

Land use planning

Most land in Sorell and Clarence is used for residential purposes, leading to increased dependence on non-local areas for employment, education and other services. This results in a high percentage of daily work trips that utilise the Sorell to Hobart Highway corridor as shown in Table 4. Almost 55% of Clarence workers commute into the City of Hobart and almost 64% of Sorell workers commute to workplaces outside of their council area.

Home Location	**Proportion of daily work trips made to**		
	City of Hobart	**Clarence Council**	**Sorell Council**
City of Hobart	92.2%	7.5%	0.3%
Clarence Council	54.5%	43.5%	2.0%
Sorell Council	35.6%	28.3%	36.1%

Source: Community Travel Patterns on the Tasman Highway between Sorell and Hobart and Domain Highway, Department of State Growth, 2017
Table 4

Road safety

Road users are making poor decisions on the Sorell to Hobart Highway corridor, which leads to driver frustration, risk taking and a higher number of crashes. In particular:

- Rosny Hill Road to East Derwent Highway interchange area is a more incident-prone section of road owing to the complexity of vehicle movements
- The Western Causeway between Midway Point and the Hobart Airport Interchange has a poor safety record with a higher propensity for serious injury crashes
- In close proximity to the Tasman Highway, the Mornington Roundabout has a high number of low injury crashes, owing to a high volume of traffic moving through the multi-lane roundabout and the need for drivers to make correct lane choices for highway access, or wait for a sufficient gap in traffic exiting the highway

A vision for the future – the Corridor Plan

Strategic Solutions Development

To meet current and future travel demand and improve the safety for all transport users along the Sorell to Hobart Highway corridor, significant transport infrastructure investment is required. The following section details the methodology used to develop the strategic solutions to meet the key corridor challenges.

Strategic solutions

The strategic solutions developed to upgrade the Sorell to Hobart corridor and address the problems identified were classified into four strategic response categories:

- Change demand
- Improve productivity
- Increase supply
- Improve road safety

Examples of the type of solutions under each strategic response are provided in Table 5.

Strategic response	Solutions	Description
Change demand	Improved active transport facilities Improved public transport facilities and services.	Improved active and public transport facilities and services should contribute to reduced demand for private vehicle use of the corridor, decreasing congestion, as well as reduce crashes and increase the movement of people and goods along the corridor.
Change productivity	Traffic signals	Traffic signals will help traffic flow through intersections, improving average travel times and vehicle throughput. Traffic signals can also be used within a congested network to gate traffic entering the Tasman Highway, enhancing mainline freeway flows and speeds whilst also providing safer gaps for traffic entering the freeway.
	Intelligent Transportation Systems (ITS) and managed motorways – ramp metering	The use of ramp metering will help in achieving a more harmonious inflow of vehicles at highway interchanges. Improved traffic flow on the highway will result in improved safety, travel speeds and reduced average travel times, particularly during peak periods.
Increase supply	New arterial roads or off-corridor supportive roads	A more robust network of roads outside of the Tasman Highway will give commuters alternative routes choices. These roads will help reduce congestion on Tasman Highway, improving average level of service.

Strategic response	Solutions	Description
Improved road safety	Intelligent Transportation Systems (ITS) and managed motorways – ramp metering	Improved traffic flow on the highway will result in improved safety, travel speeds and reduced average travel times, particularly during peak periods.

Table 5

While the study identified a range of solutions for the corridor, there is limited scope to implement solutions under the 'increase supply' category, as these would require significant infrastructure changes in the longer term. It was found that solutions which aim to change demand and improve productivity are usually more cost effective and should be prioritised.

Options assessment framework

An options assessment framework was developed to assess and rank solutions identified for the Sorell to Hobart Highway corridor. Categories within the assessment framework included social, environmental and economic. The categories were given their own internal weighting, resulting in a global weighting that was used as part of the assessment.

The outcome of this assessment, including a detailed description of each solution, their pros and cons, as well as their scores and overall rank can be found in the Options Analysis report. A list of all the solutions can also be found in Appendix A.

In the process of generating solutions, several categories were identified to group solutions. The following section details the solution categories.

Intelligent Transport and Travel Demand solutions

Intelligent Transport Systems (ITS) and Travel Demand (TD) solutions make smarter use of existing road infrastructure, either through the use advanced road technology, or by modifying travel decisions and driver behaviour.

An example of ITS and TD treatments is shown in Figure 4, which includes the following technologies:

- Freeway Ramp Signals – to control access ramps to the freeway and provide safe merging gaps during high levels of traffic on the Tasman highway
- Variable speed limit and traffic management signs – dynamic electronic signs to change the speed limit or the use of each lane for safety or capacity reasons
- Variable message signs – to provide real time information of traffic conditions or upcoming road events
- Travel time signs – to provide real time travel times of the freeway and alternative routes
- Traffic monitoring cameras and vehicle detection sensors – used to monitor traffic volumes and speed so changes to better manage flow on the freeway can be made accurately and dynamically.

The Tasman Highway already utilises a variable speed limit system, however there is scope to extend this system eastwards and improve its automated response to traffic conditions. There are also existing traffic cameras and detection sensors which monitor traffic flow along the corridor with the opportunity for more to be installed along other parts of the Tasman Highway corridor as traffic volumes increase.

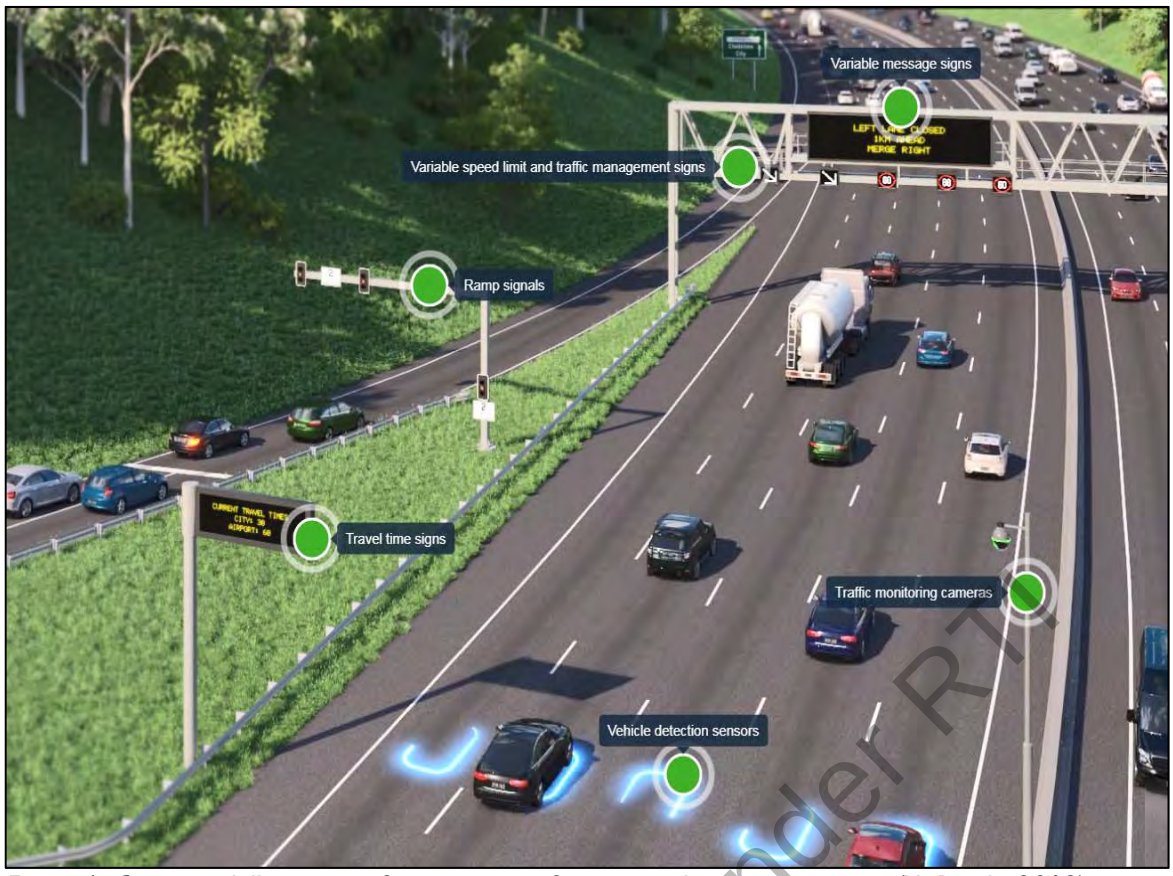


Figure 4 Conceptual illustration of components of a managed motorway system (VicRoads, 2018)

Overall, traffic flows and speeds can be improved by operating the Tasman Highway as one smart and interconnected network using the ITS treatments listed. This is also called a managed motorway system and it improves the efficiency of traffic flows by controlling vehicle merging, lane changes and travel speeds.

A common example of how it works is when an access ramp to the freeway is experiencing large volumes of traffic. Vehicles are slowing down where the traffic is merging with the freeway therefore causing congestion. Sensors in the road detect when traffic becomes heavy, and the system turns on the ramp meters to regulate the total traffic flow entering the motorway. This prevents congestion and flow breakdown on the highly trafficked freeway and better manages the conflict between vehicles merging and freeway traffic.

TD solutions seek to reduce traffic demand by modifying travel decisions and behaviours. This will be achieved by applying strategies that modify commuter travel decisions either by altering their travel choice or when they wish to travel. For example, travel time signs provide drivers with real-time advice about travel conditions on the freeway, and adjacent roads on the network. This helps drivers to make decisions about which route to take before entering the freeway and once on the freeway. In the event of a traffic incident along the Tasman Highway corridor, TD solutions also seek to divert motorists to alternate routes to avoid more traffic arriving at an incident than is necessary.

Public transport solutions

Public transport solutions focus on adding more public transport services to the network and providing a competitive alternative to the private vehicle for commuter trips. For the Sorell to Hobart Highway corridor, this means making the public bus network a more attractive way to travel by increasing the service frequency, providing additional express services, improving travel time reliability along the

corridor and through congested points and providing incentives to travel by bus like lower fares and better bus stop infrastructure which is safe and provides good passenger amenity.

As depicted in Figure 5, a solution such as a transit lane on any section of the Tasman Highway would allow buses to bypass congested general traffic lanes during peak periods. Establishing a travel time advantage for buses over cars is a powerful motivator for commuters to shift from private car use to public transport. As more people use the services, capacity can be further increased by improving bus frequency.

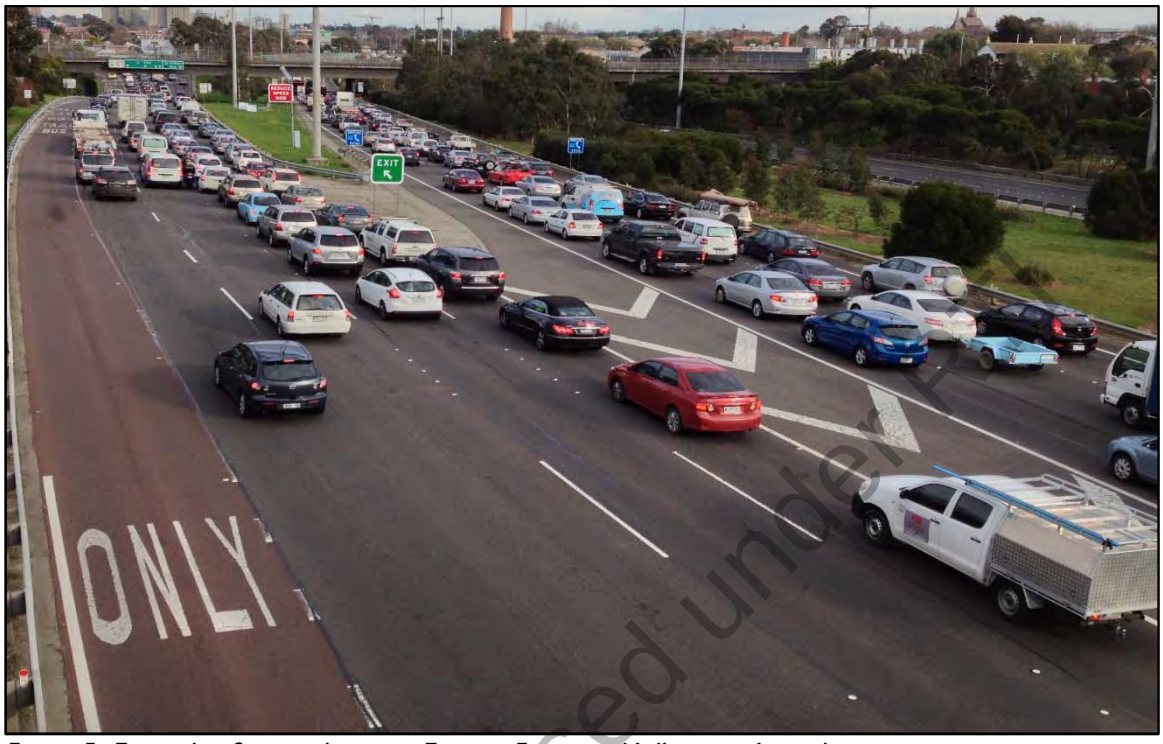


Figure 5 Example of transit lanes on Eastern Freeway, Melbourne, Australia

Road infrastructure solutions

Road infrastructure solutions deal with adding, improving or otherwise changing current road infrastructure.

Current issues relating to congestion and road safety along the Sorell to Hobart corridor include:

- Lack of capacity of the existing corridor
- Lack of alternative roads to accommodate the large volume of peak period traffic both on and off the corridor.

The solutions include:

- The construction of new road links, such as Flagstaff Gully Link, Pass Road upgrade that provide commuters an alternate route of travel away from the Tasman Highway
- Upgrading current roads to better handle the number of cars on the road, such as widening along the Tasman Highway to provide additional transit lanes. Transit lanes can be used by buses, taxis and other vehicles carrying multiple occupants.
- Changing the design of intersections, such as metering the Mornington roundabout and upgrading the Acton Road and Cambridge Road interchanges to improve level of service or performance

Solutions contained within this category often aim to build on the current road network. While they tend to be more expensive than other solutions owing to their large outlay on construction, they often

more directly address the root causes of problems faced by roads. However, the impact of induced demand also needs to be considered, as any construction of extra capacity will continue to encourage the persistent pattern of single passenger, private car use. With little incentive for the modal shift in trips, congestion will often rapidly return to pre-infrastructure levels, resulting in a poor use of capital resources. Utilising this increased capacity to enhance public transport infrastructure, such as bus only lanes or bus priority measures should be prioritised to increase the throughput of people and reduce the reliance on private car use.

Active transport solutions

Active transport infrastructure along the Tasman Highway is of a relatively low standard and disconnected with significant gaps within the network and feeder route connections. This means that cyclists cannot ride exclusively along the Tasman Highway between Sorell and Hobart but must enter and exit the corridor at different points. Even in the more densely populated section of the corridor between Mornington and Hobart, a continuous off-road cycleway has not been established. Additionally, significant precincts in Clarence such as schools and shopping centres are difficult to access by bike.

Figure 6 shows example of an off-road cycle path that passes a major highway, providing a segregated bicycle facility from vehicle traffic. By implementing similar solutions for cyclists in the Sorell, Clarence and Hobart councils, it is expected that the proportion of commuting cyclists will increase as people will feel safer knowing that their origin and destinations are adequately linked. City of Melbourne research found that potential bike riders would feel much more confident using physically separated infrastructure than painted lanes. With a protected lane, 83% felt confident versus only 22% of potential riders feeling confident with a painted lane cycleway. Similarly 73% felt confident with a protected intersection treatment compared to 16% at an unprotected intersection. Source: *Bicycles for Everyday Transport Discussion Paper, City of Melbourne (2018)*

Land use planning solutions

An effective way of minimising the requirement to travel by car to the Hobart CBD can be by reducing the distance between trip origins and destinations or improving access to public transport. This could include:

- Provisions of more residences closer to existing school and workplaces
- Provision of new workplaces and schools closer to established townships and key public transport routes
- Increasing housing density in close proximity to activity centres and key public transport routes

Previous land use planning for Greater Hobart has meant that inner urban areas closer to Hobart have been planned to accommodate population growth so people are close to all amenities like schools, employment and activity centres. Historically, Sorell and the outer edges of Clarence were zoned as rural settlements often with low density, therefore limited infrastructure was provided to support a large population in the same way.

Due to the affordability of housing and the draw of a quieter lifestyle, these areas have seen significant growth that the current infrastructure and services in the area cannot support. This has resulted in a large number of residents having to leave their local government area for a range of reasons such as employment, education and recreation, largely through private car use. Through the implementation of more robust planning of future land use, as outlined by the solutions in this category, it is hoped that the Sorell and Clarence communities can improve employment and education opportunities in their respective municipalities, thus reducing the need to travel on the Tasman Highway corridor and into Hobart CBD. Increasing population densities close to public transport routes will improve public transport patronage. Solutions contained within this category can be found in the Options Analysis report (Jacobs 2019).

Figure 6 Off-road cycle path adjacent to a major highway, providing a bicycle route which is segregated from vehicle traffic

Priority projects

To ensure the most is gained out of the solutions and to ensure an efficient roll out of improvements that balance the needs of all road users, solutions from across all categories were grouped into high priority, medium priority and long term packages.

Refer to the package plans in the Executive Summary for a summary of these packages.

In summary, the high priority solutions include:

- Development of a network operating plan, in conjunction with stakeholders, to provide the strategic guidance for how the Clarence transport network is used, managed, and planned into the future
- The smarter use of existing infrastructure, mainly by expanding the current use of ITS along the corridor and implementing further use of ITS technology solutions to improve the level of service of the network and manage demand
- Establishment of additional transit lanes in both directions on the Tasman Highway between the Cambridge interchange and the Tasman Bridge. These transit lanes can be used by buses, taxis and other vehicles carrying multiple occupants

- Provide alternatives to car travel by improving bus frequency, investigating new park and ride facilities at appropriate locations and providing higher standard facilities to complete missing cycle path links
- The upgrade of the Mornington roundabout to address community concerns and improve capacity and control. This may include metering certain approaches, or signalising the existing roundabout to increase the life span of the intersection, before upgrading to a fully signalised intersection as needed in the future
- Implement measures to prevent traffic from having to merge and cross the highway from Rosny Hill Road to East Derwent Highway in peak periods
- Work with key stakeholders to improve bus access from the Rosny bus mall onto the Tasman Highway
- Use the additional lanes built as part of the South East Traffic Solution between Sorell and the Airport interchange as peak time transit lanes. Outside of peak times, the lanes would be available for general use.

The medium priority and long term solutions are to:

- Further expand the use of transit lanes to continue to encourage public transport as an alternative to car travel
- Upgrade Mornington and Acton interchanges to support the growth of the Clarence and Sorell council areas and remove traffic away from local roads
- Provide an alternate access to the Tasman Highway at Pass Road, reducing the reliance on the current interchanges and connecting roads that are approaching capacity in the peak periods
- Create a new north-south connection to the Bowen Bridge via Flagstaff Gully to provide an alternate route into Hobart and reduce the reliance on the Tasman Bridge and sections of the Tasman Highway east of the East Derwent Highway

Next steps

This Corridor Plan provides a list of prioritised infrastructure solutions to alleviate the current congestion and travel time reliability issues experienced along the Sorell to Hobart Highway corridor and to manage demands on this vital corridor into the future.

There is no commitment to, or funding for, the solutions identified in this Plan. The Plan will be used as a basis for more detailed planning and cost estimation, with any future commitments to these solutions being subject to government priorities and funding availability. Suggested detailed planning work to commence in the next few years includes:

- Tasman Highway Transit Lane Study
- Tasman Highway Corridor Traffic Management study
- Clarence Network Operating Plan
- Eastern Shore to Sorell New Bus Route Study
- Tasman Highway Cycleway Concept Design

Appendix A Summary of solutions assessed

ID	Solutions
	Road Infrastructure solutions
RI01	Isolated connection - Rosny Hill Road Interchange to East Derwent Highway Interchange
RI02	Formalised north-south connection at Conara Road-Topham Street to Ronnie Street-East Derwent Highway intersection (includes removal of Rosny Hill Road-East Derwent Highway movement on Tasman Highway)
RI03	Addition of eastbound overpass on-ramp at Rosny Hill Road interchange
RI04	Removal of westbound off-ramp at Rosny Hill Road interchange
RI05	Addition of westbound on-ramp at Gordons Hill Road
RI06	Addition of half-interchange at Gordons Hill Road - eastbound on-ramp and westbound off-ramp
RI07	Addition of half-interchange at Dampier Street - westbound on-ramp and eastbound off-ramp
RI08	Addition of full interchange at Dampier Street
RI09	Upgrade of roundabout south of Mornington Interchange to signalised intersection
RI10	Reconfiguration of Mornington Interchange
RI11	Addition of half-interchange at Pass Road - westbound on-ramp and eastbound off-ramp
RI12	Addition of full interchange at Pass Road
RI13	Removal of Cambridge Road Interchange
RI14	Reconfiguration of Acton Road Interchange
RI15	Flagstaff Gully Link Road
RI16	Pass Road upgrade to arterial road (must be with Pass Road Interchange)
RI17	Formalised southern east-west connection as arterial road
RI18	Formalised northern east-west connection as arterial road
RI19	Formalised north-south connection east of Mt. Rumney as arterial road - connection to Acton Road Interchange
RI20	Second River Derwent bridge crossing
	Public Transport and Active Transport solutions
PA01	Bus Priority Lane on Tasman Bridge
PA02	Bus Priority Lane from Tasman Bridge east approach to Rosny Hill Road Interchange
PA03	Bus Priority Lane from Rosny Hill Road Interchange to Cambridge Road Interchange
PA04	Bus Priority Lane from Cambridge Road Interchange to Hobart Airport Interchange
PA05	Bus Priority Lane from Hobart Airport Interchange to Midway Point Roundabout
PA06	Bus Priority Lane from Midway Point Roundabout to Sorell
PA07	Park and Ride Facilities at key bus nodes
PA08	Implementation of high-frequency bus corridors
PA10	Rosny to Hobart ferry service with *Park and Ride* facilities
PA12	Inclusion of bus-only lanes on hard shoulder of highway
PA13	Full cycle network between Tasman Bridge, Lindisfarne and Bellerive Ferry Terminal and Mornington Interchange (includes on and off-corridor paths)

ID	Solutions
PA14	Full cycle network between Mornington Interchange to Acton Road Interchange (includes on and off-corridor paths)
PA15	Full cycle network between Acton Road Interchange to Hobart Airport Interchange (includes on and off-corridor paths)
PA16	Full cycle network between Hobart Airport Interchange to Midway Point Roundabout (includes on and off-corridor paths)
PA17	Full cycle network between Midway Point Roundabout to Sorell (includes on and off-corridor paths)
PA18	Reduction in peak-period public transport fares
	Intelligent Transport / Travel Demand solutions
IT01	Ramp metering at all interchanges
IT02	Lane-use management systems - includes the use of hard shoulders (LUMS)
IT03	Live travel updates through web-based systems + variable messaging signs
IT04	Variable speed limits
IT05	Restriction of on-street parking around Hobart CBD
IT06	Increased pricing of off-street parking around Hobart CBD
IT07	Capping of supply of off-street parking around Hobart CBD
IT08	Congestion pricing within Hobart CBD
IT09	Reduced fares for public transport travel outside of peak periods
IT10	Carpooling
IT11	Toll charge on Tasman Bridge
IT12	Integrated parking system
	Land Use Planning solutions
LU01	Higher density development around public transport corridors
LU02	Support Sorell Council in the identification and rezoning of an area of land to 'Light Industrial'.
LU03	Support Sorell Council in the identification and rezoning of an area of land to 'Community Purpose'.
LU04	Rezonings of land to accommodate '*Park and Ride*' facilities.
LU06	Facilitate rezoning of land in the Southern Beaches areas to 'Village' or 'Local Business'
LU07	Provide funding to Sorell Council to undertake an Open Space and Recreation Strategy.
LU08	Encourage Clarence City Council to establish cycling park and ride facilities.
LU09	Facilitate attainment of Hobart to Glenorchy Infill Corridor Objectives

Department of State Growth

Street Address
Suburb TAS 7001 Australia

Phone: 1800 030 688

Email: info@stategrowth.tas.gov.au

Web: www.transport.tas.gov.au

From:
To: s36
Subject: RE: Mornington roundabout safety
Date: Friday, 24 July 2020 12:12:00 PM
Attachments: image001.png

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s36 ,

The Road Safety Audit was undertaken by an independent consultant and completed by May 2019. The Road Safety Audit hasn't been made publicly available, I am only aware of it having been provided to some stakeholders (i.e. RACT).

The only recommendations made in the audit relating to pedestrian safety was the following:

1. An informal pedestrian path has been formed between two footpaths on the northwest corner of the roundabout. The path appears to have been formed through frequent use. It is relatively steep and is likely to be a slip hazard.

Recommendation – restrict access to informal path or formalise path (appropriate surfacing and slope).

Action Taken – fence installed to restrict pedestrians from using identified route as a shortcut

Regarding pedestrian safety and pedestrians at the roundabout, the Department recognises that due to the high volumes of traffic the level of service provided for pedestrians who intend to cross the road is less than ideal. The function of this section of road is primarily to cater for the large volumes of traffic and is not intended to promote high levels of pedestrian activity. However, for pedestrians that do choose to cross the road, the existing pedestrian facilities and points for crossing the road have been provided in the appropriate locations.

Regards

Network Management Branch, State Roads | Department of State Growth
Phone: (03) 6166 3321 | Mobile: s36
www.stategrowth.tas.gov.au

cid:5C7D3614-47A8-431A-B2FA-730CD28F016B

From: s36 @gmail.com]
Sent: Tuesday, 21 July 2020 12:37 PM
To: info stategrowth <info@stategrowth.tas.gov.au>
Subject: Mornington roundabout safety

Hi there,

I am interested in pedestrian safety at the Mornington roundabout and came across this media release.

Could you please let me know what the status of this audit is please? Is it publicly

available? Are any safety upgrades to this area planned?

http://www.premier.tas.gov.au/releases/safety_assessment_for_mornington_roundabout

Kind regards

s36 [redacted]

Record 19

Deputy Premier
Minister for Education and Training
Minister for Infrastructure
Minister for Advanced Manufacturing and Defence Industries

Level 10 15 Murray Street HOBART TAS 7000 Australia
GPO Box 123 HOBART TAS 7001 Australia
Ph: +61 3 6165 7754
Email: Jeremy.Rockliff@dpac.tas.gov.au

Tasmanian Government

17 JUN 2019

Alderman Brendan Blomeley
Clarence City Council

By email: brendan@brendanblomeley.com

Dear Alderman Blomeley

Thank you for your email of 10 May 2019 regarding concerns raised by s36 [redacted] about the vegetation maintenance on the approaches to the Mornington roundabout, and specifically the shrubs on the approach from Rokeby.

The Department of State Growth has advised me a site visit occurred on Friday, 24 May 2019 and no maintenance or visibility issues were identified. The sections of road and shrubs at the roundabout are mowed and trimmed five to six times a year, depending on vegetation growth.

The Department has also advised me they recently commissioned an independent safety audit report for the Mornington roundabout and the current vegetation on this approach is considered appropriate, but will be monitored.

I trust this information is of assistance to you in responding to concerns raised by s36 [redacted]

Yours sincerely

Hon Jeremy Rockliff MP
Deputy Premier
Minister for Infrastructure

Brendan, I appreciate you raising this with me on behalf of s36 [redacted]. Please let me know if any concerns continue. But wishes Jeremy

Deputy Premier
Minister for Education and Training
Minister for Infrastructure
Minister for Advanced Manufacturing and Defence Industries

Level 10 15 Murray Street HOBART TAS 7000 Australia
GPO Box 123 HOBART TAS 7001 Australia
Ph: +61 3 6165 7754
Email: Jeremy.Rockliff@dpac.tas.gov.au

Tasmanian Government

31 May 2019

Hon Jo Siejka MLC
Member for Pembroke

By email: Joanna.siejka@parliament.tas.gov.au

Dear Ms Siejka

Thank you for your letter of 17 April 2019 regarding the Mornington Roundabout and my apologies for the delay in responding to you. I recognise that this is an issue of concern to many local road users, including vulnerable users like pedestrians and cyclists, and I appreciate your advocacy on behalf of your constituents.

The safety review of the Roundabout has now been completed in accordance with the Austroads Guidelines by a well-regarded independent traffic safety auditor. I have asked the Department of State Growth to carefully review the recommendations made and to provide me with further advice. I expect the outcomes to be finalised in the coming weeks and will ask the Department to provide you with a detailed briefing when complete.

As part of the broader Tasman Highway Sorell to Hobart Corridor Study, which is due to be completed by the end of the year, the Department is also examining options to improve traffic flow and reliability along that corridor, and key connecting roads. The Department is working with the Clarence City Council on the development of planning for highway on/off ramps at Gordons Hill Road. That project could provide an alternative exit from Rosny/Bellerive for east bound vehicles, reducing traffic through the roundabout. I will ask the Department to ensure that you are kept informed as to the outcomes of the Corridor Study, and the planning work on the ramps project more specifically.

I trust this information is of assistance to you.

Yours sincerely

Hon Jeremy Rockliff MP
Deputy Premier
Minister for Infrastructure

From:
To: s36 "
Subject: Road Safety Audit - Mornington Roundabout
Date: Monday, 27 May 2019 1:49:00 PM
Attachments: Road Safety Audit - Mornington Roundabout.pdf

---

s36 independent audit report attached for information. If you have any questions or want to discuss just let me know
Cheers

State Roads | Department of State Growth
10 Murray Street, Hobart TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3152
www.stategrowth.tas.gov.au

Dept. Ref 074202/2
Critical Date 10 May 2019

NOTED

SIGNED:

DATE: 15-5-19

ISSUES BRIEFING NOTE FOR THE MINISTER FOR INFRASTRUCTURE

SUBJECT: ROAD SAFETY AUDIT OUTCOME – MORNINGTON ROUNDABOUT, MORNINGTON

Minister's notation:

Background:

Following concerns raised by Hon Jo Siejka MLC about the safety and performance of the Mornington Roundabout, the Department of State Growth arranged for an independent Safety Audit to be undertaken.

Midson Traffic undertook the Road Safety Audit which found no significant deficiencies at the roundabout, but recognised the roundabout is very busy at commuting times which is creating minor congestion delays.

This level of congestion is aligned with other sections of the near-urban State Road network, noting the volume of traffic using the South Arm Highway travelling through the roundabout has increased around 40 per cent since 2009.

The road safety performance has remained relatively constant over the last 15 years. Although the number of crashes has increased, the increase is proportional to the traffic exposure risk. The majority (87%) of crashes only involve property damage which is aligned with the Safe System Approach, where crashes are acceptable as long as occupants are not seriously injured or killed.

The roundabout has two lanes on all approaches for traffic capacity reasons, although some motorists may find negotiating a two lane roundabout difficult, the Audit found the permissible lane movements are well defined through line markings (pavement arrows) and signage, and no improvements were suggested, apart from refurbishing the current line markings.

The Audit acknowledged that the roundabout being located in close proximity to the Tasman Highway interchange and Mornington Road junction increases the complexity on the approaches and departures of the roundabout. However, it is not considered possible to reduce the number of lanes in order to reduce the complexity, without substantially increasing the level of congestion.

This roundabout is also being examined as part of the Tasman Highway, Sorell to Hobart corridor planning review, which is examining options to improve traffic flow and reliability.

Although at-grade pedestrian infrastructure (such as footpaths and staged crossings across all approaches) are provided, crossing two lanes of traffic in the busy peak can be difficult particularly for young and infirm pedestrians. Cycling-South commissioned a recent investigation into cycling options at this site, and concluded an underpass under the northern leg of the South Arm Highway would be the desirable option to provide a grade separated facility. This facility could also be used for pedestrians and this option is currently unfunded.

Current Situation:

Table 4 Summary of Audit Findings and Recommendations

Reference	Issue	Recommendaton	Category
3.2.5	Roundaboutreadabilty by drivers	None	Comment
3.4.2	Sightdistance	Ensurevegetationgrowingontheroundaboutis maintainedatalowheight.	Comment
3.6.2	Fadedholdinglines	Repaintholdinglinesonleftturnslipfrom SouthArm Highway(south)toCambridgeRoad (west). Repair vandalisedgivewaysign.	Low
3.9.1	Informalpedestrianpath slip hazard	Restrictaccesstoinformalpathorformalisepath.	Low

This roundabout is one of the busiest within the State and it would be difficult to make it simpler or reduce the number of crashes without reducing its traffic carrying capacity.

The Department has no current plans to modify this roundabout.

Gary Swain
Deputy Secretary, Transport Services

9 May 2019

Prepared by:		**Cleared by:**	
Position:		**Position:**	
Email:		**Email:**	
Date:	**3 May 2019**	**Date:**	**3 May 2019**
Phone:	**6166 3319**	**Phone:**	**6166 3281**

From:
To:
Cc:
Subject: RE: Mornington roundabout safety review
Date: Monday, 15 April 2019 1:58:00 PM
Attachments: image001.png

The recent safety audit of the Mornington roundabout is saved in Records Manager – ref D19/70701.
There were no significant findings.
I don't think there are any communication needs or opportunities coming out of the review.
The Mornington roundabout is one of the busiest in Tasmania and it would be difficult to make it simpler or safer without reducing its traffic capacity.
Thanks, Donald.

Traffic Engineering | Department of State Growth
76 Federal Street, North Hobart TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3327
www.stategrowth.tas.gov.au

From:
Sent: Monday, 15 April 2019 10:13 AM
To:
Cc:
Subject: FW: Mornington roundabout safety review

Can you please follow up with
From the brief discussion I have had with , I understand the review indicated no significant changes required. We will need to discuss how we communicate review outcome with Stakeholder engagement.

Cheers

From: (StateGrowth)
Sent: Monday, April 15, 2019 9:42 AM
To:
Subject: Mornington roundabout safety review

Hi
I tried to follow up with regarding the Mornington roundabout safety review. I believe he was going to advise whether there were any communications needs or opportunities coming out of the review.
Would you be able to advise me of any pertinent actions that my team should follow up or any dates we should diarise?
Many thanks

Stakeholder Communications Branch | State Roads | Department of State Growth
Parliament Square, 4 Salamanca Place, Hobart | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3437 www.stategrowth.tas.gov.au

Check out the RoadsTas Facebook page

From: DPaC - webmaster
To:
Subject: Safety assessment for Mornington Roundabout
Date: Saturday, 6 April 2019 6:35:18 AM

6 April 2019

Jeremy Rockliff, Minister for Infrastructure

Safety assessment for Mornington Roundabout

As part of the Hodgman Liberal Government's commitment to improving the safety of road users across the state, an independent safety audit of the Mornington Roundabout is underway.

The audit is focused on design, demand and driver behaviour at the roundabout and will provide important insight into the roundabout's use, as well as any safety improvements that can be made.

Providing a safe and efficient road network is a key focus for the Government and ensuring this busy roundabout is operating at a high standard is a priority, especially its connection with the peak traffic time movements on South Arm Highway, Cambridge Road and the Tasman Highway on and off the Tasman Bridge.

The audit will assess the current road marking and signage, general layout and design of the roundabout, and pedestrian access.

Part of this work will also include the observation of traffic flow to understand how drivers respond to the conditions. There are no impacts to traffic as a result of this work.

An analysis of crash data and a review of recent work that looked at how pedestrians and cyclists move through the roundabout will also be undertaken.

The audit report will provide a performance assessment and recommendations for improvements and is due to be completed by the end of the month.

Department of State Growth

Mornington Roundabout – Existing Roads Stage
Road Safety Audit

March 2019

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1. Introduction

Midson Traffic were engaged to prepare an Existing Road Stage Road Safety Audit of the Cambridge Road and South Arm Highway intersection (Mornington Roundabout) in Mornington.

The Mornington Roundabout is a high-volume intersection, with more than 40,000 vehicles travelling through it each day. In addition to the relatively high traffic volumes, the large diameter of the roundabout, coupled with the multiple lanes and close proximity to a major grade separated interchange make it a very complex and dynamic junction for motorists to traverse through.

Traffic volumes have steadily increased since the roundabout was originally constructed through land use development in the surrounding area over time. The increased traffic volume has caused minor congestion and queuing at the roundabout. Numerous concepts have been developed over the years to overcome congestion (such as the installation of traffic signals) however, most of these have had associated technical issues associated with them such as the proximity of the grade separated interchange at Tasman Highway and the movement of heavy vehicles through the roundabout.

The Mornington Roundabout study area and surrounding road network is shown in Figure 1.

Figure 1 Site Location

Image Source: LIST Map, DPIPWE

1.1 Road Safety Audit

The identification and treatment of road elements which may contribute to crash occurrence or crash severity is a key component of the safe systems approach to road safety. A safe system acknowledges that human error within the transport system is inevitable, and that when it does occur it should not result in serious injury or death for road users. Road Safety Audits are a valuable and cost-effective tool in identifying road safety deficiencies in a transport system.

The Austroads Guide to Road Safety, Part 6: *Road Safety Audit*, 2009, defines a road safety audit as "*A road safety audit is a formal examination of a future road or traffic project or an existing road, in which an independent, qualified team reports on the project's crash potential and safety performance".* A road safety audit process considers the safety of all road users.

The outcome of a road safety audit is a report that identifies any road safety deficiencies and which may make recommendations to remove or reduce the deficiencies.

Safety issues have been considered against current standards supplemented by reference to other recognised design guidelines, safety experience and practice where relevant.

There are typically four opportunities within the design and development process for a road or traffic project when a road safety audit can be conducted, regardless of the size or nature of the project. These are:

- At the feasibility stage;
- Once the preliminary design stage is complete;
- Once the detailed design stage is complete; and
- At the pre-opening stage (or soon after the project is complete).

A road safety audit may also be conducted:

- For roadwork traffic management required during construction of significant projects; and
- On the existing road network.

This report documents the findings of a road safety audit of an 'Existing Roads' stage.

1.2 Road Safety Auditor

The road safety audit was undertaken by Keith Midson, Director, Midson Traffic Pty Ltd.

Keith Midson *BE MTraffic MTransport FIEAust EngExec CPEng NER*

Keith has more than 23 years professional experience in traffic engineering and transport planning and road safety. He is a qualified road safety auditor, with a Masters Degree in Traffic Engineering, a Masters Degree in Transport, and road safety audit qualifications from LGPro/ VicRoads, Victoria. Keith was also an instructor at Road Safety Audit courses run by the Institute of Public Works Engineers Australia (IPWEA)

in Launceston in June 2010, and Hobart in June 2011. Keith has been involved in many audits over the past 5 years in Tasmania and Victoria.

Keith is Senior Adjunct Lecturer with the University of Tasmania, where he lectures Transportation Engineering to undergraduate engineering students, as well as supervising several honours projects in transportation each year.

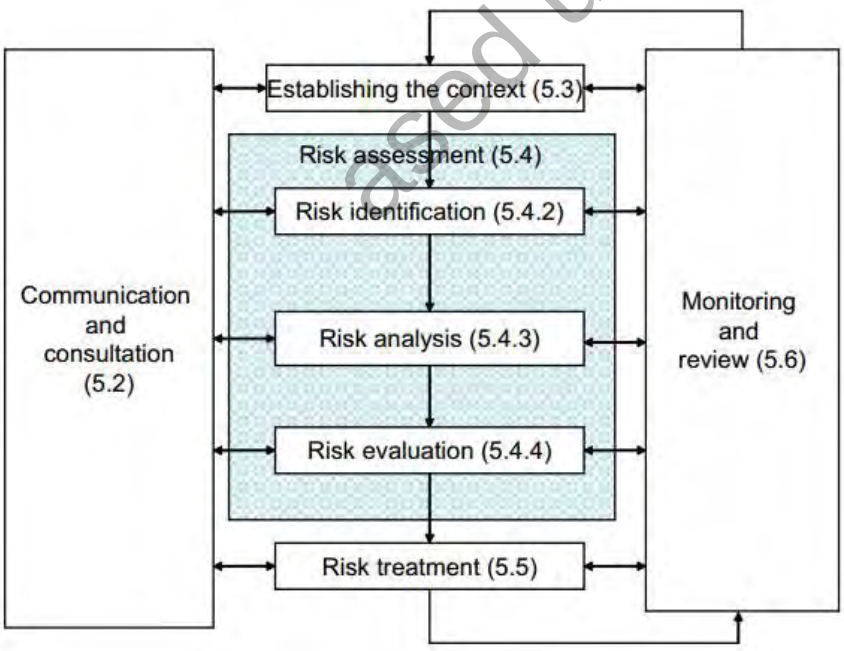
Keith was a Civil Engineering Teaching Fellow at Monash University between 2010 and 2017. In this role he coordinates the subject "*Road Safety Engineering*" as part of their postgraduate program in traffic and transport.

Keith is a Fellow and a Charted Professional Engineer with Engineers Australia.

1.3 Risk Management Process

This road safety audit has been prepared with reference to the Australian Standard AS/ NZS ISO 31000, Risk Management – Principles and Guidelines, 2009. The ISO 31000 risk management framework is shown in Figure 2.

Figure 2 Australian Standard Risk Management Process



A road safety audit assists with the identification of road safety risks within a road network. It identifies risks in the transport network and identifies potential risk treatments. It is important to note that appropriate action, reporting, and ongoing monitoring and review are required in order to reduce road safety risks following the completion of the road safety audit.

The risk analysis undertaken in this report has been undertaken in accordance with Australian Standards recommendations.

1.4 Presentation of Audit Findings and Recommendations

This road safety audit presents the findings in the following four risk categories:

- **Extreme Risk** – A major safety concern that should be addressed and requires changes to avoid serious safety issues.
- **High Risk** – A significant safety concern that requires consideration of changes to improve road safety.
- **Medium Risk** – A safety concern of lesser significance, but which should be addressed to improve safety.
- **Low Risk** – A concern or action that may be outside the scope of the Road Safety Audit, but which may improve overall safety.
- **Comment** – A statement supporting or reinforcing an aspect of road safety.

These risk ratings were adapted from the Australian Standard, AS/NZS ISO 31000, Risk Management – Principles and Guidelines, 2009. The risk analysis is defined in Figure 3.

Figure 3 Risk Analysis

HAZARD	PROBABILITY				
	Highly Likely	Likely	Occasionally	Unlikely	Highly Unlikely
	1	2	3	4	5
	Repeated Occurrence	May Occur Several Time	May Occur Sometimes	Not Very Likely to Occur	Very Unlikely to Occur

HAZARD	CONSEQUENCE				
	Catastrophic	Fatal	Serious	Marginal	Negligible
	A	B	C	D	E
	Mulitple Loss of Life	Single Death	Severe Injury	Minor Injury	Superficial Injury or Property Damage

CONSEQUENCE		1	2	3	4	5
		Highly Likely	Likely	Occasionally	Unlikely	Highly Unlikely
A	Catastrophic	Extreme	Extreme	High	High	High
B	Fatal	Extreme	High	High	Medium	Medium
C	Serious	High	High	Medium	Medium	Medium
D	Marginal	High	Medium	Medium	Low	Low
E	Negligible	Medium	Medium	Low	Low	Low

In accordance with the Austroads Road Safety Audit guidelines, it should be noted that this audit is not to be regarded as a 'quality/ design check' of current standards or guidelines. The findings, including comments and recommendations are outlined in the following sections of the report.

1.5 Road Safety Audit Brief

Table 1 Road Safety Audit Summary

Road Safety Audit Stage:	Stage 6 – Existing Roads
Project Location:	Mornington Roundabout – South Arm Highway/ Cambridge Road State Growth reference – Road Number A0498, Link 05, Chainage 0.30 to 0.15
Organisation:	Department of State Growth
Client Project Manager:	Mark Iles
Previous Road Safety Audit Details:	Stage 6, Existing Roads RSA, June 2009
Project Objective:	Identification of road safety issues for future planning purposes
Departures from Standards	N/A
Speed Limit/ Design Speed:	60-km/h
Existing Traffic Volumes:	South Arm Hwy - 24,000 vpd, Cambridge Rd - 15,000 vpd approx.
Crash Data (5 Years)	Reviewed
Austroads Checklist:	Checklist 6 – Existing Roads
List of Documents Supplied	Refer to Appendix A

2. Project Summary

2.1 Project Objectives

The road safety audit documents the findings of an existing roads stage audit of the Mornington Roundabout.

The findings of this report will assist future planning of the roundabout to ensure an appropriate level of road safety into the future.

2.2 Transport Environment

2.2.1 South Arm Highway

South Arm Highway connects between Tasman Highway at a grade separated interchange to Oceana Drive at a signalised intersection. The Mornington Roundabout is located approximately 170 metres from the Tasman Highway (noting that the Tasman Highway ramps are located approximately 45 metres from the holding lines of the roundabout). At the Mornington Roundabout, South Arm Highway is a four-lane dual carriageway.

At the Mornington Roundabout the South Arm Highway is classified as a Category 3 'Regional Access Road'. Regional Access Roads are of strategic importance to regional and local communities and economies linking important towns to the Category 1 and Category 2 roads. While they are used by heavy freight vehicles, this use is less than that of Regional Freight Roads. Together with Regional Freight Roads, the Regional Access Roads also provide safe and efficient access to Tasmania's Regions.

South Arm Highway carries approximately 22,000 vehicles per day near the subject site. The posted speed limit is 60-km/h at the roundabout, increasing to 80-km/h and 100-km/h to the south of the roundabout.

2.2.2 Cambridge Road

Cambridge Road connects between Bellerive at its southern end to the Tasman Highway at its northern end. It provides an arterial/ collector road function between Bellerive, Warrane and Mornington.

Cambridge Road has a posted speed limit of 60-km/h near the roundabout.

2.3 Pedestrian/ Cyclist Provision

On-street footpaths are provided on most approaches to the roundabout. Staged crossings are located on each approach leg. The pedestrian infrastructure in the network is shown in Figure 4.

An on-street bicycle lane has been installed on the eastbound lane of the eastern approach of the Roundabout. No other bicycle infrastructure has been installed in the network near the site.

Figure 4 Pedestrian Infrastructure

2.4 Previous Road Safety Audits

A Stage 6, Existing Roads, Road Safety Audit was undertaken of the Mornington Roundabout by Midson Traffic in 2009. A summary of the audit findings are provided in Table 2.

Table 2 Summary of 2009 Audit Findings and Recommendations

Issue	Recommendation	Classification	Action
Western approach blacked out line marking visible	Short term: Remove line marking Long term: Resurface pavement	Minor Concern	Line marking corrected
Central island sight distance obstruction	Ongoing monitoring to determine whether central island has any significant safety concerns	Comment	No change
Vandalised directional sign	Short term: Remove vandalism paint Long term: Replace sign with improved 'standard' roundabout directional signage	Minor Concern	Sign repaired
Direction signage, eastern approach	Replace sign with improved 'standard' roundabout directional signage	Minor Concern	No change
Signage proliferation, northern approach	Remove northernmost sign	Minor Concern	Signage reduced
No left turn signage, northern approach	Relocate pavement markings	Minor Concern	Pavement arrow relocated
Western approach directional signage	Short term: Replace sign with improved 'standard' roundabout directional signage Long term: Install overhead gantry signage to improve lane choice and guidance	Significant concern	Overhead gantries installed
Pavement arrows, western approach	Short term: Replace arrow markings Long term: Install overhead gantries	Significant concern	Pavement arrows replaced. Overhead gantries installed.
Confusing line marking, centre of roundabout	None	Comment	Revised line marking installed
Right turn lane configuration, eastern approach	Modify line marking to clearly provide a continuous two lanes through the intersection from eastern approach	Significant concern	No change

Southern approach central lane marking	Install guidance line marking to provide lane delineation through roundabout through the southern approach	Significant concern	Minor line marking change (break provided in line marking)
Lane changing, northern exit	Various improvements such as lane choice signage on southern and western approaches (as per Sections **Error! Reference source not found.**, **Error! Reference source not found.** and **Error! Reference source not found.**)	Significant concern	New signage installed on Cambridge Rd western approach
Signage posts on safety rail	Relocate signage to behind the safety rail	Significant concern	Unchanged
Footpath narrowing, northern approach	Provide signage "Pedestrians use other footpath" in accordance with Australian Standards requirements	Significant concern	Unchanged
Poor drainage on central aisle or roundabout	Monitor water drainage over time. Ensure future re-surfacing of the pavement does not result in water ponding.	Comment	Unknown

2.4.1 Network Changes Since Previous Audit

There have been a number of changes in the transport network near the Mornington Roundabout since the previous road safety audit was conducted in 2009.

The key changes include:

- Installation of traffic signals for the northbound lane of the southern approach of the South Arm Highway. These signals were installed to facilitate safe and efficient access to the Bunnings site and adjacent industrial estate. The traffic signals provide defined breaks in the northbound traffic lanes, which assist vehicles exiting Mornington Road via right turn manoeuvres.
- Dynamic warning signage has been installed to warn motorists of the potential for traffic stopped at the traffic signals on the southern approach of the South Arm Highway. This is shown in Figure 5.
- Various changes to the Mornington Roundabout as documented in Table 2.

Figure 5 Traffic Signal Warning Signage

2.5 Road Safety Performance

2.5.1 5-Year Crash Analysis

Five years of crash data was analysed for the Mornington Roundabout between 1st January 2014 and 31st December 2018.

During this period, a total of 94 crashes were reported, of which 7 resulted in minor injury; 5 resulted in first aid at the scene and 82 resulted in property damage only (no fatal or serious injury crashes were reported).

The crashes by year, month, and day are summarised in Figure 6, Figure 7, and Figure 8. It can be seen that crash rates have been reasonably consistent throughout this period, with a variation between 16 and 22 crashes. The five-year average crash rate was 19 crashes per year. There was a slight increase in years 2016 and 201, which recorded 21 and 23 crashes respectively.

Crash rates were elevated between the months of August to December. Crash rates were lower in the winter months.

Weekday crash rates were higher than weekends. This would be related to exposure, with higher traffic volumes during weekdays. Mondays had the highest crash frequency.

Figure 6 Crashes by Year

Figure 7 Crashes by Month of Year

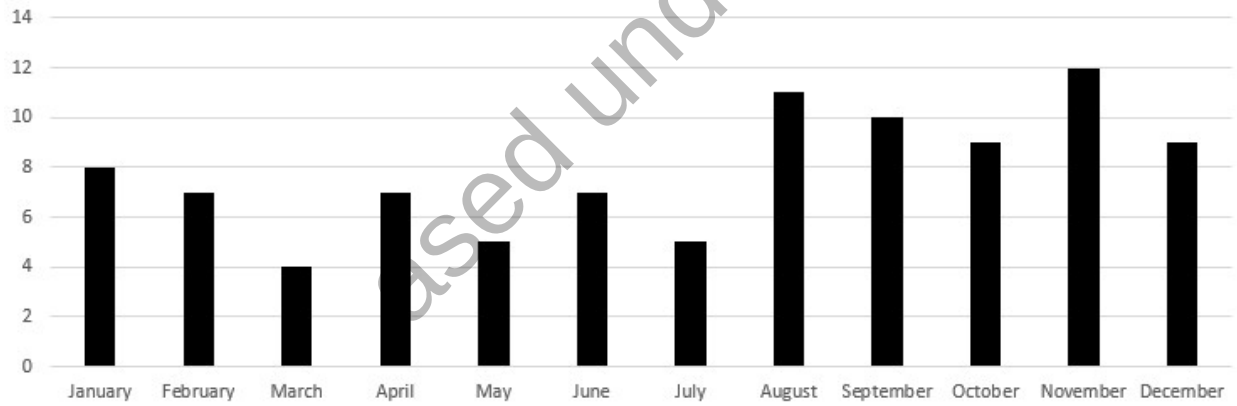
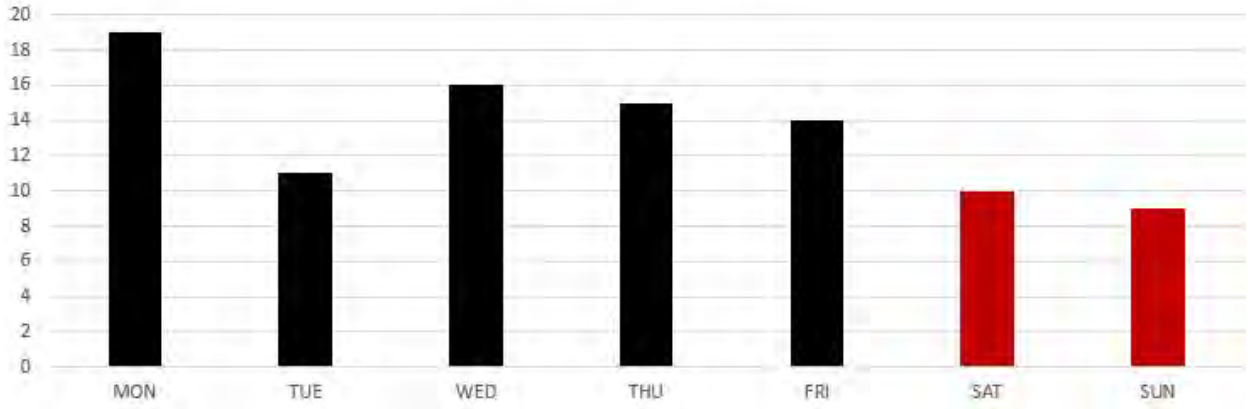


Figure 8 Crashes by Day of Week



2.5.2 Comparison with 2009 Crash Data

The 2009 Road Safety Audit included crash analysis between 2001 and 2009. Comparing the most recent crash data with the complete crash data between 2004 to 2008, we have the following.

Table 3 Crash Comparisons

	2004-2008	2014-2018	Comments
Total crashes	62 crashes	94 crashes	Increase of 52%
Average yearly crash rate	12.4 crashes per year	18.8 crashes per year	
Average yearly injury crash rate	1.1 crashes per year	1.4 crashes per year	Moderate increase in injury crashes, not proportional to total crash rate increase.
Dominant crash type	Rear-end	Rear-end	Crash types have remained consistent.
Seasonal trends	Higher winter crash rate (May to August, with spike in October)	Higher crash rate between August to December. Lower winter crash rate.	2004-2008 crash data has a smaller dataset, therefore seasonal trends are harder to determine due to low monthly crash rates overall.
Day of week trends	Tuesday highest crash rate. Weekday crash rate higher than weekend crash rate.	Monday highest crash rate. Tuesday lowest weekday rate. Weekday crash rate higher than weekend crash rate.	Whilst day of the week crash trends have changed, the dominance of weekday crashes is generally proportional to traffic exposure risk.
South Arm Highway Average Weekday Traffic Volume	2009: 18,800 vpd	2019: 26,800 vpd	Increase of 8,000 vpd. 2019 traffic volume represents a 43% increase from 2009 volumes.

Crash rates have increased between 2009 and 2019. This is due to the increased crash exposure risk caused by traffic volume increases during this period. Traffic volumes have increased by more than 40% (noting that this only includes traffic volume increases on South Arm Highway. The increases on Cambridge Road during this period are not known).

There has not been a proportionate increase in injury crashes during this period, with the injury crash rate increasing from 1.1 crashes per year to 1.4 crashes per year.

The increased crash rate at the Mornington Roundabout is therefore attributed to the increased traffic volumes travelling through the intersection, rather than any specific deterioration in the safety performance.

3. Road Safety Audit Findings

The following sections highlight road safety deficiencies that were identified through the formal road safety audit process of the Existing Roads Stage of the Mornington Roundabout in Mornington. The main headings follow the format of 'Checklist 6: Existing Roads Stage Road Safety Audit' of the Austroads publication, *'Guide to Road Safety Part 6: Road Safety Audit',* 2009.

The following sections highlight road safety deficiencies that were identified through the formal road safety audit process of these roads.

3.1 Overview

The road safety audit was undertaken on Tuesday 26th February 2019. Site investigations took place during the afternoon and evening. Weather conditions were fine and clear throughout the audit.

3.2 Road Alignment and Cross-Section

3.2.1 Visibility and Sight Distance

No visibility and sight distance issues were noted relating to the road alignment and cross-section (approaches to the Roundabout).

3.2.2 Design Speed

No design speed issues were noted (60-km/h on all approaches).

3.2.3 Speed Limit/ Speed Zoning

No speed limit or speed zoning issues were noted.

3.2.4 Overtaking

Not applicable.

3.2.5 Readability by Drivers

The general layout of the roundabout is relatively clear. Signage and line marking are in place in accordance with relevant standards on all approaches to the roundabout.

Comment – Advanced warning signage.

Advanced direction signage on the eastern and western approaches of Cambridge Road provide lane guidance for key destinations at the roundabout, however these signs do not provide an indication that the traffic management at the intersection is a roundabout. This was noted as a minor concern in the 2009 road safety audit.

The addition of overhead lane signage on the western approach of the roundabout on Cambridge Road is considered to provide an improved level of safety compared to the signage in place during the 2009 road safety audit. Whilst the signage does not provide an indication of the roundabout, it reduces the risk of lane change behaviour within the roundabout on this approach.

Recommendation – None.

3.2.6 Widths

No road width issues were noted.

3.2.7 Shoulders

No shoulder issues were noted.

3.2.8 Crossfalls

No crossfall issues were noted.

3.2.9 Batter Slopes

No batter slope issues were noted.

3.2.10 Drains

No drainage issues were noted.

3.3 Auxiliary Lanes

3.3.1 Tapers

No taper issues were noted.

3.3.2 Shoulders

No shoulder issues were noted.

3.3.3 Signs and Markings

No signage and line marking issues were noted relating to 'road alignment and cross-section'.

3.3.4 Turning Traffic

The Roundabout has two lanes on all approaches. Permissible lane movements are well defined through line marking (pavement arrows) and signage.

No issues were noted relating to turning traffic.

3.4 Intersections

3.4.1 Location

The Mornington Roundabout is located in close proximity to several major intersections and an interchange. These include the Tasman Highway/ South Arm Highway grade separated interchange, and the Mornington Road T-Junction.

This results in increased complexity on the approaches and departures of the roundabout, with increased turning traffic and lane changing behaviour.

3.4.2 Visibility; sight distance

Comment – Central Island Sight Distance

As identified in the 2009 road safety audit, the landscaping installed on the central island of the roundabout restricts sight distance through the roundabout. Sight distance can only be obtained towards the approach to the immediate right of the access on all approaches. Due to the relatively large diameter of the roundabout and the relatively low prevailing speeds of vehicles on the circulating aisle of the roundabout, this is not considered to be a serious road safety issue.

The 2009 road safety audit recommended ongoing monitoring of this issue to assess the need for increased sight distance through the roundabout. Since this time there does not appear to be any road safety issues attributable to limited sight distance through the roundabout.

Recommendation – ensure that vegetation growing on the central island of the Roundabout is maintained at a low height.

3.4.3 Layout, Controls and delineation

The Roundabout is relatively complex and has relatively high volumes on most approaches during peak periods. It is not considered possible to reduce the lanes in order to reduce the complexity of the Roundabout. The traffic management controls in place to delineate and guide motorists through the Roundabout are considered to be appropriate.

3.5 Signs and Lighting

3.5.1 Lighting

No lighting issues were noted.

3.5.2 General Sign Issues

No general sign issues were noted (refer to Section 3.2.5 for comments relating to advanced warning signage).

3.5.3 Sign Legibility

All signs were clearly legible (with the exception of the 'give way' sign on the left turn slip lane as noted in Section 3.6.2).

3.5.4 Sign Supports

No sign support issues were noted.

3.6 Markings and Delineation

3.6.1 General Issues

No general issues were noted.

3.6.2 Centrelines, Edgelines, Lane Lines

Low Risk – Faded Holding Lines

The holding lines at the left turn slip lane from South Arm Highway (south) to Cambridge Road (east) are faded. These can be difficult to see at night or adverse weather conditions. The left give way sign is also vandalised compounding the issue. There is a risk of vehicles over-shooting the intersection. This is shown in Figure 9.

Figure 9 Faded Holding Lines

Recommendation – repaint holding lines. Repair give way sign.

3.6.3 Guideposts and Reflectors

No guide post or reflector issues were noted.

3.6.4 Curve Warning and Delineation

No curve warning and delineation issues were noted.

3.7 Crash Barriers and Clear Zones

3.7.1 Clear Zones

The Mornington Roundabout is located in a 60-km/h speed zone. The clear zones on the approaches to the roundabout were considered appropriate and safe for the operating speed environment.

3.7.2 Crash Barriers

No crash barrier issues were noted.

3.7.3 End Treatments

No crash barrier end treatment issues were noted.

3.7.4 Fences

No fence issues were noted.

3.7.5 Visibility of Barriers and Fences

No visibility of barriers and fences issues were noted.

3.8 Traffic Signals

The subject site does not include traffic signals, however traffic signals have been installed at the Electra Place industrial estate access onto South Arm Highway to the south of the site.

The signals only apply to the northbound carriageway of South Arm Highway on the southern approach to the roundabout. No adverse impacts associated with the roundabout were noted in respect to the operation of the Roundabout.

3.8.1 Operations

No traffic signal operation issues were noted.

3.8.2 Visibility

Whilst beyond the study area, the traffic signals are located beyond a crest. Advanced dynamic warning signage has been installed to provide drivers with sufficient warning when vehicles are stopped at the signals.

3.9 Pedestrians and Cyclists

3.9.1 Pedestrians

Pedestrian infrastructure has been installed on most approaches of the Roundabout. This is shown in Figure 4.

Low Risk – Informal Pedestrian Path Hazard

An informal pedestrian path has been formed between two footpaths on the northwest corner of the Roundabout. The path appears to have been formed through frequent use. It is relatively steep and is likely to be a slip hazard. This is shown in Figure 10.

Figure 10 Informal Pedestrian Path

Recommendation – restrict access to informal path or formalise path (appropriate surfacing and slope).

3.9.2 Cyclists

There is limited infrastructure provided for cyclists in the network. An on-street bicycle facility has been installed on the eastbound lane of the eastern approach to the Roundabout.

Cyclists were not observed in the network during the road safety audit. It is likely that cyclists would utilise the pedestrian infrastructure.

No issues were noted relating to bicyclists.

3.9.3 Public Transport

No public transport issues were noted.

3.10 Bridges and Culverts

3.10.1 Design Features

No bridge and culvert design features were noted.

3.10.2 Crash Barriers

No crash barrier issues were noted.

3.10.3 Miscellaneous

No bridge or culvert miscellaneous issues were noted.

3.11 Pavement

3.11.1 Pavement Defects

No pavement defect issues were noted.

3.11.2 Skid Resistance

No surface treatment or skid resistance issues noted.

3.11.3 Ponding

No ponding issues were noted. It is noted that ponding issues were observed in the 2009 road safety audit, however this issue was not noted in this road safety issue.

3.11.4 Loose Stones/ Material

No loose stones/ material issues were noted.

3.12 Parking

3.12.1 General Issues

On-street parking is not permitted within the study area. No on-street parking issues were noted.

3.13 Provision for Heavy Vehicles

3.13.1 Design Issues

No heavy vehicle design issues were noted.

3.13.2 Pavements/ Shoulder Quality

No pavement or road shoulder issues were noted.

3.14 Floodways and Causeways

3.14.1 Ponding, Flooding

Not applicable.

3.14.2 Safety of Devices

Not applicable.

3.15 Miscellaneous

3.15.1 Landscaping

No landscaping issues were noted. Refer to Section 3.4.2 for comments relating to vegetation maintenance on the central island of the Roundabout.

3.15.2 Temporary Works

Not applicable.

3.15.3 Headlight Glare

No headlight glare issues were noted.

3.15.4 Roadside Glare

No roadside glare issues were noted.

3.15.5 Roadside Activities

Not applicable.

3.15.6 Errant Vehicles

No other errant vehicle issues were noted.

3.15.7 Other Safety Issues

No other miscellaneous safety issues noted.

3.15.8 Rest Areas

Not applicable.

3.15.9 Animals

Not applicable.

4. Summary of Road Safety Audit Findings

The findings of the road safety audit are presented in summary format in Table 4. The classification of findings has been set out in accordance with the categories listed in Section 1.4 to assist with prioritisation of recommendations. Those items listed as 'Extreme Risk' or 'High Risk' should be treated with greater priority, and those listed as 'Low Risk' or 'Comment' should be treated with a lower priority or monitored over time.

Table 4 Summary of Audit Findings and Recommendations

Reference	Issue	Recommendation	Category
3.2.5	Roundabout readability by drivers	None	Comment
3.4.2	Sight distance	Ensure vegetation growing on the roundabout is maintained at a low height.	Comment
3.6.2	Faded holding lines	Repaint holding lines on left turn slip lane from South Arm Highway (south) to Cambridge Road (west). Repair vandalised give way sign.	Low
3.9.1	Informal pedestrian path slip hazard	Restrict access to informal path or formalise path.	Low

5. Audit Statement

I certify that in carrying out this audit I have performed a detailed examination of the site. I have endeavoured to identify features that could be modified or removed in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe.

The problems identified have been noted in this report together with recommendations that should be studied for implementation. Readers are urged to seek further specific technical advice on matters raised and not rely solely on the report. Where recommended actions are not taken, this should be reported in writing, providing the reasons for that decision.

Signed: s36 ..... Dated: 27 February 2019

BE MTraffic MTransport FIEAust EngExec CPEng NER

Appendix A

Reference Documents

References

- Australian Transport Council, 'National Road Safety Strategy', 2011-2020
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Record 26

Deputy Premier
Minister for Education and Training
Minister for Infrastructure
Minister for Advanced Manufacturing and Defence Industries

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Tasmanian Government

12 MAR 2019

Hon Jo Siejka MLC
Labor Member for Pembroke

By email: joanna.siejka@parliament.tas.gov.au

Dear Ms Siejka

Thank you for your letter of 19 February 2019 regarding the Mornington Roundabout.

The Department of State Growth has advised me that the independent safety audit I previously requested will occur in coming weeks, with a report due to be completed by end of April 2019. The audit will cover design, traffic demand and driver behaviour.

The Department has advised me that the audit will include assessments of the current road marking and signage, general layout and design of the roundabout and impediments to pedestrian access. This will occur through a traffic survey, observation of the traffic flow and interactions at conflict points to understand how drivers respond to conditions; investigations of approaches to and within the roundabout; analysis of crash data; and integration of information from a recent feasibility study for pedestrian and cycling crossing of the area. The report will provide a performance assessment and any recommendations to improve any observed deficiencies.

I trust this information is of assistance to you in responding to your constituents' concerns.

Yours sincerely

Hon Jeremy Rockliff MP
Deputy Premier
Minister for Infrastructure

Tasmanian Government

Jeremy Rockliff, Minister for Infrastructure

Safety assessment for Mornington Roundabout

As part of the Tasmanian Government's commitment to improving the safety of road users across the state, an independent safety audit of the Mornington Roundabout is underway.

The audit is focused on design, demand and driver behaviour at the roundabout and will provide important insight into the roundabout's use, as well as any safety improvements that can be made.

Providing a safe road network is a key focus for the Government and ensuring this busy roundabout is operating at a high standard is a priority.

The audit will assess the current road marking and signage, general layout and design of the roundabout, and obstructions to pedestrian access.

Part of this work includes the observation of traffic flow to understand how drivers respond to the conditions. There are no impacts to traffic as a result of this work.

An analysis of crash data and a recent feasibility study that looked at how pedestrians and cyclists move through the roundabout will also be undertaken.

The audit report will provide a performance assessment and recommendations for improvements and is due to be completed by the in April 2019.

Contact:

Phone:

Deputy Premier
Minister for Education and Training
Minister for Infrastructure
Minister for Advanced Manufacturing and Defence Industries

Level 10 15 Murray Street HOBART TAS 7000 Australia
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Tasmanian Government

21 DEC 2018

Hon Jo Siejka MLC
Labor Member for Pembroke

By email: joanna.siejka@parliament.tas.gov.au

Dear Ms Siejka

Thank you for your letter of 1 November 2018 regarding concerns raised by residents of Pembroke about the Mornington Roundabout. My apologies for the delay in responding to you.

I have asked the Department of State Growth to consider these issues and I can advise you that an independent safety review of the roundabout will be undertaken by a senior traffic engineer to evaluate whether the operation of the roundabout can be improved, including consideration of new signage and linemarking.

I expect this review to be undertaken within the next few months and I will ensure that a copy of the report will be forwarded to you.

In addition to the abovementioned safety review, I am pleased to advise that the Government is currently undertaking a comprehensive transport planning study of the Tasman Highway corridor to determine strategies to address the future transportation task and this study includes the Mornington roundabout. Your input would be most welcome and I encourage you to make a submission directly to the Department of State Growth.

If you require further information please contact by email at peter.hubble@stategrowth.tas.gov.au or telephone on 6166 3319 for more information.

I trust this information is of assistance to you in responding to concerns raised by residents.

Yours sincerely

Jeremy Rockliff MP
Deputy Premier
Minister for Infrastructure

From:
To:
Subject: RE: Mornington roundabout
Date: Tuesday, 13 November 2018 11:20:36 AM
Attachments: image002.png
image003.png

Hi

South Arm Hwy / Cambridge Rd roundabout is already marked as high priority site on my list this year. Maintenance work will be delivered before end of this month.

Do you have any layout change want to apply on this site?

Regards

Asset Management Branch | State Road Division | Department of State Growth
Level 2 / 4 Salamanca Place, Hobart TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3445 | Mobile: s36
www.stategrowth.tas.gov.au

Department *of* State Growth

From:)
Sent: Tuesday, 13 November 2018 11:07 AM
To:
Subject: Mornington roundabout

Hi

Can you please advise if refurbishing the line marking at the Mornington roundabout is included in this year's contract work

If refurbishing is included, can be given a high priority and be done by end of this month?

If not, can be included with a high priority and be done by end of this month?

Happy to discuss

Cheers

Traffic Engineering | Department of State Growth
Phone: (03) 6166 3319 | Mobile: s36
www.stategrowth.tas.gov.au

From:)
To:)
Subject: RE: Line marking issue - Mornington Roundabout
Date: Tuesday, 23 October 2018 9:54:53 AM
Attachments: image003.png
image004.png
image005.png

Hi

I have marked this site as high priority and will get the maintenance done ASAP.

Regards

Asset Management Branch | State Road Division | Department of State Growth
Level 2 / 4 Salamanca Place, Hobart TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 3445 | Mobile: s36 [redacted]
www.stategrowth.tas.gov.au

Department *of* State Growth

From: (StateGrowth)
Sent: Tuesday, 23 October 2018 9:22 AM
To: (StateGrowth) @stategrowth.tas.gov.au>
Subject: Line marking issue - Mornington Roundabout

Hi

Can you advise if you have reviewed my previous request to add the Mornington Roundabout into your program?

Another complaint has come in.

Cheers

Regional Team Leader
Phone: (03) 6166 3374 | Mobile: s36 [redacted]

From:
Sent: Wednesday, 22 August 2018 2:26 PM
To: (StateGrowth) < @stategrowth.tas.gov.au>
Subject: I shared "2018-19 South Program (State & National) Combine Spreadsheet 8 August 2018.xlsx" with you in OneDrive

Hi

Please find the share link of the 2018-19 South Region Pavement Marking maintenance program. Please provide your comments in the "Change Log".

Cheers

2018-19 South Program (State & National) Combine Spreadsheet 8 August 2018

View in OneDrive

Mornington Roundabout - history

- The construction of the South Arm Highway commenced in the late 1980's to provide a safe and efficient bypass of Clarence Street and connect Rokeby Main Road with the Tasman Highway. The bypass created an intersection with Cambridge Road and a large two-lane roundabout was installed. The roundabout was designed to accommodate significant traffic growth expected from the expansion of residential development.

- The two-lane western approach along Cambridge Road (traffic approaching from Bellerive) was problematic for some drivers, particularly the traffic manoeuvre from Bellerive to Sorell and Hobart Airport. This was mainly due to the roundabout being located in close proximity to the Tasman Highway interchange and required drivers to make a lane change soon after leaving the roundabout. Due to public perception that this manoeuvre was unsafe, the left-hand lane along Cambridge Road was closed with the use of temporary kerb blocks.

- Initially, closing this left hand lane had no real impact to traffic queues along this approach. However, during the early 2000's as the amount of traffic increased along the South Arm Highway, extensive traffic queues became problematic along the western approach of Cambridge Road in the afternoon peaks.

- Around the same time (2002-2004), long queues began to form on the southern approach along the South Arm Highway in the morning peak due to an increase in traffic usage of the highway. The traffic queues formed as the demand during the morning peak exceeded the capacity of the roundabout. These roundabout traffic delays and other traffic issues on the eastern shore resulted in a major traffic survey being commissioned in 2004.

- In 2007, the Labour Government announced a $1.6 million election commitment to replace the roundabout with traffic signals. However, extensive traffic modelling demonstrated that traffic signals would create a highly congested situation by 2017. The modelling also demonstrated that relative minor infrastructure improvements would provide significant traffic improvements.

- During the 2008-09 construction season, $1.6 million in funding was used to provide the following infrastructure improvements:
    - re-opening of the left-hand lane along the western approach of Cambridge Road;
    - provision of a slip lane from the South Arm Highway to Cambridge Road; and
    - improvement in the alignment of the north-south through lanes.

- Although these infrastructure improvements eliminated the traffic queues, re-opening of the two-lanes along Cambridge Road reactivated the previous issues that resulted in the lane closure in the first instance.

- To address this issue, an independent safety audit was commissioned and resulted in some minor changes and the addition of lane directional signs installed on overhead gantries over the Cambridge Road western approach. These signs were designed to provide better guidance to drivers and information which lane should be used for particular traffic manoeuvre.

- The current layout of the traffic lanes at the roundabout provides for very efficient traffic performance given the constraints of the site.

- The safety performance of the roundabout is satisfactory, with an average of 14 crashes per year over the last five years in the context of an annual traffic volume of over 14.5 million vehicle movements per year.

- In the last couple of years, the increase in residential development in Howrah and surrounding areas has increased the traffic usage along the highway and as the traffic demand in the morning peak can exceed the roundabout capacity, some delays and traffic queues form on the northern approach. Although queues are forming, the time delay is reasonably short as they are moving queues, and the queues are likely to become longer as the traffic growth continues.

- The traffic demand along the Tasman Highway leading into Hobart is exceeding the capacity of the Tasman Bridge causing queues along Tasman Highway. Even if increasing the throughput capacity of the Mornington roundabout is possible, travel times for commuters along the South Arm Highway would not significantly improve, as motorists will simply arrive at the end of the Tasman Highway queues sooner.

- Similarly, if the capacity of the Tasman Bridge was increased, queues would then move to the Hobart central business district (CBD), creating greater impact on travel time reliability in the CBD and the journey as a whole.

- Generally, some drivers find negotiating two-lane roundabouts difficult, and the manoeuvre from Bellerive to the Hobart Airport is a complex traffic manoeuvre and some drivers will always find this challenging under some circumstances. Unfortunately, there is no cost-effective solution to resolve this manoeuvre at the roundabout.

Manager Traffic Engineering, State Roads Division
Department of State Growth

28 September 2018