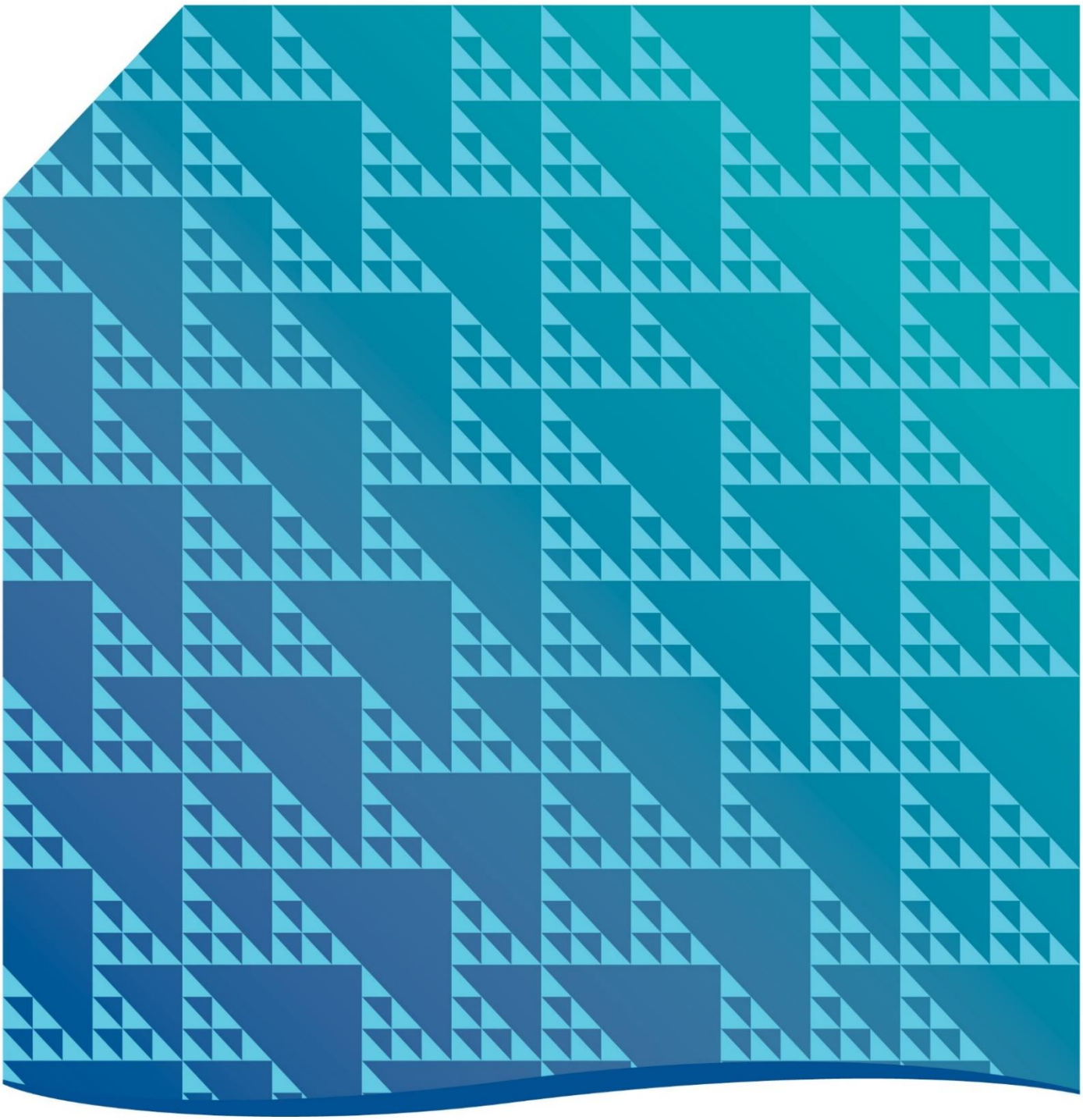
Channel Highway

Algona Road to Sandfly Road
September 2020

Corridor Study Report



Department of State Growth

Tasmanian Government

This page intentionally left blank

Table of contents

1. Project overview

1.1 Project description

The Department of State Growth (State Growth) engaged GHD to undertake a Corridor Study for the Channel Highway between Algona Road, Kingston and Sandfly Road, Margate. The overall aim of the study was to identify solutions that could be implemented to achieve improved performance, reliability and safety of the corridor during peak periods.

The Corridor Study will provide a basis for detailing concept designs and budgets for identified solutions, and to itemise and prioritise these solutions for funding approval.

The project consists of a strategic investigation of the Channel Highway from Kingston to Margate, stemming from the Tasmanian Government's commitment to investigate safety concerns. The study comprises a holistic assessment to meet the current and future functional requirements of the corridor and is to align with the Greater Hobart Transport Vision.

1.2 Project objectives

The key objectives of the project are as follows:

- Undertake a Corridor Study to identify the current and future Level of Service and an acceptable Level of Service required for the road corridor.
- Review the safety performance at Howden Road.
- Utilising the outcomes of the Corridor Study develop a range of concepts for improving accessibility, reliability and safety of the corridor during peak periods and future traffic demands.
- Provide options that improve connectivity for all transport modes.
- Prioritise options and develop high level costings for funding approval.

1.3 Purpose of this report

This report documents the methodologies, influences and outcomes of an assessment of the Channel Highway between Sandfly Road, Margate and Algona Road, Kingston. This report addresses several key purposes:

- To communicate the current performance of the corridor and to highlight specific issues identified by stakeholders and local council within the study area. The existing conditions information supplied in this report has been obtained from observations made from site visits, analysis of surveyed and supplied data, and issues highlighted from stakeholder engagement and workshops held with State Growth, and Kingborough Council.
- To document the options identification and selection process, including the development of a long list of options and their assessment (refer Section 5.1, Table 23).
- To document the traffic analysis and modelling processes undertaken to examine scenarios and determine how effectively each scenario meets the functional requirements of the road corridor under current and estimated future volumes.
- To communicate the outcomes of traffic analysis and modelling assessments in order to underpin the options to be taken to the concept design stage.
- The report concludes with a summary of short list options and opportunities.

A separate report, *Channel Highway Corridor Study – Kingston to Margate, Traffic Modelling Report* (GHD, 2019), was developed to detail the expanded model (including calibration and validation) and the results of the traffic modelling study with a specific focus on upgrades to the Channel Highway / Algona Road roundabout. This modelling is referred to within this report as outputs from the model were used to analyse upgrades to the roundabout and analyse performance of the corridor under forecast future traffic volumes.

1.4 Report structure

The report is broken down into the following sections:

- **Section 1 – Project overview**: Description of project, objectives and purpose.
- **Section 2 – Existing transport network**: Review of existing transport infrastructure, traffic volume and origin-destination data, road user details, and forecast traffic conditions.
- **Section 3 – Stakeholder and community engagement**: Summary of community consultation processes undertaken as part of the study, and discussion of emerging themes from Social Pinpoint.
- **Section 4 – Issues identification**: Identification and mapping of issues relating to safety, efficiency and corridor reliability.
- **Section 5 - Opportunities**: Exploration of long list options, option analysis and determination of short list options.
- **Section 6 - Summary and recommendations**: Summary of short list options and alignment to project objectives.

2. Existing transport network

2.1 Description of transport network

For the purposes of this assessment the transport network has been divided into five sections:

1. Algona Road / Channel Highway roundabout and approaches.
2. Channel Highway – Algona Road to Howden Road.
3. Howden Road / Channel Highway intersection and approaches.
4. Channel Highway – Howden Road to Sandfly Road.
5. Sandfly Road / Channel Highway intersection and approaches.

The sections are identified on the map in Figure 1.

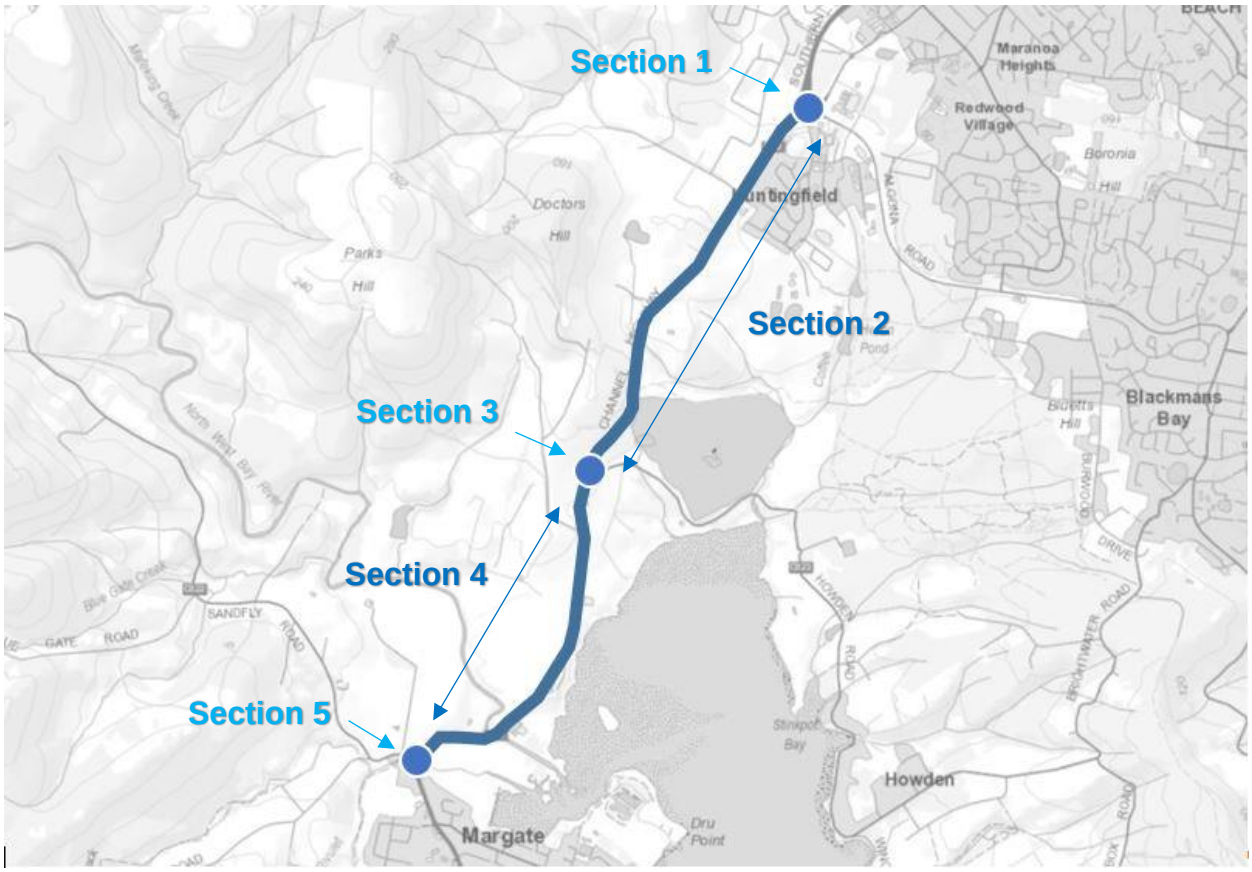


Figure 1 Study area

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

2.1.1 Section 1: Algona Road / Channel Highway roundabout

The Algona Road / Channel Highway roundabout is a five-legged roundabout which connects Channel Highway northern and southern approaches to the Kingston Bypass, Algona Road and Huntingfield Avenue. It is a semi-dual lane roundabout with two lanes in the circulating roadways between Algona Road and Kingston Bypass. There is a circulating transition lane for right turning vehicles from the Algona Road approach.

There are two approach lanes on all approaches except the southern Channel Highway approach. The southern Channel Highway approach has an additional bypass lane which allows vehicles to continue north onto the Kingston Bypass without entering the roundabout. The bypass lane splits from the roundabout approach lane approximately 230 metres from the intersection. There are two exit lanes on both the Kingston Bypass and Algona Road.

Dedicated cycle lanes and crossing storage bays are provided on the roundabout. A footpath is provided along the eastern side of the Channel Highway with a crossing point on the Algona Road approach. Alternatively, the footpath continues and pedestrians can cross Algona Road via an underpass which connects to an unsealed footpath.

There is vegetation on the roundabout and the approach verges, however, these areas are typically landscaped with short vegetation that cause minimal obstruction of sight distances. The intersection and its approaches are well lit with sufficient street lighting provided.

2.1.2 Section 2: Channel Highway – Algona Road to Howden Road

The section of the Channel Highway from Algona Road to Howden Road consist of a two-way, two lane cross-section with a speed limit of 90 km/h.

The road section is straight in the southwest direction until reaching a crest approximately 1 kilometre south of the intersection with Algona Road. The road geometry then continues with relatively frequent curves for approximately 1.5 kilometres until intersecting with Howden Road at a T-intersection.

The cross-section is reasonably narrow with lanes approximately 3 metres wide with limited and inconsistent shoulder provided on either side of the road and there are no passing lanes provided. The cycle lane continues from the Algona Road roundabout on the eastern side of Channel Highway until approximately Maddocks Road.

Various access roads and residences connect to this section of Channel Highway, including Maddocks Road and Rays Court. There are right turn refuge lanes and left turn deceleration lanes provided for Rays Court, the Golf Club access and Howden Road. There are indented bus bays just north of Rays Court and 300 metres north of the North West Bay Golf Club.

The new intersection for Huntingfield Stage 2 is proposed to be located between Maddocks Road and Rays Court.

2.1.3 Section 3: Howden Road / Channel Highway intersection

Howden Road intersects with Channel Highway at a T-junction. Howden Road provides access to the Highway from the Tinderbox and Howden areas and the Peter Murrell reserve. Alternate access from these areas to the north is provided through Blackmans Bay. There is a downhill grade on the Channel Highway southbound approach to the intersection, and there is an uphill climb on Howden Road towards the intersection.

A 140 metre left turn deceleration slip lane is provided for southbound vehicles turning into Howden Road. A right turn storage lane of 100 metres is provided for northbound vehicles turning into Howden Road.

The Howden Road approach is give-way controlled with a wide single lane. There is adequate width for left and right turning vehicles to prop next to each other for approximately 30 metres. There is a property access 14 metres from Channel Highway and a second access approximately 50 metres from the intersection. Sight distance on the Howden Road approach looking to the north up Channel Highway is obstructed by trees on the roadside.

The speed limit is 90 km/h on the Channel Highway approaches and 60 km/h on Howden Road. Street lighting is provided at the intersection. An indented bus bay is provided on both sides of Channel Highway 50 metres south of the intersection.

2.1.4 Section 4: Channel Highway – Howden Road to Sandfly Road

This section of Channel Highway consists of a two-way, two lane cross-section. The speed limit of 90 km/h reduces to 80 km/h at the Margate Train and a further reduction to 60 km/h at the Kingborough Bowls Club and into the centre of Margate.

There are various side road intersections and accesses provided along this section including access to Fehres Road, Brookfield Road, Margate Train complex, Kingborough Bowls Club as well as various businesses including Saunders Signs. Street lighting is provided at intersections of Fehres Road, Margate Train, Bowls Club, Brookfield Road and Sandfly Road as well as on the North West Bay River Bridge and on approach to the Margate centre between Brookfield Road and Sandfly Road. Turn treatments are provided for intersections with Fehres Road, Brookfield Road, Margate Train and North West Bay Golf Club, however the right turn treatment at the golf club is not formally line marked.

The North West Bay River bridge is located approximately 500 metres north of Sandfly Road.

2.1.5 Section 5: Sandfly Road /Channel Highway intersection

Sandfly Road intersects with the Channel Highway at a T-junction, with the Channel Highway providing the major north-south movement and Sandfly Road approaching from the west. Sandfly Road provides a critical link in the transport network by connecting the Channel area to the Huon. There is a high demand for right turns out of Sandfly Road travelling south into Margate and beyond. A number of industrial and agricultural businesses are located to the south of Margate.

A right turn storage lane of 100 metres is provided for southbound vehicles turning into Sandfly Road. The Sandfly Road approach is give-way controlled with a splitter island separating right and left turning vehicles. There is enough room for two left turning vehicles to queue and one right turning vehicle. Street lighting is provided at the intersection. The speed limit is 60 km/h on all approaches to the intersection.

2.2 Channel Highway traffic volumes

Average Annual Daily Traffic (AADT) data was obtained from State Growth's RoadsTas Traffic Stats website for the following available sites:

- A0155140 Link 10, Ch 1.87 – 4.62, 520 m south of Algona Road, 2016.
- A0155160, Link 10, Ch 4.62 – 6.90, 700 m north of Sandfly Road, 2016.

A recent survey of traffic was undertaken in May 2019, which indicates that significant growth has occurred in traffic volumes since 2016. Both data sets are provided in the following sections by way of comparison.

The data collection sites are shown in Figure 2.

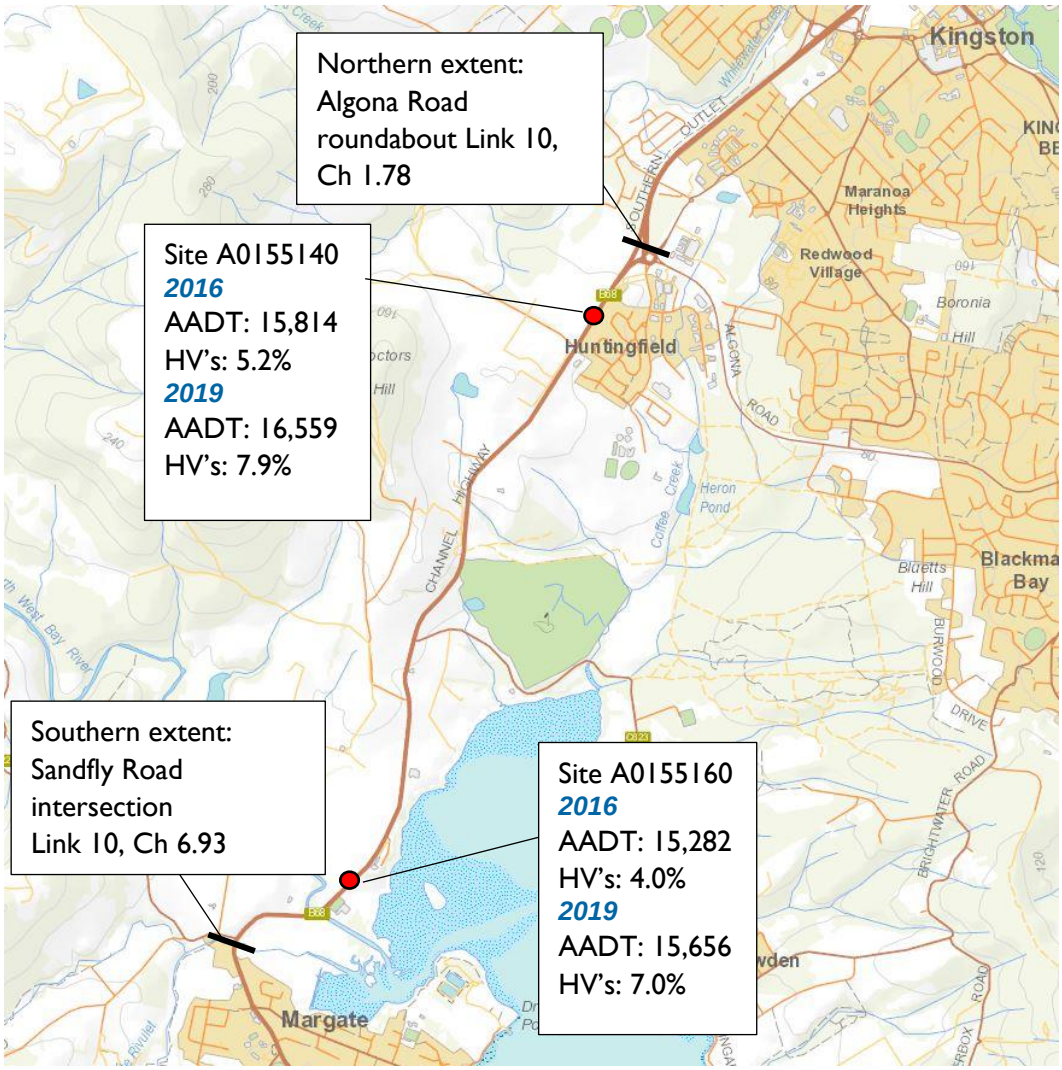


Figure 2 Traffic data collection sites

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

HV: Heavy Vehicle, AADT: Annual Average Daily Traffic

2.2.1 2016 Traffic volumes

As shown in Figure 2, traffic volumes on Channel Highway remain reasonably consistent within the study area with a reduction of approximately 3% on the southern end closer to Margate, likely vehicles stopping prior to Sandfly or turning into Howden Road. However from this it is clear that a large proportion of vehicles on the Channel Highway south of Algona Road are travelling to Margate and further south. It is noted that heavy vehicle percentage decreases in the southern road section which is likely due to heavy vehicles servicing business along the corridor not continuing the full extent of the corridor to Margate.

The daily traffic profiles for each site are presented in Figure 3 and Figure 4. In general, there is a strong directional peak travelling northbound in the morning peak period and a moderately strong directional peak travelling southbound in the evening peak. These results are expected as it is assumed that a large volume of commuters travel from Margate to Kingston (or Hobart) for work. The peak one-way traffic flows are summarised in Table 1.

Table 1 Traffic volume data 2016

Site	Location	AADT	Direction of travel	AM peak	PM peak
A0155140	South of Algona Road	15,814	Northbound	899	546
			Southbound	414	854
A0155160	North of Sandfly Road	15,282	Northbound	905	611
			Southbound	377	828

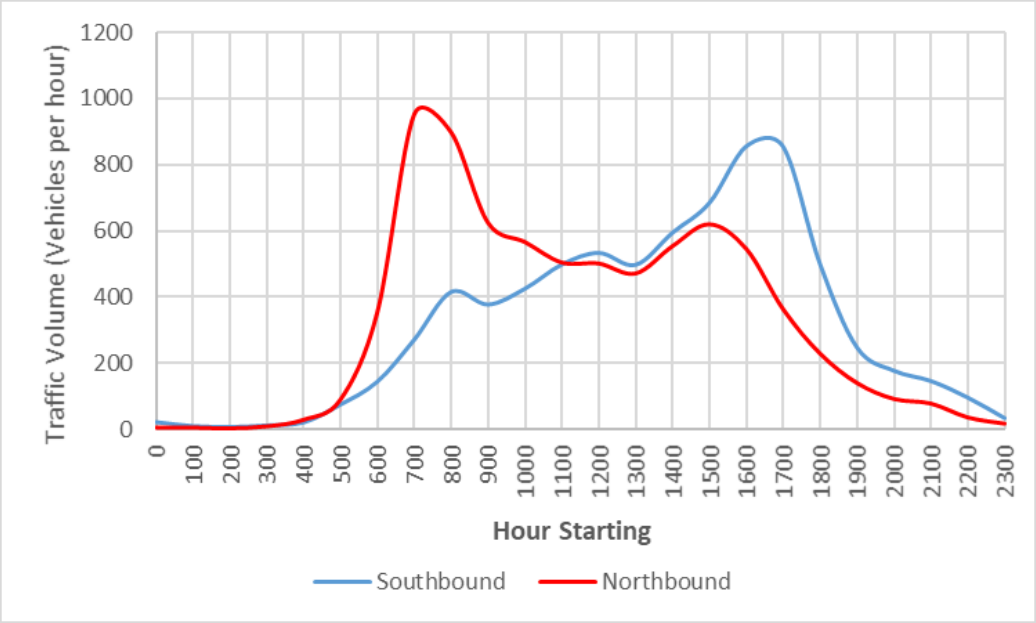


Figure 3 Site A0155140 weekday traffic profile 2016

Data source: Department of State Growth, May 2019

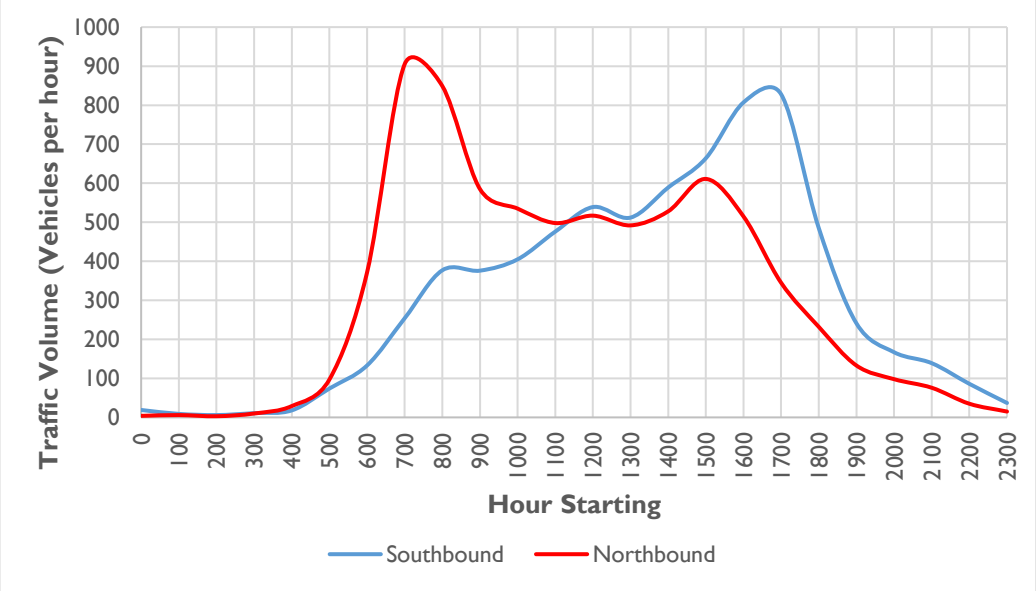


Figure 4 Site A0155160 weekday traffic profile 2016

Data source: Department of State Growth, May 2019

2.2.2 2019 Traffic volumes

Significant growth has occurred on the corridor since 2016 with the northern section of the corridor increasing AADT by 4.7% over the 3 year period and the southern section of the corridor by 2.4%.

The most notable increase for the whole corridor is the percentage heavy vehicle use, increasing by 2.7% and 3.0% for the north and south respectively.

The daily traffic profiles for each site are presented in Figure 5 and Figure 6. In general, there is a strong directional peak travelling northbound in the morning peak period and a strong directional peak travelling southbound in the evening peak. It is observed that the peak periods have further intensified over recent years showing an increase in commuter trips.

Table 2 Traffic volume data 2019

Site	Location	AADT	Direction of travel	AM peak hour	PM peak hour
A0155140	South of Algona Road	16,559	Northbound	1021	534
			Southbound	477	1043
A0155160	North of Sandfly Road	15,656	Northbound	986	618
			Southbound	440	960

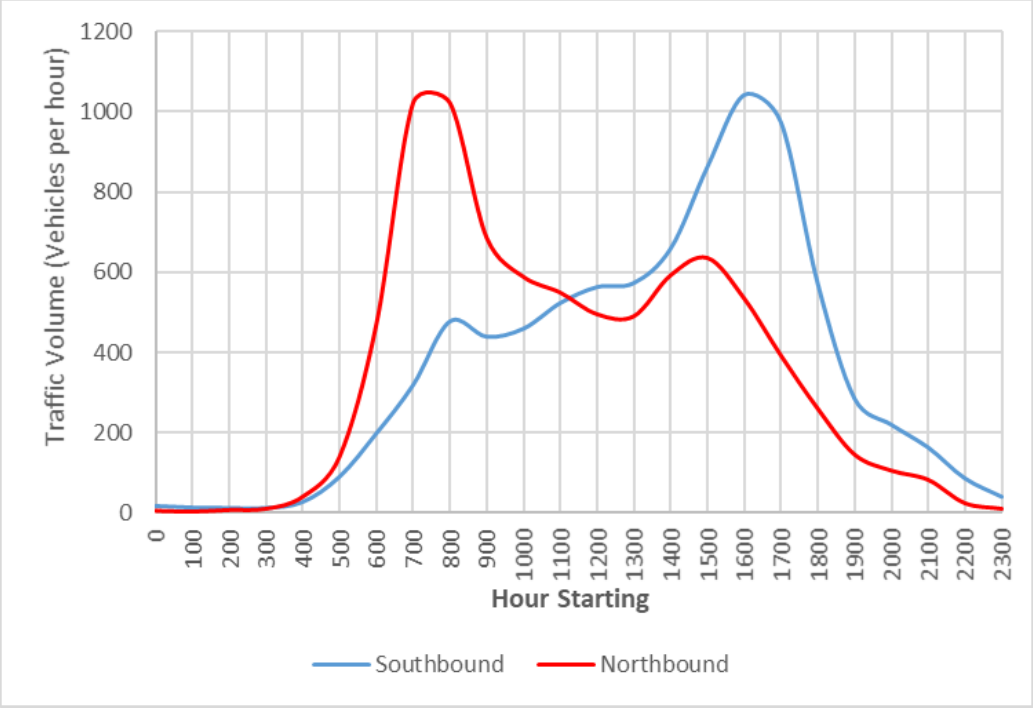


Figure 5 Site A0155140 weekday traffic profile 2019

Data source: Department of State Growth, October 2019

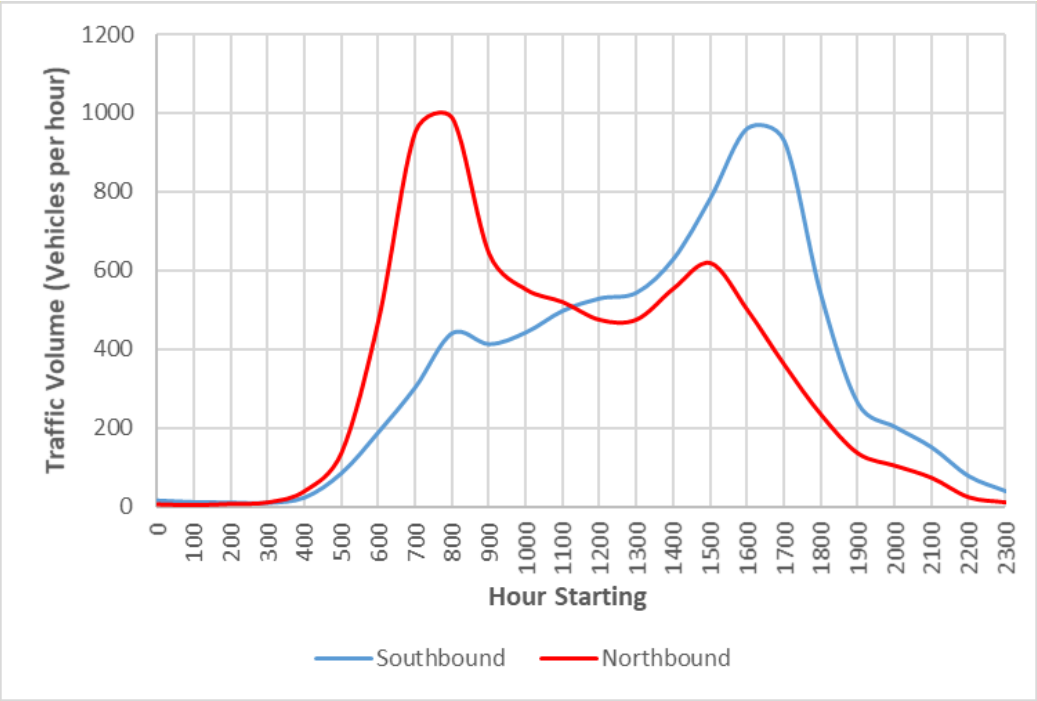


Figure 6 Site A0155160 weekday traffic profile 2019

Data source: Department of State Growth, October 2019

2.3 Intersections and connecting roads

Turning movement surveys were undertaken on Thursday 28 February 2019, at the following key intersections along Channel Highway:

- Algona Road roundabout.
- Howden Road.
- Sandfly Road.

Traffic movement diagrams for AM and PM peak periods, of 8:00 – 9:00 am and 4:45 – 5:45 pm respectively, for each of the key intersections are presented in Figure 7 to Figure 9.

2.3.1 Algona Road / Channel Highway Roundabout

In Figure 7 the traffic movement volumes over the AM and PM peak periods are presented for each approach of the Channel Highway / Algona Road roundabout. The north – south movement between Kingston Bypass and Channel Highway south experiences significantly higher volumes than other movements with 545 vehicles travelling north (predominantly using the bypass lane) in the AM and 684 vehicles travelling south in the PM. The northbound movement utilises a bypass lane, and therefore does not impact upon the performance of the roundabout. However, the southbound movement requires circulation of the roundabout and is only required to give way to vehicles already circulating the roundabout. This unmetered movement, particularly in the PM peak, results in delays at other approaches of the roundabout.

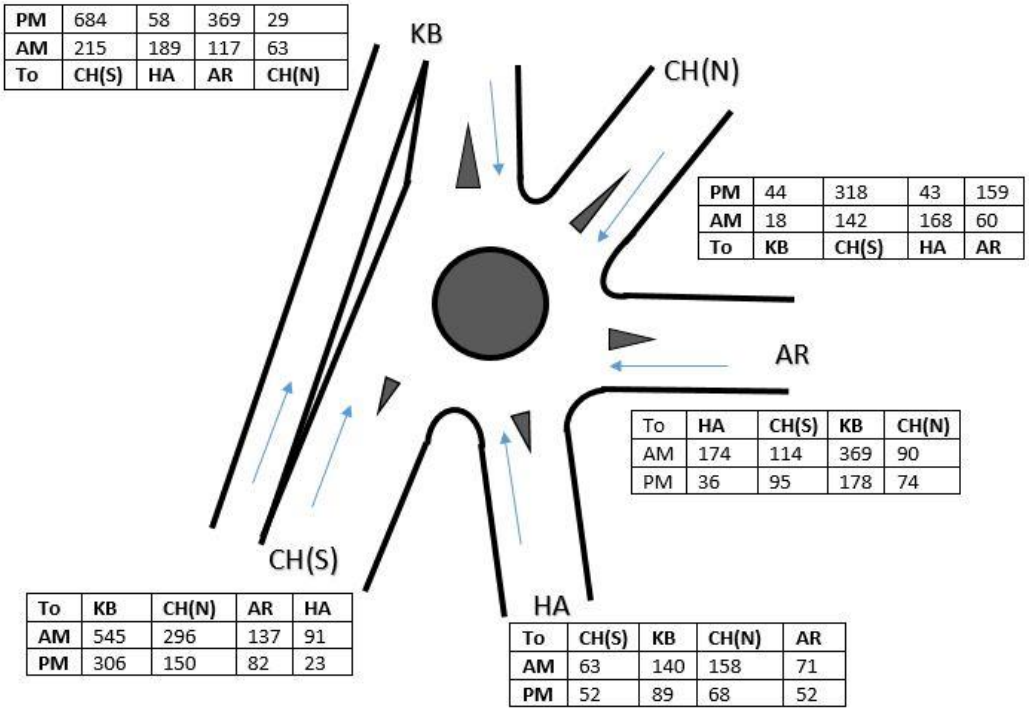


Figure 7 Algona Road / Channel Highway roundabout intersection counts

KB: Kingston Bypass, CH(N): Channel Highway north, AR: Algona Road, HA: Huntingfield Avenue, CH(S): Channel Highway south

2.3.2 Howden Road / Channel Highway Intersection

In Figure 8 the traffic movement volumes over the AM and PM peak periods are presented for each approach of the Howden Road / Channel Highway T-junction. The major proportion of traffic is on Channel Highway through movements. Turning movements into and out of Howden Road equate to a minor proportion of the total traffic, approximately 6% of traffic in the AM peak period and approximately 7% of traffic in the PM peak period.

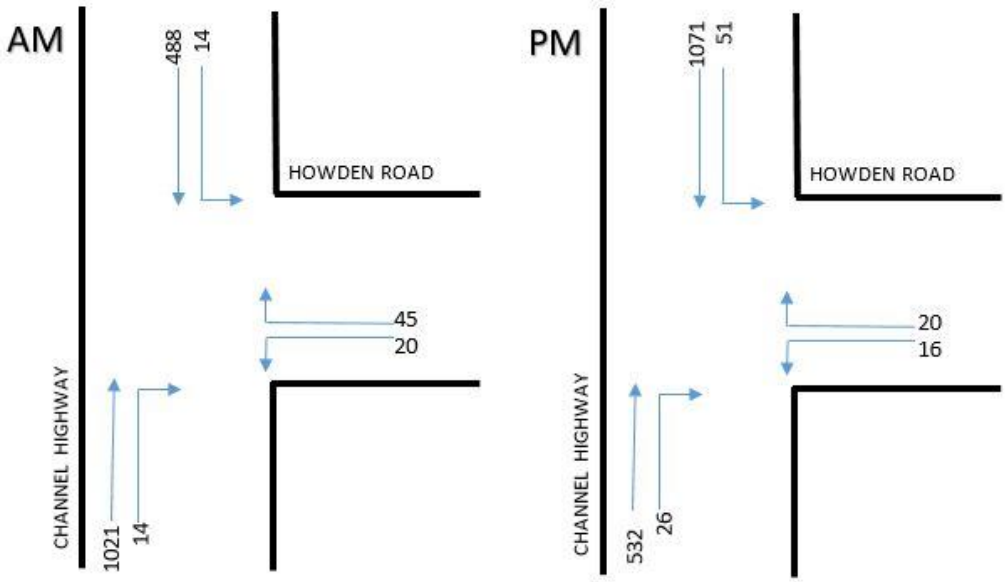


Figure 8 Howden Road / Channel Highway intersection counts

2.3.3 Sandfly Road / Channel Highway Intersection

In Figure 9 the traffic movement volumes over the AM and PM peak periods are presented for each approach of the Sandfly Road / Channel Highway T-junction. The major proportion of the traffic is Channel Highway through movements. There is, however, a significant volume of traffic turning from Sandfly Road onto Channel Highway, particularly in the AM peak period. Turning movements in and out of Sandfly Road account for approximately 22% of the total intersection approach volumes.

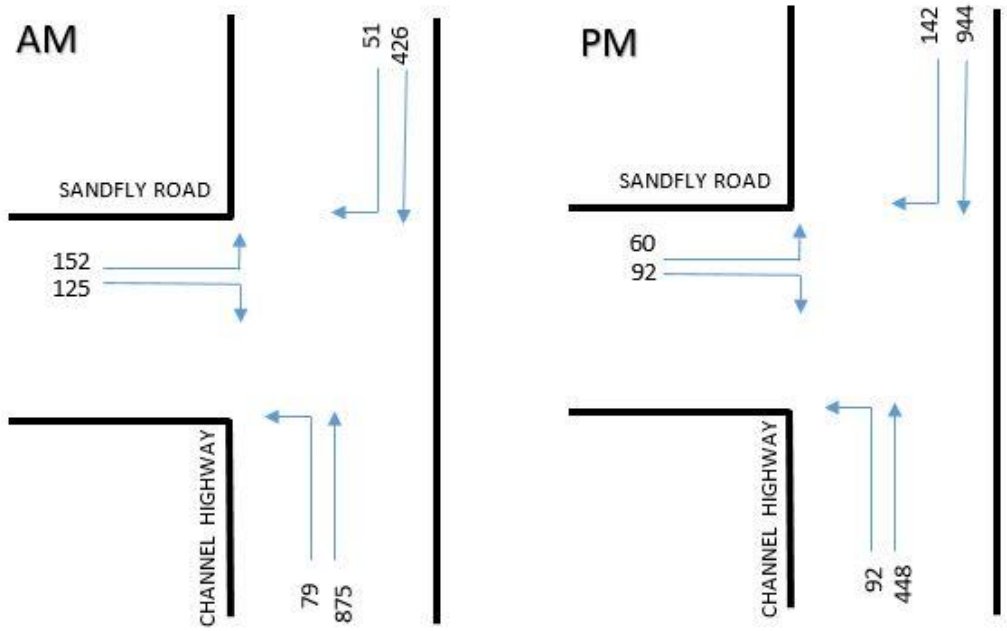


Figure 9 Sandfly Road / Channel Highway intersection counts

2.4 Origin-Destination data

Origin-Destination surveys were undertaken on Thursday 28 February 2019 along the Channel Highway between Kingston and Margate. The survey included 8 stations, where traffic was observed travelling between, and include:

1. Channel Highway – north of Algona Road
2. Algona Road – east of Channel Highway
3. Huntingfield Avenue – south of Algona Road
4. Channel Highway – south of Algona Road *
5. Kingston Bypass – north of Algona Road
6. Sandfly Road – west of Channel Highway
7. Channel Highway north of Sandfly Road *
8. Channel Highway south of Sandfly Road

* Note that stations 4 and 7 were included to pick up volume losses on the corridor (Howden Rd, Margate Train, Brookfield, etc).

The following figures show Origin-Destination counts for vehicles travelling on Channel Highway to and from Sandfly Road, Channel Highway south (Margate and beyond), and Channel Highway north (Kingston, Blackmans Bay, Huntingfield and Hobart).

2.4.1 Sandfly Road

Vehicle proportions travelling from Sandfly Road are presented in Figure 10. From Sandfly Road the major movement is observed to be the right turn onto Channel Highway, in the AM peak period 43% of light vehicles and 50% of heavy vehicles turn right from Sandfly Road. In the PM peak period 59% of light vehicles and 100% of the heavy vehicles turned right onto Channel Highway.

Of the vehicles originating from Sandfly Road and travelling north on Channel Highway a large proportion continue through to Kingston Bypass with 32% of the total light vehicles in the AM and 22% in the PM continuing on this route towards Hobart.

At the Algona Road roundabout vehicles split between Channel Highway, Huntingfield Avenue and Algona Road. In the AM peak period 15% of light vehicles continue north on the Channel Highway towards Kingston whilst 5% travel to Blackmans Bay and Huntingfield. In the PM peak period there is a more even split between the three roads.

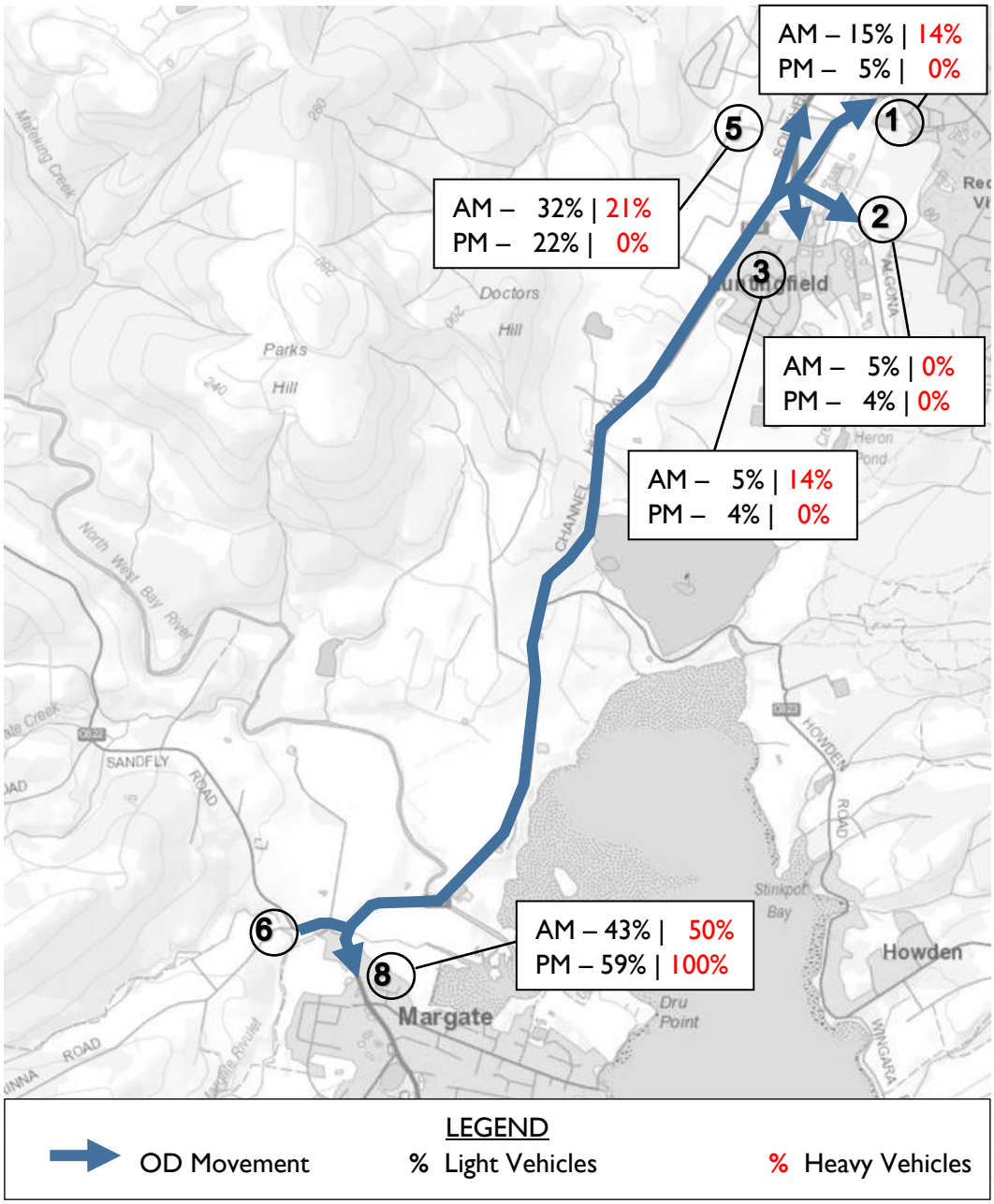


Figure 10 Origin-Destination movements – from Sandfly Road

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

Vehicle proportions travelling to Sandfly Road are presented in Figure 11. A large proportion of vehicles travelling to Sandfly Road originate from Margate and further south, with 70% of light vehicles in the AM peak period and 46% of heavy vehicles in the PM peak period travelling between these points. Compared to vehicles travelling from Sandfly Road there is an increase in travel between Channel Highway south and Sandfly Road (particularly in the AM peak period). This coincides with a decrease in travel between the Kingston Bypass and Sandfly Road.

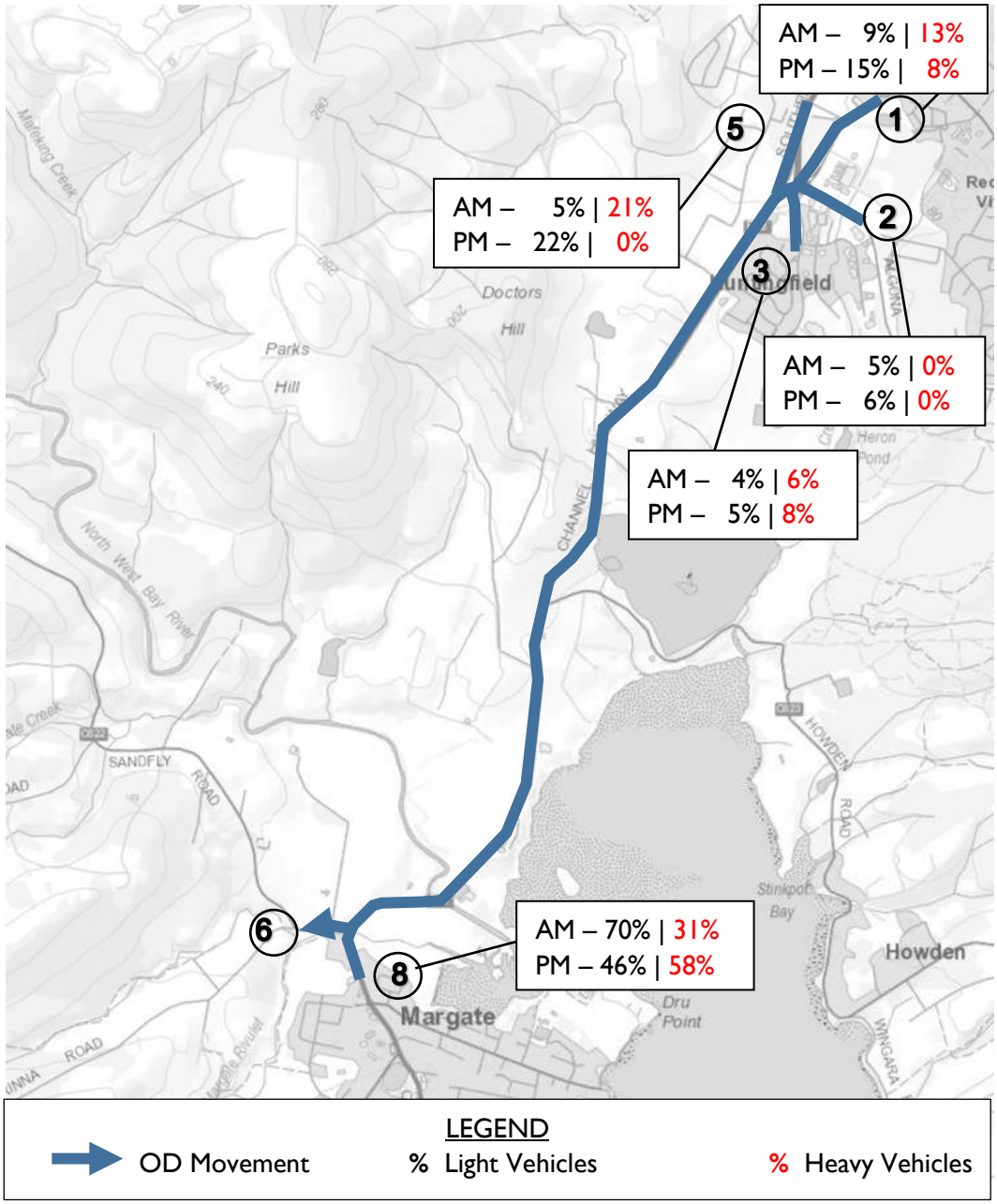


Figure 11 Origin-Destination movements – to Sandfly Road

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

2.4.2 Channel Highway south of Sandfly Road

Vehicle proportions travelling from Channel Highway south, Margate and beyond, are presented in Figure 12. A large proportion of vehicles from Channel Highway south continue north onto Kingston Bypass towards Hobart. In the AM peak period 49% of light vehicles and 50% of heavy vehicles travel on to the Kingston Bypass and 43% light vehicles and 33% heavy vehicles in the PM peak period.

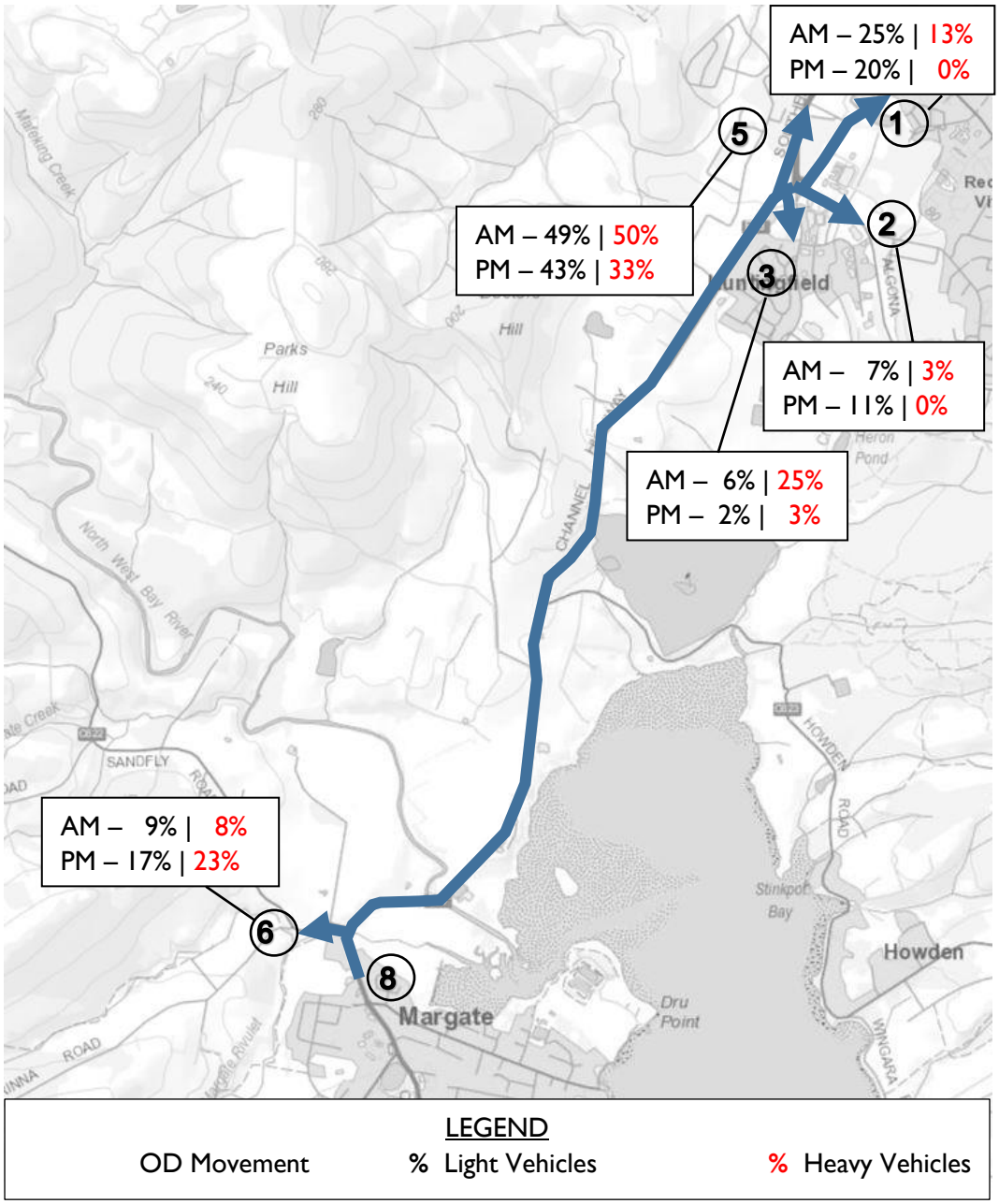


Figure 12 Origin-Destination movements – from Channel Highway south of Sandfly Road

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

Vehicle proportions travelling to Channel Highway south of Sandfly Road are presented in Figure 13. The proportions in Figure 13 mirror those in Figure 12 presenting a clear commuting trend of vehicles travelling northbound from Channel Highway south in the morning and returning in the evening. A smaller proportion is seen doing the opposite trip.

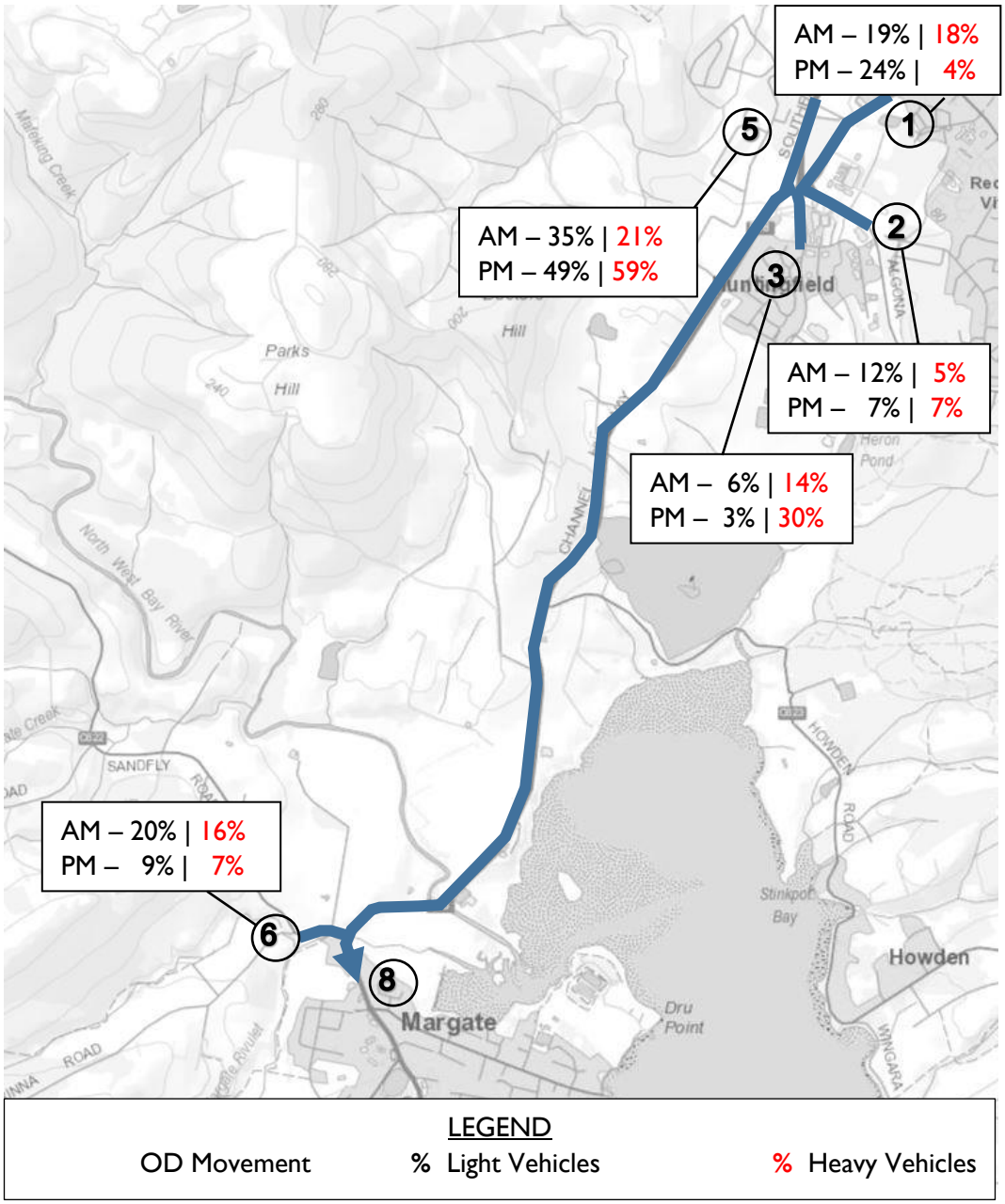


Figure 13 Origin-Destination movements – to Channel Highway south of Sandfly Road

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

Figure 14 shows the proportion of all vehicles approaching the Algona Road roundabout, exiting southbound onto Channel Highway and travelling from the northern end of Channel Highway (just south of the Algona Road roundabout) to Sandfly Road and Channel Highway south.

For vehicles exiting the roundabout at the Channel Highway southbound leg, the majority of vehicles originate from the Kingston Bypass, with 45% of light vehicles and 57% of heavy vehicles in the AM peak period and 41% of light vehicles and 61% of heavy vehicles in the PM peak period originating from the bypass. A reasonable proportion also originates from the northern Channel Highway approach.

For vehicles travelling southbound on Channel Highway there is a high proportion of local trips with 18% of light vehicles in the AM and 13% of light vehicles in the PM not being recorded at either southern Origin-Destination station. This is likely the sum of vehicles travelling to Howden via Howden Road and vehicles travelling to

residences and business along the section of Channel Highway prior to Sandfly Road. The predominant proportion of vehicles travelling southbound on Channel Highway continue south past Sandfly Road to Margate and beyond. In the AM peak period 76% of light vehicles and 65% of heavy vehicles continue south and in the PM peak period 77% of light vehicles and 66% of heavy vehicles.

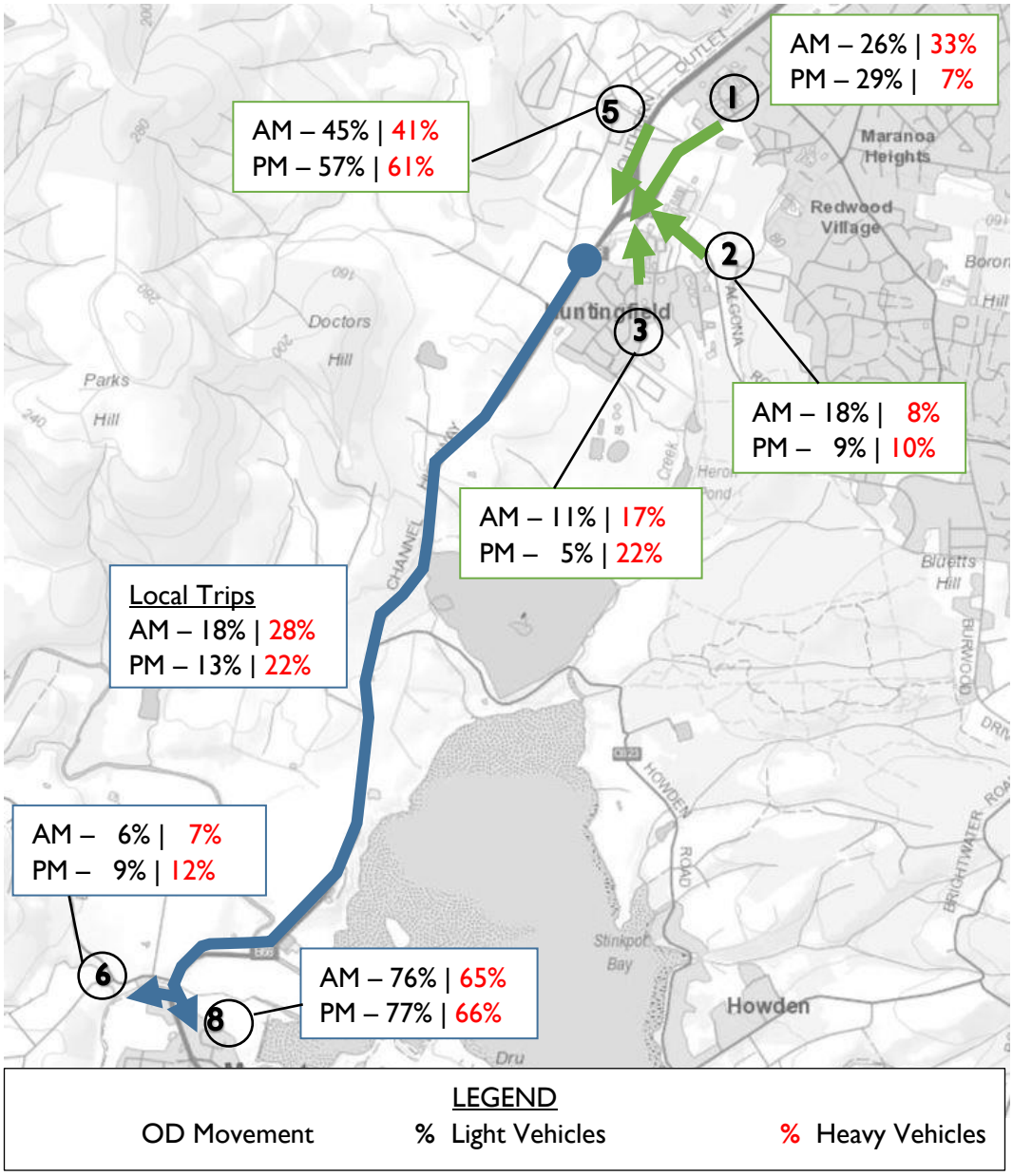


Figure 14 Origin-Destination movements – from Channel Highway north

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

2.5 Site assessment

Site visits were conducted to observe current conditions and performance of the corridor. A number of observations of the existing conditions were recorded on the site visit as detailed below.

2.5.1 Intersection of Channel Highway and Algona Road

It was noted that performance of the roundabout was poor during the school pickup time. From 3:00 to 3:45 pm long queues were observed on Huntingfield Avenue due to schools in Huntingfield. Traffic from Huntingfield Avenue wanting to travel to Kingston and Blackmans Bay were prevented from entering the roundabout by traffic already in the roundabout, who had priority. This occurrence caused significant queues but was short lived and had subsided by 3:45 pm. It was observed that from 4:30 – 5:30 pm, that with priority to Kingston Bypass approach, some queueing on Channel Highway north approach occurred.

2.5.2 Intersection of Howden Road and Channel Highway

It was noted that although there was not a significant volume of vehicles exiting Howden Road, individual vehicles experienced long delays.

The poor sight distance available at this intersection from Howden Road to the north on Channel Highway approach was also noted with the high surrounding vegetation obstructing sight distance. The curvature of the road and the downhill grade on Channel Highway northern approach makes estimating approaching vehicle speeds and identifying gaps in traffic difficult.

2.5.3 Intersection of Sandfly Road and Channel Highway

The right turn movement from Sandfly Road towards Margate experienced some queueing, however the volume of traffic kept the queue to an appropriate length. The delays, to individual vehicles however were at times significant.

2.6 Alternative transport modes

Whilst alternative modes in addition to car and freight traffic are not as prominent within the study area, they are catered for by the Channel Highway. These modes include:

- Public transport.
- Cycling.
- Walking.

2016 Census statistics from the Australian Bureau of Statistics provide insight to modes chosen for travel to work by people from Kingston and Margate. Modal breakdowns as a percentage of all commuters are presented in Table 3. A predominant proportion of people from Kingston (79%) and Margate (85%) travel to work by car (as the driver). A small proportion travel by car as a passenger from both areas. From Kingston, 7% travel to work by bus with only 3% from Margate choosing this mode.

Table 3 Method of travel to work – mode breakdown

Mode	Kingston	Margate
Bus	7%	3%
Taxi	0%	0%
Car, as driver	79%	85%
Car, as passenger	8%	7%
Truck	1%	1%
Motorbike/scooter	1%	1%
Bicycle	0%	0%
Other	1%	1%

Data source: ABS 2016 Census Journey to Work data

2.6.1 Public transport

Metro Tasmania currently operate seven routes that utilise the Channel Highway corridor, south of Algona Road. These services are:

- 411, 412, 413, 415, 416, 417, and 422.

All services traverse the entire length of the study area with the exception of 411 which services Howden and connects to the study area at the Howden Road / Channel Highway intersection but does not traverse the corridor. Services 412 and 422 travel from Margate to Hobart City along the study corridor. Services 413, 415, 416 and 417 service areas further south then travel along the corridor on to Kingston and Hobart. At the start of 2019, a significant increase in frequency of services to Margate occurred.

Northbound services

Between 7:45 am and 8:15 am five buses travel northbound from Margate to Huntingfield (continuing on to Kingston via the Channel Highway), with two of these services only running during school time, through the day and in the evening buses operate hourly. The final bus service from Margate departs at 9:37 pm.

Southbound services

In the morning (counter-peak), and throughout the day bus services operate hourly in the southbound direction through the study corridor. Between 4:30 pm and 5:45 pm six buses travel southbound from Huntingfield (originating from Kingston or further north) to Margate.

Wisby Buses operate several school bus services that utilise the Channel Highway corridor within the study area of this project. These buses service areas including:

- Kettering.
- Conningham.
- Snug.
- Margate.
- Howden.
- Tinderbox.

In the morning, buses travel from the service areas to Kingston Primary, Kingston High School, St Aloysius College, Tarremah Steiner School, Taroona Primary and Taroona High School. In the afternoon buses travel from the schools to the service areas.

Other school buses including Roberts Coaches utilise the road network within the study area of this project.

Additional to the aforementioned services a number of bus services utilise the Algona Road roundabout including Wisby Buses servicing schools and residences in:

- Huntingfield.
- Blackmans Bay.
- Kingston.

2.6.2 Cycling

The road corridor, although used by a variety of cyclists, is predominantly used by recreational cyclists.

At Algona Road roundabout dedicated cycle lanes are delineated from the circulating roadway by green paint. There are cycle lanes on approaches, storage bays, circulating lanes and exit lanes for cyclists. Cyclists circulating the roundabout are required to give way to vehicles exiting the roundabout.

The cycle lane continues southbound on Channel Highway from Algona Road roundabout for approximately 650 metres, where it tapers to a narrow shoulder at the intersection of Maddocks Road. Aside from this section, only a narrow shoulder is provided on the Channel Highway and no formal cycle facilities exist.

The Channel Highway in the study area forms part of a commonly used recreational cycle training route known as "The Commando". The route starts in Hobart with cyclists travelling southbound on Huon Road and then onto Sandfly Road. Cyclists turn left at the Sandfly Road / Channel Highway intersection and travel northbound through the study area on the Channel Highway continuing through to the Algona Road / Channel Highway roundabout. Another common variation of this involves cyclists travelling onto the Channel Highway from Sandfly Road then turning right onto Howden Road.

With no dedicated cyclist infrastructure users share the roadway with vehicular traffic travelling at the speed limit of 90 km/h. There is varying limited shoulder width throughout the corridor and only two short overtaking opportunities on the two lane two-way carriageway which require vehicles to cross into the opposing traffic lane.

Data obtained from the GPS exercise app Strava from 2018 recorded an average of 62 cyclists on weekdays in the AM peak period of 6:00 AM – 10:00 AM. On weekends an average of 80 cyclists were recorded on the corridor. This fluctuates throughout the year with peaks for weekdays of 120 cyclists recorded in December and weekends of 140 cyclists recorded in October. Larger volumes were typically recorded south of Howden Road. It should be noted that the data is only recorded for cyclists that use the Strava app on their rides so only represents a proportion of the use of the road corridor by cyclists, and likely only those using it for recreational purposes.

Figure 15 shows a heat map of Strava user cycling activity for an area of greater Hobart including Channel Highway. It is observed that the study area has a high proportion of cycling activity similar to that seen in Hobart CBD and other key cyclist route areas.

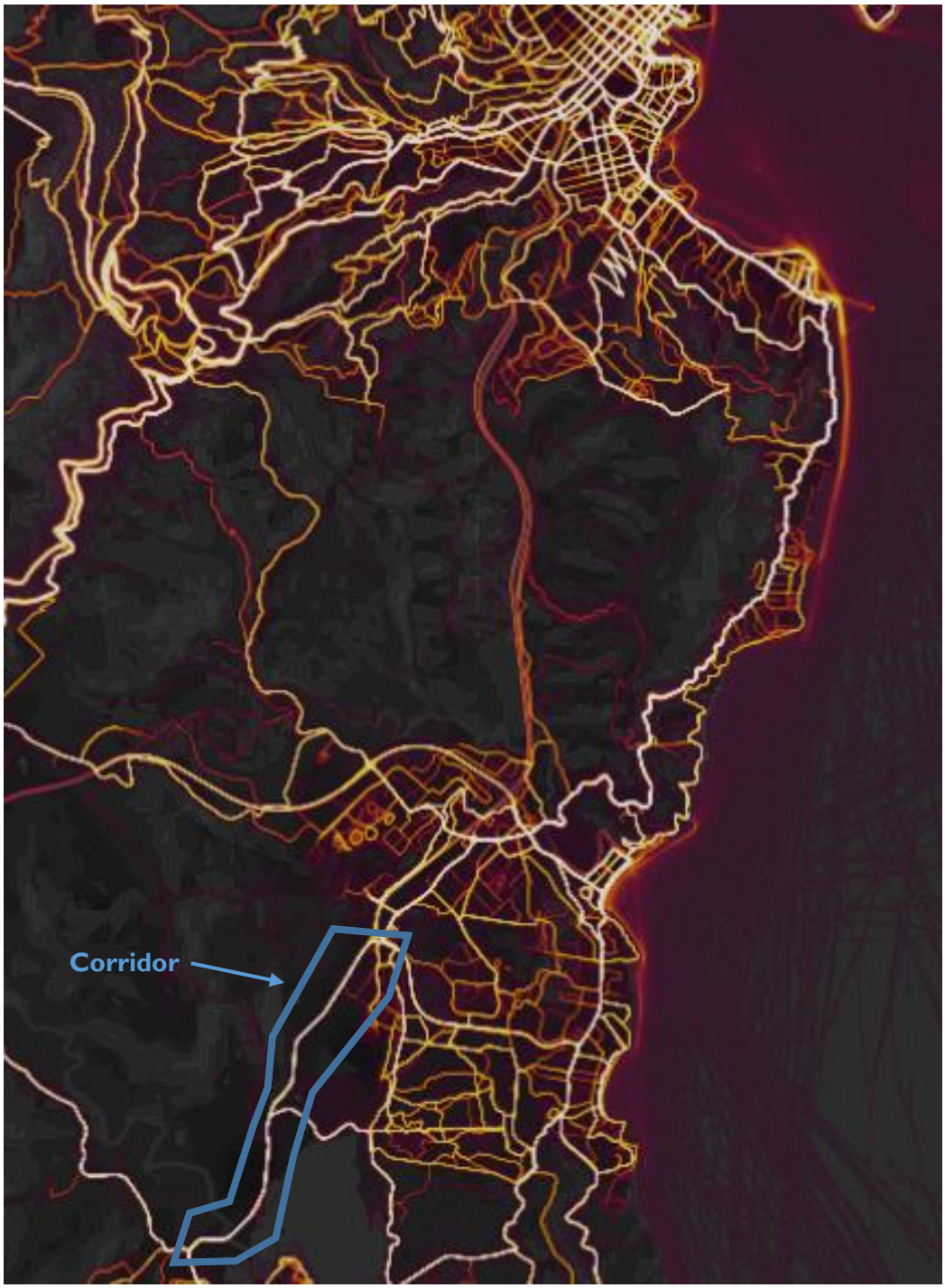


Figure 15 Strava heat map of cycling activity

Source: Strava Global Heatmap, accessed 2019

2.6.3 Pedestrians

There are limited pedestrian facilities within the study corridor. This is however expected due to the Channel Highway being classed as a highway (despite some residential accesses) with a speed limit of 90 km/h over a large section of the corridor and acting as a rural buffer between the towns of Margate and Kingston. The prevailing conditions comprise a narrow roadway with little or no shoulders in sections.

The following pedestrian facilities are noted within the study corridor:

- A narrow footpath is provided from Sandfly Road to Brookfield on the west side of the road.
- There are no off-road facilities north of Brookfield until the Algona Road roundabout.
- No pedestrian or cycling facilities are provided across North West Bay River.
- The roadside and shoulders are in some sections covered with vegetation and loose rocks.
- Limited street lighting is provided north of Kingborough Bowls Club.
- Footpaths are provided on Channel Highway north of study area including both refuge and an underpass crossing of Algona Road.

2.6.4 Freight

The traffic volumes recorded consist of a reasonable proportion of heavy vehicles on the road corridor with State Growth's AADT records from 2019 indicating 7% of the AADT is heavy vehicles.

Figure 16 presents the breakdown of use of Channel Highway (north and south of Howden Road) by vehicular class. It is observed that the majority of vehicles on the road corridor are passenger vehicles with a much smaller percentage (<7%) of vehicle classes 2 (short towing- Trailer, Caravan, Boat) and 3 (Two Axle Truck or Bus) predominately.

Please note: the data contained within the bar graph above is a magnified view of the overall data set focused only on 10% and below. It contains a scale break (Austroads class 1 continues beyond the 10% axis) this is intended to show greater detail of the other classes which are all <10%.

Figure 16 Channel Highway vehicle class breakdown (2019)

Data source: Department of State Growth, 1986-2019

2.7 Forecast traffic conditions

2.7.1 Historic AADT

AADT traffic growth forecasts for each site are presented in Figure 17. Traffic growth forecasts are based on historic AADT traffic counts collected by State Growth between 1986 and the most recent count in April 2017. Annual growth trend details are provided in Table 4 with respect to current (2019) traffic volumes. Note that the high and low growth scenarios are calculated be on the historical growth rate ± 2.5%.

Table 4 Annual Growth Trends

Site	Location	Historic Growth	High Growth	Low Growth
A0155160	South	2.1% p.a.	2.6% p.a.	1.6% p.a.
A0155140	North	2.0% p.a.	2.5% p.a.	1.5% p.a.

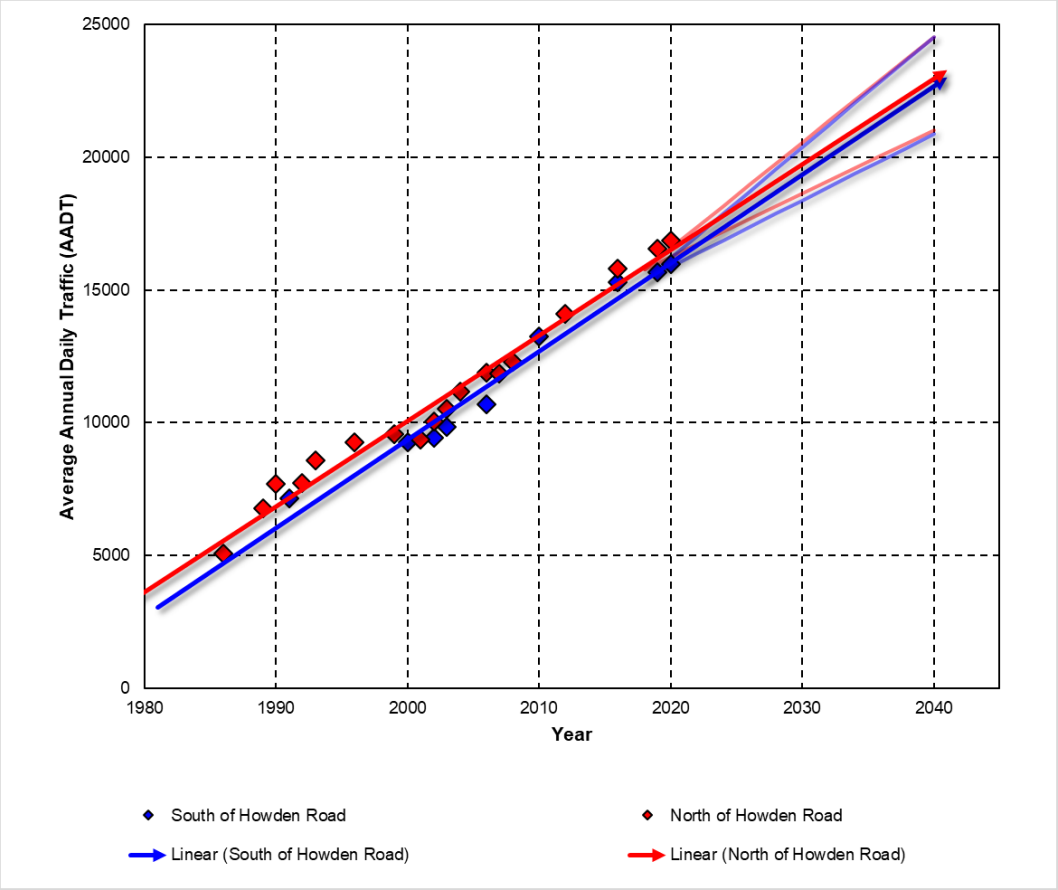


Figure 17 AADT Growth Forecasts

Data source: Department of State Growth, 1986-2019

The growth along the corridor has historically been at a high rate due to proliferation of residential areas. The historic growth is greatly influenced by this peak development period in the area and not representative of typical background growth. Future developments that may impact the corridor are examined in Section 2.7.2.

2.7.2 Future developments

The following future developments have been considered in order to estimate future traffic generation:

- Springfarm Estate.
- Whitewater Park Estate.
- Huntingfield Stage 2 Project.
- Expansion of Villa Howden hotel.
- Brookfield / Lavender Farm tourist centre.
- Growth in Margate and further south.

The Southern Tasmania Regional Land Use Strategy 2010 – 2035 includes a residential strategy for Greater Hobart and areas of future residential development. An excerpt from the residential development areas diagram is presented in Figure 18.

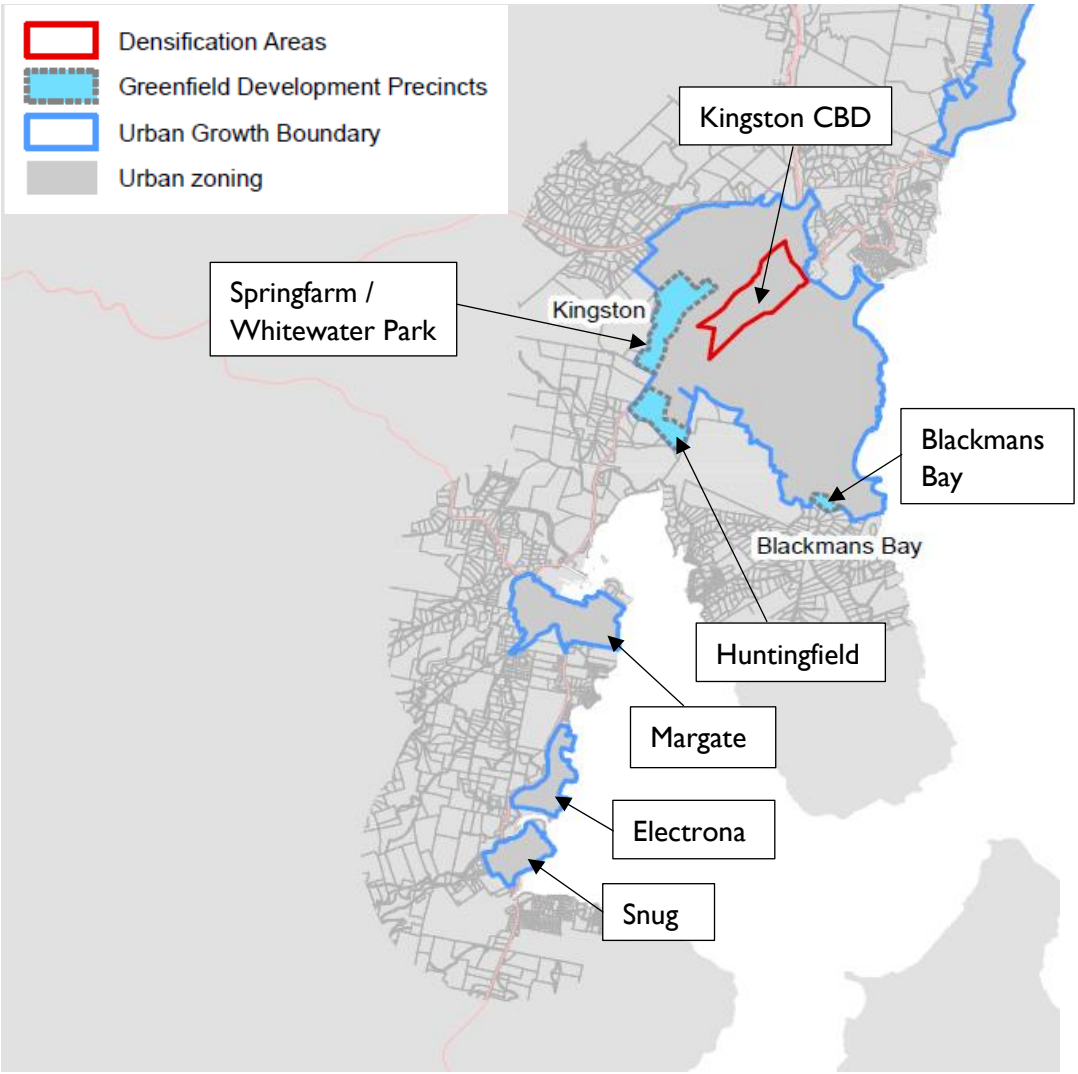


Figure 18 Residential development areas

Imagery obtained from Southern Tasmania Regional Land Use Strategy 2010 - 2035 © Southern Tasmanian Councils Authority (2013)

The development areas presented in Figure 18 indicate there is limited potential for residential growth along the corridor and further south of Margate beyond the aforementioned planned developments. The details of each of the planned developments are discussed below.

Spring Farm Estate

The development of a staged subdivision of the land at 63 Spring Farm Road, Kingston, has commenced with a number of lots already sold. The subdivision (illustrated in Figure 19) is located on the western side of the Kingston Bypass with access to the development via Spring Farm Road which is identified as a Greenfield Development Precinct in Figure 18. A Traffic Impact Assessment (TIA) of the development was undertaken by Milan Prodanovic Traffic Engineering and Road Safety. The land use predictions and associated traffic generations have been extracted from the TIA and are presented in Table 5.

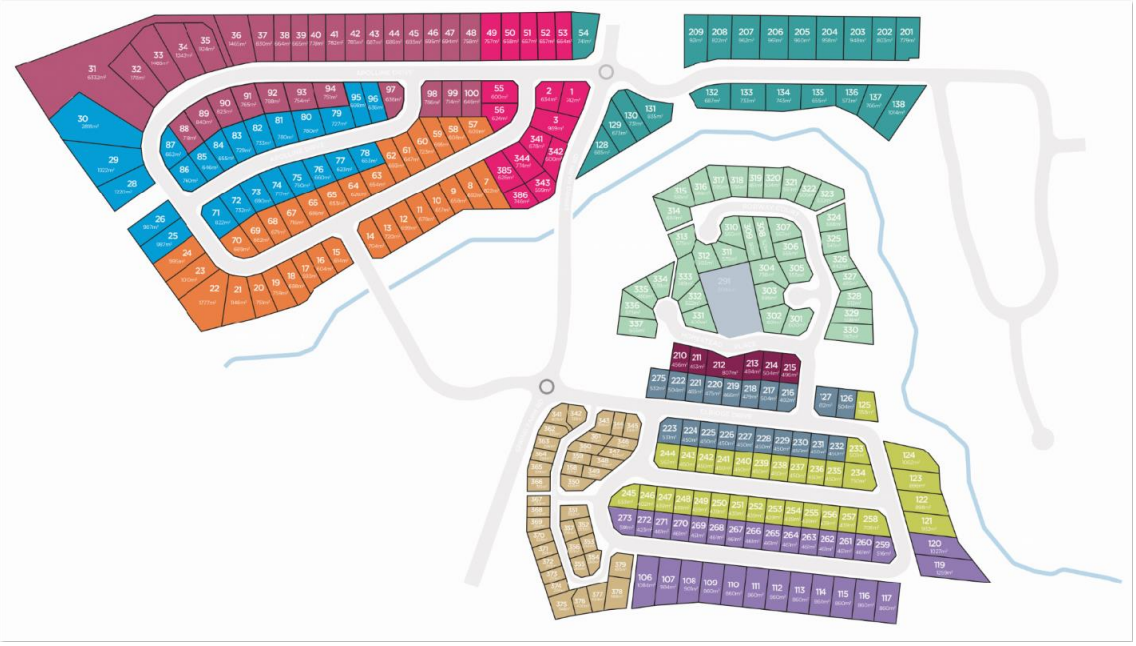


Figure 19 Springfarm Estate layout

Imagery obtained from https://www.springfarmestate.com.au © Springfarm Estate Development

Table 5 Spring Farm Road subdivision traffic generation

Land Use	Quantity	Peak Hour Trips	AADT
Residential Lots	269 lots	215	2,152
Residential Units	117 units	59	585
Retirement Units	139 units	32	320
Commercial Area (external trips only)	3,049 m^2	158	1,477
Total		***454***	***4,534***

Data extracted from Traffic Impact Assessment – 63 Spring Farm Road, Kingston (Milan Prodanovic, 2014)

Plans to provide a connection from the subdivision to Kingston View Drive were referenced in the TIA, however there is no confirmation of a date of implementation for this connection. The presence of such a connection may dissipate traffic volumes by providing alternate route choice which could result in reduced impact onto the Algona Road / Channel Highway roundabout.

Whitewater Park Estate

The development consisting of a subdivision of the land bound by Spring Farm Road and Maddocks Road, Kingston, has commenced with a number of lots already sold. The area is identified as a Greenfield Development Precinct in Figure 18. A TIA of the development was undertaken by Midson Traffic. The land use predictions and associated traffic generations were provided in the TIA, however due to availability of recent empirical data and a more detailed layout of the subdivision undertaken by JSA Consulting Engineers (JSA) there is precedent to reassess the traffic generation for this subdivision.

The JSA subdivision layout details a total of 230 lots of varying sizes classified as general residential under the Kingborough Interim Planning Scheme 2015. An update to the RTA Guide to Traffic Generating Developments provides the peak hour traffic generation rate of 0.99 vehicle trips per peak hour for residential developments (the higher rate is adopted due to expected mode breakdown – refer Section 2.6), resulting in a traffic generation of 228 vehicles per peak hour.

In order to determine the traffic directional use of Spring Farm Road and Maddocks Road, reference was taken from the existing trip distribution of vehicles from Blackmans Bay through Algona Road roundabout. The following assumptions have been adopted for peak hour conditions:

- Where there is a choice between utilising the Algona Road roundabout or not, during peak hour vehicles will avoid the roundabout.
- Where vehicles must use the Algona Road roundabout, 15% of vehicles will use Spring Farm Road and 85% Maddocks Road, due to distance from the respective roads.
- For vehicles travelling to Hobart a split of 37% travelling north on Channel Highway from Spring Farm Highway was adopted. The remaining vehicles are expected to travel along Maddocks Road onto the Kingston Bypass. This is based on a preliminary analysis of preferred travel routes in the AIMSUN Central Kingston Traffic Model.

Table 6 Trip distribution from Whitewater Park

Destination	Proportion	Route	Proportion	Spring Farm Road	Maddocks Road
Hobart	49.4%	Either	37/63	18.3	31.1
Kingston	12.0%	Spring Farm Road	100/0	12	0
Huntingfield	16.3%	Either	15/85	2.4	13.9
Blackmans Bay	7.0%	Either	15/85	1	6
Margate (and southern areas)	15.3%	Maddocks Road	0/100	0	15.3
Total				**33.7%**	**66.3%**

Applying the percentage distribution to the traffic generation of 228 vehicles it is anticipated that 77 vehicles will access and egress from Spring Farm Road and 151 from Maddocks Road.

Huntingfield Stage 2 Project

A development immediately south of Huntingfield is in development approval stages as an outcome of the Tasmania's Affordable Housing Action Plan 2019 – 2023 (Department of Communities, 2019). The proposed development is detailed in the *Huntingfield Master Plan* (GHD, 2019). The development is within an area identified as a Greenfield Development Precinct in Figure 18. The proposed development includes up to 470 residential lots of various densities as well as a small retail facility. It is not anticipated that the number of lots will deviate considerably from the currently proposed amount.

A traffic generation analysis of the residential lots was based on RTA Guide to Traffic Generating Development – Technical Direction 04a (RMS, 2013). The rates for the respective residential lots traffic generation are provided in Table 7. It is anticipated that any retail facilities will not generate external traffic to the development.

Table 7 Huntingfield Stage 2 Project residential development traffic generation

Residential Density	Quantity (lots)	Peak Hour Generation per Lot	Peak Hour Trips	Daily Generation per Lot	AADT
Low	51	0.99	51	7.4	378
Medium	145	0.65	97	6.5	962
High	118	0.67	105	4.58	715
Townhouse	156	0.67	80	4.58	541
Total			***333***		***2596***

The development includes provision of a primary access off Channel Highway as well as secondary access via Huntingfield Avenue. The primary access will connect directly onto the Channel Highway and is likely to be a roundabout. The following trip distribution is estimated, noting some redistribution of existing Huntingfield traffic, for the AM peak period:

- Northbound existing traffic will continue to use Huntingfield Avenue to access Algona Road roundabout and continue to their destination.
- Southbound existing traffic will utilise the new intersection with Channel Highway.
- All generated traffic will utilise the new intersection with Channel Highway.
- Generated traffic will be distributed with reference to Blackmans Bay traffic distribution given the same residential nature of the development.
- PM peak period distribution will be the in the reverse direction.
- Whilst some future school traffic from the new development will travel on Huntingfield Avenue to Nautilus Grove, this would be approximately offset by existing school traffic routing through the new intersection with Channel Highway.

Expansion of Villa Howden

Villa Howden is a hotel located at 77 Howden Road that currently supplies 10 rooms. Kingborough Council has approved plans to extend to 52 rooms and add a new dining area and bar.

Within the approval, two elements are key traffic generating components, which include:

- 42 hotel rooms.
- Restaurant with assumed 100 seats to cater for guests, or approximately 265 m^2 floor area.

A summary of the traffic generation from the individual components is provided in Table 8.

Table 8 Villa Howden traffic generation

Component	Quantity	Peak Hour Trips
Hotel – Cars	50% of 42 rooms	17
Hotel – Taxis	30% of 42 rooms	13
Restaurant	300 m^2	14
Total		**44**

Of the generated traffic presented in Table 8 it is anticipated that there will be a relatively even split between vehicles travelling east on Howden Road, north on Channel Highway and south on Channel Highway. Due to the relatively small size of the development in comparison to others on the corridor a conservative approach is adopted assuming 100% of trips are on the Channel Highway.

Brookfield / Lavender Farm tourist development

It has been indicated that there may be future development at 1520 Channel Highway, Margate which is currently the Lavender Farm adjacent to Brookfield Road. A 2015 proposal received council approval for the development of the Brookfield Estate property into an essential oils agri-tourism and farm operation. The development if completed is expected to attract significant numbers of visitors with a large seasonal variation. A TIA of the development was undertaken by Milan Prodanovic Traffic Engineering and Road Safety. The land use predictions and associated traffic generations have been extracted from the TIA as follows:

- It is anticipated that the development will generate 800 visitors per day with potential to reach 1000 visitors per day.
- It is anticipated that 2-3 coach services would service the development daily.
- The residual 700-740 visitors will arrive by car with an anticipated vehicle occupancy of 2.2.
- Vehicle trips to the development are likely to be in order of 340 vehicles per day.
- It is anticipated that 48 vehicles will arrive during the afternoon peak hour (after 3pm).
- An additional 10 employee trips are expected during AM and PM peak hours.

The traffic generation is summarised in Table 9.

Table 9 1520 Channel Highway traffic generation

Land Use	Peak Hour Trips	AADT
Visitor Centre	58	340

Data extracted from Traffic Impact Assessment – 1520 Channel Highway, Margate (Milan Prodanavic, 2015)

Growth in Margate and further south

Two developments have been identified as prospects which may impact upon the study corridor. The developments have not yet attained approval.

- A development of land adjacent to Meredith Organic Grocer in Margate with proposed 300 residential lots.
- A development on southern side of Snug with proposed 50 residential lots.

Both developments are outside of Urban Growth Boundary. The developments are expected over 10 – 15 year time period if approved.

A commercial area in Margate comprising of a supermarket and approximately 12 shops has attained approval however development has been paused. Approval for the development remains if development were to resume.

Further growth or densification of residential areas in Margate and Snug has been noted as a future possibility.

The above developments have not been considered further for traffic generation, however to allow for growth, the historic growth rate of the corridor has been applied. This is a highly conservative approach as the background growth considered in Section 2.7.1 is for AADT which is typically substantially higher than peak hour growth.

2.7.3 Summary of traffic generation

The traffic generation discussed in Sections 2.7.1 and 2.7.2 is summarised in Table 10.

Table 10 Channel Highway traffic generation

Development	Road	Peak hour generation	Period
Springfarm Estate	Spring Farm Road *Connection to Kingston View Drive not considered.*	454	Development in progress.
Whitewater Park Estate	Spring Farm Road	77	Development in progress
	Maddocks Road	151	
Huntingfield Stage 2 Development	New access road onto Channel Highway	333	Construction expected within three years
Expansion of Villa Howden	Howden Road	44	Unconfirmed. Conservative estimate due to low generation.
Brookfield Lavender Farm tourist development	Brookfield Road	58	Unconfirmed. Conservative estimate due to low generation.
Background growth / southern densification	Channel Highway at Margate	2.1%	Historically annually, however this is a conservative estimate

3. Stakeholder and community engagement

A number of community engagement activities were undertaken as part of the options identification process. Details of the activities and resultant outcomes are discussed in the following section.

3.1 Consultation summary

The diagram below outlines the stages of the planning study and this consultation summary includes the consultation activities carried out to date during the project. Key stakeholders, residents, road users, community groups, business owners, and public transport service providers have contributed to the planning study by providing valuable input and suggested improvements for this section of the Channel Highway. The specific consultation activities that have been undertaken to date to inform the study are listed below and the dates on which these occurred are listed in Table 11:

- Briefings to key stakeholders and Kingborough Council.
- Workshops with representatives from Department of State Growth, Kingborough Council, Cycling South, and the Royal Automobile Club of Tasmania (RACT).
- Social Pinpoint, a digital interactive map that was used to collect feedback from road users and the wider community from 15 April to the end of May 2019 and to gain insights into the various perspectives of different road users, residents, and business owners. From 9 – 20 December 2019 the interactive map was relaunched to share the list of improvement options with the community and seek their opinions on the improvements.
- As well as direct emails to stakeholders, State Growth's website, Kingborough Council website, and Facebook advertising promoting the use of the interactive map.

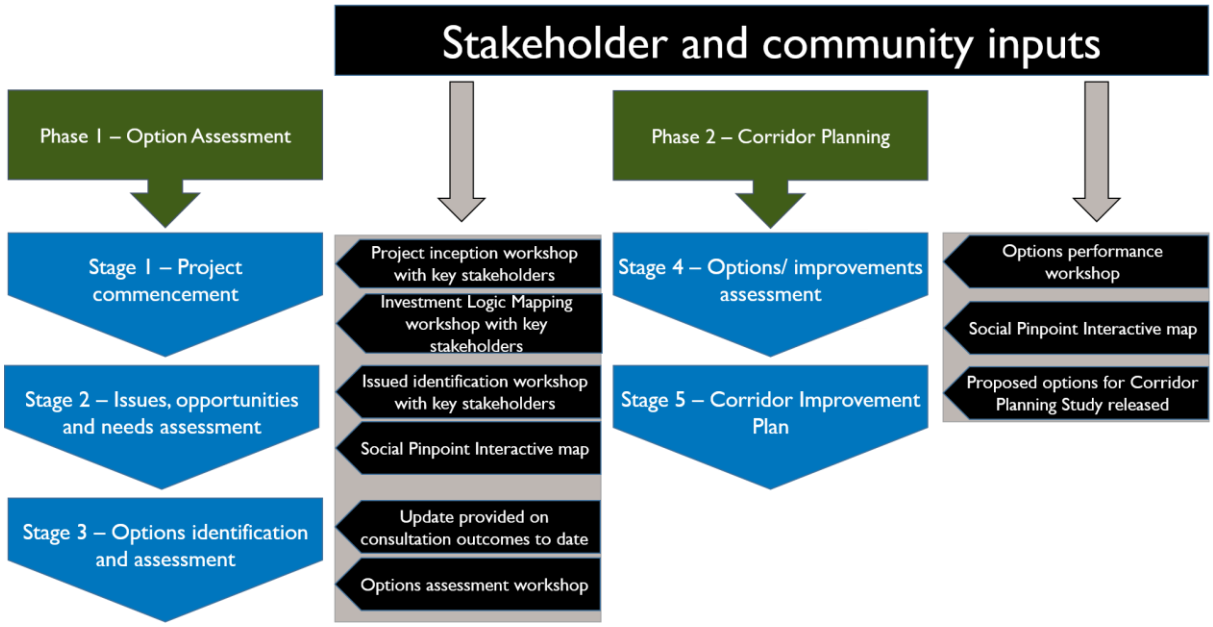


Figure 20 Stakeholder and community inputs

Table 11 Consultation activities

Date	Tool/method	Distribution/promotion
26 February 2019	Briefings to Kingborough Council ahead of the planning study	Not applicable
14 March 2019	Investment Logic Mapping workshop with key stakeholders	Not applicable
9 May, 9 July 2019	Three workshops with representatives from the Department of State Growth, Kingborough Council, Cycling South, RACT	Not applicable
15 April 2019	Notification flyer to residents adjacent to the study area and in the Howden Road catchment	Hard copy sent to adjacent and nearby residents, email version sent to Government and agency representatives, local community groups and businesses
15 April - 26 May 2019	Social Pinpoint interactive map	Details in notification flyer, promoted on State Roads website and Facebook page, promoted on Kingborough Council website and Facebook page
10 July – early September 2019	Further engagement with Kingborough Council	By email
August 2019	Update on summary of consultation received and current project status	Posted on State Roads project webpage and online interactive map
20 September 2019	Ministerial briefing on improvement options identified that are being assessed for inclusion in the Final Corridor Improvement Plan	Not applicable
4 November 2019	Workshop with Kingborough Council on improvement options identified that are being assessed for inclusion in the Final Corridor Improvement Plan	Not applicable
9 – 20 December 2019	Probable improvement options shared with the community	Media release, update to Social Pinpoint interactive map, display at Kingborough Council, information on State roads webpage and Facebook
Early-mid 2020	Ministerial briefing and briefing to Kingborough Council on final Corridor Improvement Plan	Not applicable
Mid 2020	Corridor Improvement Plan study report completed	Media release, report available on State roads webpage and link on Facebook page, link on Kingborough Council website and Facebook page

The separate Channel Highway Kingston to Margate Consultation and Feedback Report (June 2020) summarises engagement activities undertaken with key stakeholders, residents, road users, community groups, business owners, and public transport service provided during the study.

3.2 Investment Logic Mapping

As part of the initiation stage of the corridor study an Investment Logic Mapping workshop was held with representatives from Kingborough Council staff and elected members, RACT, State Growth (Active Transport, Passenger Transport, Environment, Traffic Engineering) and was facilitated by GHD.

Investment Logic Mapping (ILM) is a structured workshop that brings together key stakeholders to ensure that there is early agreement on problems, outcomes and benefits before any investment decisions are made. It is an informed discussion based on sound investment management principles that will:

- Give an opportunity for different perspectives to be shared and respectively challenged.
- Creates an opportunity to draw links across organisations about what is known.
- Provides a clearer view of what we know from the people who know the most, and the quality of the evidence available which will underpin the discussion.

Key project objectives from the ILM were:

1. A reliable and safer corridor for the movement of people and goods.
2. Improved access to local schools, town centres and amenities.
3. A safer, more enjoyable and convenient transport corridor for all mode users.

A summary of the Statements and Benefits that were concluded from the ILM are detailed in Figure 21.

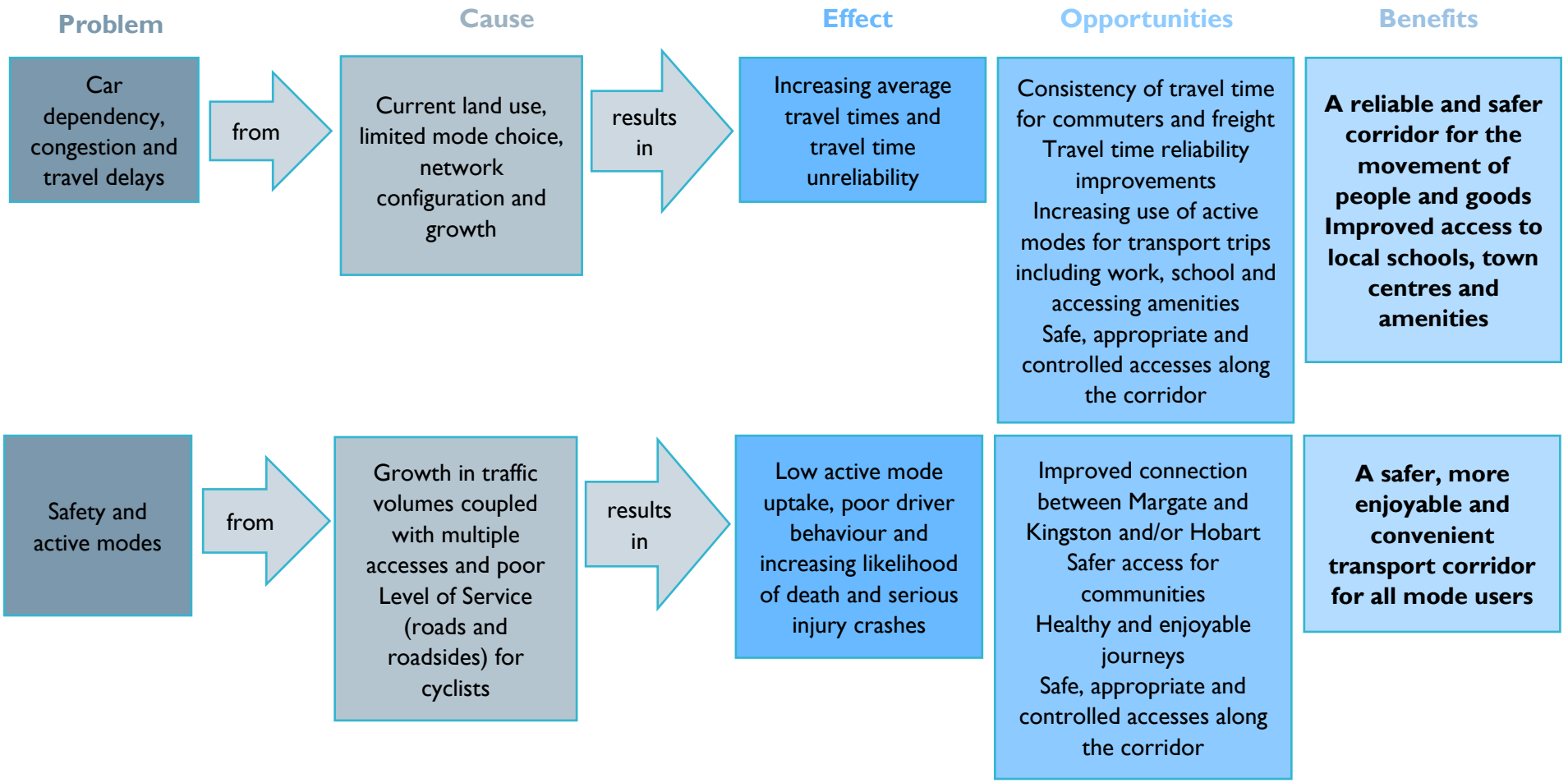


Figure 21 ILM Summary Statements and Benefits

3.3 Consultation emerging themes

Following a review of all of the feedback received via the online interactive map between 15 April and 26 May 2019 and written submissions from five organisations, the key themes identified were:

- Strong support for a dedicated cycling/walking pathway on this section of the Highway to improve safety for cyclists and pedestrians and to encourage increased participation in active transport both for commuters and recreational bicycle riders.
- Cycling safety is a concern on this section of the Highway both in terms of the condition of the road shoulders and behaviour of passing motorists.
- The issue of congestion was expressed strongly particularly in relation to the road layout at the Algona Road roundabout.
- Upgrade and seal shoulders to 1.5 metres along corridor.
- Safety at the Howden Road junction was highlighted in a number of comments received with particular mention of the difficulty turning right from Howden Road onto the Channel Highway at peak times.
- There were a number of community members and road users who expressed a desire for this section of the Highway to be upgraded to dual carriageway or installation of passing lanes to increase traffic flow and reduce congestion.
- Right turn lanes into specific businesses along the corridor.
- The intersection of the Channel Highway and Sandfly Road attracted feedback expressing the desire for a roundabout to be installed at this intersection with road users experiencing difficulty turning right onto Channel Highway towards Margate at peak times.
- Pedestrian safety was of concern also, with community members saying they felt unsafe on this section of the Highway particularly when accessing bus services. The provision of a dedicated cycle/walkway was suggested to provide a safer pedestrian environment and encourage more recreational use with a connection between Kingston and Margate.
- The issue of public transport, bus timetables, park and ride facilities drew some comments, with some indicating they would definitely make use of park and ride facilities to commute to Hobart on public transport if adequate infrastructure and more regular bus services were provided. There was also the desire to include facilities for bicycle park and ride infrastructure at key locations.
- Road users stated that the bridge at North West Bay River is consider inadequate for pedestrians, cyclists and horse riders to safely negotiate. The narrowness of the bridge, high volumes and speed of passing traffic were provided as reasons for this.

3.4 Other submissions

As well as the feedback received via briefings, workshops, Facebook and the interactive map, submissions were also received from Metro Tasmania, RACT, Bicycle Network Tasmania, the Kingborough Council Bike Advisory Committee, Hobart Walking Club, and numerous property owners. A summary of issues and opportunities contained in these submission is summarised below.

- Improvements to park and ride facilities at Huntingfield, inclusion of bicycle parking options at park and ride facilities, and improvements to bus stop facilities along this section of the Channel Highway.
- Installation of traffic signals to regulate traffic flow at peak times at the Algona Road roundabout.
- Installation of a roundabout and associated speed limit changes at the Howden Road/Channel Highway intersection, as well as improvements to line of sight for vehicles entering and exiting the road.
- Provision of a slow turnout lane on the departure side for vehicles uphill towards Kingston.
- A dedicated cycling corridor between Kingston and Margate.
- Complete widening from the North West Bay Golf Course to the North West Bay River Bridge, approximately 7 kilometres.
- Median right-hand turn lane along the entire length of this section of the Highway.
- Right-hand turn lanes into the Margate industrial estate, Margate Train, and Kingborough Bowls Club, as is the case with the North West Bay Golf Club.
- Installing a roundabout at the Sandfly Road/Channel Highway intersection at Margate.
- Encourage an increase in active transport.
- Upgrade the current shoulders to 1.5 metres wide with a smooth surface treatment installed.
- A dedicated cycleway/pathway is urgently needed.

A summary of issues and opportunities contained in the five written submissions received from Metro Tasmania, RACT, Bicycle Network Tasmania, the Kingborough Council Bike Advisory Committee and the Hobart Walking Club, is listed below:

Metro Tasmania

The submission from Metro Tasmania stated there are currently over 20 services each way weekdays, plus weekend services as well as numerous school bus operators on this section of the Highway. The area south of Huntingfield is classified as "urban fringe" and the provision of bus stop infrastructure is State and local government responsibility. Metro Tasmania works collaboratively with both levels of government and has a dedicated team of contractors to assist with this. Metro Tasmania believe there are opportunities for improvements to park and ride facilities at Huntingfield which will support increased utilisation of public transport.

Congestion issues at Huntingfield continues to worsen causing delays to bus services and affecting on-time performance for Metro Tasmania. Metro Tasmania have suggested consideration should be given to the installation of traffic signals to regulate traffic flow at peak times at the Algona Road roundabout, and should revert to a standard roundabout at non peak times.

The right turn movement from Howden Road in afternoon peak times is a significant issue for Metro Tasmania bus drivers, particularly with the current 90 km/h speed limit present at this point. Increased future traffic volumes will increase accident risk for their drivers. A roundabout at Howden Road is suggested to be most appropriate treatment at this intersection with bus stops south of Howden Road being relocated to the departure sides of the roundabout. Provision of a slow turnout lane on the departure side for vehicles uphill towards Kingston would also minimise the effect of buses re-joining the traffic stream.

RACT

The RACT submission requests State Growth to consider the following:

- Development of a park and ride facility to cater for bus patrons in the Kingborough area that commute to Hobart, as well as improvements to bus stop standards along the Channel Highway.
- A separated cycleway in both directions, facilitated by widened shoulders along the length of the Highway, to enhance the safety of commuter and recreational cyclists.
- A complete widening from the North West Bay Golf Course to the North West Bay River Bridge, approximately 7 kilometres.
- A median right-hand turn lane along the entire length of the Highway, separating turning vehicles from traffic turning into commercial or residential properties.
- This must include right-hand turn lanes into the Margate industrial estate, Margate Train, and Kingborough Bowls Club, as is the case with the North West Bay Golf Club.
- These projects may require sealing shoulders and/or lane widening for specific sections.
- Installation of a roundabout and associated speed limit changes at the Howden Road/Channel Highway intersection, as well as improvements to line of sight for vehicles entering and exiting the road.
- Installing a roundabout at the Sandfly Road/Channel Highway intersection at Margate to allow for safer movement turning right into Margate and mitigate against future traffic issues for people turning left towards Kingston.

Bicycle Network Tasmania

The members of Bicycle Network Tasmania expressed a desire for a dedicated cycling corridor between Kingston and Margate and that the shared path that currently exists between Snug and Margate be continued to Kingston. Given the number of future developments in the area the Bicycle Network stated that this infrastructure will provide another option to driving and encourage an increase in active transport. As well as bicycle users, this facility would allow children to get to school, sporting and other services and bus stops into city safely. Sealed shoulders would only suit a small number of riders, the bulk preferring a dedicated cycleway/pathway. There was also the desire that park and ride infrastructure should include bike parking facilities near major bus stops to allow riders to park their bikes there and then commute by bus into Hobart city. The group is happy to consult with members on a preferred route and stated it makes sense to include a dedicated cycleway/pathway in any future works on the Highway.

Kingborough Council Bike Advisory Committee

The advisory committee stated there is a growth in population in the area and number of bicycle users is increasing. The Highway in its current configuration is the only connection available for cyclists between Kingston and Margate. This section of the Highway is used by commuter, recreational, and tourist bike riders. The current shoulders are unsuitable being in poor and inconsistent condition both in quality and width. They stated that the current passing laws mean that motorists slow down so that they can legally pass (allowing 1.5 metres) and that this holds up traffic and contributes to congestion and driver frustration. Their wish in the short term would be to upgrade the current shoulders to 1.5 metres wide with a smooth surface treatment installed however stated that a dedicated cycleway/pathway is urgently needed and should be a continuation of the Snug to Margate pathway. This will improve safety and reduce stress for both cyclists and motorists on this section of the Highway.

Hobart Walking Club

The Hobart Walking Club expressed their wish that the shared pathway at Snug be extended from Margate to Kingston and beyond to encourage active transport for their members and recreational opportunities for the wider community. The club see this as an opportunity for the Kingborough Council and Department of State Growth to work together on achieve this goal.

Following the assessment of the identified improvement opportunities on a range of criteria including safety, constructability, value for money, and community interest, the options were shared with the community on the online interactive map, the State Roads website and Facebook pages, and displayed publicly at the Kingborough Council offices from 9-20 December 2019. There were an additional 166 comments received on the online interactive map and 30 comments on the Facebook page, and four submissions received from individuals and organisations. A summary of the feedback received for each option is in Table 12 below.

Table 12 Feedback on identified improvement options

Safety	
Channel Highway shoulders widened and sealed to a consistent standard	There was considerable community support for this initiative – particularly from those who cycle on this section of the Highway either recreationally or to commute to Hobart. There was also the desire for complete widening of the corridor from the North West Bay Golf Club to the North West Bay River bridge (approximately 7 kilometres), and identify priority areas within the section.
Reduction of speed limit from 90 km/h to 80 km/h	Of those who commented, most opposed this initiative and said that this section of road is already generally considerably slower that the current 90 km/h speed limit caused by increasing traffic volumes and poor driving skills. It was suggested that a speed limit reduction should only occur once improvements to road standards have been made and there is evidence to support a reduction at that time.
Sight distance improvements at the Howden Road intersection	This option had mixed support from the community with some saying this would not be enough to fix the currently experienced "near miss" occurrences at this intersection and would like to see more done to address safety concerns here.
Feasibility study for a new roundabout and realignment of Howden Road and Brookfield Lane to intersect with Fehres Road	Sight lines at Fehres Road due to long grass are a concern expressed by the community and that the roundabout/realignment concept suggested would not meet future needs of this section of the corridor and that the roundabout would affect traffic flow. The majority of the community who commented on this option would like to see other options considered that would future-proof and increase the safety of this section of the corridor, and that gives consideration to the needs of bike riders in the design.
Pedestrian and cyclist bridge crossing at North West Bay River	This option is very strongly supported by the community particularly with links to Snug to Margate off-road pathway and the potential to connect to the proposed Margate to Kingston off-road pathway option.

Traffic flow	
Stage 1 - an additional roundabout at Algona Road which will improve traffic flow for north/south through traffic	While this option received strong support from the community, community comments were that Stage 2 should either be prioritised over Stage 1 or built at the same time to achieve resolution to congestion experienced here. There was also some comment that the roundabout should be simplified and a request that it does not shift congestion from the Channel Highway to the Southern Outlet and vice-versa for southbound traffic. Comments suggested that consideration should also be given to the needs of bike riders in the design.
Stage 2 – an overpass at Algona Road. This will allow north/south traffic to travel through this section of the Highway without entering a roundabout and also provide access on and off the Highway via the Stage 1 roundabout above	There was very strong support for this option, with many community members expressing that they would prefer to see this option occur before the Stage 1 roundabout above. Clarification was also sought on whether this would be a four lane or two lane overpass and functionally how it would fit into the existing Channel Highway.
Bus priority lane during peak hours at Algona Road roundabout with improved access to Park and Ride facilities	There was mixed support for this option, with the community expressing that for this to work effectively, education as well as improved bus infrastructure and timetables would be needed to persuade community members to use the bus. There is also the perception that if a lane is reserved for bus priority then this makes less lanes available to commuter traffic. Clarification was sought on exactly where the bus lane will be, how it will operate and a suggestion that this should be extended along the Channel Highway and Southern Outlet to some extent.
Improvements to Channel Highway intersection with Sandfly Road, including pedestrian facilities	There was strong support from the community for this option with most stating that a roundabout would be the preferred outcome here.
Northbound overtaking lane – slow vehicle passing opportunity in northbound direction	There was a low level of interest in this option with those community members who commented expressing that it should be southbound instead of northbound as there are no overtaking opportunities for southbound traffic between Algona Road and the southern side of Snug. There was also a desire for the entire corridor to be two lanes north and southbound.

Access	
Feasibility study for an off-road shared path from Margate to Huntingfield	Of all the options presented, this received the most interest from the community and is strongly supported. Feedback asked that consideration also be given to a separated cycleway in both directions on the Channel Highway to enhance the safety of commuter and recreational cyclists. Concerns have been raised by some community members and landowners directly adjacent to the schematic indicated on the map. There was a desire expressed for the path to extend through to the current Algona Road roundabout instead of terminating at Huntingfield.
New roundabout for Huntingfield Stage 2 Project access and realignment of Maddocks Road to **connect** with intersection	There was very little community support expressed for this option, with the preference that other options be considered including alternate road arrangements, and the design should consider cyclist and pedestrian needs.
Existing bus stop infrastructure improvements and increased accessibility to the stops from side streets for pedestrians and cyclists. Improved frequency, cost and travel time along the corridor.	There was good support from the community for this option with safety, accessibility, integration with bike riding commuters including secure bike infrastructure, and frequency of services being suggested as areas for improvement.

Several issues have been raised as not being addressed by the study to date and broadly these are:

- The development of a dedicated site for a commuter park and ride facilities in the Kingborough area.
- Complete widening of the corridor from North West Bay Golf Course to the North West Bay River Bridge (approximately 7 kilometres).
- A median right-turn lane along the entire length of the Highway to allow traffic to safety turn into commercial and residential properties.

4. Issues identification

4.1 Corridor efficiency review

4.1.1 Road performance assessment

A primary criterion for measuring road corridor performance is Level of Service (LoS). The Channel Highway is a two-lane highway, therefore, the performances is determined by considering the 'Average Travel Speed' (ATS) and the 'Percent Time Spent Following' (PTSF). Both of these parameters are calculated using the methodologies provided in the Highway Capacity Manual 2010 depending on the classification of the highway. The Channel Highway is considered a Class I Highway as it is used for daily commuters and motorists expect to travel at relatively high speeds, however it should be noted that it does also experience a level of recreational use which would be considered Class II. The performance criteria are provided in Table 13.

Table 13 Level of Service criteria for two-lane highways

Level of service	Class I highway	
	Average travel speed ATS (km/h)	Percent time-spent-following PTSF (%)
LoS A	> 90	≤ 35
LoS B	> 80-90	> 35-50
LoS C	> 70-80	> 50-65
LoS D	> 60-70	> 65-80
LoS E	≤ 60	> 80

Source: HCM 2010

Travel times for the corridor were recorded during the Origin-Destination survey undertaken in February 2019. It should be noted that these travel times include delays experienced at Algona Road / Channel Highway roundabout.

Average and median travel times over 15 minute periods between 7:30 AM and 9:30 AM showed a range in travel time of 5 – 6 minutes (from south of Sandfly Road to north of Algona Road).

The same approach was taken for the evening period of 4:00 PM – 6:00 PM which showed a range of 5.5 – 6 minutes with typical travel time being around 6 minutes for the corridor (from north of Algona Road to south of Sandfly Road).

Based on these travel times, Channel Highway average speeds are generally in the range of 50 to 60 km/h. Table 13 indicates that the performance of the bypass is LoS E (noting the 80 km/h and 60 km/h speed limits restricts the potential LoS of the Channel Highway to LoS B and more likely LoS C). It is also restricted by the conflicting use classes of the Highway due to high tourist and recreational use which are not Class I uses.

The Highway Capacity Manual provides guidance with regards to the capacity of two-lane highways in terms of passenger cars per hour (pc/h). The Channel Highway prevailing conditions for AM and PM peak hour is a volume of 1,600 vehicles per hour (i.e., all vehicles) with a 65/35 directional split. The Highway Capacity Manual considers heavy vehicle proportion and impacts of highway grade to determine the passenger car equivalent flow rate (v_p). Following the provided method, the value for v_p was determined to be 1,880 pc/h with a peak directional flow of 1,222 pc/h. These values are below the acceptable limits provided of 3,200 pc/h for two-way and 1,700 pc/h for directional flow suggesting that theoretically there is sufficient capacity within the corridor.

4.1.2 Intersection performance analysis

Existing intersection performance has been assessed based on traffic count data and verified using surveyed queue lengths. Key performance limitations were identified and are summarised in Table 14.

Table 14 Intersection performance limitations

Intersection	Finding
Algona Road	Algona Road / Channel Highway is subject to high volume peak hour movements between Channel Highway south and Kingston Bypass, Channel Highway south and Channel Highway north, and Algona Road and Kingston Bypass.
	Maximum queue for Channel Highway south approach in AM peak has potential to block Kingston Bypass lane.
	Queuing in the PM peak occurs on Channel Highway north approach and at times may block the left slip lane and access to the Antarctic Division. Current queue lengths are not anticipated to interfere with Spring Farm Road roundabout.
	Queues on the Huntingfield Avenue approach may extend to block egress from the Park and Ride facility particularly in the PM peak period.
Howden Road	Howden Road turning movements represent a small proportion of the total intersection volumes (approximately 6 - 7%).
	A small amount of queueing was observed on Howden Road though the potential for significant vehicle delays was noted.
	A residential driveway is located in close vicinity to the intersection on Howden Road.
Sandfly Road	Sandfly Road turning movements represent a significant proportion of the total intersection volume (approximately 22%).
	Sufficient storage for existing queue lengths is provided.
	Typical queueing on Sandfly Road is low however there is potential for long delays.

SIDRA intersection modelling was used to quantify the performance of intersections in the corridor. Intersection LoS diagrams indicating the LoS for each approach are provided in Figure 22 to Figure 25.

Algona Road / Channel Highway

For roundabouts and give way intersections the intersection LoS is determined as the worst approach LoS. The criteria for LoS at intersections are provided in Table 15.

Table 15 Level of Service criteria for intersections

LoS	Average delay per vehicle in seconds	
	Unsignalised intersections	Roundabouts
A	<10	<10
B	>10 – 15	>10 – 20
C	>15 – 25	>20 – 35
D	>25 – 35	>35 – 50
E	>35 – 50	>50 – 70
F	>50	>70

Source: Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis

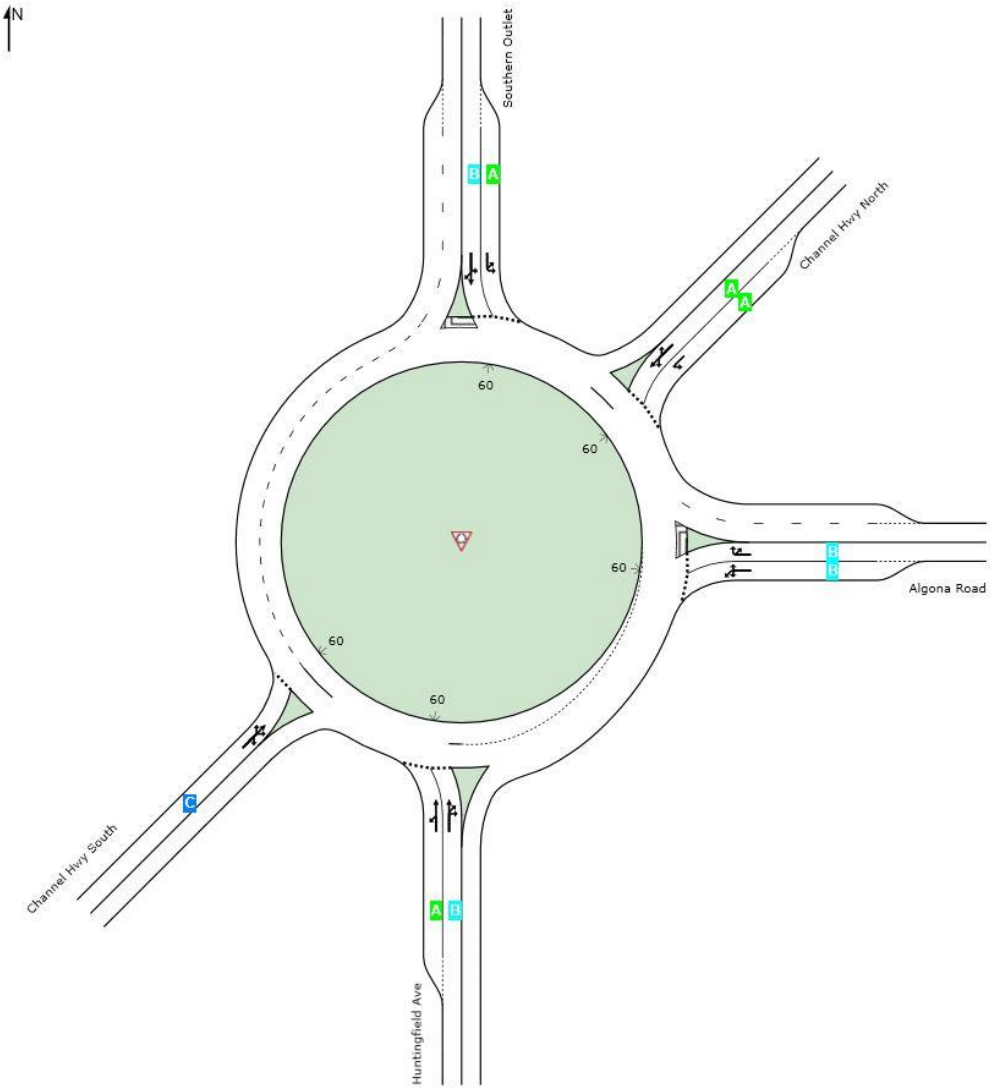


Figure 22 Algona Road roundabout LoS AM peak hour

As presented in Figure 22 the intersection LoS for Algona Road / Channel Highway roundabout in the AM peak hour is LoS C due to the Channel Highway south approach with an average delay of 31 seconds. The delays for each approach lanes are provided in Table 16.

Table 16 Algona Road roundabout delays (s) and LoS

Approach	Kingston Bypass		Channel Highway north		Algona Road		Huntingfield Avenue		Channel Highway south
Lane	L	R	L	R	L	R	L	R	-
AM	8.6 (A)	11.3 (B)	6.1 (A)	5.4 (A)	11.4 (B)	16.3 (B)	7.6 (A)	12.2 (B)	30.7 (C)
PM	5.9 (A)	12.6 (B)	17.2 (B)	49.1 (D)	26.2 (C)	28.9 (C)	23.2 (C)	33.8 (C)	12.8 (B)

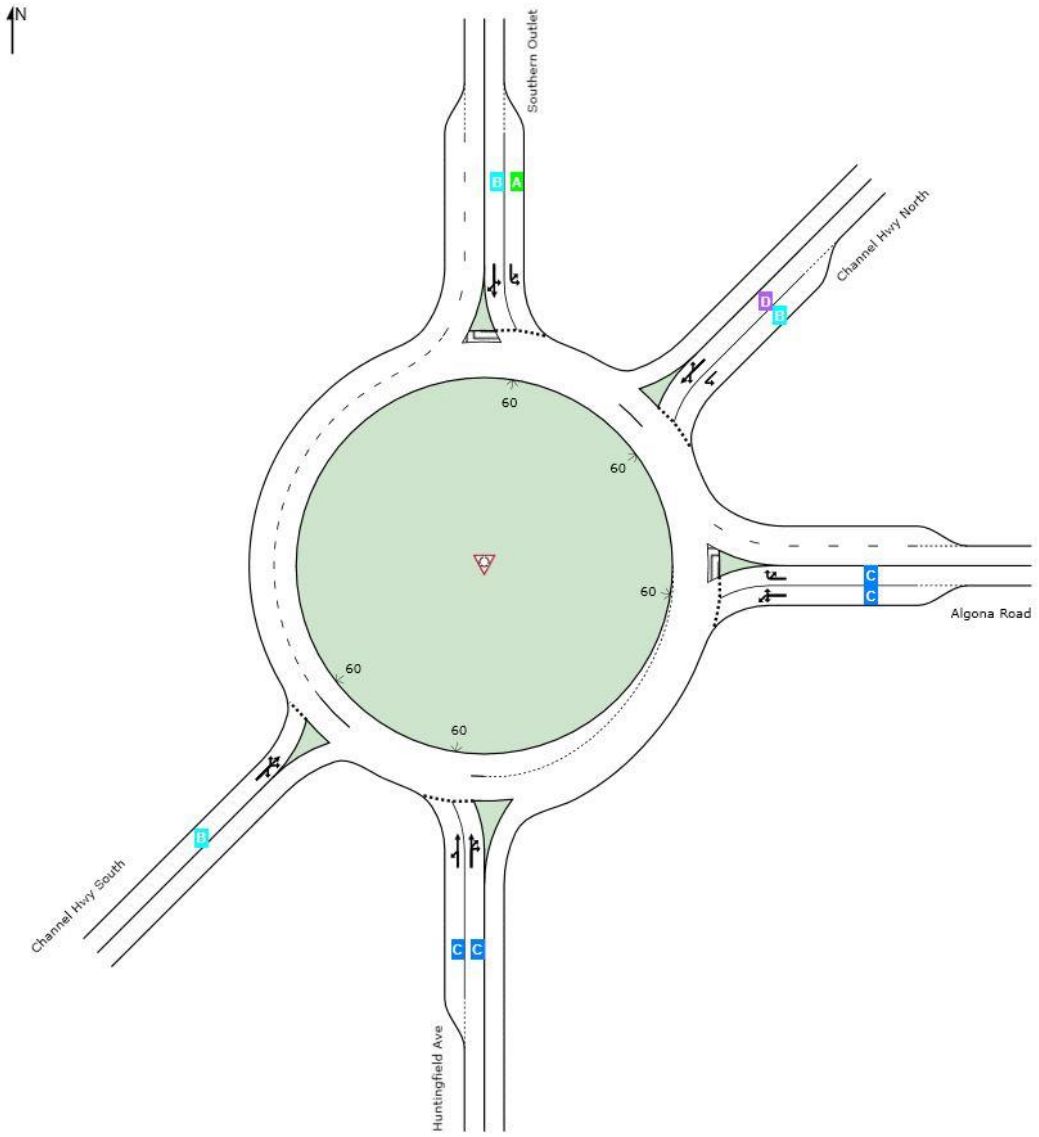


Figure 23 Algona Road roundabout LoS PM peak hour

As presented in Figure 23 the intersection LoS for Algona Road / Channel Highway roundabout in the PM peak hour is LoS D. The approach that performs worst is the Channel Highway north approach with an average delay of 41 seconds.

The large volume of traffic travelling through from Channel Highway north to Channel Highway south has an evident impact on the Algona Road and Huntingfield Avenue approaches with both approaches performing at LoS C and average delays of 12 – 15 seconds.

Howden Road

As presented in Figure 24 the Howden Road intersection in both the AM and PM peak hours has a LoS F. The average delay for the right turn movement in the PM peak is 72 seconds as presented in Table 17. The Howden Road right turn approach experiences high delays but low queues with over 90% of the total intersection volume travelling on Channel Highway.

In the PM peak period the LoS of right turns into Howden Road and left turns out of Howden Road achieves LoS C due to the high directional split of Channel Highway having substantially more southbound movements in the PM peak hour.

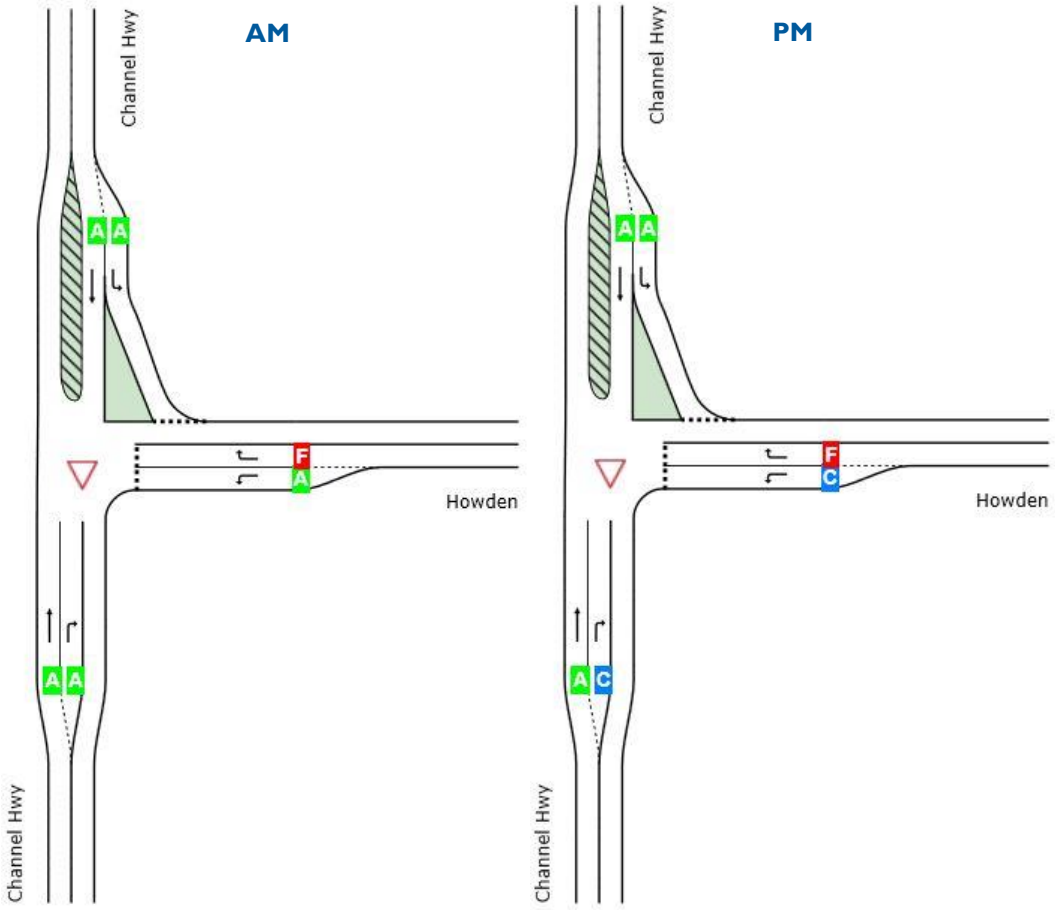


Figure 24 Howden Road intersection LoS

Table 17 Howden Road intersection delays (s) and LoS

Approach	Channel Highway south		Howden Road		Channel Highway north	
Lane	L	R	L	R	L	R
AM	0.1 (A)	9.6 (A)	7.7 (A)	63.9 (F)	8.2 (A)	0.0 (A)
PM	0.0 (A)	17.1 (C)	15.5 (C)	71.5 (F)	8.0 (A)	0.1 (A)

Sandfly Road

As presented in Figure 25 the intersection LoS for Sandfly Road intersection in the AM and PM peak hours is LoS F. The approach that performs worst is the Sandfly Road right turn approach which experiences high delays but low queues.

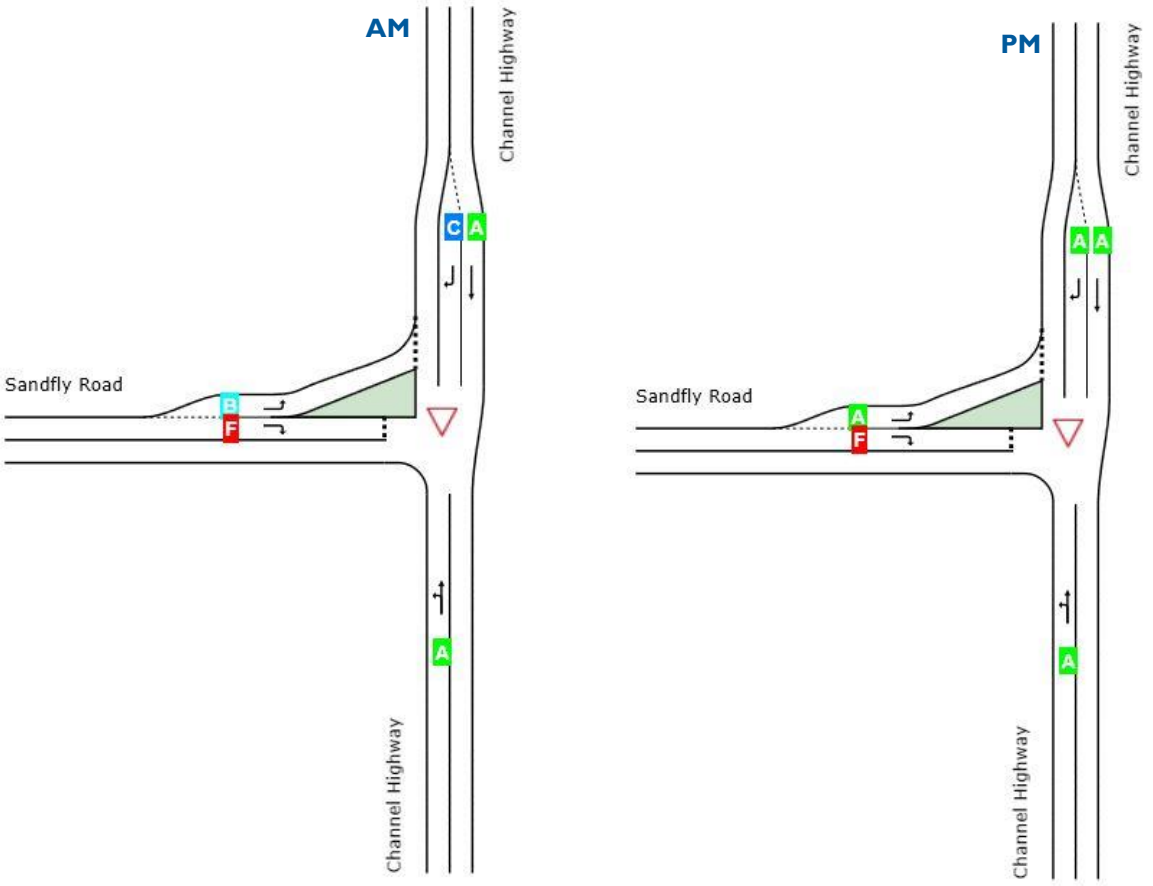


Figure 25 Sandfly Road intersection LoS

As presented in Table 18, for the AM peak period the right turns into Sandfly Road and left turns out of Sandfly Road perform worse than the PM due to the high directional split of Channel Highway having substantially more northbound trips in the AM peak hour. Despite the LoS, the 85th percentile queue for both turning movements is only one vehicle.

Table 18 Sandfly Road intersection delays (s) and LoS

Approach	Channel Highway south	Sandfly Road		Channel Highway north	
Lane	-	L	R	L	R
AM	0.9 (A)	7.7 (A)	63.9 (F)	8.2 (A)	8.0 (A)
PM	0.9 (A)	7.7 (A)	59.9 (F)	0.1 (A)	8.4 (A)

4.1.3 Future intersection performance

In order to assess the ability for the network to operate under future conditions the Aimsun Hybrid Traffic Model of Kingston was utilised along with individual SIDRA intersection models for detailed intersection assessments.

The development and results from the Hybrid Model is detailed in the *Channel Highway Corridor Study – Kingston to Margate, Traffic Modelling Report* (GHD, 2019). The key findings from the hybrid modelling are included below. The traffic volumes from the model were then used to provide future demand for SIDRA intersection models for a detailed analysis of each intersection.

The future demand for the model is comprised of base demand from the calibrated extension of the Kingston Hybrid Traffic Model, strategic demand from the Greater Hobart Urban Travel Demand Model and development traffic generation as determined in Section 2.7 (refer Table 10). The intersection impacts are discussed below.

Algona Road / Channel Highway

When assessing the forecast volume, the result indicated the need for intersection upgrades prior to the completion of the known traffic developments discussed in Section 2.7. Significant delays were observed on Channel Highway south approach in the AM peak period which would have a strong impact on the corridor performance. The PM peak period model was too congested and not able to be run at full forecast volume, the demands were reduced incrementally until a point that would allow the model to successfully run. Any additional traffic added to the model created instability in the performance indicating that the existing network is close to capacity. It should be noted that although the AM model was able to run successfully with additional demand, the delays experienced on the corridor would not be considered acceptable.

A sensitivity analysis of the PM model was undertaken in order to determine staging of when an intersection upgrade would be required. The analysis indicated that upgrades are likely to be required prior the full forecast demand of Spring Farm Estate and Whitewater Park Estate being generated. Alternatively, this is equivalent to 20% of the total forecast demand increase.

The trigger point for upgrades is dependent on performance requirements determined by Department of State Growth, however from the modelling results it is evident that upgrades should be considered for the immediate future.

Howden Road

A SIDRA intersection assessment of Howden Road was undertaken with future traffic volumes from the Kingston Hybrid Traffic Model. In order to model the full forecast demand, the traffic volumes are extracted from a model with road network upgrades at Algona Road / Channel Highway and in Kingston. The LoS, based on future demand, is presented for the AM and PM peak hours in Figure 26.

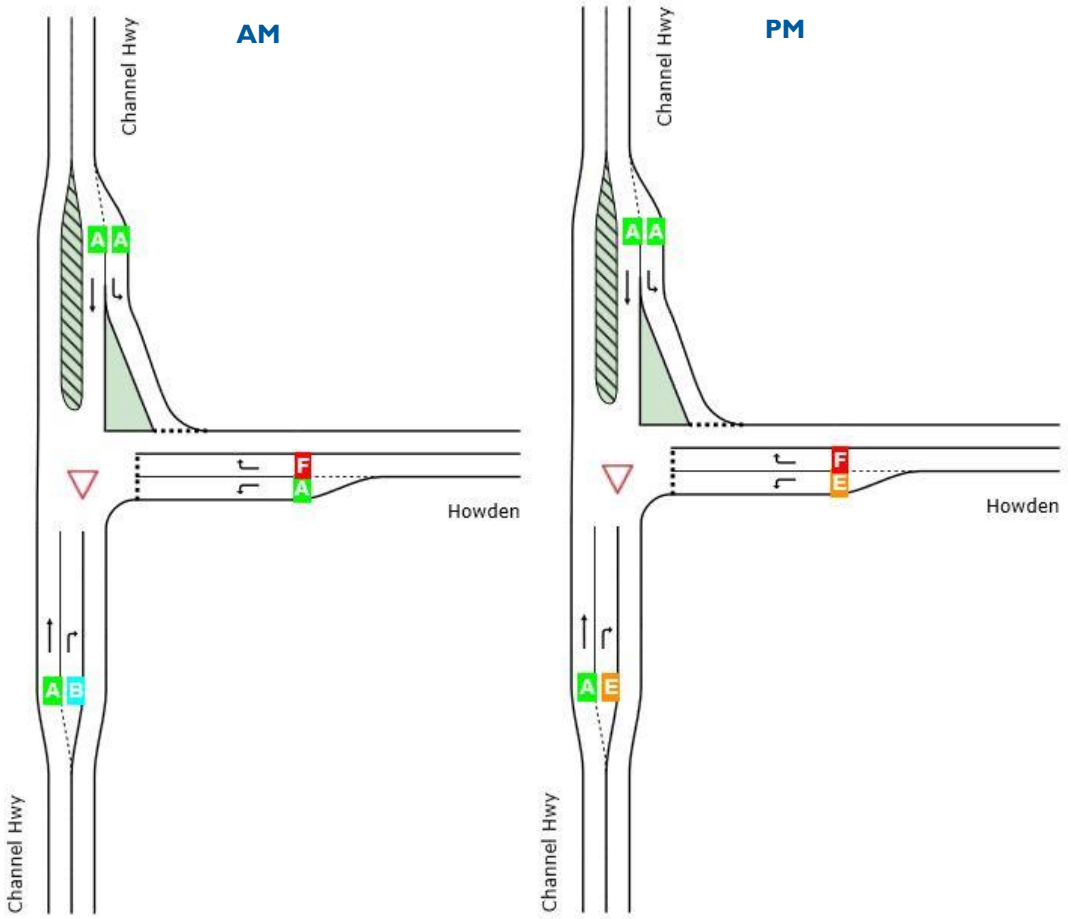


Figure 26 Howden Road intersection future LoS

As presented in Figure 26 the intersection LoS for Howden Road intersection in the AM and PM peak hours remains as LoS F. However, in both the modelled periods the delay for the right turn approach on Howden Road indicates that the intersection is saturated and is not operating as required. The saturation of the intersection is due to the increased volume on Channel Highway limiting the number and frequency of suitable gaps for turning vehicles. The approach delays are presented in Table 19.

Table 19 Howden Road intersection future delays (s) and LoS

Approach	Channel Highway south		Howden Road		Channel Highway north	
Lane	L	R	L	R	L	R
AM	0.2 (A)	10.4 (B)	8.1 (A)	>300 (F)	8.1 (A)	0.0 (A)
PM	0.1 (A)	40.7 (E)	36.9 (E)	>300 (F)	8.0 (A)	0.3 (A)

Sandfly Road

A SIDRA intersection assessment of Sandfly Road was undertaken with future traffic volumes from the Kingston Hybrid Traffic Model. The LoS, based on future demand, is presented for the AM and PM peak hours in Figure 27.

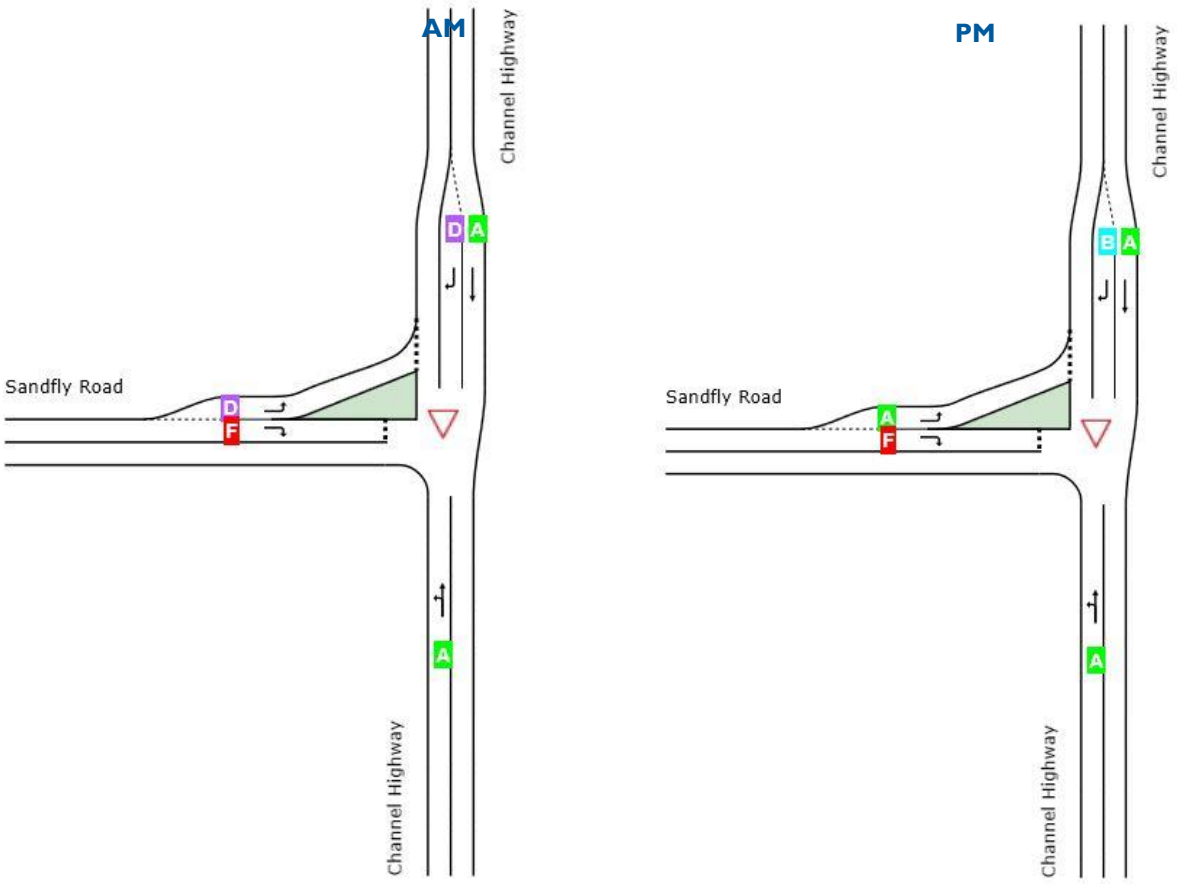


Figure 27 Sandfly Road future intersection LoS

As presented in Figure 27 the intersection LoS for Sandfly Road intersection in the AM and PM peak hours remains at LoS F, however decreases in lane LoS are observed for the right turn into Sandfly Road and the left turn slip lane from Sandfly Road. The lane delays are presented in Table 20. In both the modelled periods the delay for the right turn approach on Sandfly Road indicates that the intersection is saturated and is not operating as required. The saturation of the intersection is due to the increased volume on Channel Highway limiting the number and frequency of suitable gaps for turning vehicles.

Table 20 Sandfly Road future approach delays (s) and LoS

Approach	Channel Highway south	Sandfly Road		Channel Highway north	
Lane	-	L	R	L	R
AM	0.6 (A)	33.4 (D)	>300 (F)	0.0 (A)	29.8 (D)
PM	0.9 (A)	9.0 (A)	>300 (F)	0.2 (A)	10.4 (B)

Proposed Huntingfield access

As discussed in Section 2.7.2, the primary access into Huntingfield Stage 2 Project residential development will be provided directly onto Channel Highway south of Algona Road. The impacts of the access on performance of the Channel Highway corridor was examined in Aimsun and then the volumes exported to SIDRA.

When observed in Aimsun the proposed Huntingfield roundabout did not have a significant impact on the broader network, minor increases in travel time were observed for vehicles travelling on Channel Highway due to the speed restriction and minor delays at the roundabout.

4.2 Safety performance

Safety performance has been assessed based on a review of historic crash records, assessment of the existing geometric layout, and localised physical issues.

4.2.1 Crash history

Crash data for the last 5 years was collected from State Growth's Tasmanian Vehicle Crash Data. A total of 73 crashes were recorded on the corridor and at each intersection within the study area, of which 32 resulted in injury. The crash history of the corridor represents a crash rate of approximately 15 crashes per year.

From a review of the data provided, Algona Road roundabout stands out as a high occurrence crash area which is not unexpected given the high volumes and large number of conflicting movements.

Detailed crashes for Howden Road intersection are shown in Figure 28 below.

The 5 year crash history detail is contained in Table 21 and Figure 29 indicates the crash locations along the corridor.

Table 21 Crash history detail

Location	Type of crashes (Number of crashes)	Major Crash Type
Algona Roundabout	Cross Traffic (7) Rear End (7) Right Through (1) Other Manoeuvring (1) Loss of Control (2) Other Pedestrian (1) Not Known (1)	Cross Traffic (35%) Rear End (35%)
Channel Highway midblock between Algona Roundabout and Maddocks Road	Rear End (4) Loss of Control (4)	Rear End (50%) Loss of Control (50%)
Channel Highway midblock between Maddocks Road and Rays Crescent	Rear End (2) Head On (1) Other (1)	Rear End (50%)
Channel Highway midblock between Howden Road and Brookfield Road	Rear End (10) Head On (3) Manoeuvring (2) Loss of control (2) Cross Traffic (1) Other (2)	Rear End (53%)
Channel Highway midblock between Brookfield Road and Sandfly Road	Rear End (10) Cross Traffic (4) Head On (3) Loss of Control (3) Manoeuvring (1)	Rear End (48%)

Figure 28 Howden Road intersection – Crash history

Figure 29 Corridor 5 year crash history

4.2.2 Road Layout and Geometric review

A review of the corridor was undertaken to assess the current layout and cross section against standard requirements. The current geometric alignment on some curves along the corridor do not meet the standard requirements for the posted speed. Vehicles travelling at higher speeds than what the theoretical safe speed for the curve is can be unsafe and increase the chance of a crash occurring. This substandard condition does not meet the objectives National Road Safety Strategy and Safe System principles.

Four curves have been identified as being substandard for the posted speed and these have been highlighted in red in Figure 30.

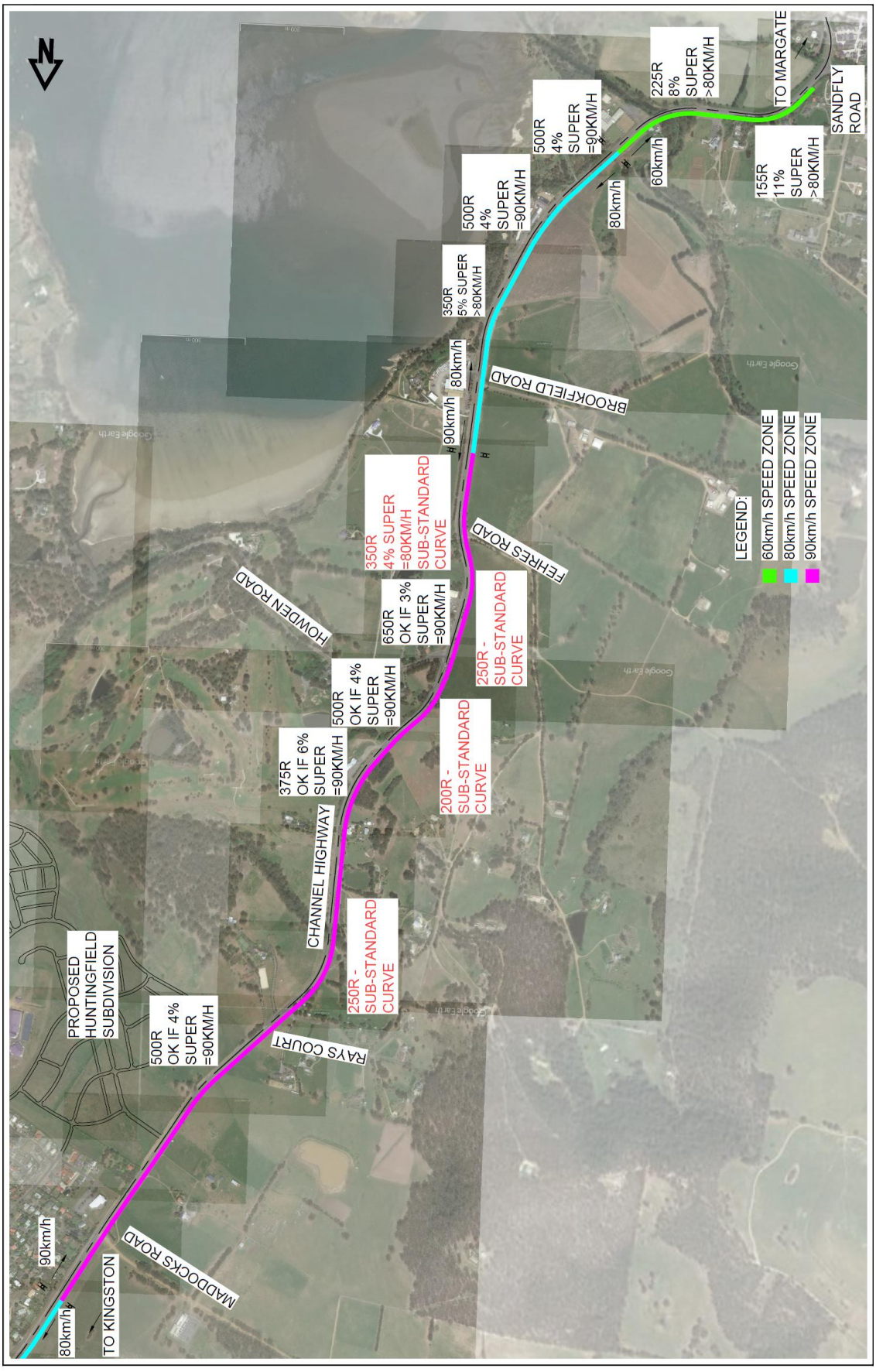


Figure 30 Geometric review

4.2.3 Howden Road intersection

The Howden Road and Channel Highway intersection is a concern from residents in Howden and Tinderbox. Safety and time delay issues when entering Channel Highway have been raised by the public.

A number of issues have been identified during the study and listed below:

- Intersection is located in between two substandard curves (at the posted speed limit of 90km/h).
- Sight distance is substandard to the north by a shortfall of approximately 80 metres.
- Channel Highway is unsighted when approaching from Howden Road due to uphill grade.
- Channel Highway southbound has a downhill grade, making it difficult for slowing left turn movement and identifying gaps in oncoming traffic when exiting from Howden Road.

Figure 31 Howden Road intersection – Available sight distance

4.3 Public Transport

According to the guide provided in Table 22 the level of service of the existing public transport service between Margate and Kingston varies across the time of day, ranging from Level of Service B for a brief time duration in the morning peak period, Level of Service C-D during the evening peak, and outside of peak times a Level of Service E-F would be experienced with headways up to an hour.

Table 22 Public transport level of encouragement

Level of service	Headway [min]	Scheduled services per hour	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 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

Source: Kittelson Assoc et al, 2003

The frequency of scheduled services in the peak times would be desirable for a number of users, and would encourage users who are in a position to choose public transport as means of travel. However these frequencies are only experienced for around an hour each day, and headways outside of these times means that the service would start to become unattractive for all users.

Given there is no public transport priority on the corridor between Margate and Kingston and bus stops are infrequent, the travel times of bus compared to private vehicles are comparable. Similar to that of travel times between Margate through to the Hobart CBD; travel times during the morning peak are between 22-40 minutes and around 38 minutes for bus services during this time.

State Growth has developed general access service standards which describes the various levels of service that might be delivered to a community based on need and demand. The service standards are based on a hierarchy on which Margate is classified as a 'Standard link' or service level C. The community connection service levels indicate provision of a 30 minute service frequency during weekday peaks and 60 minute service frequency during other specified periods.

4.4 Active Transport

Whilst at present there is only a small demand for walking and cycling infrastructure between Margate and Kingston, the limited or total lack of provision of separated facilities from the Highway carriageway is not providing an acceptable level of service for these users. This is particularly the case at the North West Bay River Bridge, where no footpaths are provided on the existing structure. Cyclists and pedestrians wishing to cross at the Bridge are required to travel on the Highway on a very limited width shoulder.

Figure 32 North West Bay River bridge

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

The corridor between Margate and Kingston is approximately 6.5 kilometres long, which makes it an acceptable distance for a commuting purpose as well as for trips made to a particularly destination such as a shop, restaurant, etc. according to Austroads Guide to Traffic Management Part 4: Network Management, Table B2.

Whilst it is a larger distance than most of the community could comfortably walk, if there is a need to walk between Margate and Kingston the facilities are not currently provided to safely navigate the corridor.

There is insufficient lighting in some sections of the corridor to provide a safe environment for both cyclists and pedestrians navigating the corridor at night or dusk conditions.

4.5 Issues summary

The main themes and issues identified in Sections 2, 3 and 4 have been summarised graphically in the following series of maps with the key issues identified in this study broadly grouped into the following summary areas:

- Provision of Level of Service and safety for active travel.
- Level of Service of the road corridor and adjacent roads including safety of intersection.
- Safety and accessibility of accesses onto road corridor.
- Deficiencies in the road corridor alignment.
- Insufficient intersection sight distance.
- High proportion of single occupancy vehicles and low passenger transport usage.

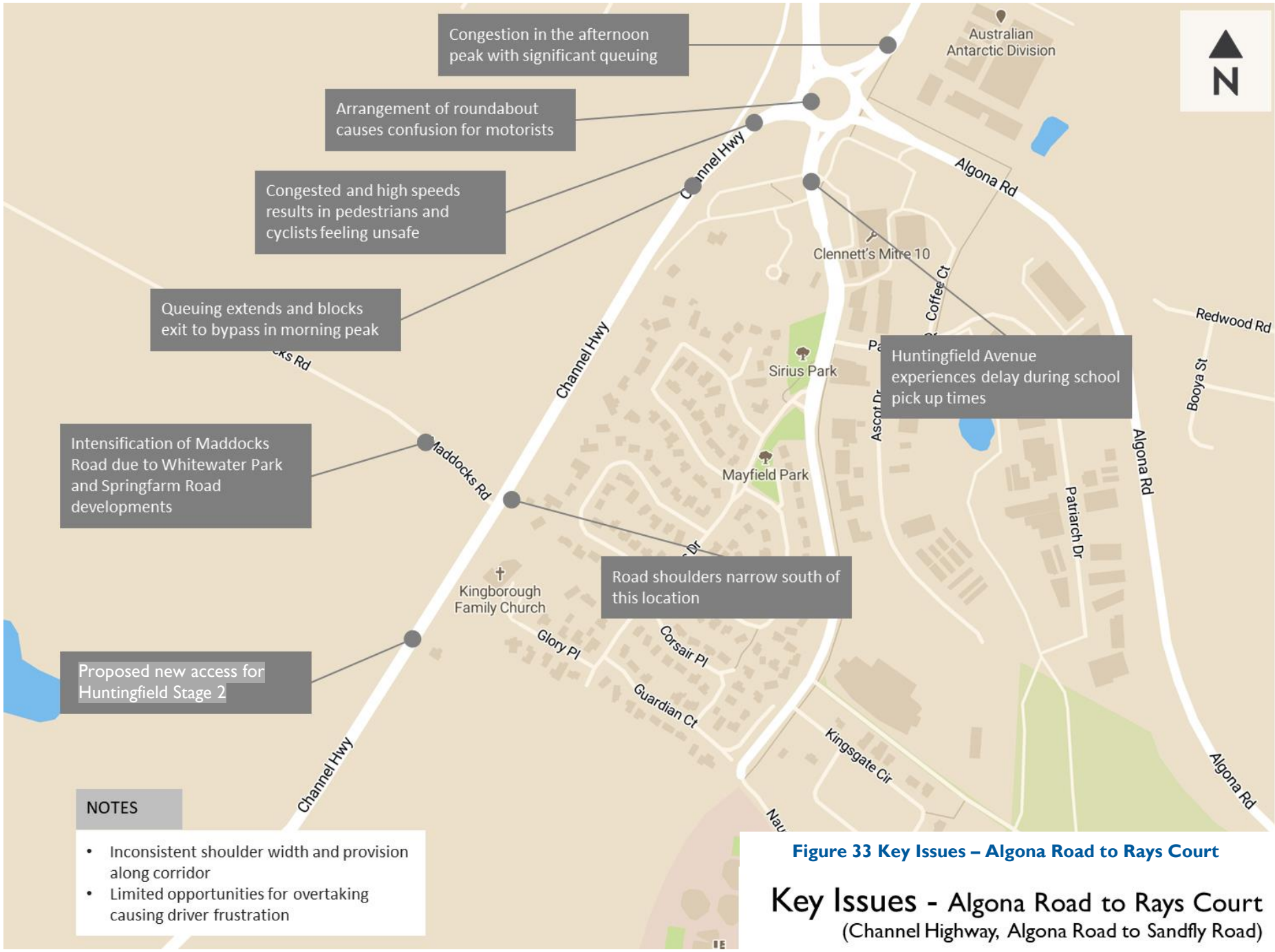


Figure 33 Key Issues – Algona Road to Rays Court

Figure 34 Key issues – Golf Course to Brookfield Road

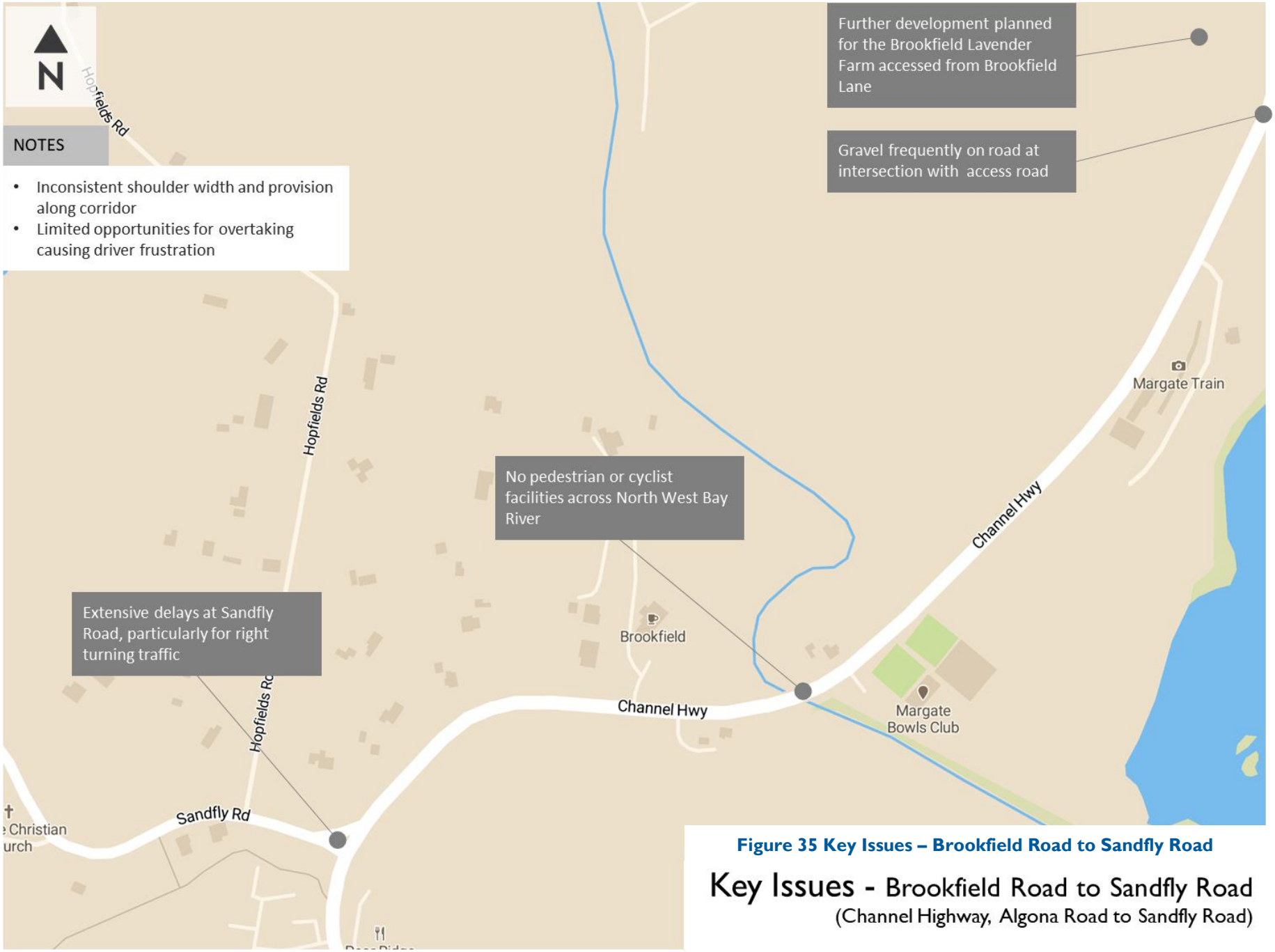


Figure 35 Key Issues – Brookfield Road to Sandfly Road

Key Issues - Brookfield Road to Sandfly Road

(Channel Highway, Algona Road to Sandfly Road)

5. Opportunities

In order to identify key opportunities that address the study objectives of accessibility, reliability and safety, an options identification and assessment process was undertaken. A list of 23 options were identified for assessment (See Table 23). The Long List Options were reviewed and then subjected to a multi-criteria analysis (MCA) (refer Section 5.2) undertaken with State Growth, and Kingborough Council, where each option was ranked in order of the objectives of the project, The highest ranked options translated into scenarios to be further tested to determine their impacts on the accessibility, reliability and safety of the network, including the use of traffic modelling to determine network and performance impacts. The Short List Options are provided in Section 5.3. After identifying the Short List Options, preliminary traffic modelling and geometric reviews were undertaken to provide context to each option.

5.1 Long list opportunities

As a result of preliminary consultation with stakeholders and the community and the investigations undertaken, a total of 24 opportunities and options have been identified. These opportunities have been summarised in Table 23 identifying the objective (issue addressed) and a description of each option. Of the 24 opportunities, 23 have been carried through to the long list options. These 23 were subject to an assessment and evaluation process (detailed in Section 5.2) to rank the options from most beneficial, to least beneficial to the corridor.

Table 23 Opportunities and preliminary options

Issue / area	Opportunity
Active transport LoS	Shoulder widening on Channel Highway
	Provision of an off road cycle / shared path from Margate to Algona Road
	New bridge at North West Bay River bridge to accommodate active transport
	Widening of North West Bay River bridge to accommodate active transport
Road corridor LoS	Provision of additional roundabout at Channel Highway / Algona Road
	Provision of full interchange with above grade bypass at Channel Highway / Algona Road
	Provision of slow vehicle passing lane from Howden Road to golf course (northbound only)
High single occupancy vehicle usage and low uptake of public transport	Bus priority at Channel Highway / Algona Road roundabout with direct access to Park and Ride facility
	Improvements to and provision of bus stop infrastructure and accessibility
	Express route to Hobart for peak commuter periods (excluded as outside project scope)
Poor road alignment / cross section deficiencies and accesses	Modify 90 km/h zone to 80 km/h
	Realignment of 90 km/h section to meet standards
	Provision of dual carriageway
	Provision of right turn median lane through corridor
	New Huntingfield Stage 2 access onto Channel Highway
	Realign Maddocks Road to Huntingfield new access
Howden Road intersection LoS and safety	Realign both Howden Road and Brookfield Road to create new intersection at Fehres Road
	Sight distance improvements
	Convert to signalised intersection
	Convert to roundabout intersection
	Convert to seagull interchange
Sandfly Road LoS and safety	Convert to signalised intersection
	Convert to roundabout intersection
	Provide two lane approach on Sandfly Road

5.2 Assessment of opportunities

5.2.1 Assessment methodology

Following further analysis and refinement of the long list opportunities, the working group assessed the list within a workshop in which they were scored against an agreed set of criteria. The scores were then weighted according to how each criteria addressed the objective of the project. The weighted total score gave priority to each opportunity. The short list of opportunities were formulated from the prioritised list and grouped by each area of concern. Areas were broken into the following:

- Algona Road roundabout
- Huntingfield Access
- Howden Road
- Sandfly Road
- Public transport
- General

Each opportunity was also allocated which benefit they addressed being:

- Accessibility
- Reliability
- Safety

5.2.2 MCA assessment criteria and weightings

Assessment criteria were based on the outcomes from the ILM and the project objectives. The MCA workshop attendees agreed on the final list of criteria and the relative importance (weighting) for each criteria. The ranking and weighting of each criteria is presented in Table 24.

Table 24 MCA ranking and weighting system

Criteria	Ranking	Weightings
Safety	1	20%
Travel time reliability	4	12.5%
Increase in active trips	7	7.5%
Access safety and efficiency	2	17.5%
Corridor accessibility	5	10%
Increased passenger transport usage	6	7.5%
Constructability	8	5%
Value for money	3	15%
Social interest	9	5%
		100%

5.2.3 MCA scoring and outcome

The initial scoring for each opportunity and its criteria are shown in Table 25. The outcomes from the initial scoring were then weighted and grouped by area of concern and this is shown in Table 26. During this process options which did not align with the project objectives were removed from the assessment at this stage and not considered any further. The highest ranked opportunities were viewed as the priority to address the initial issues and this formed the basis of the short list of opportunities.

Table 25 MCA opportunity scorings (no weighting)

Opportunity	Safety	Travel time reliability	Increase in active trips	Access safety and efficiency	Corridor accessibility	Increase passenger transport usage	Constructability	Value for Money	Social Interest
Shoulder widening on Channel Highway	2	1	3	3	1	0	2	2	2
Provision of an off road cycle / shared path from Margate to Algona Road	3	1	3	3	1	0	2	-2	3
New bridge at North West Bay River bridge to accommodate active transport	3	0	3	0	2	0	3	1	3
Widening of North West Bay River bridge to accommodate active transport	3	0	3	0	2	0	-2	1	3
Provision of additional roundabout at Channel Highway / Algona Road	2	2	0	1	1	-1	3	2	2
Provision of full interchange with above grade bypass at Channel Highway / Algona Road	3	2	0	2	2	-1	2	-2	3
Provision of slow vehicle passing lane from Howden Road to golf course (northbound only)	1	2	0	-1	1	0	1	-1	2
Bus priority at Channel Highway / Algona Road roundabout with direct access to Park and Ride facility	2	3	2	0	3	3	0	2	2
Improvements to and provision of bus stop infrastructure and accessibility	1	1	1	0	2	3	3	1	3
Express bus route to Hobart for peak commuter periods	Outside of project scope								
Modify 90 km/h zone to 80km/h	2	3	1	2	2	0	3	3	1
Realignment of 90km/h section to meet standards	2	3	1	2	2	0	-3	-3	0
Provision of dual carriageway	1	3	-1	-1	2	-1	-3	-3	1
Provision of right turn median lane through corridor	2	1	-1	2	0	-1	-1	0	1
Realign Maddocks Road to Huntingfield new access	2	2	0	3	1	0	-1	1	1

Opportunity	Safety	Travel time reliability	Increase in active trips	Access safety and efficiency	Corridor accessibility	Increase passenger transport usage	Constructability	Value for Money	Social Interest
Realign both Howden Road and Brookfield Road to create new intersection at Fehres Road	3	2	0	3	3	0	-1	1	2
Sight distance improvements to Howden Road	1	0	0	1	1	0	2	3	2
Convert Howden Road to signalised intersection	0	1	0	3	2	0	2	-3	2
Convert Howden Road to roundabout	1	1	0	3	2	0	-3	-3	2
Convert Howden Road to seagull interchange	-1	1	0	3	2	0	-1	-3	2
Convert Sandfly Road to signalised intersection	3	2	-1	1	1	0	-3	-2	3
Convert Sandfly Road to roundabout	2	3	0	3	1	0	-1	1	3
Provide two lane approach on Sandfly Road	1	1	0	0	0	0	3	1	0

Table 26 MCA opportunities (weighted, sorted and grouped)

				Effectiveness of opportunity against project objectives									
			Weighting of objectives (%)	20	12.5	7.5	17.5	10	7.5	5	15	5	100
			Ranking of objectives	1	4	7	2	5	6	8	3	9	
Area	**Opportunities**	**Issue it addresses**	**Benefit**	**Safety**	**Travel time reliability**	**Increase in active trips**	**Access safety and efficiency**	**Corridor accessibility**	**Increase passenger transport usage**	**Construct**	**Value for Money**	**Social Interest**	**Total score**
Active Transport	Widen Channel Highway shoulders	LOS for active travel	Safety	40	12.5	22.5	52.5	10	0	10	30	10	188
Active Transport	Feasibility study to build off road cycle / shared path from Margate to Algona Road	LOS for active travel	Accessibility	60	12.5	22.5	52.5	10	0	10	-30	15	153
Algona Road	Realign Maddocks Road to Huntingfield Stage 2 access	Multiple accesses	Accessibility	40	25	0	52.5	10	0	-5	15	5	143
Algona Road	Algona Road Roundabout – build additional roundabout	LOS of road corridor	Reliability	40	25	0	17.5	10	-7.5	15	30	10	140
Algona Road	Algona Road Roundabout – build full interchange	LOS of road corridor	Reliability	60	25	0	35	20	-7.5	10	-30	15	128
General	Speed adjustment - modify 90km/h zone to 80km/h	Road alignment/cross section deficiencies	Safety	40	37.5	7.5	35	20	0	15	45	5	205
General	Road realignment of 90km/h zone to meet standards	Road alignment/cross section deficiencies	Safety	40	37.5	7.5	35	20	0	-15	-45	0	80
General	Right turn median lane through the corridor	Improve access	Accessibility	40	12.5	-7.5	35	0	-7.5	-5	0	5	72.5
General	Construct dual carriageway	Road alignment/cross section deficiencies	Reliability	20	37.5	-7.5	-17.5	20	-7.5	-15	-45	5	-10
Howden Road	Howden Road Intersection – realign both Howden and Brookfield to create new intersection at Fehres Road	Sight distances insufficient	Safety	60	25	0	52.5	30	0	-5	15	10	188

Howden Road	Howden Road Intersection – sight distance improvements	Sight distances insufficient	Safety	20	0	0	17.5	10	0	10	45	10	113
Howden Road	Howden Road Intersection – convert to signals	Sight distances insufficient	Safety	0	12.5	0	52.5	20	0	10	-45	10	60
Howden Road	Howden Road Intersection – convert to roundabout	Sight distances insufficient	Safety	20	12.5	0	52.5	20	0	-15	-45	10	55
Howden Road	Install slow vehicle passing lane from Howden Road to golf course (NB only)	LOS of road corridor	Reliability	20	25	0	-17.5	10	0	5	-15	10	38
Howden Road	Howden Road Intersection – convert to seagull interchange	Sight distances insufficient	Safety	-20	12.5	0	52.5	20	0	-5	-45	10	25
Public Transport	Improvements to Passenger Transport - priority at Algona RAB with direct access to PnR	High single occupancy vehicle usage	Reliability	40	37.5	15	0	30	22.5	0	30	10	185
Public Transport	Improvements to Passenger Transport - bus stop infrastructure and accessibility	High single occupancy vehicle usage	Reliability	20	12.5	7.5	0	20	22.5	15	15	15	127.5
Public Transport	Improvements to Passenger Transport - express route to Hobart for peak times.	High single occupancy vehicle usage	Reliability				Excluded as outside project scope						
Sandfly	Sandfly Road Intersection – convert signals	LOS of road corridor	Reliability	40	37.5	0	52.5	10	0	-5	15	15	165
Sandfly	North West Bay River bridge – new bridge to accommodate active transport	LOS for active travel	Reliability	60	0	22.5	0	20	0	15	15	15	148
Sandfly	North West Bay River bridge – widen to accommodate active transport	LOS for active travel	Reliability	60	0	22.5	0	20	0	-10	15	15	123
Sandfly	Sandfly Road Intersection – convert to roundabout	LOS of road corridor	Reliability	60	25	-7.5	17.5	10	0	-15	-30	15	75
Sandfly	Sandfly Road Intersection - 2 lane approach on Sandfly Road	LOS of road corridor	Reliability	20	12.5	0	0	0	0	15	15	0	63

5.3 Short list options

From the MCA outcomes in Section 5.2, the following options were selected for more detailed assessment:

Safety

1. Channel Highway shoulders widened to a consistent standard.
2. Reduction of speed limit from 90 km/h to 80 km/h.
3. Sight distance improvement at Howden Road intersection.
4. Feasibility study to assess a new roundabout and realignment of Howden Road and Brookfield Lane to intersect with Fehres Road.
5. Pedestrian and cyclist crossing facility of North West Bay River.

Corridor Reliability

6. Secondary at-grade roundabout at Algona Road.
7. Full grade separated interchange at Algona Road with dual roundabouts.
8. Bus priority at Algona Road roundabout with improved access to Park and Ride.
9. Improvements to Channel Highway intersection with Sandfly Road, including pedestrian facilities.
10. Provision of and improvements to public transport services – including improved frequency, cost and travel time.
11. Provision of northbound overtaking lane – slow vehicle passing opportunity in northbound direction.

Corridor Accessibility

12. Feasibility study for an off road shared path from Margate to Huntingfield.
13. New roundabout at Huntingfield Stage 2 access and realignment of Maddocks Road to connect to this intersection.
14. Existing bus stop infrastructure improvements and increased accessibility to the stops from side streets for pedestrians and cyclists.

A map indicating the location of each short list opportunity is shown in Figure 36. The short list options are described in more detail in the following sections.

Safety	Priority
Channel Highway shoulders widened to a consistent standard	HIGH
Reduction of speed limit from 90km/hr to 80km/hr	HIGH
Sight distance improvements at Howden Road intersection	HIGH
Feasibility study for a new roundabout and realignment of Howden Road and Brookfield Road to intersect with Fehres Road	MEDIUM
Pedestrian and cyclist crossing facility of North West Bay River	HIGH
Corridor Reliability	**Priority**
Secondary at-grade roundabout at Algona Road	HIGH
Full grade separated interchange at Algona Road with dual roundabouts	LOW
Bus priority at Algona Road roundabout with improved access to Park and Ride	HIGH
Improvements to Channel Highway intersection with Sandfly Road, including pedestrian facilities	MEDIUM
Public transport facilities – including improved frequency, cost and travel time	HIGH
Northbound overtaking lane – slow vehicle passing opportunity in northbound direction	MEDIUM
Corridor Accessibility	**Priority**
Feasibility study for off road shared path from Margate to Huntingfield	HIGH
New roundabout with Huntingfield Stage 2 access and realignment of Maddocks Road	MEDIUM
Existing bus stop infrastructure improvements and increased accessibility to the stops from side streets for pedestrians and cyclists	MEDIUM

Figure 36 Opportunities Short List Map

5.3.1 Channel Highway shoulders widened to a consistent standard

Increasing the provision of sealed shoulder along Channel Highway between Kingston and Margate to the recommended standard width of 1.5 metres would help to improve the safety performance of the Highway.

Provision of shoulders along Channel Highway provides space for cyclist use for sport, recreational and commuting purposes, improving the accessibility and safety of the corridor for active transport. Additional benefits of widened shoulders is increased vehicle travel time reliability due to increased opportunities to overtake cyclists as well as improved safety for vehicles by provide greater recovery space for errant vehicles.

Whilst an initial assessment has been conducted a more detailed geometric review will be required to ensure construction feasibility. Whilst there is sufficient road reservation space there are two areas of concern where the existing road is very close to the boundary and space is limited. One area is opposite Howden Road and the other is opposite Kingborough Bowls Club.

5.3.2 Reduction of speed limit from 90 km/h to 80 km/h

It was identified in the geometric review (Section 4.2.2) that the certain sections of the horizontal alignment do not meet the requirements of a 90 km/h posted speed limit. By reducing the 90 km/h section to 80 km/h the road corridor then aligns with the appropriate standard thereby improving the safety performance of this section of the corridor.

The geometric analysis undertaken identified four substandard curves within the 90 km/h section, with Howden Road intersection being located between two. The current speed and downhill grade on Channel Highway southbound makes slowing for the left turn movement into Howden Road difficult, as well as identifying suitable gaps in traffic for turning vehicles out of Howden Road. The reduction in the speed limit will substantially improve safety for vehicles entering and exiting the Howden Road.

With the introduction of the new intersection at Huntingfield Stage 2, the Channel Highway section from Rays Court to Algona Road would need to be reduced to 80 km/h leaving a relatively short section still at 90 km/h.

The section of 90 km/h is approximately 2,800 metres. Therefore, a reduction in the speed limit by 10 km/h across this section theoretically represents an increase in travel time of approximately 14 seconds.

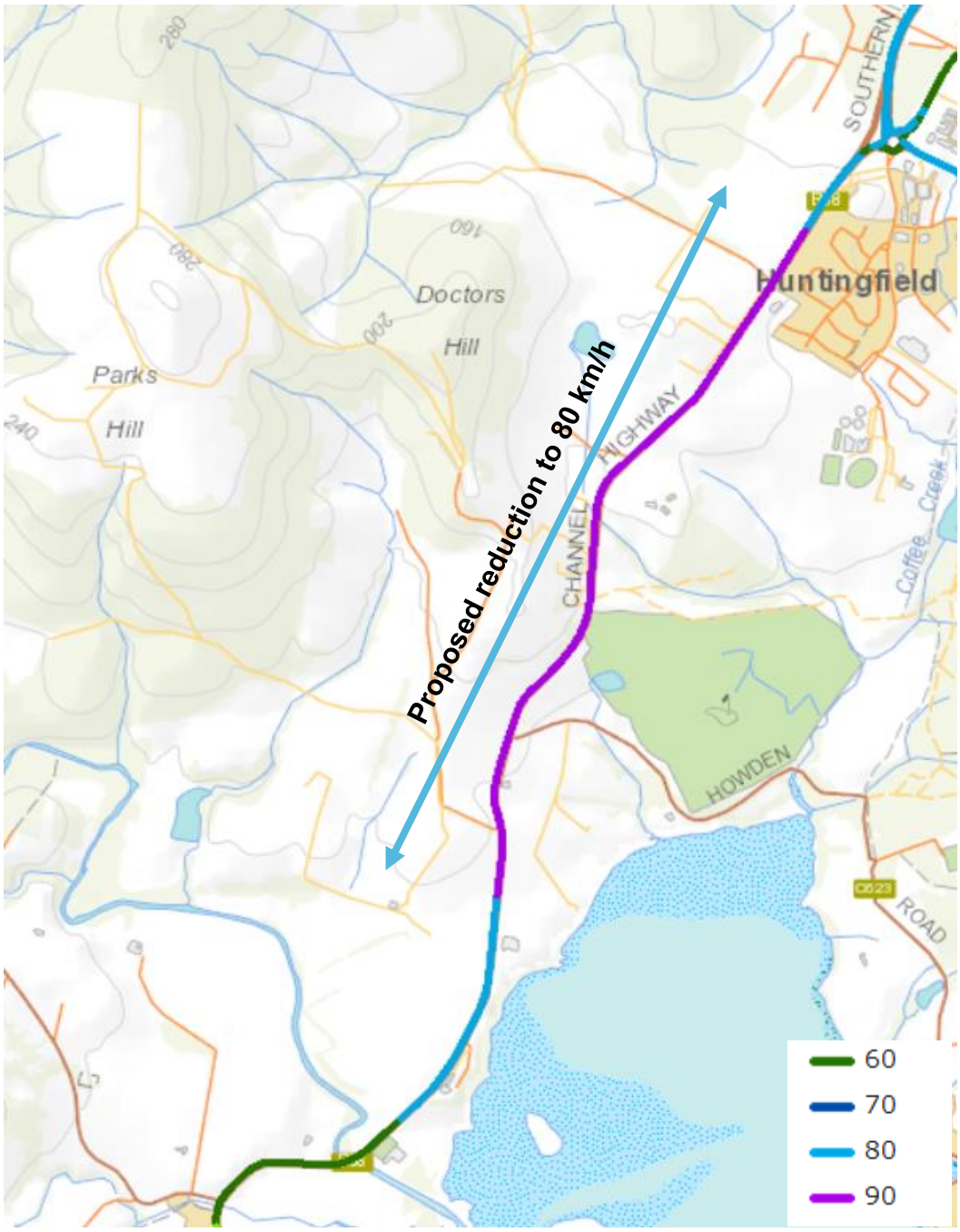


Figure 37 Speed limits on Channel Highway

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

5.3.3 Sight distance improvement at Howden Road intersection

Howden Road was identified as having poor sight distance and hence requiring safety improvements. Extensive clearing of vegetation could be undertaken north of the intersection to improve sight lines in order to achieve minimum gap and safe intersection sight distances.

The improvement should include future planning for the intersection by ensuring maximum growth of remaining vegetation will not impact sight lines or by developing a maintenance plan.

Location of vegetation clearing to the north is shown in Figure 38. Some trimming and clearing has already been arranged within the Highway reservation.

Figure 38 Vegetation clearing at Howden Road intersection

5.3.4 New roundabout and realignment of Howden Road and Brookfield Lane to intersect with Fehres Road

A roundabout is often used to improve the safety of intersections by reducing conflict points and reducing severity of incidents. By providing a roundabout at Fehres Road and realigning both Howden Road and Brookfield Road there will be a consolidation of accesses on the Channel Highway. The safety and efficiency performance for access to the corridor from the side roads will also be improved by provision of a roundabout.

To enable the realignment, significant realignment of Howden Road will be required. A proposed alignment is provided in Figure 39.

Figure 39 Realignment of Howden Road / Brookfield Road intersections

5.3.5 Pedestrian and cyclist crossing facility of North West Bay River

The absence of pedestrian and cyclist facilities for crossing North West Bay River was highlighted as an issue in Section 4.2.2. Two options to address this were considered, either providing an additional bridge for active transport or widening the existing bridge to provide a path for pedestrians and cyclists. No further analysis of these options has been undertaken at this stage. Some previous work has been conducted on the strengthening of the bridge and initial indications are that widening the bridge would unlikely be feasible. A new bridge is likely to be the preferred recommendation subject to further analysis.

5.3.6 Second at-grade roundabout at Algona Road

The need to upgrade the interchange at Algona Road was identified in Section 4.1.3. Provision of a secondary at-grade roundabout within the footprint of the proposed grade separated interchange was proposed as an intermediate measure to service increasing traffic demands at the roundabout. The secondary roundabout improves capacity by removing the north / south traffic from the existing roundabout. The proposed layout of the roundabout is mostly identical to the future full grade separated interchange and can be viewed as a Stage 1 implementation. The proposed layout for the secondary roundabout is illustrated in Figure 40.

Figure 40 Second at-grade roundabout at Algona Road

Modelling of the interchange was undertaken in Aimsun and is detailed in *Channel Highway Corridor Study – Kingston to Margate, Traffic Modelling Report* (GHD, 2019). The model indicated that the interchange should provide acceptable LoS to vehicles under the future forecast demand composed of the developments detailed in Section 2.7.2. The interchange significantly alters the use of the existing Channel Highway / Algona Road roundabout and therefore further assessment of lane allocation should be considered to provide appropriate priority to higher demand movements or different transport modes.

5.3.7 Full grade separated interchange at Algona Road with dual roundabouts

The provision of a full grade separated interchange at Algona Road with dual roundabout has been proposed as the next stage for the interchange when demand dictates it to be necessary. The full grade separated interchange is the final upgrade of this junction and provides uninterrupted traffic flow for the north / south traffic movement with safe on and off ramps for access to Algona Road, Huntingfield Avenue and Channel Highway. The proposed layout is illustrated in Figure 41.

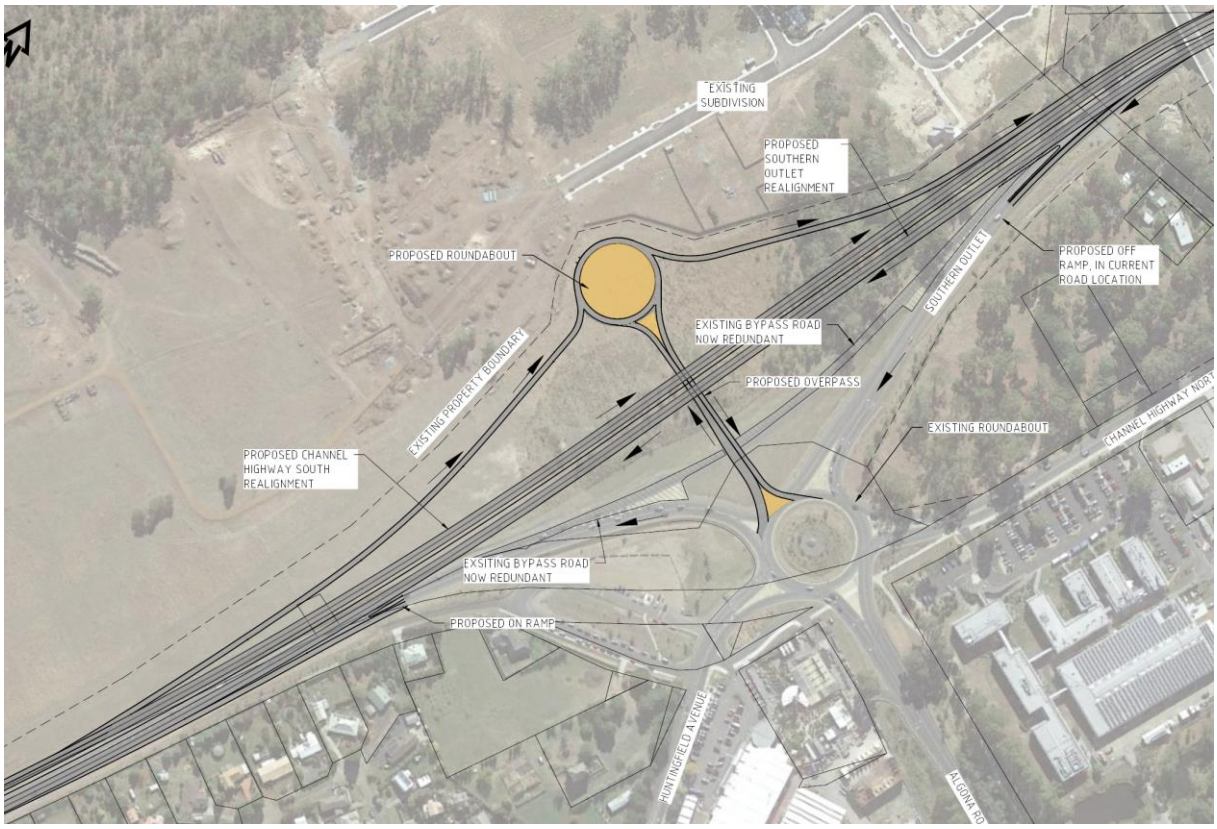


Figure 41 Full grade separated interchange at Algona Road with dual roundabouts

Traffic modelling of the future forecast traffic demand identified an upgrade to the interchange is required in the short term. Modelling of the interchange was undertaken in Aimsun and is detailed in *Channel Highway Corridor Study – Kingston to Margate, Traffic Modelling Report* (GHD, 2019). The modelling considered a staged approach, where, the additional roundabout considered in Section 5.3.6 is provided first and the grade separated interchange is provided as required. Due to this, an additional lane providing a northbound through movement is present of the western roundabout. In the full interchange, this auxiliary lane is redundant due to the demand being adequately serviced by a single through lane. The model indicated that the interchange should provide an acceptable LoS to vehicles under the future forecast demand compiled of the developments detailed in Section 2.7.2. The interchange significantly alters the use of the existing Channel Highway / Algona Road roundabout and therefore further assessment of lane allocation should be considered to provide appropriate priority to higher demand movements or to different transport modes. There is opportunity to provide additional capacity for the Algona Road to Kingston Bypass movement by repurposing the additional through lane on the western roundabout.

5.3.8 Bus priority at Algona Road roundabout with improved access to the Park and Ride facility

In its existing layout it is difficult to provide bus priority at the Algona Road roundabout, however the assessment for future traffic demand indicated the requirement to provide upgrades such as those identified in Sections 5.3.6 and 5.3.7. Both options provide the opportunity to alter lane arrangements and provide bus priority at the existing and future park and ride sites.

The provision of a secondary at-grade roundabout at Algona Road also provides the opportunity to provide an improved bus park and ride facility within the interchange for increased connectivity and minimised delay to services.

Opportunities for bus priority and improvement park and ride accessibility are recommended with changes to the interchange.

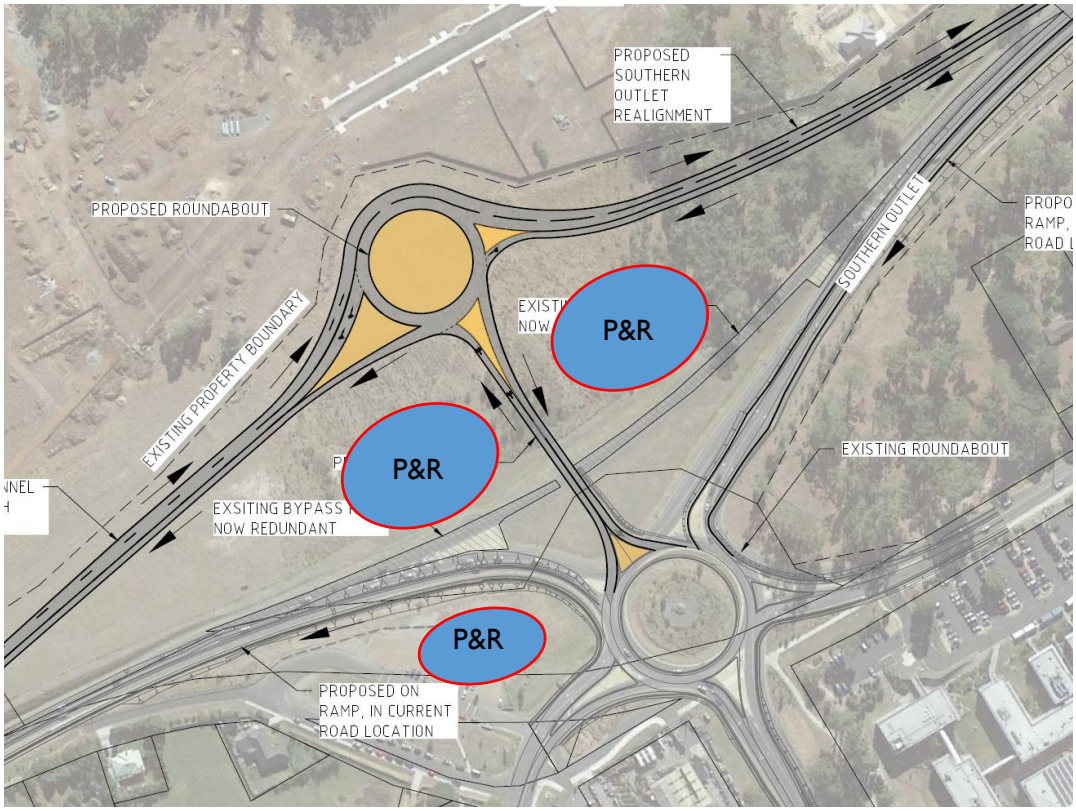


Figure 42 Opportunities for Bus Park and Ride facilities

5.3.9 Improvements to Channel Highway intersection with Sandfly Road, including pedestrian facilities

Several improvement options for the Sandfly Road intersection were considered in the MCA in Section 5.2. High level investigation of options were undertaken and is detailed in the following:

Option 1 – Provision of island on Sandfly Road approach

Provision of a triangle island separating the left and right turn queues on Sandfly Road will formalise the queue space of the intersection to decrease the likelihood of left turning vehicles having to queue behind right turning vehicles.

The formalisation of the intersection is likely to improve the safety of the intersection and allow more queuing room for left turning traffic, however it is not expected to have a significant impact on delays experienced by right turning traffic.

Option 2 – Roundabout

Provision of a roundabout was considered at the Sandfly Road intersection in order to improve delays experienced by vehicles turning right from Sandfly Road. Due to the low volume of vehicles on Sandfly Road, this option may be preferable from a performance perspective by minimising impact on Channel Highway through movements. Roundabouts also have considerable safety advantages over other intersection treatments.

A significant footprint is required for a roundabout to cater for the turning paths of the design vehicles operating on the network, with the site highly constrained due to the rivulet running underneath the Channel Highway and alongside Sandfly Road. A more detailed geometric review of the constraints is required to assist in understanding constructability issues.

It is recommended that further investigation into improvements of the intersection of Channel Highway / Sandfly Road are undertaken. It is anticipated that in future conditions greater capacity than a single lane roundabout will be required.

Option 3 – Signalised intersection

Converting Sandfly Road intersection to signalised control will provide priority turning opportunities for vehicles on Sandfly Road to access Channel Highway. The intersection was modelled in SIDRA intersection with the LoS results shown in Figure 43.

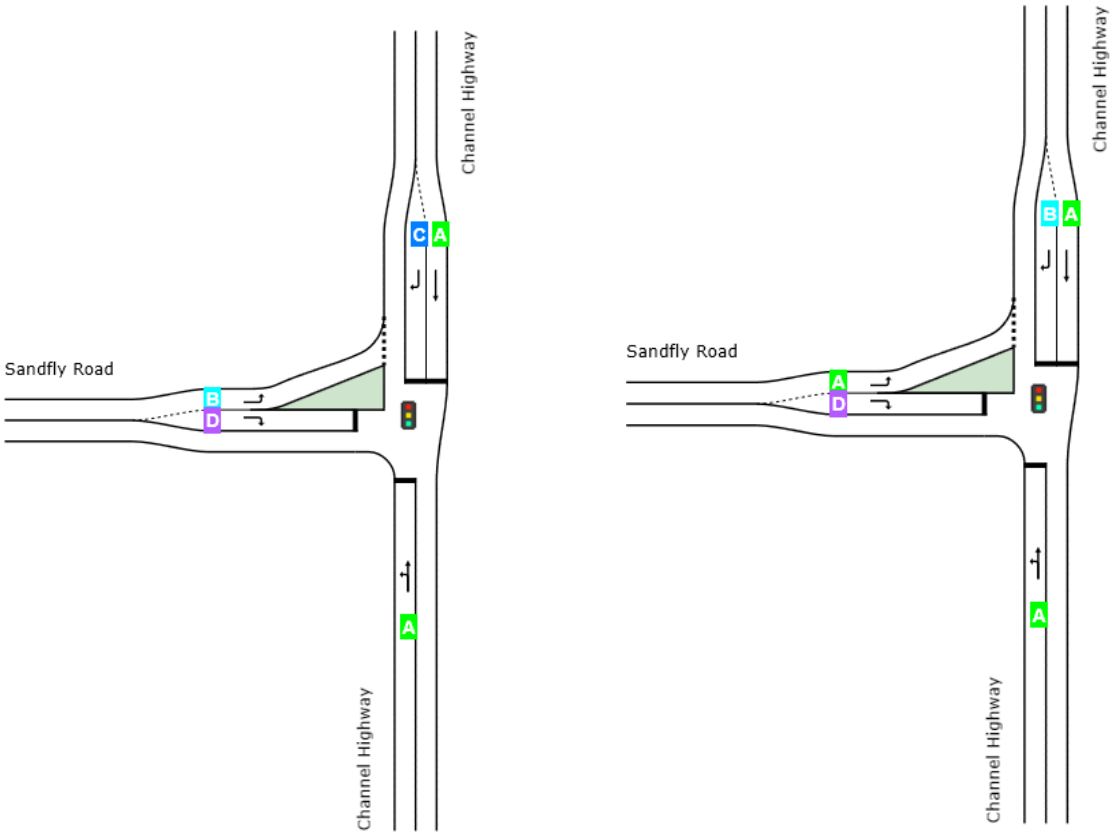


Figure 43 Sandfly Road approach LoS under existing volumes

With existing volumes, the introduction of traffic signal control results in an acceptable LoS but significant queuing on Channel Highway approaches. It is anticipated that under future volumes additional lanes will be required to accommodate the through movement to minimise queuing on Channel Highway and delays on Sandfly Road. This would however take up a greater footprint than the existing road reserve, resulting in the same constructability issues associated with a roundabout.

5.3.10 Provision of and improvements to public transport services (improved frequency, cost and travel time)

The imminent need for upgrades to the road network is identified due to the future forecast traffic demand, however this forecast may be conservative as it does not consider any significant change in mode choice. The journey to work data presented in Section 2.6 shows a low uptake of public transport. Improved public transport services may increase public transport usage and assist in reducing the high dependency of single occupancy vehicles and allow the current road infrastructure a longer service life.

Public transport improvements have the potential to increase the accessibility of the road corridor to a more diverse demographic as well as to improve the reliability of services (travel time and frequency) for existing users.

5.3.11 Provision of northbound overtaking lane – slow vehicle passing opportunity in northbound direction

In order to improve reliability of travel time with consideration to the varied users of the road corridor (commuters and tourists), a northbound overtaking lane is considered for the Channel Highway between Howden Road and Rays Court, as illustrated in Figure 44.

The overtaking lane would be approximately 650 metres long and the preliminary investigations do not show any significant issues. One access is affected and a bus stop would have to be reconstructed.

Figure 44 Provision of northbound overtaking lane

Base map obtained from https://maps.thelist.tas.gov.au © State of Tasmania

Further engineering design is required in order to determine how much room outside of the existing road reservation is required and therefore any associated impacts on land owners and environmental considerations.

5.3.12 Feasibility study for an off road shared path from Margate to Huntingfield

In order to address active transport accessibility and safety, provision of an off road shared path from Margate to Huntingfield is considered. This would be a continuation of the very popular Snug to Margate shared path. Whilst widening of the shoulders on the Channel Highway would improve conditions for cyclists, this is likely to still only be a suitable option for recreational users or confident riders. It would not entice riders to use it for recreation or commuting who are less than confident or require a dedicated facility.

The path would need to tie in with the Snug to Margate shared path and could follow the North West Bay foreshore until Howden Road. From there, an ideal pathway would follow the alignment of Coffee Creek behind the golf course and up into the Huntingfield development which would increase connectivity to the existing and future Park and Ride facilities.

A feasibility study is proposed to determine the appropriate alignment, forecast use and other design details in order to prepare a concept design.

5.3.13 New roundabout at Huntingfield Stage 2 access and realignment of Maddocks Road

A new roundabout is proposed to provide a connection from the Channel Highway to the new access road for the Huntingfield Stage 2 Project. A roundabout is often used to improve the safety of intersections by reducing conflict points and reducing severity of incidents. The new Huntingfield access road will connect through to Huntingfield Avenue and provide an alternate connection into Huntingfield. By providing a roundabout at the new access road, there is an opportunity to realign Maddocks Road and combine the two roads into a single access onto the Channel Highway. The safety and LoS for access from the side roads will also be improved by provision of a roundabout and consolidating the intersections.

5.3.14 Existing bus stop infrastructure improvements and increased accessibility to the stops from side streets for pedestrians and cyclists

The existing bus stop infrastructure is proposed to be improved with safer access for pedestrians, higher quality shelters and bicycle storage. Bus stop infrastructure should be upgraded to comply with the Disability Discrimination Act (DDA). Increased accessibility to bus stops for pedestrians and cyclists may assist increasing uptake of public transport through increased accessibility and amenity. The increase in mode shift to public transport would assist with reducing the high usage of single occupancy vehicles and allow the current road infrastructure a longer service life.

6. Summary and recommendations

This report details the study of the Channel Highway between Algona Road, Kingston and Sandfly Road, Margate. The overall aim of the study was to identify solutions that could be implemented to achieve improved accessibility, reliability and safety of the corridor.

The report investigates the existing traffic and transport network, future traffic conditions and community consultation which led to the identification of a number of issues in the corridor. From the issues identified, a long list of opportunities were developed. The long list opportunities were subjected to a Multi Criteria Analysis from which a short list of recommendations were developed.

The opportunities recommended based on accessibility, reliability and safety grounds are presented in Table 27 with respect to the issues identified and the link to the overall study objectives.

Table 27 Issues summary and opportunities

Issue	Opportunity	Link to objectives
Improve Level of Service and safety for active travel	Channel Highway shoulders widened to a consistent standard	Safety
	Feasibility study for an off road shared path from Margate to Huntingfield	Corridor accessibility
	Pedestrian and cyclist crossing facility of North West Bay River	Safety
Level of Service of the road corridor and adjacent roads including safety of intersections	Secondary at-grade roundabout at Algona Road	Corridor reliability
	Full grade separated interchange at Algona Road with dual roundabouts	Corridor reliability
	Improvements Sandfly Road intersection, including pedestrian facilities	Corridor reliability
	Provision of northbound overtaking lane – slow vehicle passing opportunity in northbound direction	Corridor reliability
Safety and accessibility of accesses onto road corridor	New roundabout and realignment of Maddocks Road to connect with Huntingfield Stage 2 access	Corridor accessibility
	New roundabout and realignment of Howden Road and Brookfield Lane to intersect with Fehres Road	Safety
Deficiencies in the road corridor alignment	Reduction of speed limit from 90 km/h to 80 km/h	Safety
Insufficient intersection sight distance	Sight distance improvement at Howden Road intersection	Safety
High proportion of single occupancy vehicles and lower passenger transport usage	Bus priority at Algona Road roundabout with improved access to Park and Ride	Corridor reliability
	Provision of and improvements to public transport facilities – including improved frequency, cost and travel time	Corridor reliability
	Existing bus stop infrastructure improvements and increased accessibility to the stops from side streets for pedestrians and cyclists	Corridor reliability

Next steps of the investigation will include further analysis, planning and design of opportunities identified to enable funding applications to be developed.

Department of State Growth

4 Salamanca Place TAS 7001 Australia

Phone: 1800 030 688

Email: info@stategrowth.tas.gov.au

Web: www.transport.tas.gov.au