Greater Hobart Park and Ride Investigation

Strategic Corridor Assessment

Barry Watkins & Associates

Client Department of State Growth, Tasmania

Date 13 November 2019

Barry Watkins & Associates Pty Ltd

Project: Greater Hobart Park and Ride Investigation

Location: Hobart, Tasmania

Client: Department of State Growth

Report: Strategic Corridor Assessment

Quality Record

Issue	Date	Description	Prepared By	Approved By
Draft 1.0	08/08/2019	Initial Draft	s 36	s
Draft 1.1	09/08/2019	Revised Initial Draft	s 36	s
Final 2.0	13/11/2019	Final	s 36	s

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1. Overview

1.1 Purpose of this report

The Tasmanian Department of State Growth commissioned Barry Watkins and Associates (BWA) to assist in the development of park and strategy for Greater Hobart to help guide investment in Park and Ride facilities in the next twenty years.

There is an opportunity to increase public transport use and decrease traffic congestion in seven key corridors in Greater Hobart. Park and Ride facilities, as part of the public transport system, can help to attract new public transport customers and increase patronage of services. However, Park and Rides often represent a costly investment in public transport provision. Therefore, it is important that Park and Ride sites are selected and developed in order of priority of demand and their ability to maximise wider community benefits.

To assist in determining investment priorities, this report documents a high-level assessment of corridors that is intended to give an initial indication of favourable locations for Park and Ride at the network level and comparatively across the Greater Hobart area. It recognises that further work will be needed to inform more detailed assessment of areas and possible sites within corridors including in-depth cost analysis to inform decisions.

To assess the seven corridors, a multi-criteria assessment was used to determine which, if any, show a higher need for Park and Ride facilities in relation to the others, to guide the targeted investment in this infrastructure to support the public transport network. This also highlights any specific constraints or opportunities within each corridor.

2. Corridors

2.1 Corridors and catchments

For the purposes of this assessment, the Greater Hobart area was divided into seven key corridor areas:

1. Main Road, from New Town to Granton
2. Brooker Highway, from Hobart to the Midland Highway
3. East Derwent Highway, from Rose Bay to Gagebrook
4. Tasman Highway, from the Tasman Bridge to Sorell
5. South Arm Highway corridor, from Mornington to Lauderdale
6. Sandy Bay/Channel Highway from Sandy Bay to Kingston
7. Southern Outlet, from South Hobart to Snug

When assessing the catchments served by each corridor, consideration has been given to what areas lay beyond the most proximal intercept point on the corridor, i.e. the closest point to the CBD that a Park and Ride would be considered. Based on observation of the Hobart road network and land use, this distance has been defined as 8km driving distance from the Hobart GPO: approximately the distance to the Derwent Entertainment Centre north of the CBD, Mornington to the east or Taroona to the south.

On all corridors, a point 8km from the CBD represents a car journey of 15-20 minutes in the AM peak. While a Park and Ride this close to the CBD can be considered, it is generally preferable to locate them further out if doing so won't reduce their attractiveness.

Although each corridor continues to the Hobart CBD, the potential catchment of users of a Park and Ride in a corridor has been defined by the selection of SA1 census zones surrounding the 8km intercept point, and extending outwards from the CBD. The corridors and their defined catchments are presented in this section.

It is noted that some census zones fall within the potential catchments of more than one corridor, such as those north of Glenorchy where the Main Road and Brooker Highway corridors are located adjacent to each other. In these instances, these zones are included in the assessment of each corridor.

2.2 Main Road

The Main Road corridor travels from New Town to Granton, and the 8km point from the Hobart CBD occurs approximately at the intersection of Barry Street in the Glenorchy town centre.

For most of its length, Main Road serves a catchment that overlaps the Brooker Highway. The two road corridors intersect at Berriedale, and at Granton where Main Road ends. Many trips towards the CBD travel initially on Main Road before accessing the Brooker Highway.

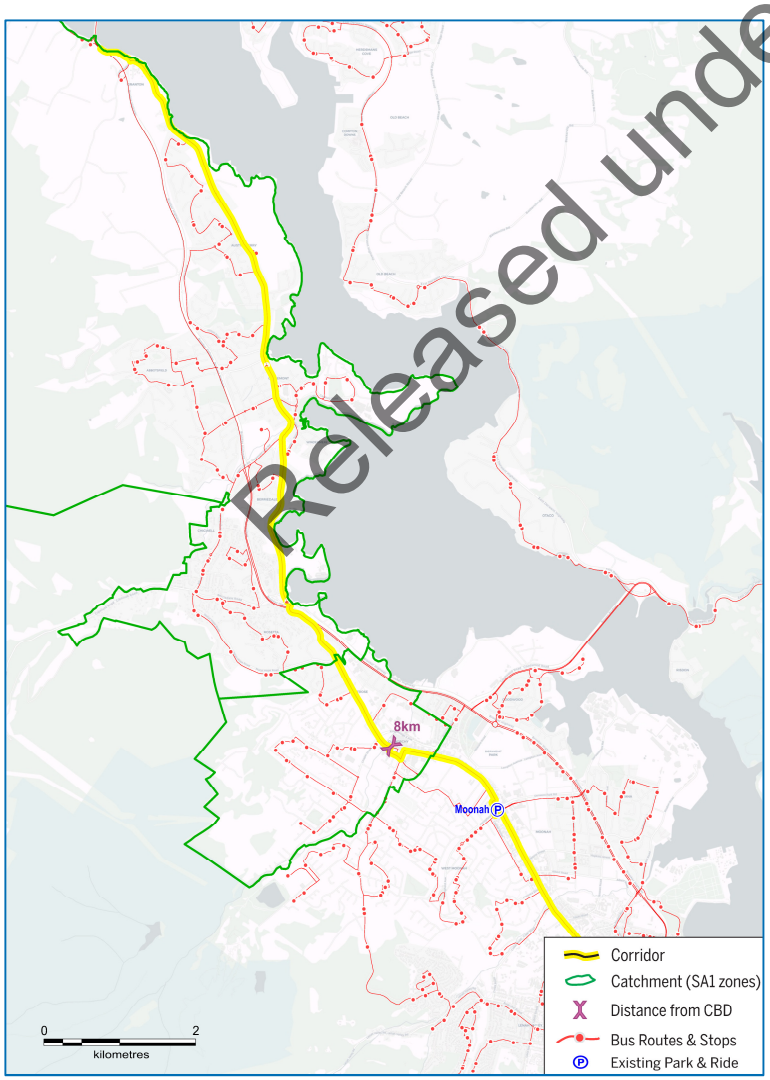
A Park and Ride located on Main Road is likely to attract a smaller, localised group of users, intercepting them closer to their homes with a high level of local access. Conversely, a Park and Ride located on the Brooker Highway may be more visible and attractive to a larger number of people travelling from further away, but intercepting them relatively further from their homes.

The assessment catchment defined for this corridor includes Glenorchy and Claremont and is shown below. Census 2016 data shows a residential population of 25,905 within it.

The Main Road corridor is served by Metro Tasmania routes 500, 501, 502, 503, 504, 510, 511, 512, 513, 520, 522, X20 and X42.

A Park and Ride facility is located in the catchment at 212 Main Road, Moonah. It offers 69 car spaces, a bicycle rack, bus shelter and seating and is located directly outside the Metro bus depot.

Figure 1: Main Road Corridor Alignment and Catchment Boundary



2.3 Brooker Highway

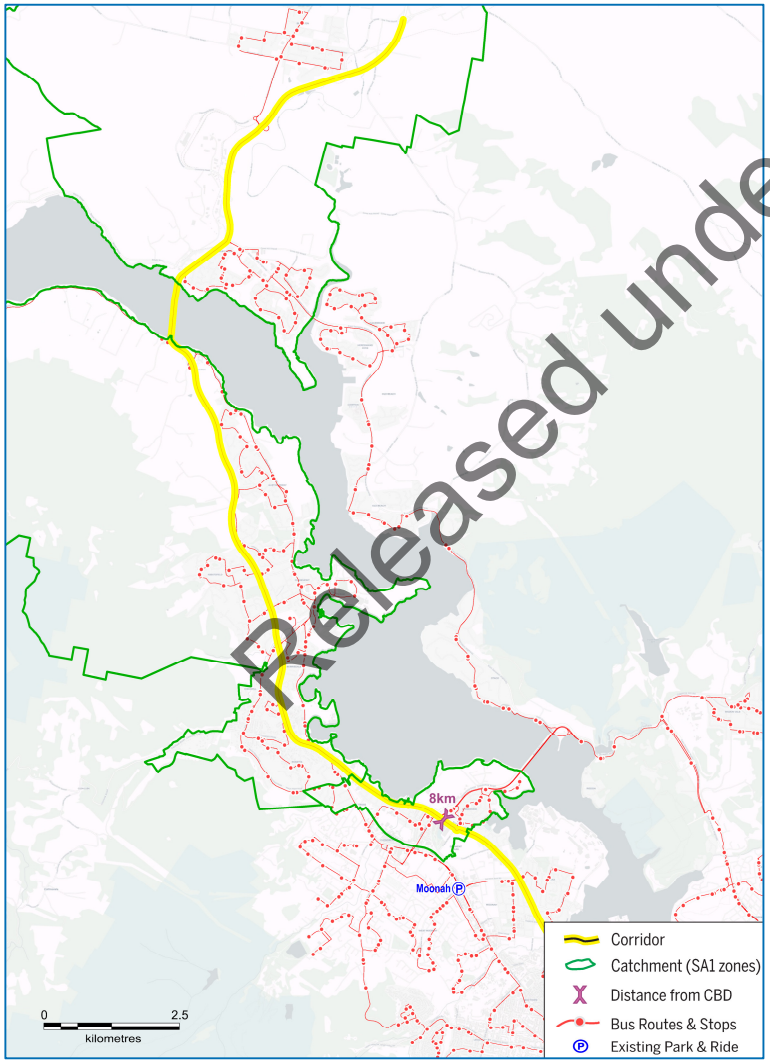
The Brooker Highway corridor travels from the CBD to Granton where it splits into the Lyell Highway travelling north-west, and the Midland Highway travelling north. The 8km point from the Hobart CBD occurs approximately at the intersection of Elwick Road.

For some of its length, the Brooker Highway serves a catchment that overlaps Main Road. The two road corridors intersect at Berriedale, and at Granton where Main Road ends. Many trips towards the CBD travel initially on Main Road before accessing the Brooker Highway.

The assessment catchment defined for this corridor includes Granton, Claremont, Bridgewater and Brighton and is shown below. Census 2016 data shows a residential population of 31,299 within it.

Bus routes that travel along the Brooker Highway corridor include Metro Tasmania routes X02, X10, X11 (partially on Main Rd), X20 (partially on Main Rd), X21, X30 (from East Derwent), and O'Driscolls routes X22 and X23.

Figure 2: Brooker Highway Corridor Alignment and Catchment Boundary



2.4 East Derwent Highway

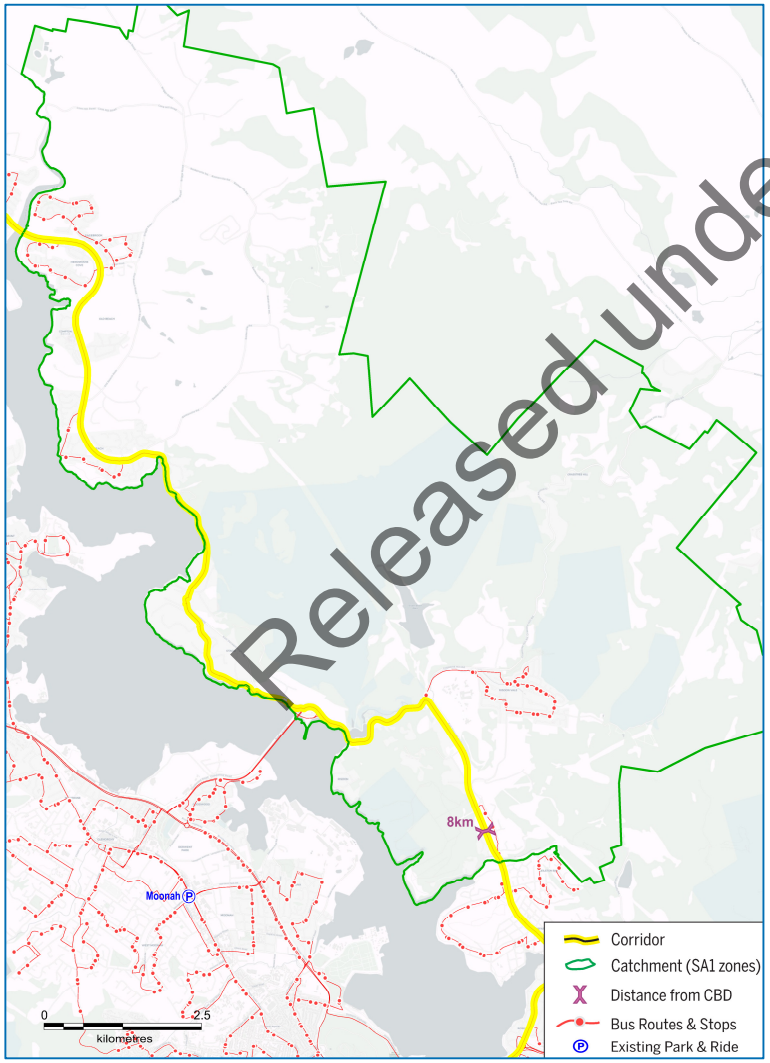
The East Derwent Highway corridor is defined as running from Rose Bay to Gagebrook. Although the highway continues further north, it is more likely that people travelling from beyond Gagebrook to the Hobart CBD would travel via the Brooker Highway.

The 8km point from the Hobart CBD occurs just north of the intersection of Geilston Bay Road. The catchment for assessment extends from this location north to Jordan River and includes suburbs of Risdon Vale, Otago, Old Beach and Gagebrook.

Census 2016 data shows a residential population of 11,584 within the catchment.

Bus routes that travel along the Brooker Highway corridor include Metro Tasmania routes 685 and 695 which approach Hobart CBD via the Tasman Bridge, and routes X30 and 530 that approach via Bowen Bridge. From locations north of Risdon, travel times to the CBD by either approach are comparable.

Figure 3: East Derwent Highway Corridor Alignment and Catchment Boundary



2.5 Tasman Highway

The Tasman Highway corridor is defined as running from the Tasman Bridge to Sorell, with the highway continuing north from there. The Arthur Highway continues east from Sorell, effectively acting as a branch of the corridor.

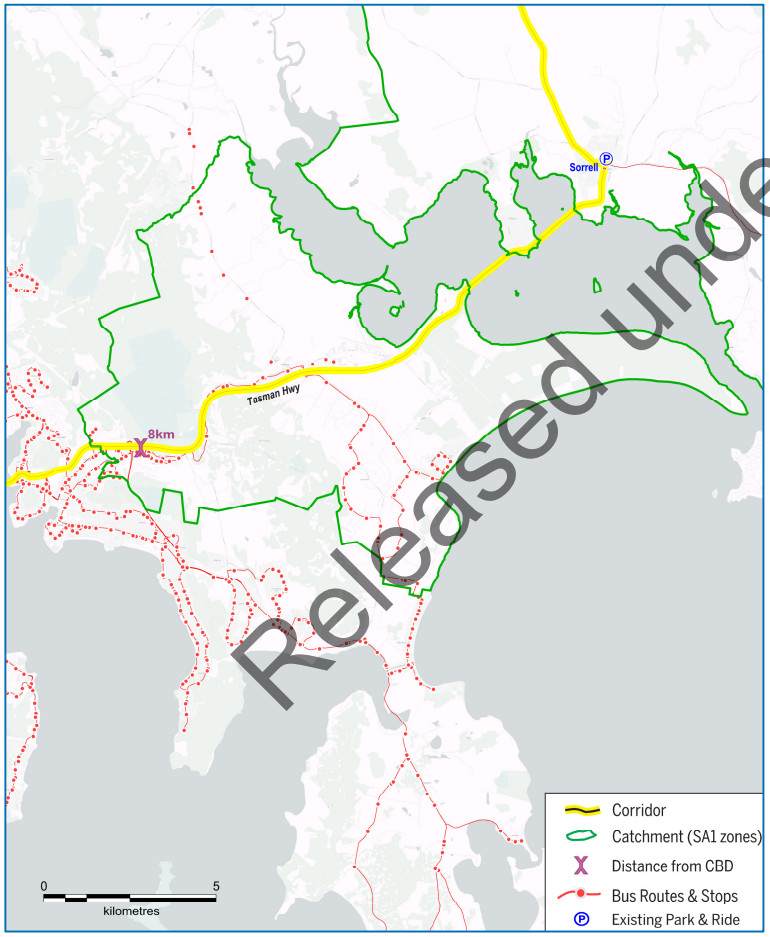
The 8km point from the Hobart CBD occurs in Mornington, near the junction connecting to the South Arm Highway. The catchment for assessment extends from this location east towards Sorell and includes Mornington, Cambridge, Acton Park and Midway Point. It has been extended to include SA1 census zones further to the north and east of there, from which commuters would travel to the Tasman Highway to continue to Hobart.

A Park and Ride facility is located in the catchment at Station Lane, Sorell. It offers 77 car spaces, three bus shelters with seating, but no bicycle facilities.

Census 2016 data shows a residential population of 15,966 within the catchment.

Bus routes that travel along the Tasman Highway include Redline routes 731, X31, 732, X32, X33 and TassieLink routes 734, 736 and 737.

Figure 4: Tasman Highway Corridor Alignment and Catchment Boundary



2.6 South Arm Highway

The South Arm Highway corridor is defined as running south from the Tasman Highway at Mornington to Lauderdale and continues further to South Arm. The corridor effectively branches at Howrah, providing the option to travel towards Hobart CBD via Clarence Street, a route that is slightly shorter by distance but not quicker.

The 8km point from the Hobart CBD occurs in Mornington, south of the junction connecting to the South Arm Highway. If travelling via Clarence Street, the 8km point occurs near Berega Street. The catchment for assessment extends from these locations south to South Arm and includes Mornington, Howrah, Rokeby, Tranmere, Lauderdale and Sandford.

Census 2016 data shows a residential population of 23,581 within the catchment.

Bus routes that serve the South Arm Highway corridor include Metro Tasmania routes X15, X16 and X34 that travel via Mornington, and routes 601, 606, 614, 615, 624, 625, 634, 635, 646 and X44.

Figure 5: South Arm Highway Corridor Alignment and Catchment Boundary

2.7 Sandy Bay

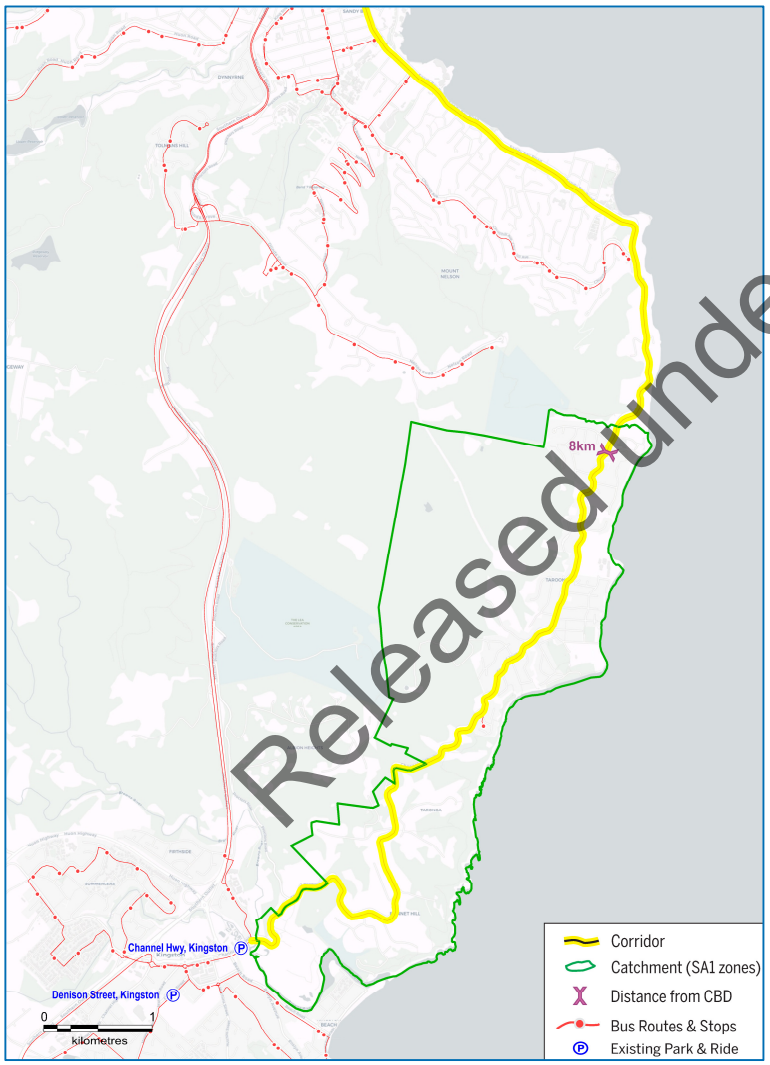
The Sandy Bay corridor is defined as running south along Sandy Bay Road and Channel Highway from the CBD to Kingston.

The 8km point from the Hobart CBD occurs in Taroona, near the intersection of Oakleigh Avenue. The catchment for assessment extends from Taroona to Kingston, including Bonnet Hill. Areas further south are considered to be part of the catchment of the Southern Outlet corridor, given the much quicker travel times available to the CBD.

Census 2016 data shows a residential population of only 3,591 within the catchment, given its small geographic area.

Bus routes that serve the Sandy Bay corridor include Metro Tasmania routes 401, 402, 426, 427, 428 and 429.

Figure 6: Sandy Bay Corridor Alignment and Catchment Boundary



2.8 Southern Outlet

The Southern Outlet corridor is defined as running south from South Hobart to Lower Snug.

The 8km point from the Hobart CBD occurs along the corridor approximately 3km north of Kingston. The catchment, as assessed, extends from Kingston to Lower Snug, and includes Huntingfield, Blackmans Bay, Spring Farm and Whitewater Creek development areas, Margate, Howden, Electrona and Snug. It is noted that a small amount of additional demand for travel to Hobart originates further to the south.

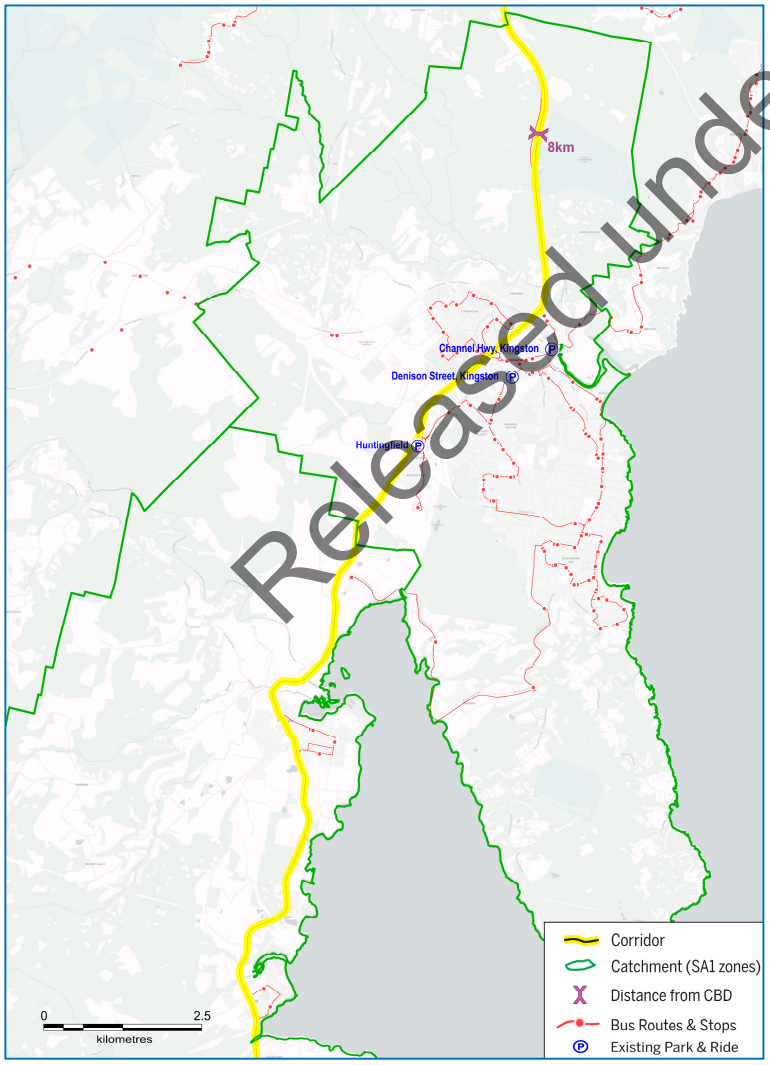
Census 2016 data shows a residential population of 27,382 within the catchment.

Bus routes that serve the Southern Outlet corridor include Metro Tasmania routes 407, 408, 409, 411, 412, 413, 415, 416, 417 and 500.

Two existing Park and Ride facilities are located in the catchment:

- Denison Street, Kingston. The facility offers 71 car spaces, a bicycle rack, a bus shelter and seating and is located near the Christian Reformed Church of Kingston.
- Channel Highway (near Browns Road). The facility offers 18 car spaces, bicycle lockers (but no racks), a bus shelter and seating.

Figure 7: Southern Outlet Corridor Alignment and Catchment Boundary



3. Methodology

3.1 Approach

A series of measures were used to assess each corridor at a strategic level and then compare all corridors to determine the order of priority for investment.

The assessment approach is not intended to provide a comprehensive quantitative assessment, but rather a high-level review of factors that describe the need and likelihood of success.

3.2 Graduated scoring approach

To compare the corridors, a graduated scoring system has been applied that provides a visual rather than numerical comparison against each criterion.

This system, sometimes described as a 'traffic light comparison', applies one of three colours as a representation of the degree to which each corridor either meets a criterion, or performs better than the other corridors. The graduated scoring system is presented in Table 1.

Table 1: Graduated scoring system

Score	Interpretation
🟢	Good. Meets criterion, or performs better than other corridors
🟡	Acceptable. Neutral, or performs adequately compared to other corridors
🔴	Poor. Fails to meet criterion, or performs worse than other corridors

In this process, the application of scores contains a degree of subjectivity and the results should be viewed as indicative rather than conclusive. The applied scores for each corridor against each criterion are presented in the following chapter.

3.3 Exclusions and boundaries

The assessment typically considers corridor catchments to begin a minimum of eight kilometres beyond Hobart CBD.

However, to understand factors within the corridors likely to affect bus service reliability or capacity, they may be assessed at different locations depending on the nature of the assessment being undertaken. For example, existing bus loadings are measured in the Hobart CBD, while total potential catchment may include areas beyond the outer end of the corridor.

3.4 Assessment criteria

3.4.1 Transport Supply Indicator

The Transport Supply Indicator (TSI) aims to quantify the measurable supply of public transport services available in a location, allowing different catchment areas to be compared. It considers:

- The number of bus services in an area over a period of time (e.g. AM peak period);
- How many people reside within 400m of a bus stop served by these services; and
- The proportion of the total population in the area that these people represent.

Details of how the TSI is calculated are provided in Appendix A.

When considering Park and Ride planning, a catchment that has a lower TSI score (i.e. low availability of bus services that people can actually get to) will have greater justification to drive to access public transport than a catchment where bus services are plentiful and easy to access.

3.4.2 Population growth

While larger populations in a corridor are likely to justify larger Park and Ride facilities, population alone is not a useful predictor of the successfulness of these facilities. However, population growth may be useful, particularly if it isn't known if local services within walkable distances will be increased at the same rate as population growth.

Predicted growth from 2019 to 2034 in each corridor catchment area, of persons aged between 15 and 65.

Growth rates were sourced from Tasmanian Government projections based on 2012 population levels, and presented at the LGA level. Some interpretation of the projections has been required to associate the LGA areas to corridor catchments.

Within the study area, estimated growth rates range from -2.7% for Hobart City Council to 14.3% for Kingborough Council.

Areas of higher growth are considered to have a stronger argument for providing additional public transport services and infrastructure, including Park and Ride facilities.

3.4.3 Mode share

Mode share based on Census 2016 Journey to Work data, provided at the SA1 zone level and averaged across each corridor catchment.

The metric used is the percentage of persons who travelled to work as Car Drivers.

Areas of higher car driver mode share are considered to have a stronger argument for providing additional public transport services and infrastructure, including Park and Ride facilities.

3.4.4 Bus service frequency

Bus services must be frequent enough to provide customers convenience and confidence that there will be a service available when they want to travel. Infrequent services reduce uptake of Park and Ride if customers believe they could drive to their destination in less time than it will take for the next bus to arrive.

A minimum of four buses per hour travelling to Hobart CBD in the AM peak is recommended to support a Park and Ride. Frequencies of eight buses per hour or higher are preferred.

Service levels in off-peak periods of at least two buses per hour to/from the CBD are required to give customers the flexibility to use a Park and Ride for anything other than typical '9 to 5' commuting.

3.4.5 Bus service spare capacity

Bus services must have adequate spare capacity to give customers confidence that they will be able to board the services at the Park and Ride, while still having capacity to allow existing customers closer to the CBD to board. If adequate spare capacity isn't available, additional services will need to be provided which represent an additional ongoing cost. Alternatively, larger buses could also be substituted into service, though their acquisition represents an additional capital cost.

A capacity assessment has been provided by Metro Tasmania which has been filtered to include data from March 2019, representing peak annual demand. Average spare capacity across the month has been estimated at the point when each scheduled service arrives in the CBD during the AM peak period.

It is noted that no bus departures from the CBD in PM peak period show evidence of full loadings on a regular basis, and outbound bus capacity has consequently been excluded from this assessment.

No data is available for TassieLink services (e.g. the Tasman Highway corridor).

3.4.6 Bus priority

Park and Rides are more likely to be successful if their associated bus services are supported by bus priority measures in the corridor to the CBD, to ensure journey speed and reliability, and provide a competitive advantage over car travel.

This criterion is assessed based on the presence of priority measures in locations of high traffic volume or congestion.

3.4.7 Existing Park and Ride use and capacity

The presence of an existing Park and Ride, whether formal or informal, gives a measure of demand in the corridor.

Existing facilities that are poorly utilised may suggest low demand, though could also suggest poor placement or low customer awareness.

Existing facilities that are well utilised or experience overflow suggest high demand, though consideration must be given to whether other (non-travelling) users are parking in it.

3.4.8 Planning provisions / constraints

Existing or future environmental constraints, land uses and zonings may either assist or inhibit the ability to develop and operate a Park and Ride.

These factors influence the feasibility, suitability and cost of a Park and Ride as a land use activity in the corridor.

Ideally, corridors should have identifiable areas of well-located land with compatible zoning and few known constraints.

3.4.9 Planned infrastructure / road projects.

Planned infrastructure projects or corridor improvements may impact the ongoing viability of a Park and Ride.

For example, if a new road project will improve road congestion without providing priority to public transport, it may reduce the demand to use a Park and Ride. Conversely, new development in the corridor with limited supporting infrastructure result in increased local traffic congestion, also affecting the ability of public transport to perform well.

3.4.10 Additional public transport investment needed

Providing a Park and Ride may result in increased external costs in the provision of the public transport system. This may include the cost of additional bus services, additional bus fleet to operate those services or supporting infrastructure like bus priority measures. These costs also include the cost of maintaining the Park and Ride facility.

3.5 Alternate approaches

Ideally, the assessment of demand for Park and Ride and the potential impact on mode shares would be assessed through the use of a strategic transport model, such as the Greater Hobart Urban Travel Demand Model (GHUTDM). Such an approach would provide insight into the response that could be expected following the establishment of a Park and Ride facility in any location throughout Hobart, along with any changes to the public transport services.

While this approach is generally recommended, the interrogation of the GHUTDM was not within the scope of this investigation.

4. Findings

4.1 Summary

The criteria have been scored for each of the seven corridors using the graduated scoring approach. Scores are summarised in Table 2, and presented in detail in this chapter.

Table 2: Summary of corridor assessment scoring

Criteria	Main Road	Brooker Highway	East Derwent	Tasman Highway	South Arm	Sandy Bay	Southern Outlet
Population Criteria							
Transport supply Population weighted transport supply indicator (TSI).	🔴	🔴	🟡	🟢	🟡	🔴	🟡
Population growth Predicted growth over next 15 years in catchment area.	🟡	🟡	🟡	🟡	🟡	🔴	🟡
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🟡	🟡	🟢	🟢	🟡	🔴	🟡
Public Transport Criteria							
PT Frequency Existing inbound services in AM peak.	🟢	🟡	🔴	🟡	🟢	🟡	🟢
Spare Capacity On existing services arriving in CBD in AM peak.	🔴	🟢	🟡	🔴	🟢	🟢	🟢
PT Priority Priority measures present within corridor	🟡	🟡	🔴	🔴	🔴	🔴	🟡
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🟢	🟡	🔴	🔴	🟡	🔴	🟢
Planning Criteria							
Planning provisions / constraints Planning, environmental or land use constraints.	🔴	🟢	🟡	🟡	🟡	🔴	🟡
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride.	🟢	🟢	🟢	🟢	🟡	🟢	🟢
Other Criteria							
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🟡	🔴	🔴	🟡	🟡	🟡	🟡

Based on the scoring presented, the following is observed.

- The Southern Outlet corridor ranks as the highest priority for Park and Ride development, with the highest number of 'Good' scores and no 'Poor' scores. Key factors include a growing population, existing Park and Rides that are well used, an intention to construct bus priority in the corridor and existing bus services that are of adequate frequency and have spare capacity, yet do not provide good opportunities for residents to access them from their homes.
- The Sandy Bay corridor ranks as the lowest priority for Park and Ride development, with the lowest number of 'Good' scores and the highest number of 'Poor' scores. Key factors include reasonably frequent bus

services that are well used by people accessing them from local walking catchments, and low expected population growth.

- The other corridors are closely clustered in terms of the number of good and bad scores they have. The Brooker Highway and Main Road corridors score slightly better than the other three.

It is important to note that with the possible exception of the Sandy Bay corridor, there isn't a recommendation not to invest in Park and Ride in any of the corridors. However, the highest ranked corridors suggest higher potential success relative to the complexity of Park and Ride development, and the total cost of doing so (construction cost and network improvement costs).

4.2 Main Road

4.2.1 Criteria scoring

Table 3: Main Road corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	🔴	TSI scoring shows that this corridor has a very good level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	🟡	Infill and development planned and underway in and around Glenorchy to Granton.
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🟡	The proportion of journeys to work made by drivers of single occupancy vehicles is lower than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	🟢	The Main Rd corridor has a high number of services per hour (13 including the X20).
Spare Capacity On existing services arriving in CBD in AM peak.	🔴	Services have little to no spare capacity and a high number of buses arriving in Hobart CBD with full loads.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	🟡	
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🔴	Existing Park and Ride at Moonah is oversubscribed and some spill-over is observed. Possible informal Park and Ride could be happening at Glenorchy town centre.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	🔴	There are some sites suitable further out along the corridor, but the majority of the corridor is developed or earmarked for densification and/or in private ownership.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride,	🟢	Main Road Transit Corridor Plan - planning underway - project will improve journey times and reliability. Objectives in this corridor are to reduce traffic congestion and associated parking pressures by increasing PT use.
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🟡	As per Main Road transit plan - some investment need has been identified.

4.2.2 Commentary

This corridor has a very good level of bus service, but most of the services arriving in Hobart CBD in the AM peak are arriving with full loads. Development planned and underway in outer areas of this corridor around Granton and Claremont presents an opportunity to increase the use of public transport using Park and Ride to capture new ridership. However, this would require investment in the frequency and number of services serving these areas.

The existing Park and Ride at Moonah is at capacity and there appears to be little opportunity to increase its size except by converting the adjacent bus depot staff car parking. Increasing its size could increase congestion on the surrounding road network, and is not a good land use outcome at this location as it does not align with the principle of intercepting customers closer to the origin of their trips.

While the utilisation of the Moonah Park and Ride indicates demand for additional Park and Ride in this corridor, when comparing the need for Park and Ride to other corridors, it does not score highly in terms of short-term priority for investment. This coupled with the need to invest in additional services in this corridor to make it attractive to customers, means that until it is viable to do this, it does not present as an immediate priority for investment in Park and Ride.

Possible location for Park and Ride provision

If correctly located, a Park and Ride located north of Glenorchy town centre would also help to consolidate demand for services to avoid having to provided uneconomic coverage services in some new development areas where this may not be feasible.

Locating a Park and Ride north of Glenorchy would help to:

- Relieve pressure on the existing Moonah Park and Ride.
- Intercept customers closer to the origin of their trips, reducing the length of their private vehicle trips.
- Increase the attractiveness of this high-frequency corridor, providing the opportunity to extend it further or build patronage to support additional services.

It is suggested that the 700m section of Main Road between Chapel Street and Montrose Road could provide a viable location to develop a Park and Ride based on the following:

- This section of Main Road is where all bus routes in the area come together to provide a high and attractive combined frequency.
- Adequately far north of Glenorchy to intercept traffic before it reaches the town centre.
- If new bus services were added, they could then head to the Brooker to express into the CBD (assuming that's a faster trip).
- There is a large area of land zoned Commercial or Light Industrial on the eastern side of Main Road that is not intensely developed.
- The Intercity Cycleway is located 100m-200m immediately east of and parallel to Main Road, allowing for Bike and Ride integration opportunities.

4.3 Brooker Highway

4.3.1 Criteria scoring

Table 4: Brooker Highway corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	🔴	TSI scoring shows that this corridor has a good level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	🟡	Greenfields and some infill residential development is planned or underway in this corridor at Brighton, Bridgewater, Granton, Claremont, and around New Norfolk.
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🟡	The proportion of journeys to work made by drivers of single occupancy vehicles is close to, but slightly lower than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	🟡	Moderate level of service. Most routes are express in nature.
Spare Capacity On existing services arriving in CBD in AM peak.	🟢	Buses have high spare capacity.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	🟡	No known PT priority in this corridor - though it may not be necessary.
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🟡	Reasonable utilisation of the formalised Park and Ride at New Norfolk, no informal Park and Ride observed.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	🟢	No major constraints identified.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride,	🟢	No known major projects likely to improve or affect Park and Ride planning or bus network planning. The Northern section of the Brooker Highway has lower traffic volumes and does not experience the same levels of congestion as the southern section.
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🔴	Yes. Some additional service would most likely be required. A Park and Ride in the corridor may have challenging access requirements, requiring external works to prevent localised traffic congestion.

4.3.2 Commentary

The Brooker Highway corridor catchment is geographically large, extending from Glenorchy to beyond Granton along the Lyell and Midland Highways. If a Park and Ride was located at the southern point of this catchment at Goodwood, it could potentially also serve much of the catchment along the East Derwent Highway.

Main Road vs Brooker Highway observations

The Main Road and Brooker Highway corridors are closely located and almost parallel, sharing much of the same catchment south of Granton. However, these two roads are fundamentally different in nature and Park and Rides located in each would perform differently.

Table 5: Differences between Park and Ride attributes in Main Road and Brooker Highway corridors

Main Road Corridor	Brooker Highway Corridor
Main Road is an arterial road controlled by the local councils through which it passes. Important for north-south movement within and between local communities, it also has direct property accesses along its length and connects to other major roads and residential streets along its length at a mixture of signalised and unsignalized intersections. Many car trips from local communities towards the Hobart CBD initially travel on Main Road before accessing the Brooker Highway, as do some bus routes.	In contrast, the Brooker Highway is a Category 1 State Road defined as "crucial to the effective functioning of industry, commerce and the community in Tasmania. They carry large numbers of heavy freight and passenger vehicles and are the key links supporting future economic development"[1].
A Park and Ride located on Main Road is likely to attract a localised group of users, intercepting them closer to their homes with a high level of local access. Generally, in corridors of this type, a successful Park and Ride would need to be small, responding to this local demand but also to avoid attracting too many users from further away who could exacerbate local traffic congestion.	A Park and Ride located on Brooker Highway is likely to attract a larger number of people travelling from further away but intercepting them relatively further from their homes, potentially travelling from further north such as the Lyell Highway or Midland Highway corridors. It is unlikely that access to a Park and Ride would be directly from the highway, and complex access arrangements may be required via highway ramps or intersecting roads, which then has the potential to create localised traffic congestion where it does not currently exist. Pedestrian access may also be challenging as customers may need to cross the highway in one direction of travel, unless buses divert into the Park and Ride.
The location of the Park and Ride would literally need to be on the existing bus routes: e.g. on Main Road itself. This limits the number of readily available sites, with site acquisition most likely required.	Located in or immediately adjacent to a highway road corridor, possible sites may already be in public ownership, but a Park and Ride of this type would most likely be a large, major facility, with potential constructability challenges.
As a small Park and Ride, it would need to be able to leverage off the existing bus network, and would not justify modifying existing bus services to use it.	As a larger Park and Ride, there may be justification for diverting existing buses to it as there are relatively few bus stops on the Brooker Highway itself, and most existing bus services run express along it. Existing bus services would experience a delay, either from the addition of new stops on the highway, or by diverting the highway – this may be justifiable if the number of Park and Ride users is large.
If additional services are required to create more attractive frequencies or provide additional capacity, these would best be delivered by increasing the frequency of local bus routes that would benefit the local community and the Park and Ride alike.	If additional services are required, there may be justification for adding targeted routes primarily designed to serve the Park and Ride.

Possible location for Park and Ride provision

The areas adjacent to the intersection of Brooker Highway with Goodwood Road may be suitable for the development of a Park and Ride. Existing parking areas serving the Entertainment Centre and racecourse are underutilised outside of event times.

The site on the eastern corner of the intersection is of additional interest as it benefits from the combined frequency of buses travelling along Goodwood Road and those from Brooker Highway further north. This location would also intercept traffic from both corridors.

New bus stops would be required on Brooker Highway, along with changes to service patterns to allow the X series bus routes to stop there.

A challenge to be addressed would be constructing outbound bus stops on Brooker Highway itself that still allow buses to turn right into Goodwood Road, noting the three lanes of traffic to cross. One solution would be providing bus-only priority hook-turn, allowing buses to turn right from the left lane on a dedicated signal phase.

[1] https://www.transport.tas.gov.au/__data/assets/pdf_file/0005/108509/State_road_hierarchy_December_1.pdf accessed 5 August 2019.

Figure 8: Brooker Highway and Goodwood Road intersection and adjacent areas

4.4 East Derwent Highway

4.4.1 Criteria scoring

Table 6: East Derwent Highway corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	🟡	TSI scoring shows that this corridor has a moderate level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	🟡	Growth in Rison Vale, Risdon, Geilston Bay and Old Beach largely underway.
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🟢	The proportion of journeys to work made by drivers of single occupancy vehicles is notably higher than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	🔴	Low level of service.
Spare Capacity On existing services arriving in CBD in AM peak.	🟡	Buses have high spare capacity, but the low frequency yields only moderate total additional capacity.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	🔴	Congestion on Tasman Bridge a problem in this corridor.
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🔴	No existing Park and Ride. No known informal Park and Ride reported.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	🟡	Possible sites can be identified.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride,	🟢	No known projects likely to improve or affect corridor. Any projects to reduce bridge congestion likely to improve PT.
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🔴	Additional bus services would be required to create an attractive service frequency.

4.4.2 Commentary

The East Derwent Highway corridor has a comparatively small population catchment, and journeys originating from this area represent only around 16% of trips using the Tasman bridge to access Hobart CBD in the AM peak.[2] Census data also shows that the proportion of journey to work made by drivers of single occupancy vehicles is notably higher than the average for Hobart in this area. A lower level of bus services in this catchment and the speed of bus services means private vehicle trips originating in this area are twice as fast as equivalent bus trips.

[2] State Growth, 2017 *Community Travel Patterns on the Tasman Highway between Sorell and Hobart and Domain Highway.* Data and Analysis Team, State Roads Division, Department of State Growth, Hobart.

While there is some development in this area around Risdon Vale, the development does not result in a significant increase in population in this catchment. A relatively small catchment and lower bus service provision makes it difficult to justify for a Park and Ride.

In assessing this corridor consideration was also given to what role a Park and Ride might play within the eight-kilometre boundary from the CBD. This area has a higher level of bus service frequency and it was considered that this may play a role in the attractiveness of services. However, given the short driving length of this trip it is unlikely that transferring to bus to complete the trip will present a competitive option for customers. Further this option is likely to cannibalise existing public transport services in this area, by attracting local customers at the expense of customers travelling from further away.

Possible location for Park and Ride provision

While this corridor does not present itself as a priority for investment in Park and Ride, a small facility could be feasible if it can be delivered for low cost and located at an appropriate location to consolidate demand for services. Noting that it may need to be supported by more frequent direct bus services to successfully attract customers.

A small, low-cost Park and Ride may be able to be developed along East Derwent Highway in Geilston Bay, in the vicinity of the Sugarloaf Road or Geilston Bay Road junctions, where large amounts of space are currently unutilised in the wide road corridor.

Figure 9: Intersection of East Derwent Highway and Geilston Bay Road

4.5 Tasman Highway to Sorell

4.5.1 Criteria scoring

Table 7: Tasman Highway corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	●	TSI scoring shows that this corridor has a very low level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	●	Further - phone survey (Ref: Eastern Shore Discussion doc) suggest little to no interest in Park and Ride from residents in outer eastern area. Small increase in demand possible from recent Midway Point development.
Mode share 'Car as Driver' from Census 2016 Journey to Work.	●	The proportion of journeys to work made by drivers of single occupancy vehicles is notably higher than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	●	Current services are reasonably frequent for customers accessing the bus network at Sorell or Midway Point. Seven inbound in the AM peak arriving before 9am (maximum of five in one hour), three outbound departing Hobart after 5pm.
Spare Capacity On existing services arriving in CBD in AM peak.	●	No data is available on current loads. However, the low outbound PM service frequency means that the spare capacity in the corridor is assumed to be low in terms of total seat availability.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	●	No bus priority on the bridge or Tasman Highway. Congested at bottlenecks, including at the bridge create delays on this corridor and affect the reliability of services.
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	●	Limited usage for existing Park and Ride. No indication of informal Park and Ride occurring. Existing Park and Ride is under-utilised, estimate at less than 25%. This could be due to lack of customer awareness of the facility, as it is not listed on the Metro or other website. Another issue could be the location does not align with the potential catchment of PT services, i.e. it is not on the route of existing commute trips - given how far out it is.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	●	Based on previous study - Limited land in Crown or Council ownership in this corridor.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride,	●	Investigations into improvements to Eastern Shore corridor to CBD
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	●	Yes, investment to increase outbound PM frequency is suggested. Questionable as to how much value there is to be gained, given low density of catchment.

4.5.2 Commentary

Although the number of single occupancy journey to work trips in this corridor is slightly higher than the Greater Hobart average, trips generated in this corridor represent only a small number of those crossing the Tasman Bridge in the AM peak. Therefore, these trips do not presently contribute significantly to traffic congestion on the Tasman Highway. However, a small amount of growth in this catchment does contribute to increasing congestion on the Tasman Highway and Bridge.

A small and dispersed catchment along this corridor means it is difficult to locate a suitable section to intercept private vehicle journeys with Park and Ride at a point where public transport will be competitive with a private vehicle trip and where demand would justify an increase in the number of bus services.

A low to moderate number of existing bus services means additional services would be needed to make Park and Ride attractive to customers, particularly in the PM peak period when outbound services after 5pm are limited and infrequent. A Park and Ride closer to Hobart CBD would achieve less in terms of reducing car VKT, but will be more affordable in the provision of additional bus services.

Within this corridor there is already a Park and Ride at Sorell that services part of the catchment. However, service frequency and timing is not currently adequate to attract customers to this Park and Ride location. Additionally, the location of this Park and Ride is sub-optimal, somewhat isolated in the northern half of the Sorell township and unlikely to attract users from the southern half who effectively need to drive in the opposite direction from Hobart to access it. It is only suitable for a small number of potential customers in the Sorell area. It is also unlikely to unlikely to attract additional ridership without service improvements.

Possible location for Park and Ride provision

On balance, the Tasman Highway corridor does not present a strong argument for immediate priority for investment in the short-term or significant investment over time. However, this corridor may lend itself to opportunistic investment in smaller, low-cost Park and Ride facilities or the support of informal Park and Ride sites.

Within Midway Point, a small facility could be developed near the intersection with Penna Road, and could be provided as a shared parking area for businesses in the area.

Closer to Hobart, a Park and Ride located in the vicinity of the junction of the Tasman Highway and the South Arm Highway in Mornington might be viable and has the potential to intercept traffic on the Mornington Highway, South Arm Highway, and the local community. Locations where this could be developed are limited. The small parcel of land adjacent the Mornington Inn may be suitable, and it would be served by existing bus routes that travel on Cambridge Road, rather than relying on the few buses that travel on the Tasman Highway.

Figure 10: Junction of Tasman Highway and South Arm Highway, Mornington

4.6 South Arm Highway

4.6.1 Criteria scoring

Table 8: South Arm Highway corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	🟡	TSI scoring shows that this corridor has a moderate level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	🟡	Notable population growth in this area - including in and around Howrah, Rokeby, Clarendon Vale, and Tranmere.
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🟡	The proportion of journeys to work made by drivers of single occupancy vehicles is close to, but slightly higher than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	🟢	Moderate to high level of service. Clarence Road services add to total service offering in corridor.
Spare Capacity On existing services arriving in CBD in AM peak.	🟢	Buses have high spare capacity.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	🔴	Congestion is an issue.
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🟡	No existing formal Park and Ride. Some informal Park and Ride observed at Lauderdale Tavern and Shoreline Shopping Centre.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	🟡	Some sites identified in corridor study, but limited suitable sites.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride.	🟡	Investigation into improvements to Sorell to Hobart corridor - improvements to inner corridor areas unknown.
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🟡	Minor investment needed.

4.6.2 Commentary

The South Arm Highway catchment has moderate to high levels of bus service. However, routes serving outer areas such as Tranmere and Lauderdale are not very competitive with private vehicle trips to Hobart CBD due to the diversion through the Rosny Interchange, a lack of bus priority and congestion at the Tasman Bridge making these services slower and unreliable.

While there are currently no formal Park and Ride facilities in this corridor, it is observed that informal Park and Ride occurs at Shoreline Shopping Centre and the Foreshore Tavern at Lauderdale and may be occurring at other interchanges in the corridor where services are either more direct or frequent.

Approximately 38% of private vehicle trips crossing the Tasman Bridge in the AM peak originate from Rosny, South Arm and Mornington; making a significant contribution to Tasman Bridge congestion.[3] Increasing bus mode share from these areas would help to reduce this congestion in this corridor.

Spare capacity on peak bus services to Hobart CBD is reasonable, based on the data provided, though it is noted that the services that travel via Clarence Street are more heavily loaded than those through Mornington via South Arm Highway.

Therefore, increased service levels, priority and express trips may be needed to support the provision of Park and Ride in the Mornington area. Locating a Park and Ride closer to the Tasman Bridge, in locations such as Rosny Park, is not supported due to the need to intercept customers closer to their point of origin and to avoid attracting traffic into already congested areas in and around Rosny Hill Road and Cambridge Road.

However, planned growth in and around Rokeby, Tranmere and Lauderdale will add to congestion in this corridor. This growth represents an opportunity as it increases public transport catchments. A high-level assessment of this catchments indicates enough demand to warrant further investigation into Park and Ride and investment in service improvements.

Possible location for Park and Ride provision

As discussed previously, a location near the junction of the Tasman Highway and the South Arm Highway in Mornington may be viable. This location might be able to draw traffic from the South Arm Highway corridor away from Rosny Park, and also intercept traffic in the Tasman Highway corridor.

Further south, land within the road reserve near the intersection of Rokeby Road and Pass Road may be suitable. This location would intercept traffic from Rokeby and further southwards. Bus stops are located adjacent to the intersection.

Figure 11: Intersection of Rokeby Road and Pass Road, Rokeby

[3] State Growth, 2017.

4.7 Sandy Bay

4.7.1 Criteria scoring

Table 9: Sandy Bay corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	🔴	TSI scoring shows that this corridor has a high level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	🔴	No significant population growth is forecast in this relatively low-population area.
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🔴	The proportion of journeys to work made by drivers of single occupancy vehicles is notably lower than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	🟡	Moderate level of service.
Spare Capacity On existing services arriving in CBD in AM peak.	🟢	Buses have high spare capacity.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	🔴	Transit priority is proposed for Sandy Bay Road towards the University of Tasmania.
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🔴	No informal Park and Ride was observed between Taroona and Hobart. Nearest formal Park and Ride is at Kingston Wetlands, but it is unlikely that customers in this catchment would be travelling backwards to utilise this facility.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	🔴	Geographically constrained corridor, with conservation area, steep land and well established residential development makes it difficult to identify any suitable sites. Also given the location, sites are likely to have higher land values.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride.	🟢	Safety improvements planned for Channel Highway in Bonnet Hill, but no known significant improvements planned for the outer corridor. PT priority improvements are proposed by Hobart Council for the inner corridor (Sandy Bay Road).
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🟡	Service frequency in the AM peak requires some improvement.

4.7.2 Commentary

An assessment of the Sandy Bay corridor and its catchments indicated it is difficult to justify any further investment in Park and Ride in this area. Inner areas of this corridor are well-served by public transport and the TSI assessment indicated a high level of service availability within walking distance of residences, relative to population.

Park and Ride is also difficult to justify as there is no significant greenfield development in this corridor, and development in the form of infill is mainly occurring in areas within eight kilometres of the CBD where Park and Ride is not suitable due to the proximity to the CBD.

High level assessment also found that the land ownership, development patterns and geographic constraints along Channel Highway would make it very difficult to find a site suitable for formal Park and Ride without incurring a significant cost, not commensurate with the investment required.

4.8 Southern Outlet

4.8.1 Criteria scoring

Table 10: Southern Outlet corridor assessment

Criteria	Score	Notes
Population Criteria		
Transport supply Population weighted transport supply indicator (TSI).	🟡	TSI scoring shows that this corridor has a moderate level of bus service availability within close proximity to residences, relative to the population.
Population growth Predicted growth over next 15 years in catchment area.	🟡	Residential development planned or underway at Spring Farm (600 dwellings), Whitewater Estate (229 lots, 15 multiple dwelling), Huntingfield (450 dwellings), plus smaller pockets of development in Snug, Margate and the Huon Valley
Mode share 'Car as Driver' from Census 2016 Journey to Work.	🟡	The proportion of journeys to work made by drivers of single occupancy vehicles is close to, but slightly lower than the average for Hobart.
Public Transport Criteria		
PT Frequency Existing inbound services in AM peak.	🟢	High level of service, exceeding 8 buses per hour in Kingston.
Spare Capacity On existing services arriving in CBD in AM peak.	🟢	Buses have high spare capacity.
PT Priority Priority measures present within corridor in locations of high traffic volume or congestion.	🟡	No priority in the corridor at present, excepting a 720m section of northbound bus lane on the Southern Outlet that ends 200m south of Davey Street. Proposal to build a 5th lane - for buses only on the Southern outlet is being investigated and resulting PT travel time savings would likely to make bus trips more attractive in this corridor.
Existing Park and Ride use and capacity As a measure of demand for Park and Ride in the corridor.	🟢	Existing sites are well-utilised. The informal site at the Hunting field terminus appears to be reasonably attractive to customers. Informal Park and Ride has also been observed at Kingston Beach, Margate and Snug.
Planning Criteria		
Planning provisions / constraints Planning, environmental or land use constraints.	🟡	There are limited sites suitable for Park and Ride in the Kingborough area. And planning constraints, including flooding make some sites unsuitable.
Planned infrastructure / road projects. Planned projects that may impact the ongoing viability of Park and Ride,	🟢	Planned improvements to the road network including the Spring Farm Road extension, the bus transit lane on the Southern Outlet, the Huntingfield roundabout upgrades all represent opportunities to improve the bus network and traffic access to potential Park and Ride sites.
Other Criteria		
Additional PT investment needed Cost of maintenance, additional services or supporting infrastructure.	🟡	PT frequency is comparatively high in this corridor. However, there is opportunity to reduce journey times through investment in express services and more frequent direct services.

4.8.2 Commentary

The Southern Outlet corridor represents the greatest short-term opportunity for investment in Park and Ride. Factors informing this find include congestion of the Southern Outlet, population growth, existing demonstrated demand for Park and Ride and a level of service capable of supporting Park and Ride.

Two existing Park and Rides in this catchment at Dennison Street and the Kingston Wetlands site on Channel Highway are already well-utilised. Informal Park and Ride is also occurring at the Huntingfield Terminus and has been reported at Kingston Beach and Snug, indicating an existing demand for more formal Park and Ride.

High traffic volumes on the Southern Outlet between Kingston and Hobart have led to investigations into the construction of fifth lane to accommodate public transport and emergency vehicles. Options and staging assessment of this project is ongoing.

Development planned or underway in the Kingborough local government area, including at Huntingfield, Spring Farm and south in and around Margate are likely to add to increase traffic volumes on the Southern Outlet and Channel Highway. However, they also represent an opportunity to increase public transport patronage by improving services to attract new users.

A review of existing bus services found frequency and service levels to be adequate to support Park and Ride. However, some service improvements such as more direct services in the AM peak and improved journey time reliability would help to make Park and Ride locations attractive to customers. There is some capacity to cater for increased patronage, but it is likely that consolidating demand for services at a Park and Ride location may result in a need to increase services or vehicle capacities.

This assessment also indicates that the existing Denison Street Park and Ride and Kington Wetlands Park and Ride serve local demand from the eastern side of the Channel Highway, but do not intercept people from further south (Margate, Snug or Blackmans Bay) as they require a deviation from their trip to access the Park and Rides. This may explain why informal Park and Ride is occurring at the Huntingfield terminus, as this site is easily accessible by commuters travelling from the South to Hobart.

Possible location for Park and Ride provision

The informal Park and Ride activity occurring at the Huntingfield Terminus suggests an unmet demand in this location. As the site is located within the road reserve, no acquisition or planning issues are likely to prevent the formalisation of this site.

Figure 12: Informal Park and Ride at Huntingfield Terminus

Appendix A

Transport Supply Indicator

The Transport Supply Indicator (TSI) aims to quantify the measurable supply of public transport services available in a location, allowing different catchment areas to be compared. It considers:

- The number of bus services in an area over a period of time (e.g. AM peak period);
- How many people reside within 400m of a bus stop served by these services; and
- The proportion of the total population in the area that these people represent.

As an example, if all people in a catchment live within 400m of a bus stop, and these bus stops are served by frequent bus departures, that catchment will receive a high score. If another catchment has either fewer bus departures, or has a smaller percentage of residents who live within 400m of a bus stop, it will receive a lower score.

TSI has been calculated using a methodology adapted from the previous work by Currie and Senbergs[4]. The following summarises the approach:

- GTFS timetable data is used to calculate the number of bus services that stop at each stop in Hobart over the two-hour weekday AM peak period (0700-0900).
- Census Mesh Blocks were used to map residential population. By using population at this fine-grained level, distortion caused by sparsely populated areas within the larger SA1 census zones can be avoided.
- GIS software was used to calculate the percentage of each mesh block that is located within 400m of a bus stop. Where the 400m buffer area of different stops overlapped, the overlapping buffers were merged to prevent double counting.
- The TSI was calculated for each corridor catchment area by the following formulae:

$$TSI_{CC} = \frac{\sum MB\left(Pop_{MB} \times \sum T\left(\frac{Area_{B_T}}{Area_{MB}}\right)\right)}{\sum Pop_{MB}}$$

where:

TSI_{CC} = Transport Supply Indicator for the Corridor Catchment
CC = Corridor Catchment under analysis
MB = Mesh Blocks included within the CC
T = number of unique bus trips servicing each MB
$AreaB_T$ = the combined buffer area for all stops in each MB serving each of the T trips in that mesh block
AreaMB = square kilometre spatial area of the MB
Pop_{MB} = the resident population of the MB

It is important to note that the actual score is meaningless in its own right, i.e. there is no specific number that represents a good score or a bad score. The calculated scores form a means to compare one catchment with another.

Corridor	Population	% Persons Covered	TSI Score
Main Road	25905	92.0%	6.47
Brooker Hwy	31299	85.5%	5.21
East Derwent Hwy	11584	79.1%	3.53
Tasman Hwy	15966	41.4%	2.66
South Arm Hwy	23581	84.9%	4.96
Sandy Bay - Channel Hwy	3591	89.7%	5.37
Southern Outlet	27382	71.4%	3.97

[4] *Identifying Spatial Gaps in Public Transport Provision for Socially Disadvantaged Australians – The Melbourne 'Needs Gap' Study, 2007*

Appendix B

Mode Share

Journey to Work mode share. Census 2016 at SA1 level.

Corridor	Persons Who Travelled to Work	Persons who Drove Themselves	% of Persons who Drove Themselves
Main Road	9270	7303	78.8%
Brooker Hwy	11100	8936	80.5%
East Derwent Hwy	3840	3224	84.0%
Tasman Hwy	6286	5278	84.0%
South Arm Hwy	8896	7254	81.5%
Sandy Bay - Channel Hwy	1257	923	73.4%
Southern Outlet	10315	8275	80.2%

Appendix C

Bus Service Spare Capacity

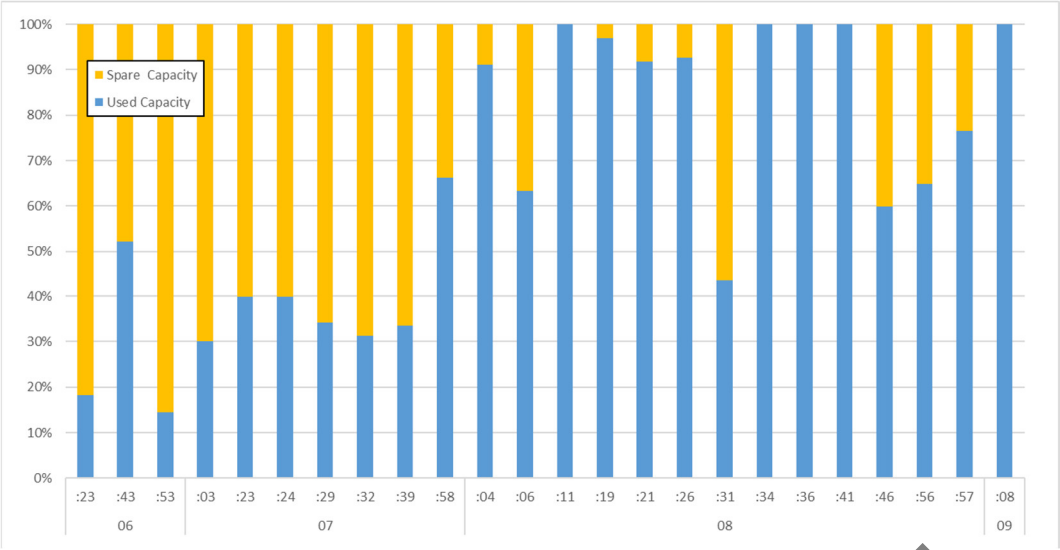
Spare Capacity of Buses Arriving in Hobart CBD on weekdays between 0800 and 0900 in March 2019.

Corridor	Spare Capacity	Services in Sample
Main Road	16%	13
Brooker Hwy	63%	8
East Derwent Hwy	53%	5
Tasman Hwy	No data	
Rosny (incl some South Arm Hwy)	58%	13
South Arm / Clarence Street	25%	9
Sandy Bay - Channel Hwy	45%	8
Southern Outlet	45%	11

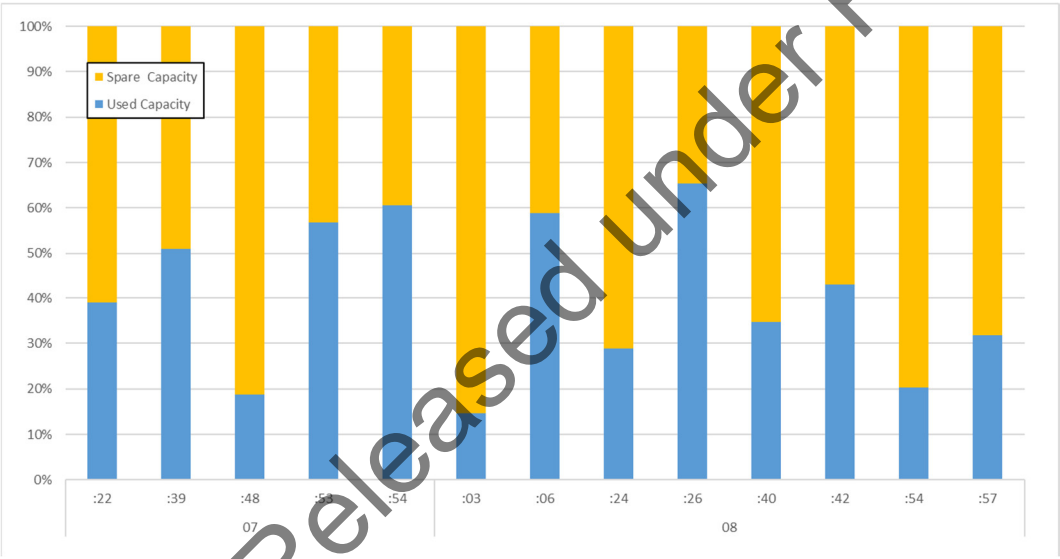
Based on analysis undertaken by Metro Tasmania

AM Passenger Loads by Time of Arrival in Hobart CBD

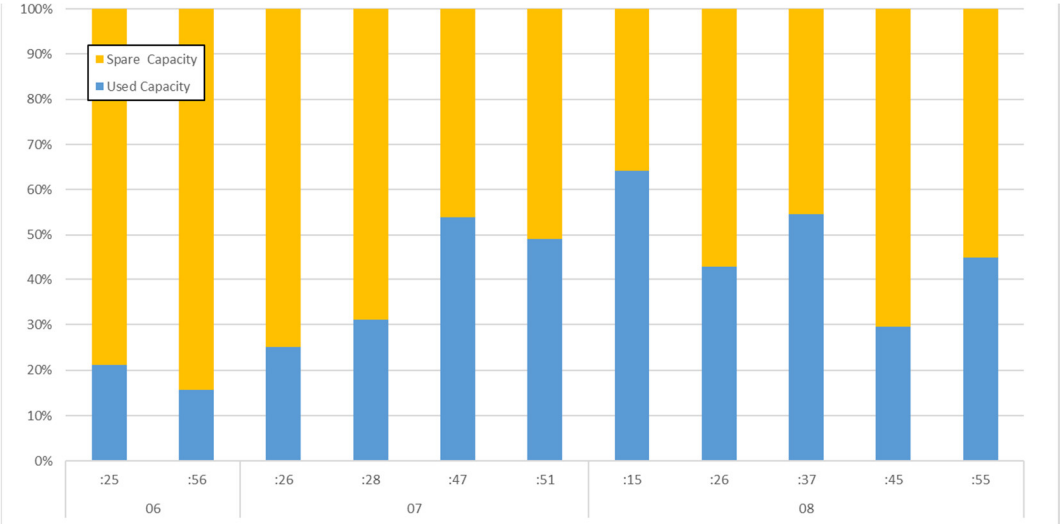
Main Road



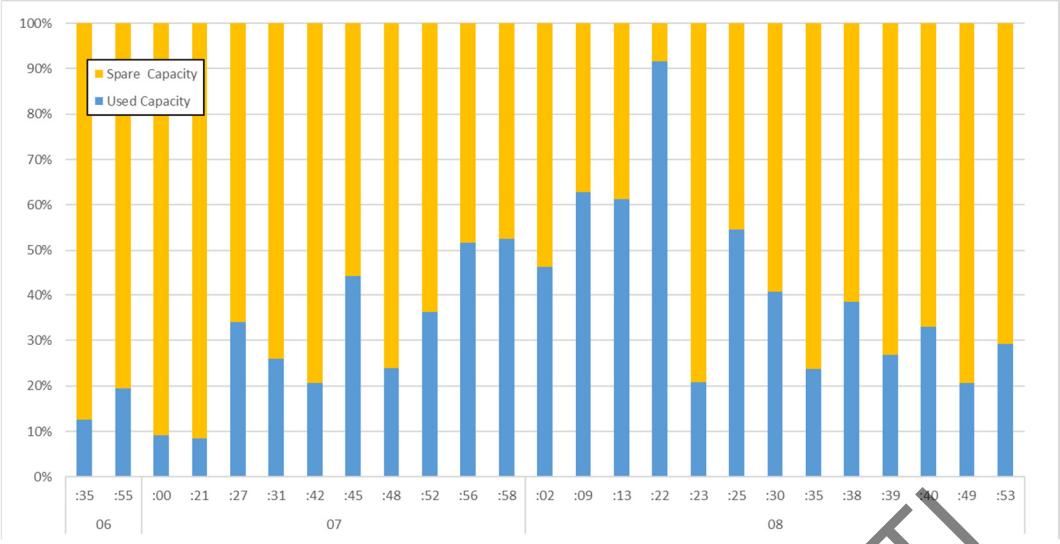
Brooker Hwy



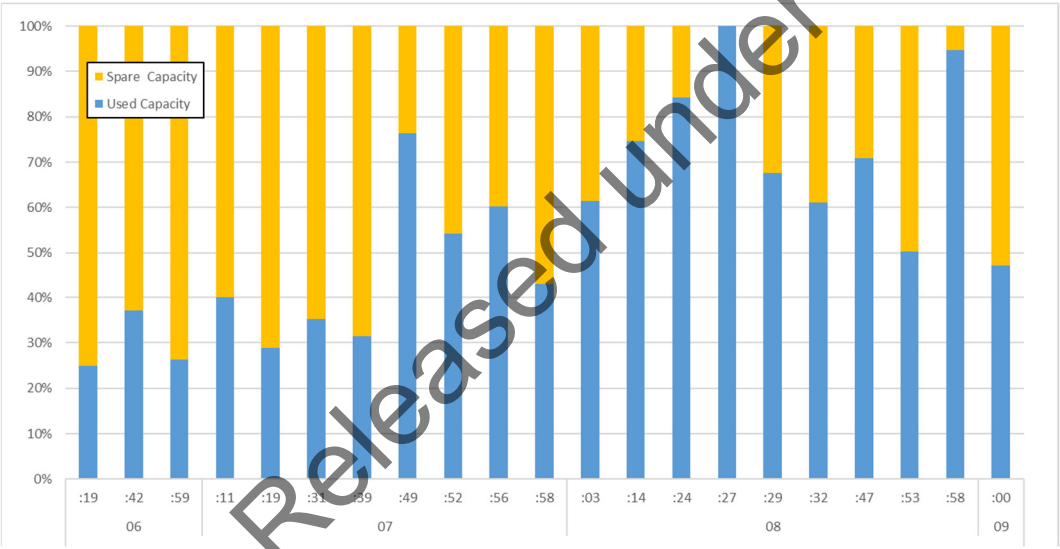
East Derwent



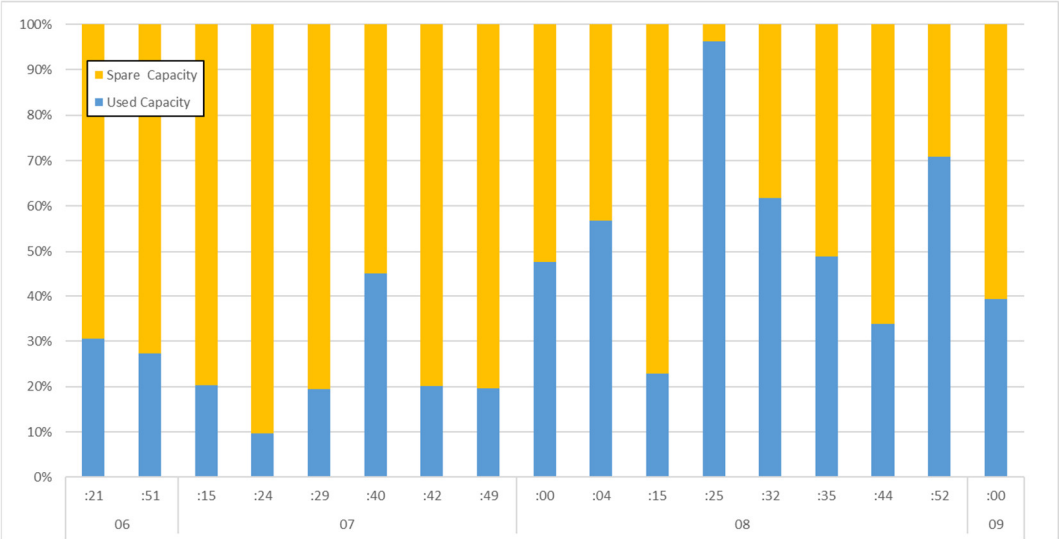
Rosny (incl South Arm Services)



South Arm / Clarence Street



Channel Hwy



Southern Outlet