Glenorchy to Hobart CBD Transit Corridor

Transit Corridor Assessment Report – Stage one

Corridor function and performance

July 2012

Department of Infrastructure,
Energy and Resources

Tasmania
Explore the possibilities

CONTENTS

1 KEY POINTS

This report highlights key issues along the Transit Corridor from a function and performance perspective, focusing predominantly on public transport.

- **Transit Corridor function:**
    - The Corridor typically operates as a 'main street', as opposed to an urban highway, because of its function and adjoining land uses.
    - Traffic volumes along the Transit Corridor are highly variable at different points along the Corridor, with volumes varying between 9 300 to 21 800 cars per day.
    - Traffic volumes have actually decreased along certain sections of the Corridor over the last 20 years.
- **Car travel time:**
    - The PM peak outward trip has the longest travel times along the Corridor at 20:14 minutes, followed by the AM peak inward trip at 17:54 minutes (Tolosa Street to Liverpool Street).
    - Slowest sections in both the AM (inward) and PM (outward) peaks include North Hobart and Hobart CBD.
- **Bus travel time:**
    - Inter-peak outward trip has the longest travel times for buses at 34:28 minutes, followed by the PM peak inward trip at 31:43 minutes and AM peak inward at 31:19 minutes.
    - The slowest sections for buses in the AM peak inward include:
        - North Hobart to Collins Street.
        - Moonah activity centre to Risdon Road.
        - Springfield Bus Depot to Moonah activity centre.
    - Bus travel time is much longer than car travel time along the Corridor. In the AM peak inward trip, on average a bus trip takes 31 minutes compared to 18 minutes by car (note that car and bus travel time data is not directly comparable).
    - Cycling travel times along the Inter-City Cycle Way and Argyle Street bicycle lanes are slightly faster than bus travel times, but slower than car travel times.
    - Analysis shows that there is significant variation in travel times along the Transit Corridor for buses, with the inter-peak outward trip having the highest level of variation, of around eight minutes.
- **Travel time reliability:**
    - Historically cars have been given priority over other modes on Greater Hobart's roads. This has resulted in poor travel time reliability for buses.
    - Reliability on the Transit Corridor is affected by:
        - General traffic delays: localised congestion especially during peak travel times.

- Traffic conditions within activity centres: can affect the reliability of through traffic movements including buses.
- The number and spacing of bus stops: there are 66 bus stops on the Corridor, which is an average of a bus stop every 250 metres.
- Inadequate bus stop lengths: creates difficulties for buses merging back into traffic.
- Deviations from the Corridor: the bus has to deviate from the Corridor through the Springfield Depot on the inward trip and via the Hobart CBD one-way street network (outward and inward). These delays result in an additional 11:10 minutes during the AM peak inward trip.

- Improving the reliability for buses is a key means to improving patronage. As road space is limited on Main Road, public transport may need to be given priority on certain sections of the Corridor.

2 TRANSIT CORRIDOR FUNCTION

The Transit Corridor consisting of Main Road, Elizabeth Street and New Town Road is an important intra-urban road linking Glenorchy, Moonah, New Town, North Hobart and the Hobart CBD. It was the only major road link connecting Hobart to Glenorchy and Northern Tasmania until the construction of the Brooker Highway in the 1950s.

The Transit Corridor has historically, and continues to be, a critical public transport route, with bus services operating at a high frequency during weekdays. During the morning peak the Corridor has a bus frequency on average of every five minutes.

The Transit Corridor is also an important route for local car traffic, facilitating movement between the different activity centres and residential areas along the network. The Corridor links five activity centres over eight kilometres, which makes it the densest commercial strip in Greater Hobart. The Corridor has ‘strip shopping’ nearly the entire length with the exception of parts of New Town.

The Corridor typically operates as a ‘main street’, as opposed to an urban highway, because of its function and adjoining land uses. The Corridor has 30 sets of traffic lights, which is just under 25 percent of all traffic lights in Southern Tasmania. These traffic lights facilitate safe access from residential areas to the Corridor for both pedestrians and vehicles and also result in slower travel speeds and times for both cars and buses. The Corridor has inconsistent speed limits along its length which is reflective of the different types of activity on the Corridor:

- Hobart CBD to North Hobart shopping precinct: 50 kilometres per hour.
- North Hobart shopping precinct: 40 kilometres per hour.
- New Town to Moonah: 60 kilometres per hour.
- Moonah shopping precinct: 40 kilometres per hour during business hours (7:30 AM and 6 PM from Monday to Friday, and between 9 AM and 4 PM on Saturdays) 50 kilometres per hour at all other times.
- Moonah to Glenorchy: 60 kilometres per hour (consideration is being given to lowering the speed limit to 50 kilometres per hour).
- Glenorchy activity centre: 50 kilometres per hour.

The intercity cycle-way and the on-road cycle lanes on Argyle Streets provide an alternative route for cyclists parallel to the Transit Corridor. In order to access the activity centres and

public transport located on the Transit Corridor, cyclists need to be able to safely and conveniently transition from the cycle infrastructure to the Transit Corridor.

2.1.1 Adjacent road routes

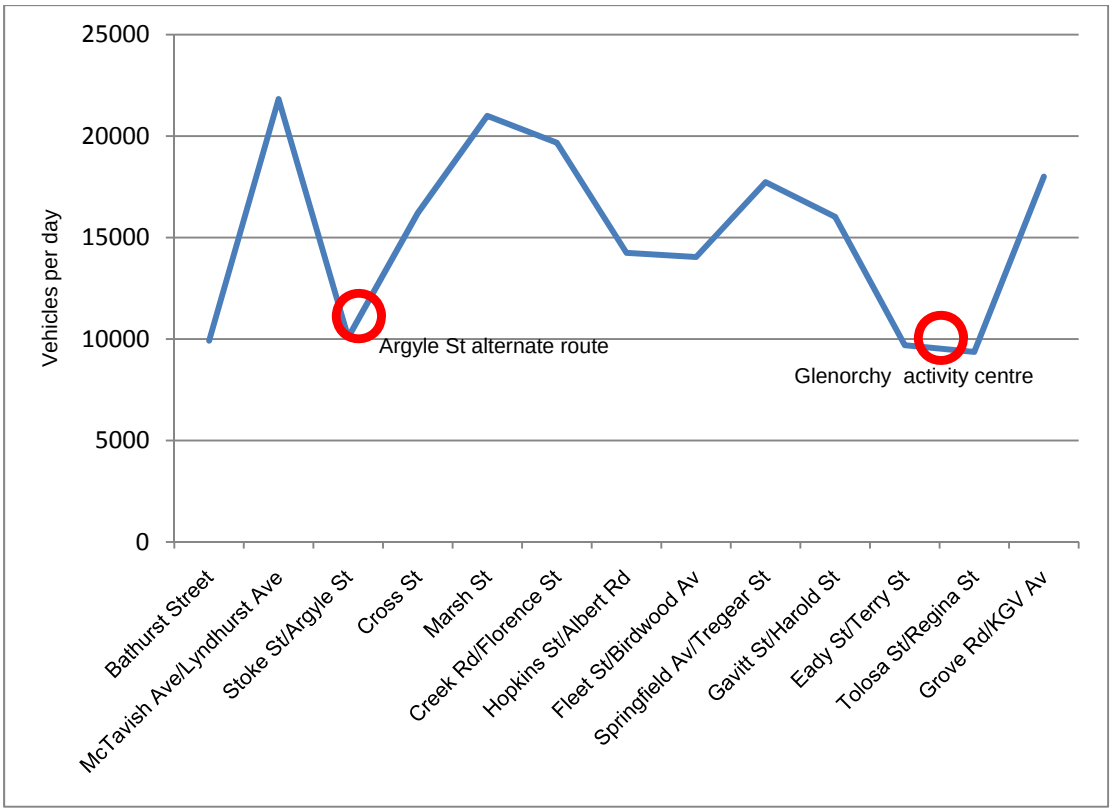
The Brooker Highway (which runs parallel to Main Road) is Greater Hobart's key urban passenger and freight route, linking southern distribution centres to the Northern Ports. It is also the key arterial route linking the Northern Suburbs to the Hobart CBD. Its primary role is to carry freight and car-based passenger traffic, rather than as a public transport route, although a number of express bus services use the highway as an alternative to Main Road.

Argyle/Campbell Streets, which run parallel to Elizabeth Street, also provide an alternative through route for car-based traffic wanting to bypass the North Hobart shopping precinct. Argyle Street is also part of the Principal Urban Cycling Network.

2.2 Traffic volumes

Daily traffic volumes along the Transit Corridor are highly variable at different points along the Corridor, with volumes varying from 9300 to 21 800 cars. The variability is because alternative traffic routes from the Corridor are provided at Argyle Street and King George V Avenue.

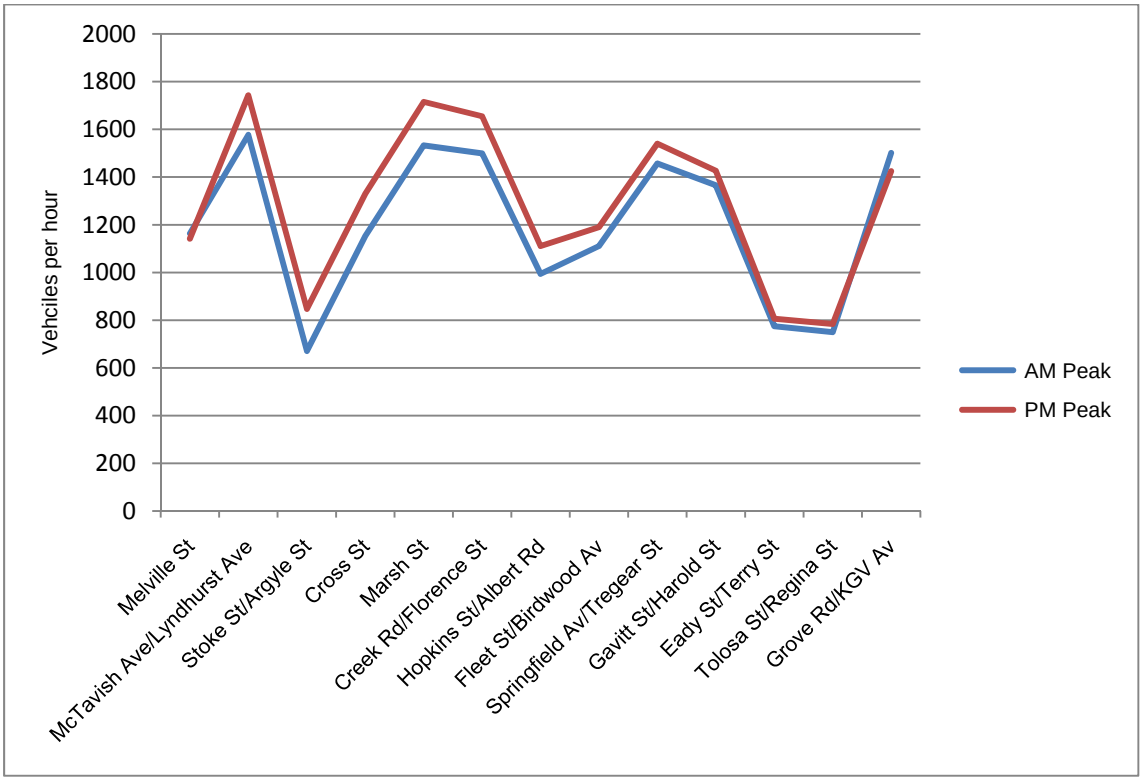
Figure 1 Traffic volumes per day along the Transit Corridor



Source: Glenorchy City and Hobart City Council, based on mid-block intersection counts.

Figure 2 shows that the PM peak (5:00-6:00 PM) carries slightly higher traffic volumes than the AM peak (8:00-9:00 AM).

Figure 2 Traffic volumes along the Transit Corridor during AM and PM peak periods



Source: Glenorchy City and Hobart City Council, based on mid-block intersection counts.

At its highest volume location, the Transit Corridor carries slightly below half the volumes of the Brooker Highway, which carries 50 000 vehicles per day on its busiest section (between the Domain Highway and Derwent Park). Traffic volumes on the Brooker Highway are forecast to increase to 66 000 per day by 2031, based on historic linear growth of 1.26 percent.

In comparison, traffic volumes on the Transit Corridor from Glenorchy activity centre to Creek Road over the last 20 years have actually decreased. This may be because Glenorchy has had relatively low population growth over this period and people use the Brooker Highway for through movements.

The Transit Corridor carries low levels of freight, reflecting its function as a 'main street'. Derwent Park is the highest volume location on the Corridor for freight carrying 70 000 tonnes per annum. Lower volume sections carry around 40 000 tonnes (DIER 2008/09).

The Brooker Highway is a major freight route; it carried 2.7 million tonnes of freight in 2008/09 with freight forecast to increase to 4.5 million tonnes by 2027.

3 TRANSIT CORRIDOR PERFORMANCE

3.1 Car travel time analysis

Car travel time analysis was undertaken on the Transit Corridor by DIER in 2006 and 2011. This analysis identifies parts of the network that are experiencing delays and have capacity constraints.

3.1.1 2011 car travel time analysis

For the Transit Corridor from Tolosa Street to Liverpool Street the analysis showed that:

- PM peak outward trip:

    - Longest travel times at 20:14 minutes.
    - Average speed 20 kilometres per hour.
- AM peak inward trip:
    - Second longest travel time at 17:54 minutes.
    - Average speed 25 kilometres per hour.
- AM peak inward vs inter-peak: 1 minute travel time difference.
- PM peak outward vs inter-peak: 4 minutes travel time difference.

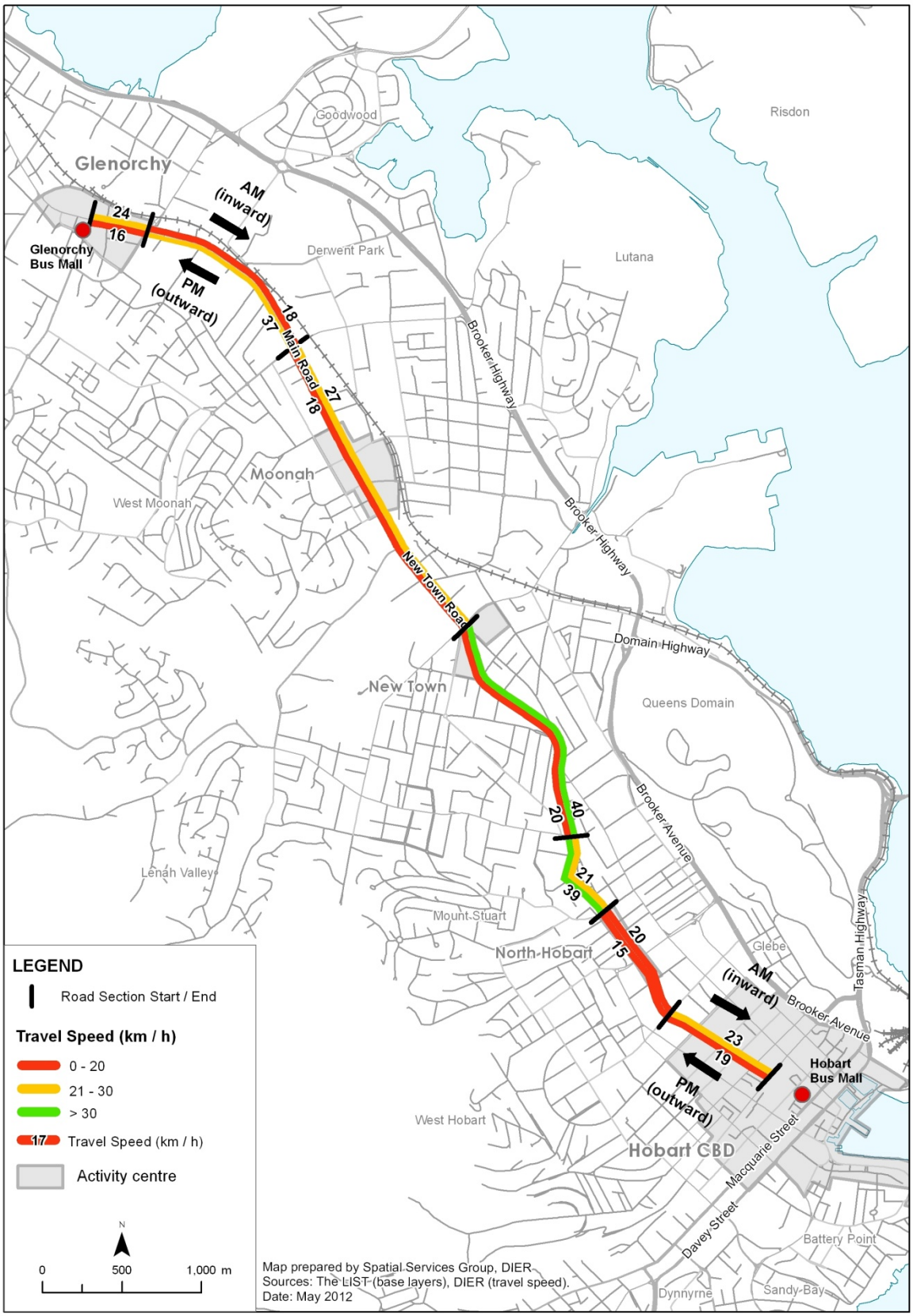
Figure 3 Travel times and speeds on the Transit Corridor from Tolosa Street to Liverpool Street, 2011

Travel period	2011 travel speed	2011 travel time
AM peak inward	25 km per hour	17:54 minutes
AM peak outward	26 km per hour	16:54 minutes
Inter-peak inward	26 km per hour	17 :00 minutes
Inter-peak outward	27 km per hour	16:16 minutes
PM peak inward	30 km per hour	14:43 minutes
PM peak outward	20 km per hour	20:14 minutes

When specific sections of the Corridor are analysed in further detail, North Hobart and Hobart CBD have the slowest travel speeds in both the AM (inward) and PM (outward) peaks:

- AM peak inward, slowest sections:
    - Warwick Street – Federal Street: 20 kilometres per hour.
    - Derwent Park Road – Elwick Road: 18 kilometres per hour.
- PM peak outward, slowest sections:
    - Liverpool Street – Warwick Street: 20 kilometres per hour.
    - Warwick Street – Federal Street: 15 kilometres per hour.
    - Augusta Road – Risdon Road: 20 kilometres per hour.
    - Risdon Road – Derwent Park Road: 18 kilometres per hour.
    - Elwick Road – Tolosa Street: 16 kilometres per hour.

Figure 4 Car travel speeds along the Corridor, 2011



Note: Travel Speeds are based on average travel speed by link on the Corridor

3.1.2 Changes between the 2006 and 2011 travel times and speeds

A direct comparison between the 2006 and 2011 data should be interpreted with a degree of caution, as the data is not collected frequently enough to make reliable trend comparisons.

However, the comparison does reveal some changes that are consistent with other trends occurring in Greater Hobart:

- The AM inward peak travel time has slightly decreased since 2006, a trend that has been observed on other arterial roads in Greater Hobart.
- The PM peak outward trip has replaced the AM peak inward trip as having the longest travel times. This is supported by the traffic volume data, which shows that PM peak hour traffic volumes along the Transit Corridor are slightly higher than AM peak volumes.

Other issues relevant to travel times along the Corridor since the 2006 study include:

- Safety-related adjustments to the traffic signal phases at the Derwent Park Road intersection in 2010 have caused modest delays and queuing on Main Road. This has increased travel times for the section of road between Elwick Road and Derwent Park Road for the AM inward peak and the section between Risdon Road and Derwent Park Road for the PM outward peak trip.
- The 2011 travel time data was collected in early December 2011. This may have affected travel times measured during the AM peak, as the school year for Grade 11 and 12 students, University and the Tasmanian Polytechnic had ended. However analysis revealed that the data was representative of travel times along the Corridor and trends across other arterial roads in Greater Hobart.

3.2 Bus travel time analysis

Average bus travel times were analysed for the Transit Corridor to determine variability across different periods of the day. The peak travel periods for buses are defined as between 7:00-9:00 AM (AM peak) and 3:00-6:00 PM (PM peak). These peak periods are different from peak periods for cars, because public transport patronage is heavily student orientated and schools typically finish between 3:00-3:30 PM.

For the Transit Corridor from Glenorchy Bus Mall to Hobart Bus Mall, the analysis showed that:

- Inter-peak outward trip:
    - Longest travel times at 34:28 minutes.
    - Average speed 17 kilometres per hour.
- PM peak inward trip:
    - Second longest travel time at 31:43 minutes
    - Average speed 17 kilometres per hour.
- AM peak inward trip:
    - Third longest travel time at 31:19 minutes.
    - Average speed 17 kilometres per hour.
- AM peak inward vs inter-peak inward: +1 minute travel time difference.
- PM peak outward vs inter-peak outward: -6 minutes travel time difference.

Figure 5 Bus travel times by weekdays

Travel period	Travel speed	Travel time
AM peak inward	17 km per hour	31:19 minutes
AM peak outward	25 km per hour	20:29 minutes
Inter-peak inward	19 km per hour	30 :21 minutes
Inter-peak outward	17 km per hour	34:28 minutes
PM peak inward	17km per hour	31:43 minutes
PM peak outward	21 km per hour	28:32 minutes
Average travel time across the day inward	19 km per hour	27:54 minutes
Average travel time across the day outward	20 km per hour	29:49 minutes

Source: Metro 2012 Greencard

The inter-peak has the slowest travel times because there is strong inter-peak demand and the market profile of users is different from the peak. The inter-peak market is characterised by shorter journeys, as the majority of trips are for shopping or accessing social services, rather than commuting to work. Inter-peak services are also likely to stop more frequently and have longer dwell times as there is more likely to be slower boarding passengers (elderly people, mothers with prams etc).

The PM inward trip has a longer travel time than the PM outward trip; this is likely to be influenced by the afternoon school peak around New Town and Ogilvie High, which creates localised congestion. This section (Moonah Stop 18 - Maypole Stop 14) has the slowest bus travel speeds during the afternoon peak at 13 kilometres per hour.

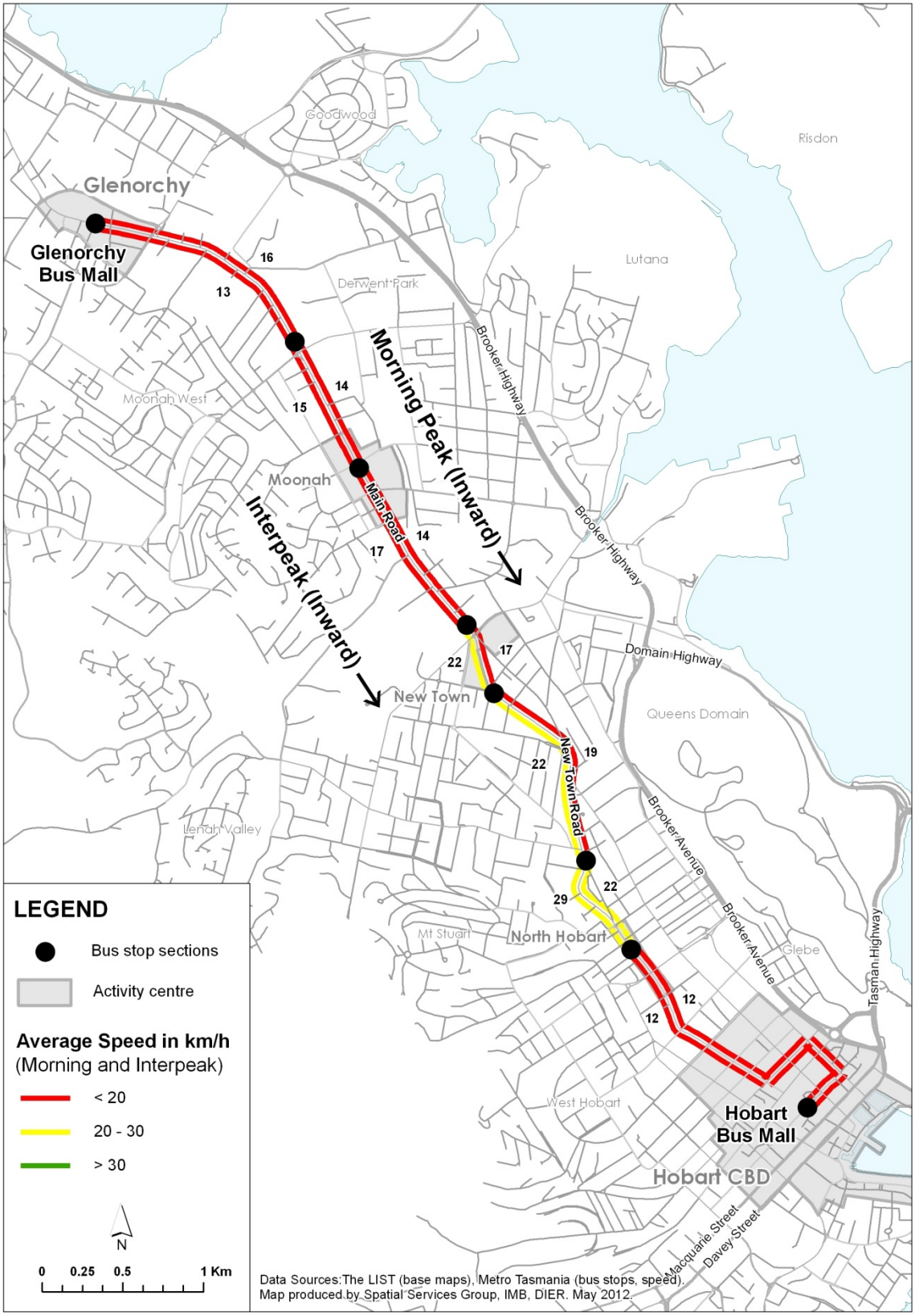
When specific sections of the Corridor are analysed in further detail, the Hobart CBD, Moonah and New Town have the slowest travel speeds in the AM (inward) peak:

- North Hobart to Collins Street: 12 kilometres per hour.
- Moonah Stop 18 to Maypole Stop 14: 14 kilometres per hour.
- Springfield Depot to Moonah Stop 18: 14 kilometres per hour.

Figure 6 shows the travel speeds by section for buses comparing the AM inward peak and the AM inward inter-peak.

Research undertaken by Austroads indicates that buses travelling in urban areas without priority over general traffic, travel at speeds of about 15 to 20 kilometres per hour (including stopping, travelling and dwell times), reducing to 10 kilometres per hour in congested conditions. Based on this, the Corridor is performing adequately as the average travel speed across all times of the day is between 19-20 kilometres per hour.

Figure 6 Bus travel speeds along the Corridor



3.3 Comparing travel times and speeds by mode

3.3.1 Car and bus travel times

It is difficult to accurately compare bus and car travel times along the Corridor, for the following reasons:

- The car and bus travel time data followed a different route within the Hobart CBD, with car travel times starting and finishing at Liverpool Street and buses at the Hobart Bus Mall. This is because buses and cars have different destinations within the CBD. This would increase bus travel times compared to the car.
- Car peak travel periods are different from buses. Buses have a much longer PM peak period because they heavily cater to the student transport task.
- Buses have longer travel times due to the need to stop frequently to enable passengers to board and alight and then re-enter traffic.

Despite the difficulty in being able to accurately compare the data, it is clear that bus travel times are much longer than car travel times:

- AM peak inward trip: buses take 31 minutes to travel to the Hobart CBD compared to 18 minutes by car. A difference of 13 minutes.
- Inter-peak inward trip: buses take 30 minutes to travel to the Hobart CBD compared to 17 minutes by car. A difference of 13 minutes.
- PM outward trip: buses take 28 minutes to reach Glenorchy CBD compared to 20 minutes by car. A difference of eight minutes.

The challenge is to ensure the bus is competitive with the car in terms of travel time by reducing bus travel times where possible and ensuring travel time is reliable and predictable.

3.3.2 Cycling and bus travel times

Cycling travel times along the Inter-City Cycle Way and Argyle Street bicycle lanes are slightly faster than bus travel times, but slower than car travel times:

- AM peak inward cycling trip from the junction of the Inter-City Cycle Way and Elwick Road to the Hobart GPO takes approximately 30 minutes, while bus travel time is approximately 31 minutes (from Glenorchy bus mall).
- AM peak inward cycling trip from North Hobart (junction Elizabeth/Newdegate Street) via Argyle Street to the Hobart GPO takes approximately 9 minutes, while bus travel time is approximately 11 minutes.

Comparing cycling and bus travel times demonstrates that cycling can be competitive with other transport modes in terms of travel time, particularly in inner urban areas. One of the benefits of cycling compared to other modes is that there is a high level of travel time reliability, as there is very little variability in travel times between peak and inter-peak periods.

The exceptions may be when there is no priority given to cyclists at crossing points, for example where the Inter-City Cycle Way has a large number of intersections with the road network. This can cause delays for cyclists and safety issues (especially for less experienced cyclists) at peak car travel times.

3.3.3 Travel time variability along the Transit Corridor

Analysis shows that there is a significant variation in travel times along the Transit Corridor for buses. Variation in travel time is caused by the following factors:

- Patronage variation: Both the volume of passengers, together with the number of times the bus has to stop to enable passengers to board and alight will vary day to day.
- Traffic conditions: the conditions along the Transit Corridor will vary due to traffic volumes on the network, incidents on the network (eg accidents) and through activity centres (high level of vehicular and pedestrian access affecting through traffic movements, particularly in the inter-peak).

As stated previously in the Public Transport Report, variability impacts directly on increased waiting times for passengers at bus stops, which is perceived by passengers as highly annoying. Increases in travel times that occur on board the bus is also annoying for passengers, but not to the extent of unexpected waiting times at bus stops.

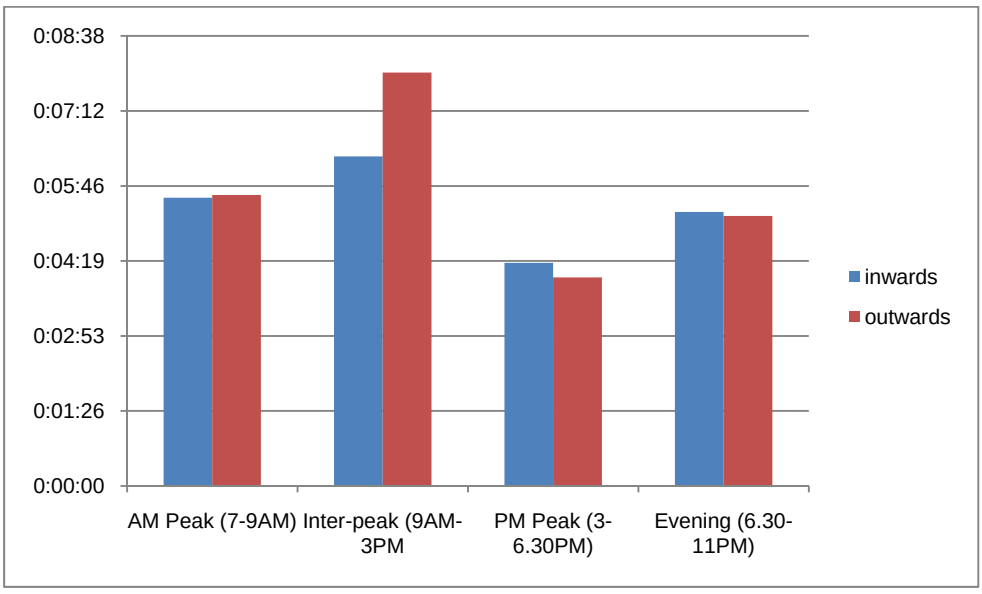
There is little data to compare how travel time variability on the Transit Corridor compares with similar services operating in Australian cities and what would normally be expected on such a Corridor. Travel time variation is likely to be higher on corridors which are on-road systems, without any form of bus priority. The variation is also likely to be higher than that experienced on suburban routes, which are not usually subject to the same traffic conditions (eg significant localised congestion).

However, based on the analysis below, it is considered that travel variability on the Corridor is relatively high. The travel time on the inter-peak outward trip (highest level of variability) can vary by up to 20 percent of the total journey time, which is considered significant.

The graph below shows that there is travel time variation along the Corridor at different times of the day:

- The inter-peak outward trip has the highest level of variability at 7:56 minutes. This is consistent with the inter-peak outward trip having the longest travel times, and likely high level of passenger variation during inter-peak periods. In addition, variability occurs from some services having to stop for up to two minutes at the Springfield Depot to facilitate driver change over in the inter-peak.
- The AM peak also has a high level of variability of around 5:30 minutes for both inward and outward journeys.
- The PM peak has the lowest level of variability, of around 4:00 minutes.

Figure 7 Bus travel time variability along the Transit Corridor

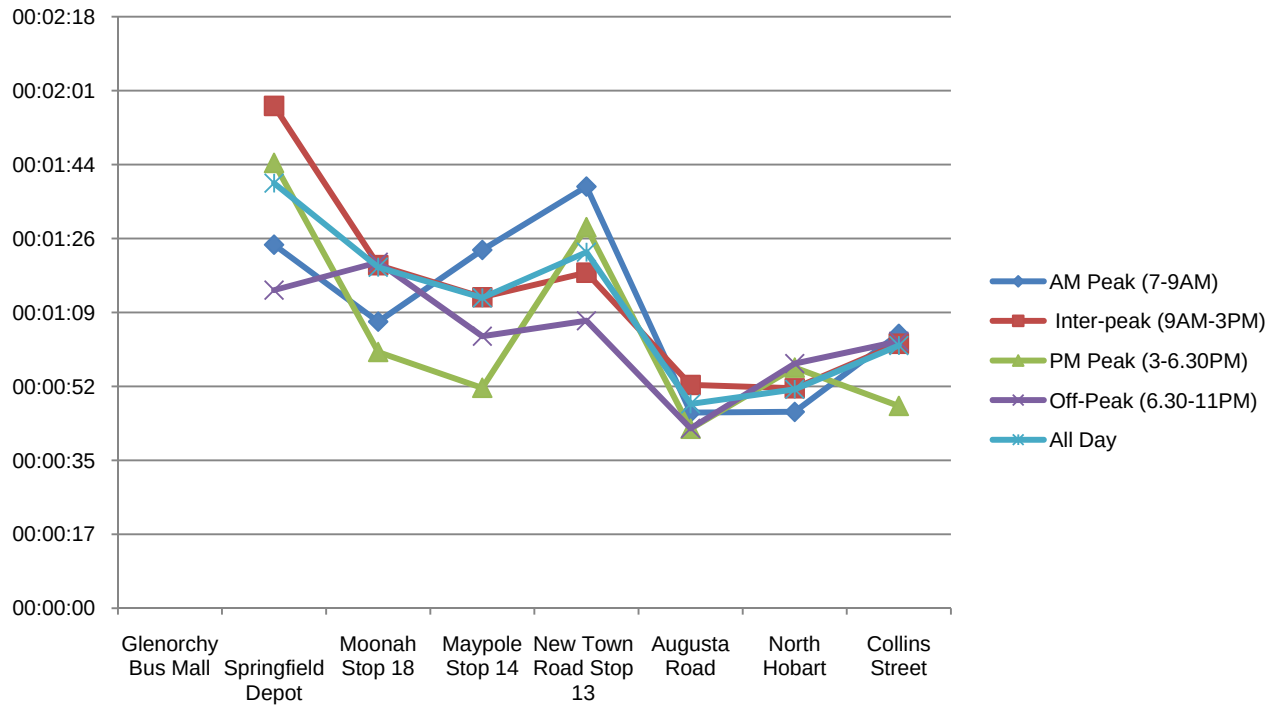


Source: Metro, 2012, based on standard deviation.

The graph below shows the inward travel time variations based on selected bus stop sections at different times of the day. The results show that:

- The section between Glenorchy Bus Mall and Springfield Depot experiences the highest level of variation consistently across the day; between one to two minutes per kilometre.
- The inter-peak experiences the highest level of variation at just under 1:57 minutes between Glenorchy Bus Mall and Springfield Depot. As indicated above, this is mainly due to the need for some services to change drivers.
- Maypole stop 14 to New Town Road stop 13 also has high levels of variation, with the AM peak having a variation of 1:39 minutes per kilometre. This section includes the Risdon Road intersection which experiences localised congestion and queuing.

Figure 8 Bus travel time variability – inwards, based on standard deviation by kilometre

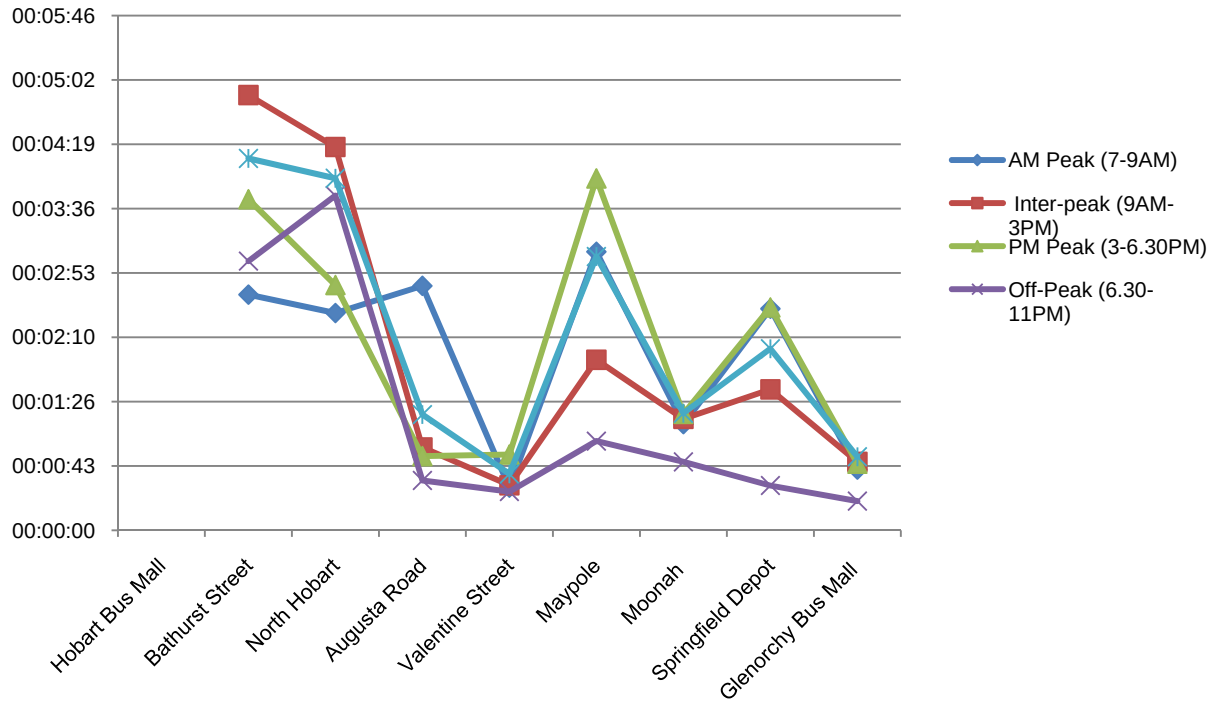


Source: Metro, 2012, based on standard deviation by kilometre.

The travel time variations for the outward trips are as follows:

- The outward trip has a higher level of variation than the inward journey for certain sections.
- The highest level of variation is the inter-peak between Hobart Bus Mall and Bathurst Street at 4:52 minutes.
- The section between Valentine Street and Maypole experiences a high level of variation across different times of the day; this is likely to be caused by queuing at the Risdon Road intersection.
- The section between Augusta Road and Valentine Street has a low level of variation.

Figure 9 Bus travel time variability – outwards, based on standard deviation by kilometre



Source: Metro, 2012, based on standard deviation by kilometre.

4 TRAVEL TIME RELIABILITY

A number of studies have highlighted bus reliability as a key influence in increasing bus patronage. Punctuality, reliability and dependability of bus systems are rated by users as an important feature, affecting their perceptions and usage of the service. Reliability is also important for operators, who are interested in operational performance and minimising operating costs.

Reliability affects both passengers waiting at bus stops (eg those affected by services which have poor schedule adherence) and those on board the bus, who are affected by in-vehicle travel time reliability.

4.1 Factors affecting bus travel time on the road network

In the absence of bus priority measures, on-road bus systems tend to have longer travel times than general traffic. Delays to bus travel time on the Transit Corridor arise from:

- General traffic delays: localised congestion especially during peak travel times.
- High number of traffic signals: There are 30 sets of traffic signals on the Corridor, which result in delays for buses as well as cars. The variation in delays increases with the number of traffic signals that the traffic encounters.
- Traffic conditions within activity centres: Activity centres have a higher concentration of pedestrian activity and generally provide for a high level of vehicular access through the provision of on-street car parking, high number of junctions and direct accesses to businesses which can affect the reliability of through traffic movements including buses.

- The number and spacing of bus stops: there are 66 bus stops on the Corridor (inward and outward), which is an average of a bus stop every 250 metres.
- Inadequate bus stop lengths: creates difficulties for buses merging back into traffic.
- Deviations from the Corridor: the bus has to deviate from the Corridor through the Springfield Depot (on the inward trip) and via the Hobart CBD one-way street network on both the (inward and outward trips) resulting in a longer route length.

4.2 Congestion

Congestion affects travel times and the timetable reliability of bus services, especially if there are no bus priority measures. Based on analysis in earlier sections of this report, the Transit Corridor experiences localised congestion during the following times and locations:

- AM peak inward and PM peak outward.
- Through the activity centres of Glenorchy, Moonah, North Hobart and Hobart CBD.
- At major intersections, including Risdon Road and Derwent Park Road.

4.3 Number, size and location of bus stops

The Public Transport Report highlighted the large number of bus stops on the Corridor. This affects travel time reliability on the Corridor, with the bus having to stop frequently to allow passengers to board and alight.

Delays can also be encountered with passengers paying for cash tickets on the bus as opposed to using the 'cashless' Metro Greencard. In Greater Hobart currently 51.3 percent of public transport boardings use a Greencard (Metro 2012). Anecdotally, more people in the Northern Suburbs pay cash fares, which can increase bus dwell times.

Dwell times can also be affected by the type of bus:

- Low-floor buses are generally easier for passengers to board and alight, especially for the elderly, disabled and those with children, thereby reducing dwell times.
- If passengers are required to alight from the rear door, dwell times will be reduced as the passengers entering the bus via the front door will not have impeded access.

Some bus stops are poorly located and have inadequate lengths which can cause difficulty for buses merging back into traffic:

- Buses have problems merging into traffic in peak periods and near major intersections where there is traffic queuing.
- As the Transit Corridor is a trunk route with high bus frequency, the arrival pattern of buses can also result in two buses serving the bus stop at the same time. Bus stops with inadequate lengths result in delays, as the first bus has to leave before the second bus can enter.

4.4 Route diversions

The 'all stops' Main Road buses have two route diversions from the Corridor which result in an increase in travel times. These route diversions are:

- Diverting the inward bus into the Springfield Bus Depot due to both the location of the bus stop (within the Depot) and for the purpose of driver change over. This diversion results in the following delays:

    - An average of 2:40 minutes delay during the AM inward peak (no driver change over).
    - An average of 4:30 minutes delay during the inter-peak (including driver change over).
- The one way street network in Hobart CBD and the Elizabeth Street Mall, which forces buses to divert from Elizabeth Street. This results in delays:
    - Inward: approximately 8:30 minutes during the height of the AM peak and 3:25 minutes during the inter-peak.
    - Outward: 2:40 minutes during the PM commuter peak.

For the AM peak inward trip, the total travel time delay caused by diversions is 11:10 minutes.

4.5 Travel time reliability workshops

DIER and GHD conducted two travel time reliability workshops with officers from DIER, Hobart and Glenorchy City Councils and Metro Tasmania (including bus drivers) to identify the location and cause of delays for buses on the Transit Corridor. A summary of the workshop results are as follows (see **Appendix A:** GHD Reliability Workshop Results for further detail):

Narrow road widths, particularly within activity centres:

- Median islands within the road can cause difficulty for buses entering in and out of bus stops.
- Median islands and narrow road widths can cause traffic delays, as vehicles are unable to pass buses parked at bus stops.
- Lane widths on Bathurst Street are inadequate for larger vehicles.

High number of signalised intersections and congestion:

- Some signalised intersections along the Corridor experience significant delays and queuing on all approaches.
- There is no right turn priority at the Albert Road intersection.
- Congestion around Tower Road causes difficulties, particularly during school peak travel times. There is queuing of traffic turning right from Main Road into Tower Road.
- Risdon Road experiences congestion due to the number of activities in the area (eg schools) resulting in high trip attraction and passenger drop-offs. The signals do not appear to be linked and have long signal phases.
- Signal operation at Burnett Street causes significant queuing and delays.

Delays at Springfield Bus Depot:

- Driver relief at the Depot results in delays and it is not clear if this is properly accounted for in the timetable information.
- Buses entering and exiting from the Depot can cause delays.

On-street car parking:

- On-street car parking in Moonah and North Hobart can result in narrow road widths, and difficulty for buses re-entering traffic. Waiting for cars to park can also cause traffic delays.

- Lower section of Collins Street can become congested, mainly due to on-street parking.

Pedestrian movements:

- Uncertainty of pedestrian priority along parts of the Transit Corridor eg near Banjos in Moonah.
- High passenger volumes in the Hobart CBD, resulting in competition between buses and pedestrians, particularly around the Bus Mall.
- North Hobart has a high number of pedestrian crossings; pedestrian volumes in the PM peak are much higher than the AM peak.
- Pedestrians in Hobart CBD frequently ignore green pedestrian lights, causing buses to travel through orange and red lights resulting in travel time delays for buses.

Bus stop location, spacing and length:

- Bus stops in New Town and around Ogilvie and New Town High are located too close together.
- The location of the bus stop and on-street car parking near Augusta Road causes difficultly for buses re-entering traffic.
- Bus stops in North Hobart are inadequate lengths particularly for articulated buses, which results in bus bunching and travel delays for general traffic.

Hobart bus mall:

- Experiences bus congestion in peak periods particularly on major routes which can cause bus delays.
- The design of the Bus Mall results in bus inefficiencies:
    - Northern Suburb buses are located on the eastern side of the mall, which means buses travel via Macquarie Street, when Collins Street may be more efficient from a reliability perspective.
    - Eastern Shore buses are located on the western side of the Bus Mall and therefore travel via Collins Street, when it may be more effective for them to travel via Macquarie Street.

5 ROAD PRIORITY

Historically, cars have been given priority over other modes on urban roads in Greater Hobart. Most transport planning focuses on increasing the capacity of roads to improve traffic flow for cars. Public transport has continually been given a lower priority, which has resulted in poor travel time reliability for buses.

Improving the reliability of travel times is considered to be a critical means to improve public transport patronage. Where road space is very limited, this necessitates that a particular transport mode is given priority over other modes on certain networks, sections of networks or at particular times of the day.

Road space is limited along the Transit Corridor, particularly within the main activity centres because of the other activities occurring in this area. It is undesirable to widen main streets, as this will affect other stakeholders, especially if the footpath width is reduced. Road widening can also affect the amenity of adjacent property, including local streetscapes, heritage buildings and local businesses. It is unsustainable to focus on continually providing more vehicle capacity, as this starts to degrade the liveability of local places and activity

centres along the Corridor. There are many competing interests along the Transit Corridor including the use of road space and activities adjacent to the Corridor:

Road space users:

- Cars, including on-street car parking.
- Buses, including bus stops.
- Pedestrians.
- Cyclists.
- Freight and light commercial vehicles, including loading zones.

Activities adjacent to the Transit Corridor:

- Socialising or shopping along the street, eg outdoor dining.
- Conducting or attracting business along the street, including signage.
- Vehicular/pedestrian movement into property.
- Waiting for public transport.
- Living next to the street.
- Vehicular/pedestrian movement into local streets.

In Melbourne, the Victorian Government has developed a network management approach called 'SmartRoads', which manages competing interests for limited road space by giving priority use to different modes. All modes continue to have access to all roads, however certain routes will be managed to function more efficiently for cars, while others will give greater priority to public transport, cyclists and pedestrians.

In Melbourne, trams and buses are given priority on key public transport routes that link activity centres during morning and afternoon peak periods and pedestrians are encouraged in activity centres. Within activity centres there is often tension between the efficient movement of through traffic and creating an environment that allows for local interaction and amenity. While activity centres partly rely on passing traffic for trade, they also need traffic-calmed environments for pedestrians and on-street car parking to allow people to access surrounding services and facilities.

Accommodating competing road user demands within activity centres is a major challenge and requires innovative approaches to cater simultaneously for public transport, on-street car parking and creating high quality pedestrian environments. Often a treatment that benefits one mode can affect the reliability of another mode.

There are examples on the Transit Corridor where the road environment has been designed for cars and pedestrians to the detriment of public transport reliability, examples include:

- Introduction of the one-way street system in the Hobart CBD and removal of traffic from Elizabeth Street Mall significantly creating longer routes for buses.
- Traffic calming devices in North Hobart, such as roundabouts and narrow lane widths, making it difficult for larger vehicles (such as buses) to efficiently negotiate movements.
- Inadequate bus stop lengths – impeding the merging of buses into traffic. For example in North Hobart, where buses can also obstruct passing traffic resulting in localised congestion.

Adelaide City Council has developed a similar approach for its *draft Integrated Movement Strategy 2012-22*. The Council has developed a hierarchy for its road network based on a link and place classification, whereby roads are defined by the amount of traffic they carry

and movement characteristics as well as the level of intensity of on-street activities eg number of attractors. This hierarchy enables the Council to plan for the future street layout, in terms of the number of traffic lanes, bus priority, width of footpaths and availability of on-street parking.

Department of Infrastructure, Energy and Resources

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