Congestion in Greater Hobart

Response to issues

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Department of Infrastructure,
Energy and Resources

Tasmania
Explore the possibilities

CONTENTS

1 EXECUTIVE SUMMARY

The Department of Infrastructure Energy and Resources (DIER) recognises that there is community concern regarding congestion on key urban roads in Greater Hobart and that appropriate measures need to be put in place to manage traffic growth and delays.

DIER's strategic planning for the transport system takes a long term (20 year) view which is viewed as a sensible and realistic planning horizon. DIER has undertaken traffic forecasting and capacity analysis in Greater Hobart to understand where future traffic growth and delays are likely to occur.

Travel time analysis for Greater Hobart shows that traffic delays are confined to short periods during the morning peak and to a lesser extent the evening peak during school days. At a network level, the Brooker Highway experiences the greatest delays and slowest travel speeds of urban arterials within Greater Hobart.

Due to the need to ensure that we wisely invest our limited financial resources, the State Government is increasingly focused on carefully planning our roads and ensuring that our existing infrastructure and services operate more efficiently and are safe. The cost of building new roads is expensive and can lead to induced demand intensifying congestion in the future.

Transport systems are complex, no single response is able to address the range of factors contributing to congestion. An integrated approach including a range of complementary measures tailored to the particular circumstances of each urban area offers the best prospect of managing congestion. Both State and local Governments approach to managing traffic delays must be well researched, based on evidence and well thought through.

The Government is focused on ensuring existing infrastructure and services operate more efficiently and are safe through the use of technology and innovation, demand management and better land use planning, rather than focusing on new infrastructure solutions.

2 CONGESTION CONTEXT

2.1 What is congestion?

Congestion can occur when the demand for transport services approaches or exceeds available capacity. Congestion is a time and location specific occurrence impacting on specific user groups. Congestion can be caused by a number of interrelating factors such as:

- Characteristics of transport infrastructure, such as capacity and configuration of the road network.
- Availability and usage of alternative transport options in terms of mode, route, frequency and time.
- An increasing trend in trip making, including cross town and longer trips for people and businesses.
- Driver behaviour, traffic incidents and weather conditions.

Congestion can cause a variety of economic, social and environmental impacts such as delays, higher vehicle operating costs, crashes, loss of amenity in areas affected by congestion and noise and air pollution. However, the majority of the community's concern about congestion focuses on its impact on travel times for both passenger and freight.

2.2 Influences of congestion

While congestion can be caused by a number of interrelating factors such our preference for private car trips over other mode choices and weekday travel demand within a concentrated period related to work and educational trips, at a strategic level the pattern of development in Greater Hobart is also a contributing factor.

The pattern of development in Greater Hobart has a significant impact on how the road network is used. Greater Hobart has a low density development pattern, with population and housing growth occurring in outer urban areas such as Kingston/Margate, Sorell and Brighton. This has been followed by dispersed commercial development including transport dependent 'big box' developments. The urban footprint of Greater Hobart is the same size of Sydney, New York and London which have significantly higher populations and densities.

Hobart's road network and settlement pattern is strongly influenced by its environmental setting. The Derwent River, Mount Wellington and Meehan Range restrict the location of arterial roads into and through Hobart to the Tasman Highway, Brooker Highway and Southern Outlet.

There has been a strong trend toward housing in outer urban areas based on choice and housing affordability. Outer urban areas tend to be characterised by the following:

- Limited local employment opportunities and essential services meaning people travel more and further to go to work, school or to shop.
- A high reliance on cars for private travel with a higher number of car trips.
- Difficulty in providing public transport services as fewer houses are distributed across greater distances than in inner urban areas. Hobart has a number of growing outer residential areas, making this a challenge across Greater Hobart.

Low density urban areas often have high levels of car ownership and use, due to the spatial diversity of travel patterns. In comparison more dense urban areas often have high levels of alternative transport such as public transport, walking and cycling as origin-destination points are close together.

The availability of low-cost or free car parking within Hobart CBD and other centres such as Rosny, Kingston Central and Glenorchy influences people's travel behaviour and demand for car based transport. Measures such as increasing car parking pricing and limiting supply can influence people's travel behaviour and direct them to use more sustainable travel forms. Local Government can play a key role in regulating the supply and pricing of car parking to encourage the use of more sustainable modes whilst balancing the need of businesses that rely on customer parking.

The range and complexity of factors affecting traffic flows; particularly personal mobility and behavioural choices make it a difficult issue to address. Generally, responses to traffic flow issues require a mix of strategies that better use the existing network and manage the demand for travel.

2.3 Measuring congestion

Congestion can be measured by a variety of measures, including:

- Volume-capacity ratio: describes the ratio of the average number of vehicles using a road per hour with the estimated design capacity of the road. However, this ratio does not necessarily reflect actual driving conditions such as the weather and traffic incidents caused by crashes or vehicle breakdowns.
- Time delay measures: the time delays experienced relative to free flow conditions.
- Journey time reliability: the variability in travel times.
- Measures of the performance of transport systems: such as average traffic speed and the amount of congested roads in a metropolitan road network.

Generally the morning peak period is an hour, however this is dependent on the individual road network. For example the Brooker Highway experiences a longer morning peak time commencing at 7.30am predominately due to demographic factors which may influence when people start work. Sandy Bay Road in comparison has a shorter and later peak time usually commencing at 8.30am and lasting until 9.00am.

Anecdotally congestion hot spots in Greater Hobart include the:

- Brooker Highway from Rosetta through to Risdon Road.
- Tasman Highway, especially from the approaches to the Bridge on the Eastern Shore through to lower Davey Street.
- Channel Highway through Kingston, especially the Summerleas and Algona Road Roundabouts.
- Intersections supporting cross town movements on the Macquarie Davey couplet such as Barrack Street, Sandy Bay Road and Regent Street.

2.3.1 Travel time analysis

As part of the development of the Southern Integrated Transport Plan, DIER undertook travel time and traffic forecasting and capacity analysis in 2006 to understand which parts of the network were experiencing delays and had capacity constraints.

Nominal travel time analysis is the time it takes to travel a particular road segment at the posted speed limit. The travel time analysis used an accepted Austroad methodology, which was based on recording driving times over defined routes during the morning peak, off peak and afternoon peak periods.

Data was collected across five major routes feeding into the Hobart CBD:

- Brooker Highway (City Roundabout to Pontville).
- Southern Outlet (Macquarie St to Margate).
- South Arm Highway (Davey St to Lauderdale).
- Tasman Highway (Davey St to Sorell).
- East Derwent Highway (Davey St to Midland Highway).

Travel speeds and delays have been calculated for a 10km distance along the above routes extending outwards from Hobart CBD. This approach provides an equivalent distance for comparison purposes for each of the routes and is also generally located within built up areas experiencing higher traffic volumes.

The 10km travel time analysis showed that:

- All routes experienced some delays in the morning peak on the inward run into the Hobart CBD.
- The Brooker Highway experiences the greatest delays (12 minutes) on the morning peak inward run, followed by the South Arm Highway and East Derwent Highway (nine minutes). It should be noted that the South Arm and East Derwent Highway routes also include sections of the Tasman Highway into the CBD.
- The Southern Outlet and Tasman Highway experienced the least delays at seven minutes during the morning peak inward run.
- In terms of the inward morning peak, the Brooker Highway experienced the slowest travel speeds, averaging 27 kilometres per hour.
- During other periods, there was little change in travel speeds and times. The Brooker Highway experienced more than the other four routes, with a delay of four minutes in the outward afternoon peak.
- Afternoon peaks tend to be less concentrated than during morning periods, reflecting variability in school finishing times and to some extent employment. Optional trips such as shopping also tend to be undertaken in the later afternoon, contributing to staggered departure times.
- Generally the routes experience slower travel speeds and an increase in travel times closer to the Hobart CBD, however there are some parts of the network which

experience localised congestion around key intersections in outlying areas. For example the Southern Outlet does experience greater delays outside the 10km distance (near Algona Roundabout) in the inward morning peak and to a lesser extent the Tasman Highway experiences delays outside the 10km distance near the Midway Point roundabout.

Figure 1 shows the delay per kilometre in seconds for each 10km travelled. The morning peak in delay is determined by comparing the travel time in minutes against the off peak in.

Figure 1 Delay/km (in seconds based on nominal speed – 10km route)

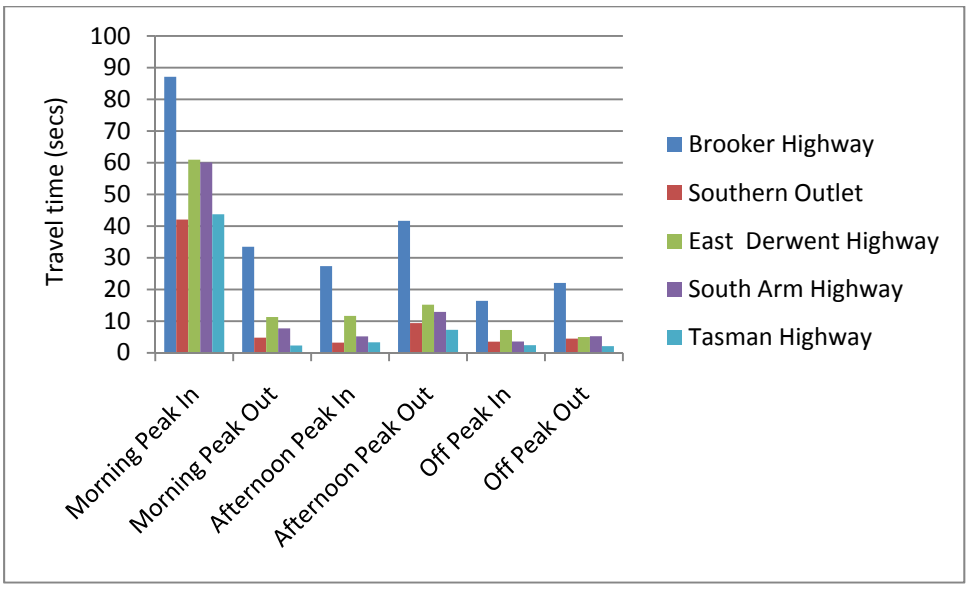
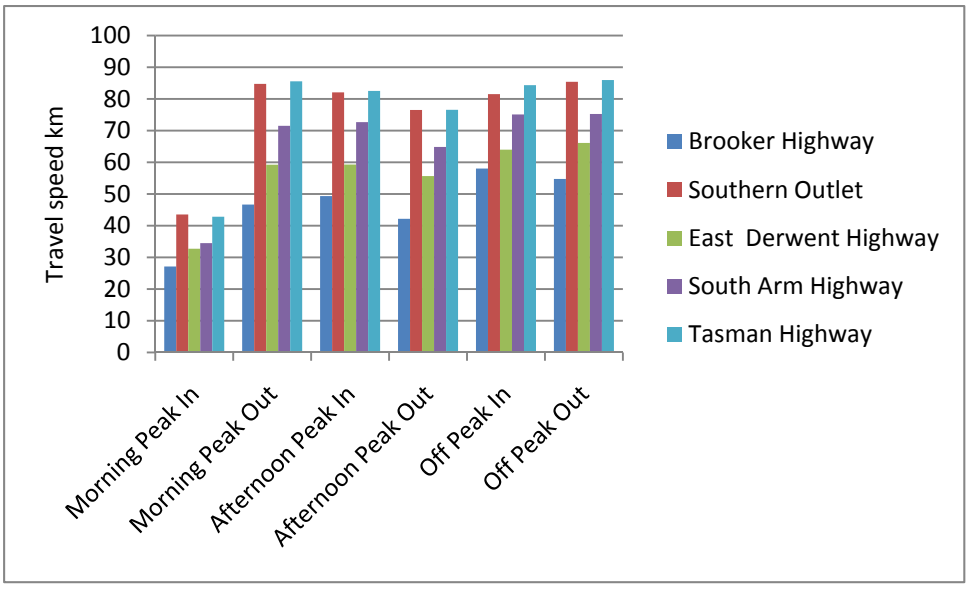


Figure 2 shows the average travel speeds per kilometre.

Figure 2 Average Travel Speed (km/h – 10km)



DIER recognises that there is a need to update the 2006 data and is in the process of developing a project to update the travel time analysis. It should be noted that since this data was collected several alterations to the network have been undertaken such as

improvements to the South Arm Highway including duplication of the highway from Shoreline to Oceana Drive and improvements to the Mornington Roundabout. Improvements to the Midway Point roundabout also improved traffic flow on the Tasman Highway.

2.3.2 Traffic volumes and road capacity

At a network level the Tasman and Brooker Highways are the most significant roads in Greater Hobart in terms of current and forecast daily traffic volumes, peak hour volumes and level of service.

The Tasman Bridge and Brooker Highway carry 65 000 and 50 000 vehicles per day respectively. In comparison Macquarie and Davey Streets carry 28 500 and 37 200 vehicles per day respectively, with the Brooker Avenue south of Clearys Gates carrying 35 000 per day.

Traffic forecasting and capacity analysis was undertaken in 2006 to measure the gap between forecast traffic growth and roadway capacity as one way of identifying transport corridors that may experience increased delays into the future.

The approach taken was to calculate the future capacity of road networks using Level of Service (LOS). LOS is a qualitative measure describing the operational conditions of traffic flows; it is not a definitive, quantitative measure of traffic flows. LOS considers such factors as speed and travel time, freedom to manoeuvre within traffic, traffic interruptions, comfort and convenience and safety. The LOS of a road can range from LOS A, representing free flow conditions, to LOS F, which represents an area exhibiting the conditions of significant congestion.

The analysis uses forecast traffic volumes and the characteristics of individual roads to determine the number of years until road segments will reach LOS D. LOS D is where drivers are restricted in their freedom to select their desired speed and to manoeuvre within traffic; small increases in traffic flow will generally cause operational issues.

The time calculations do not represent the number of years until the system reaches severe congestion, but represent the time until a road would be considered congested by Tasmanian standards.

The analysis shows that some road segments are already at LOS D or are forecast to reach LOS D over the next five to 15 years. It should be noted that LOS D only occurs for short periods during the morning peak and to a much lesser degree the afternoon peak and this is confined to school days only. The majority of roads do not experience congestion during other times of the day.

Those road segments which are at LOS D during peak periods are:

- Brooker Highway - Berriedale Road Underpass to Burnett Street.
- Channel Highway - Sandfly Road to Kingston Interchange Overpass.
- Domain Highway - Brooker Highway to Tasman Highway.
- Midland Highway - Rifle Range Road to Brooker Highway.
- South Arm Highway - Clarence Plains Rivulet Bridge to Merindah Street.
- Tasman Highway - Tasman Bridge to Brooker Avenue.
- Tasman Highway - Shark Point Road to Holyman Avenue Roundabout.

2.3.3 Congestion in comparison to other states

In comparison with other states, major urban corridors in Greater Hobart are much less congested. The table below shows the Urban Congestion Indicator (CGI) which aggregates the delay from the nominal travel time (in minutes per kilometre) on a representative sample of the road network in urban areas for different time periods. None of the Hobart routes analysed had a CGI greater than any other state in the morning peak period. In the morning and afternoon peak, arterial roads in Hobart were the least congested of any other state.

Figure 3 Urban Congestion Indicator (CGI - minutes per km) for Hobart routes and other Australian states

Location	Morning Peak	Off peak	Afternoon peak
Southern Outlet	0.09	0.06	0.10
Tasman-South Arm Highway	0.37	0.11	0.35
Brooker Highway	0.33	0.28	0.27
Average for above three routes	0.26	0.15	0.24
NSW	0.77	0.33	0.60
Victoria	0.73	0.42	0.59
Queensland	0.78	0.25	0.55
Western Australia	0.44	0.14	0.34
South Australia	0.66	0.41	0.56

3 COMMUNITY'S PERCEPTIONS OF CONGESTION

There is an increasing community perception that traffic congestion is worsening within Greater Hobart and that major infrastructure responses such as tunnels or bypasses are required.

3.1 Major infrastructure responses

As a result of the perception of increasing congestion and traffic volumes, major infrastructure responses are raised as potential solutions.

In the 1960s and 1970s which was seen as the 'Master Plan' era for Hobart, two influential studies by consultants Wilbur Smith and Associates proposed extensive and expansive highway construction through central Hobart. Both studies proposed an elevated bypass around the Hobart CBD from Grosvenor Street, Sandy Bay and from the Southern Outlet following the Hobart Rivulet and bypassing the CBD between Melville and Brisbane Streets.

A bypass around the CBD from McRobies Gully, South Hobart via Knocklofty Park to Lenah Valley has also been mooted in the past.

More recently an Alderman of Hobart City Council has proposed a tunnel from the junction of the Southern Outlet and Davey Street to Brooker Avenue though West and North Hobart as

a means to solving congestion issues on Macquarie/Davey Streets. The proposal is to build a tunnel in two stages:

- Stage one (2.6km) would link the Southern Outlet at Davey Street with the Brooker Highway, running under West and North Hobart.
- Stage two (1.5km) would link Brooker Avenue with the Tasman Bridge, going under the Queens Domain.

An alternative alignment for a tunnel has also been suggested which is for a 1km long tunnel under Davey Street from the Southern Outlet to Brooker Avenue.

These tunnels are seen as a potential to change the face of Hobart by creating better linkages between the Hobart CBD and the waterfront and significantly easing congestion and traffic volumes on the Macquarie Davey couplet.

It has also been suggested that the cost of a tunnel could partially be recouped through user pays charges such as a toll.

A proposal by an Alderman of Clarence City Council to replace the Tasman Bridge has also been proposed in recent months. This proposal would see the construction of a new eight lane bridge from the southern end of the Domain to Rosny Hill.

3.1.1 Preferred approach

The cost of constructing major infrastructure responses such as major bypasses and tunnels is vastly out of proportion to the traffic issues and reflects an infrastructure focus rather than a network or system-wide perspective to address traffic issues.

Infrastructure has been the historical focus of all governments in responding to transport issues and this does not always solve the problem. Roads, in particular, have attracted significant investment but this has resulted in other issues associated with expanded transport networks, induced demand, and maintenance costs.

The increasingly high cost of infrastructure provision and maintenance, has led to a shift away from new and expanded road networks as the primary solution to transport issues. Expansion of road networks is only supported where they make better use of existing strategic networks, facilitate the efficient movement of freight and increase safety. The Brighton Bypass is an example of a road network expansion which supports the efficient movement of freight between the Northern Ports and Southern Tasmania. The bypass will also address safety and amenity issues associated with a major freight route passing through the towns of Brighton and Pontville.

Providing new roads can lead to induced demand where outer urban areas become more attractive places to live, leading to residential growth and expansion of areas which are separated from people's workplaces. These outer areas are typically characterised by low density residential development with little or no support facilities such as shops or community services and this encourages the use and reliance of cars over other forms of transport such as public transport.

The result is that in ten to 20 years time the new road has usually reached its capacity and congestion is back to or worse than the initial situation that promoted the infrastructure

response in the first place. The increasing traffic volumes also create impacts to the environment such as increased greenhouse gas emissions and reduced urban amenity.

Infrastructure costs

The relative cost of building underground tunnels is very prohibitive. It is estimated that the proposed tunnel (stage one from Southern Outlet to Brooker Avenue) would cost around $1 billion.

Two of the most recent tunnel projects proposed in Australia were estimated to cost between $360-$390 million per km. This cost includes the total project cost for two separate parallel tunnels with two lanes of traffic each which is what would be required in a Hobart context. The total project cost for a tunnel also needs to take into account ancillary infrastructure requirements such as ventilation and emergency evacuation systems and interchanges at both ends.

Two of the most recent tunnels in Brisbane include Northern Link and Clem7. Northern Link which is currently in the procurement phase will be a 5km underground toll road designed to relieve congestion on Brisbane's arterial roads. The tunnel is estimated to cost $1.8 billion. Clem7 is a 5.6km tunnel recently constructed in Brisbane. The tunnel is part of a 6.8km toll road which cost $2.2 billion. Two purpose built tunnel boring machines were required for the project costing $50 million each. Most tunnels require specialised purpose built tunnel borers.

Infrastructure Australia have also reported that the cost of constructing tunnels is very expensive with the cost being around $100 million per lane kilometre.

Major interchanges would be required at the Southern Outlet and Brooker Avenue in order to manage traffic flow to and from the tunnel and accessing the CBD. The footprint of the interchanges would require major land acquisition which would increase costs. The steep topography around Brooker Avenue would also increase interchange costs because of extensive earthworks and fill required.

The proposed alignment of the tunnel would need to transect relatively steep topography through West Hobart and the Domain requiring extra depth and cost to reduce the gradient for traffic.

A bypass around the Hobart CBD is also likely to have significant costs due to topography and extensive acquisition of already developed land. In addition, there may be other issues due to impacts on natural and cultural values if, for example, part of Knocklofty Park or the Wellington Park was to be traversed by the bypass.

A new eight lane bridge over the Derwent River near the Tasman Bridge is likely to be also very expensive especially if a cable suspension design is utilised. It is estimated that a new bridge at this location to Rosny Hill is likely to cost between $800 million to $1200 million.

Demand for a tunnel or bypass

A 2008 traffic survey on the Macquarie Davey couplet indicates that a large proportion of traffic on the couplet is not through traffic but uses the couplet to access the Hobart CBD at various points. Data shows that there will continue to be a need for a large proportion of

traffic to access the CBD itself, therefore stage one of the proposed tunnel is likely to only remove about 15% of the traffic on the Macquarie Davey couplet during the morning peak and 14% in the evening peak.

Therefore building a tunnel or a bypass is unlikely to solve traffic issues on Macquarie Davey couplet because most of the traffic is not through movements.

The traffic survey is supported by data from the Greater Hobart Household Travel Survey. The Household Travel Survey indicates that the majority of people (63.4%) undertake trips during weekdays within the same Local Government Area (LGA) in which they live. Of the remaining out of area trips, the most popular destination was Hobart LGA which attracts about a third of all trips. As shown in Table 4, there are relatively few trips to other areas, meaning that there is little through traffic through Hobart LGA to other LGAs.

Figure 4 Greater Hobart Household Travel Survey percentage of trips to Local Government Areas

	Destination			
Origin	**Hobart LGA**	**Glenorchy LGA**	**Clarence LGA**	**Kingborough LGA**
Kingborough LGA	22.7%	4.1%	4.5%	65.8%
Glenorchy LGA	21.5%	60.5%	7.5%	2.5%
Clarence LGA	21.4%	6.7%	64.3%	3%
Hobart LGA	66.4%	11.6%	11.6%	6.9%

It should be noted that a proportion of traffic destined for Hobart LGA would still pass through the whole length of the Macquarie Davey couplet. However key destinations within Hobart LGA other than the CBD, such as North Hobart and Sandy Bay are accessed via points on the Macquarie Davey couplet such as Harrington Street, Sandy Bay Road and Antill/Regent Street.

Journey to Work data (ABS 2006) supports that Hobart LGA is a key destination for journey to work. Most residents travel to Hobart for work or work within the Local Government area in which they live with little demand for journey to work trips through Hobart. For example in Kingborough LGA, the percentage of residents participating in the journey to work is as follows:

- 50% work within Hobart LGA.
- 32% work within Kingborough LGA.
- 10% work in Glenorchy LGA.
- 5% work in Clarence LGA.

When the journey to work data within Hobart LGA is analysed in further detail; 35% of Kingborough residents work within the Hobart CBD, with 15% working within other areas such as Sandy Bay and North Hobart within Hobart LGA.

As stated earlier both the Brooker and Tasman Highway experience higher traffic volumes than the Macquarie Davey couplet, therefore the proposed tunnel or a bypass around Hobart CBD does not target roads which have higher volumes or experience greater delays. It should be noted that the tunnel is likely to cause localised traffic congestion at either end of the tunnel as traffic will be forced onto higher volume roads such as the Brooker and Tasman Highways.

Social and environmental impacts

A tunnel or bypass is likely to have an impact on Hobart's many heritage buildings. A bypass would involve extensive property acquisition particularly if it followed the alignment proposed by Wilbur Smith and Associates. This would impact upon heritage residences between Molle and Harrington Street and also businesses in the CBD between Brisbane and Melville Street. The Wilbur Smith and Associates bypass effectively severs the CBD, creating a barrier between the northern part of the CBD and West and North Hobart. This proposal is contrary to the vision proposed by Jan Gehl in his Inner City Development Plan for Hobart.

A CBD bypass with elevated 'freeways' is also likely to create a significant visual impact particularly against the backdrop of Hobart CBD and foothills of Mount Wellington. A bypass from McRobies Gully to South Hobart would also create a visual impact on the lower slopes of Mount Wellington.

Although a tunnel has less visual impact than a bypass it is likely to have substantial impacts on Hobart's many heritage buildings due to vibration associated with construction. An interchange near the Southern Outlet would impact upon heritage buildings around Elboden Street and the recreational area of Fitzroy Gardens.

Toll roads and public private partnerships

It has been proposed that the cost of building a tunnel can partly be recouped through a toll or through a public private partnership. There have been several examples in Australia, where the required level of tolls proved to be higher than people were prepared to pay.

The recent Clem7 tunnel in Brisbane has seen that people are not prepared to pay a toll of $4.20. When the tunnel was first opened, the toll was free and traffic volumes were 59 000 per day, volumes dropped to 21 000 per day when the tolls started. A reduction in tolls and lower traffic volumes means that the developer is unable to recoup the cost of the development and the objective of relieving congestion has not been achieved.

Sydney Cross City tunnel provides a link from Darling Harbour underneath the CBD to Sydney's Eastern suburbs. The cost in 2006 was around $800 million for 2.1km and is likely to be closer to 1 billion in today's dollars. The tunnel was built as a public private partnership and the operating company went into receivership less than two years after the tunnel opened. The tunnel was unable to generate the required traffic volumes to meet the interest payments. Even when the toll was free the tunnel did not meet the forecast traffic levels of 90 000 vehicles per day.

Due to Tasmania's small population and relatively low traffic volumes, our ability to attract public private partnerships is limited. Tunnels require relatively high traffic volumes to help recoup costs, transport routes such as Macquarie Davey couplet and Brooker Avenue are unlikely to have the traffic volumes to return the level of investment.

As tunnels or bypasses are expensive to build, a toll is one way to help recoup costs, however as shown in other states, people have not been prepared to pay the cost of tolls, particularly where there are alternative transport routes available, such as the Macquarie Davey couplet.

As a tunnel or bypass is unlikely to have high traffic volumes the cost of paying for the infrastructure through a toll is likely to result in higher toll charges in order to help recoup costs.

3.2 One way streets

Converting the one way street system within Hobart CBD to two way streets has been raised recently in two forums.

3.2.1 Hobart Inner City Development Plan

In 2009 Hobart City Council commissioned urban design consultant Jan Gehl to prepare the first stage of Hobart's Inner City Development Plan. The plan states that one way streets act as barriers to pedestrians and should be converted to two way streets. The plan recommends that the highest priority conversions are Campbell, Argyle and Murray Streets.

The plan also recommends the creation of a traffic calmed Hobart CBD through reducing car dominance and encouraging people to walk, cycle and use public transport. The plan suggests that a long term strategy to reduce urban through traffic should be developed.

The Macquarie Davey couplet has the highest traffic volumes in the CBD because of their arterial function. The high traffic volumes can make the streets an unpleasant environment for pedestrians and can create a barrier between the CBD and waterfront. In order to strengthen linkages between the waterfront and CBD and make the streets at a more human scale the plan recommends that Macquarie and Davey Streets should be transformed to green city boulevards with wider footpaths, bus and cycle lanes.

Strategies raised in the Jan Gehl report more relate to creating high quality urban spaces through traffic calming and encouraging more sustainable transport modes than issues relating to congestion.

Consultation on the strategies within the plan will be occurring during the first half of 2011 so it can be expected that there will be further discussion of the future for the Macquarie Davey couplet during this period.

3.2.2 Congestion and one way streets

A Hobart City Council Alderman has also stated that the introduction of one way streets has lead to an increase in congestion as a result of higher volumes occurring on specific streets at certain times of the day. For example in the afternoon peak Barrack Street has higher volumes than Molle Street. These concerns appear to only relate to one way streets outside the core CBD street network and not the Macquarie Davey couplet.

If the Council is to investigate the issue of one way street reversal to streets such as Molle and Barrack Streets they will need to consider the implications on the broader traffic network. Small changes to one way streets such as changing Molle Street from three to two lanes can have an impact on the performance of intersections on the Macquarie Davey couplet. It is likely that detailed modelling will have to be undertaken to understand the implications of one way street reversals.

3.2.3 Preferred approach

As stated previously the issues raised in the Jan Gehl report more relate to improving the urban environment through creating a more pedestrian friendly place. DIER will need to work with Council to understand the wider network implications to making changes to one way street systems.

In relation to the Macquarie Davey couplet, DIER will need to work with Council to ensure the function of the road is protected through any changes to the network in terms of traffic calming, travel demand measures such as cycle and bus lanes and lower travel speeds.

4 DIER'S APPROACH TO MANAGING CONGESTION

4.1 Congestion is complex to manage

Addressing congestion is a complex matter because of the range of factors that contribute both directly and indirectly to its cause such as modal choice (private car, bus, cycling and walking), traffic accidents and capacity of infrastructure. No single response is able to address the range of factors contributing to congestion. An integrated approach including a range of complementary measures tailored to the particular circumstances of each urban area offers the best prospect of managing congestion.

Congestion measures include both 'supply' and 'demand' side measures. Supply side approaches aim to increase the capacity of the network while demand side approaches aim to reduce congestion by influencing the demand for travel, including when, why and how we travel.

Examples of congestion measures include:

- Increasing the capacity of the network through infrastructure responses such as construction of new roads, additional lanes and contra lane flows.
- The use of intelligent transport systems (ITS) to improve traffic flow and safety through driver information such as variable speed limits, real time traffic information and real time traffic control which leads to improved incident detection and response.
- Increasing the attractiveness of public transport through increased frequency and better coordination of services, such as more direct simplified routes.
- Travel behaviour change initiatives which focus on improving peoples acceptance of public transport, walking and cycling.
- Encouraging a shift away from single car occupancy eg bus priority measures, congestion charging, car parking supply and pricing and encouraging the use of walking and cycling.
- Reducing the need to travel at peak times through flexible work arrangements, staggered school hours and use of electronic commence such as internet shopping and e-health.
- Managing land use to encourage more dense urban areas with jobs concentrated in key centres, which reduce the length of travel and support the use of alternative modes such as walking and cycling as travel distances are shorter.

4.2 Strategic planning and policy frameworks

Due to the need to ensure that we wisely invest our limited financial resources, DIER is increasingly focused on strategically planning our roads and ensuring that our existing infrastructure and services operate more efficiently and are safe.

This approach is supported by the development of strategic transport policy and planning frameworks such as the *Tasmanian Infrastructure Strategy* and recently released *Southern Integrated Transport Plan*. These frameworks provide Government with a solid basis for cost effectively identifying and responding to emerging and future transport challenges and opportunities.

The policy frameworks have led to a shift away from providing new infrastructure as the primary solution to focusing on maximising the use of our existing transport network. These frameworks take a system-wide, multi-modal approach, moving beyond the discrete planning of individual transport modes and parts of the network in isolation. There is a need to ensure our existing infrastructure and services operate more efficiently and are safe through the use of technology and innovation, demand management and land use planning measures rather than focusing too heavily on infrastructure solutions.

New infrastructure together with the additional maintenance burden is costly, there is a need to ensure our existing infrastructure is used as efficiently as possible and duplication is avoided where possible.

A key guiding framework for DIER and the State government, the *Tasmanian Infrastructure Strategy* also states that infrastructure planning should be evidence based. DIER invests significant resources in its data and analytical capabilities. This information is a key part of developing strategic policy and planning frameworks and in identifying the need and justification for a project. Any project should have clear links to strategic planning and policy frameworks, be evidence based and have clearly identified outcomes.

It should also be noted that Infrastructure Australia is also increasingly focused on making better use of existing infrastructure, particularly urban roads. Infrastructure Australia has stated that urban road upgrades need to focus on the following principles:

- Making better use of existing networks.
- Efficient movement of freight.
- Efficient movement of road based public transport.

Infrastructure Australia have clearly stated that it is highly unlikely to support proposals which do not meet the above principles or who do not provide for some form of pricing mechanism to either help recover the cost of a project or send signals to influence demand.

4.2.1 Transport planning in Greater Hobart

The State Government has invested significant resources to improve transport planning in Greater Hobart. The Government has developed strategic frameworks and information systems to improve passenger transport outcomes in urban areas, these frameworks are:

- *Tasmanian Urban Passenger Transport Framework.*
- *Southern Integrated Transport Plan.*

- *Tasmanian Walking and Cycling Strategy for Active Transport.*
- *Greater Hobart Household Travel Survey.*

DIER's strategic planning for the transport system takes a long term (20 year) view which is viewed as a sensible and realistic planning horizon. While we cannot always predict the nature and impact of change in Greater Hobart, the above planning frameworks provide a platform to respond to future changes and demands. DIER has undertaken significant investment in understanding our transport system and the key challenges it faces.

Both the *Tasmanian Urban Passenger Transport Framework* and *Southern Integrated Transport Plan* have in-built review mechanisms to ensure the plans respond to an evolving transport agenda.

Tasmanian Urban Passenger Transport Framework

The *Tasmanian Urban Passenger Transport Framework* was released in 2010 and provides an overarching policy response to deliver better modal choice to people in urban areas. The overall objective of the framework is to develop a safe and responsive passenger transport system that supports improved accessibility, liveability and health outcomes for our communities, in the context of the challenges of climate change.

The framework focuses on improving outcomes in the following priority areas which are relevant to congestion:

- **Focus on creating liveable and accessible communities** - Compact urban forms with good connectivity can reduce travel distances and car reliance and encourage the uptake of alternative transport modes. Compact urban forms and development that integrates with public transport corridors will improve the attractiveness and effectiveness of public transport services.
- **Focus on travel reliability over mobility** - Travel reliability focuses on providing consistent travel times for all transport users by ensuring we can predict the time taken to travel to a destination and reliably plan our journey. This is in contrast to mobility, which aims to simply reduce the time it takes to travel between different destinations, and emphasises car based transport.

The framework identifies an integrated package of measures to address passenger transport issues, including travel behaviour, bus priority, walking and cycling and land use planning initiatives.

Southern Integrated Transport Plan

The *Southern Integrated Transport Plan* developed in partnership with the Southern Councils was released in 2010. The Plan provides the strategic framework for planning and investing in Southern Tasmania's regional transport system over the next 20 years. The plan advocates maximising the use of existing infrastructure over the need for expensive upgrades and duplication of assets. The plan contains objectives and strategies to increase the operational efficiency and travel time reliability of existing infrastructure, examples of some of the strategies listed in the Plan are below:

- Improving travel time reliability on key urban transport corridors:
    - Provision of en-route driver information including expected travel times, delays and alternative routes selection.

    - Better utilisation of available road space such as targeted intersection upgrades.
    - Use of Intelligent Transport Systems to monitor network performance and better respond to incidents which cause congestion and bottlenecks.
    - Traffic management including control of access points, improved traffic light coordination and priority treatment for certain modes.

- Managing travel demand and influencing travel choice in peak periods:
    - Encourage and support greater use of public passenger transport, multiple occupancy car trips, cycling and walking.
    - Investigate and implement bus priority measures within Greater Hobart.
    - Manage land use to reduce travel demand on major arterial roads and encourage use of less infrastructure intensive non car modes.
    - Implement employment and education based measures to manage peak travel demand including work and school travel plans and flexible work arrangements.
    - Develop and implement a Greater Hobart parking strategy, including parking controls and pricing to discourage single occupancy car trips (excluding taxis) and encourage use of more sustainable transport modes e.g. motorcycles and cycling.

As part of the development of the Plan, traffic forecasting and capacity analysis in Greater Hobart was undertaken to understand where future traffic growth and delays are likely to occur.

Tasmanian Walking and Cycling Strategy for Active Transport

The *Tasmanian Walking and Cycling for Active Transport Strategy* is a key component of the *Tasmanian Urban Passenger Transport Framework* which aims to promote walking and cycling as viable and desirable forms of transport, through improved infrastructure, land use planning and behavioural change. The strategy is intended to guide development of walking and cycling as transport options in our urban areas over the long-term by creating a more supportive transport system for pedestrians and cyclists.

Greater Hobart Household Travel Survey

The Greater Hobart Household Travel Survey is a comprehensive survey of how, where and why people are travelling in Greater Hobart. The Survey makes a significant contribution to better understanding actual passenger transport patterns and needs, to inform the development of appropriate policy and planning responses, including metropolitan, corridor and network planning, and the examination of individual measures. The survey provides valuable data to make more informed evidence based decisions.

4.3 What is DIER doing?

DIER is undertaking a range of actions to improve traffic flow and travel time reliability along key urban links including investment in improving public transport services, use of intelligent transport systems and targeted infrastructure upgrades rather than focusing on new infrastructure solutions.

4.3.1 System wide approach

The system wide approach that DIER is undertaking is focused on improving the passenger transport system in terms of increasing the attractiveness and use of public transport, walking and cycling. This approach focuses on reducing greenhouse gas emissions, better managing travel demand and establishing more liveable, compact urban areas. While this approach is not directly related to improving traffic flow it does have flow on affects in terms of managing people's demand for travel.

Passenger Transport Innovation Program

The State Government has allocated $7 million over two years for the Passenger Transport Innovation Program. The program is being guided by the *Tasmanian Urban Passenger Transport Framework* and will support both immediate improvements in passenger transport, and also assist in planning for long term change.

Initiatives under the program include:

- $350 000 to develop an urban travel demand model that will be used to better forecast the impact of passenger transport proposals. The model will be used to model future scenarios such as demand management measures eg increased bus frequencies, and how these will impact on people's travel behaviour and the transport network.
- $2 million over two years to support increased bus services on urban fringe services.
- The development of integrated transit corridor plans to identify specific opportunities to increase the reliability and effectiveness of public transport such as increased frequency, more simplified and direct routes and bus priority, encourage appropriate adjacent land uses and planning scheme responses and identify and integrate with walking and cycling infrastructure.
- Development of a work place travel behaviour change program targeting State Government employees. The first phase of this project is a 12 month trial which aims to significantly reduce the number of single-occupancy car commuter journeys undertaken by DIER staff, and increase the number of commuter journeys undertaken by sustainable transport modes such as walking, cycling, bus travel and car-pooling.
- Appointment of an active transport officer to work with stakeholders in identifying and developing active transport networks.

In addition to the Program the State Government has already committed:

- $350 000 to develop a business case for light rail as part of the long term planning for transit priority in Hobart's northern suburbs.
- $3 million over four years to develop park and ride initiatives.
- $13 million over four years to support Metro Tasmania in a range of initiatives including bus replacement, bus network planning to support more direct services and simplified routes, marketing, intelligent transport systems and infrastructure upgrades.

4.3.2 Corridor specific approaches

DIER has also undertaken a corridor specific approach to improving traffic flow on key urban arterials within Greater Hobart. This approach focuses on a mix of long-term planning, targeted infrastructure upgrades such as intersection improvements and non-infrastructure solutions such as ITS and bus priority measures.

Brooker Highway Transport Plan

The Brooker Highway experiences the greatest travel time delays and slowest travel time speeds of the five arterial networks in Greater Hobart. The Highway is also a key strategic link in Tasmania's transport network for the movement of both freight and passengers. To address this high priority issue, the State Government in conjunction with Brighton, Glenorchy City and Hobart City Councils has developed a transport plan for the Brooker Highway.

The plan provides an agreed framework for identifying, prioritising and implementing upgrades and development along the Highway over the short, medium and long term. Maintaining capacity and travel time reliability for the efficient and safe movement of freight and passengers is a core objective of the plan.

Identified priority projects to improve capacity, safety and efficiency over the short term include a mixture of planning, infrastructure and non-infrastructure measures:

- Finalise strategic planning and design options for Brooker Highway intersection upgrades between Berriedale Road and Howard Road.
- Howard Road / Elwick Road / Goodwood Road intersections – capacity and efficiency upgrades.
- Enhancements to traffic signal co-ordination following intersection upgrade at Howard Road.
- Finalise design options for the Domain Highway intersection and increased lane capacity between Domain Highway and Risdon Road.
- Intersection safety, accessibility and capacity review.
- Examine options for variable speed limits.
- Implement relevant travel demand management measures outlined in the *Tasmanian Urban Passenger Transport Framework* and *Southern Integrated Transport Plan*.
- Implementation of Performance Based Systems and providing quad axle vehicle access.

Tasman Highway variable speed limits

The Tasman Bridge carries the highest traffic volumes in Greater Hobart and was identified as a road crash problem together with the Tasman Highway between Cambridge Road and Liverpool Street. During peak periods any disturbance to the traffic flow can result in congestion and ultimately crashes.

The Tasmanian Government is implementing a $1.8M project to improve traffic flow and prevent rear end crashes through introducing variable speed limits. Variable speed limits are used to reduce crash risk by decreasing the speed of vehicles and by lowering the speed of vehicles approaching congested locations. In addition to improved road safety, the variable

speed limit will result in improved traffic flow, more reliable journey times, and greater utilisation of the available road space during peak travel times.

The variable speed limits will be implemented using ITS. Although the technology is new to Tasmania it is a proven measure increasingly used in other States to improve traffic safety and flow. Approximately 40 electronic speed limit signs will be installed along the highway.

Depending on the success of the project, this approach may be applied to other key urban corridors in Greater Hobart such as the Brooker Highway.

Kingston Bypass

The Kingston bypass is a $41 million project currently under construction which commences south of the Channel Highway/Summerleas Road roundabout and runs parallel to Whitewater Creek before rejoining the Channel Highway at Algona Road.

The bypass was developed in response to managing capacity issues along the Channel Highway through Kingston and also infrastructure deficiencies and safety issues associated with the existing highway in terms of width, property access and intersection treatments.

Modelling shows that the bypass will cater for future traffic volumes and growth for more than 15 years.

Southern Outlet and Macquarie Street

The State Government has allocated $750 000 to improve the flow of Hobart city-bound traffic on the Southern Outlet and Macquarie Street. A bus lane is operating successfully on the Southern Outlet, so that during the morning peak, bus patrons are saved 90 seconds of travel time on average.

The clearway in Macquarie Street at the Molle Street intersection has been extended up to Denison Lane, providing more space for through traffic to pass left turning traffic. An evaluation of the clearway indicated that there is now a more even distribution of traffic across the Macquarie Street lanes at Molle Street meaning that the capacity of each lane is better utilised. Improvements to travel time between Antill Street and Molle Street have also decreased by 34 seconds, which is a 30% improvement. The average travel time between the Mount Nelson interchange and Molle Street on the Southern Outlet has decreased by 3 minutes 26 seconds, a 36% improvement.

DIER has also been working with Hobart City Council to design an upgrade of the Southern Outlet and Macquarie Street junction, involving widening each approach to increase capacity. This issue which was subject to a planning appeal is now resolved with the project to be constructed in 2011.

4.3.3 Conclusion

The State Government is increasingly focused on carefully planning our roads and ensuring that our existing infrastructure and services operate more efficiently and are safe. This approach includes a mixture of system wide approaches and corridor specific initiatives.

The system wide approach focuses on increasing the attractiveness and use of public transport, walking and cycling through the establishment of the Passenger Transport

Innovation Program and managing peoples demand for travel. DIER is also undertaking corridor specific approaches which focus on improving traffic flow on key urban arterials such as long-term planning through the Brooker Highway Transport Plan, targeted infrastructure upgrades and non-infrastructure solutions.

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