Travel Demand Forecasts: Results summary

Hobart Passenger Transport Case Study

Department of Infrastructure,
Energy and Resources

Tasmania
Explore the possibilities

Background

As part of the Hobart Passenger Transport Case Study, the Tasmanian Government engaged Parsons Brinckerhoff to undertake the Travel Demand Forecasts project. This project developed travel demand forecasts for Greater Hobart's passenger transport system, using a travel demand model. The travel demand model includes the roads and public transport routes along the four major corridors of Greater Hobart's transport network, linking the Hobart CBD to outer suburbs:

- Brooker Highway/Main Road corridor – linking the Northern Suburbs to the Hobart CBD
- Tasman Highway corridor (including the Tasman Bridge) – linking the Eastern Shore to the City
- Southern Outlet corridor – linking the Kingborough region to the Hobart CBD
- Sandy Bay Road/ Channel Highway corridor – linking Sandy Bay and Taroona to the Hobart CBD

The model uses population and employment data, along with household travel survey data, to model changes in travel demand. Within the model, mathematical equations are used to represent each individual's decision making process of: "Why", "When", "Where", and "How" to make the trip, and "What" route to follow to complete the trip. The model results for these individual choices are combined to determine the impact of changes to the transport system on travel patterns and associated impacts, including greenhouse gas emissions.

Travel demand forecasts were developed for four measures modelled as part of the demand modelling for the Hobart Passenger Transport Case Study, for over 5, 10, 20, 30 and 40 year intervals. The measures modelled were road expansion, land use planning changes (i.e. constrained, unconstrained growth), car parking changes (i.e. increased car parking costs) and changes to the public transport system (i.e. increased frequency of service).

Scenario	Planning Scenario	Road Network	CBD Car parking costs	Public Transport Network
No Active Intervention	*Base forecasts*	*Existing*	*Existing*	*Existing*
Option 1	*Base forecasts*	*Road expansion program*	*Existing*	*Existing*
Option 2	*Unconstrained forecasts*	*Road expansion program*	*Existing*	*Existing*
Option 3	*Constrained forecasts*	*Road expansion program*	*Existing*	*Existing*
Option 4	*Constrained forecasts*	*Road expansion program*	*Double*	*Existing*
Option 5	*Base forecasts*	*Road expansion program*	*Double*	*Existing*
Option 6	*Constrained forecasts*	*Road expansion program*	*Double*	*Transit corridor improvements*
Option 7	*Base forecasts*	*Road expansion program*	*Double*	*Transit corridor improvements*
Option 8	*Unconstrained forecasts*	*Road expansion program*	*Double*	*Transit corridor improvements*

Summary of Findings

Road Expansion

A number of network changes were incorporated:

- 6 lanes, Brooker Highway (Hobart to Granton)
- 4 lanes, Bridgewater Bridge
- 4 lanes, Tasman Highway to Sorell
- 4 lanes, Kingston to Margate
- 4 lanes, Rokeby to Lauderdale

The road expansion had very little effect on travel demand, with average speed for a car trip increased by less than 1% in the peak period, and even less significant increases in average speed across the whole day.

The measure also had little or no impact on public transport mode share and car vehicle kilometres travelled (VKT). The minor impact of the measures is predominantly due to the majority of the network being uncongested and large portions of the expansion program being located in the uncongested parts of the network.

Land use planning

Three scenarios were modelled under land use planning – with differing population and employment distribution for the forecasts:

- Base Case – no active intervention scenario,
- Unconstrained Growth (i.e. continued housing growth on the urban fringe) and
- Constrained Growth (i.e. implementation of a urban growth boundary).

The Unconstrained Growth scenario modelled a greater population in outlying areas than experienced in the Base Case. The result was that VKT for cars increased from the Base Base, with a 1.5% increase in five years time continuing to rise to a 4.0% increase by 50 years time. This steady increase in VKT over time was caused by greater numbers of people locating in outlying areas in future years. Public transport mode share was also negatively impacted, decreasing by 0.4% to 6.3% in 50 years time.

The Constrained Growth scenario modelled greater population and employment locating in more central areas. Not surprisingly, the impact was the opposite of the Unconstrained Growth scenario. VKT reduced by 0.5% from the Base Case in five years time and continued to reduce over the evaluation period such that it was about 2.5% less in 50 years time. Public transport mode share was similar to the base case in five years time but increased by about 2% in 50 years time.

Car Parking

This measure aimed to measure a reduction in central car parking spaces, but the number of car parking spaces was not an included variable in the model. To simulate this measure, the cost of parking was doubled in the model. Doubling car parking costs reduced car VKT by around 2%, which was fairly uniform across the evaluation period.

More significantly, increasing car parking costs produced a large shift in public transport mode share, approximately a growth in public transport mode share of 33% over the whole day uniform across the evaluation period (public transport mode share grew from 6.7% to 9% under this measure). More pronounced growth in public transport mode share was experienced in the peak periods, particularly the AM peak where it almost doubled.

Public Transport Improvement

The Public Transport Improvement measure modelled a significant increase in the number of services over existing routes was modelled (estimated to be approximately a doubling of existing bus services). The overall reduction in car VKT from this measure was approximately 5%, uniform across the evaluation period. The measure also produced a large increase in public transport mode share or around 50% over the whole day uniform across the evaluation period (public transport mode share grew from 9.0% to 13.3% under this measure). Unlike the car parking measure, less pronounced growth in public transport mode share was experienced in the peak periods, where it increases by approximately 25%.

However, this measure was modelled in scenarios including the car parking measure, so it is difficult to disaggregate the two, the results may be more pronounced if modelled without the car parking measure.