Tasmanian Government
2012 Submission to Nation Building 2 Program

Urban Intelligent Transport Systems, Hobart

September 2012

Department *of* Infrastructure, Energy *and* Resources

Tasmania
Explore the possibilities

Priority assigned by jurisdiction for NB2 funding consideration	Priority four under Innovation
Details of full scope of project, including objectives, service requirements, project status and project phase(s) seeking funding. Note: It is expected that this will be largely addressed through the main IA submission. However, the Department requires cost estimates to be provided using the **Best Practice Cost Estimation Standard** and at both **P50 and P90**. Also to use **both 4% and 7%** for BCRs.	Information on project objectives, strategic context and options analysis is discussed in the Stage 1-6 template. Information on the technical and delivery aspects of the project, including benefit cost analysis, project risks and delivery program is discussed in the Stage 7 template.
Alignment with objectives of NB2 Note: This should include how a project aligns with the overarching objective of NB2, as well as how it aligns with the objective of each relevant NB2 subprogram.	The Urban Intelligent Transport Systems, Hobart project is submitted under the Innovation theme of Nation Building 2 and also aligns with the Connecting People, Moving Freight and Safety themes. This project focuses on better managing existing road capacity using ITS solutions. ITS is a low-cost solution to improve safety and efficiency, particularly on higher volume corridors. The project includes variable speed messaging on the Brooker Highway and Southern Outlet; SMS traveller information; improved traffic management systems Further details are contained under Goal Definition (Stage1-6 template).Further details are contained under Goal Definition (Stage1-6 template).
Alignment with broader Commonwealth and state/territory policies and plans Note: Specific plans/policies to be addressed (at a minimum) include the Commonwealth's Infrastructure Investment Framework; the National Urban Policy; the National Ports and Land Freight Strategies; and the Australian Government commitment on the incorporation of ITS for major urban roads (as appropriate).	The project aligns with a number of Infrastructure Australia's strategic priorities, including: • Increase Australia's productivity • Developing Australia's cities and regions • Reduce greenhouse gas emissions This project aligns with the National Urban Policy strategic priority of improving the efficiency of urban infrastructure – utilising smart infrastructure by better managing existing road capacity through ITS solutions. Further details are contained under Goal Definition (Stage1-6 template).

Overall financial exposure including identification of other partner funding Note: It is expected that this will be addressed in the main IA submission.	Full details of cost estimates are outlined in the Stage 7 template.
Identification of key strategic risks to the project Note: It is expected that this will be addressed in the main IA submission	A Risk Management Register has been developed for the project. Risks are detailed in the submission under Costs, Risks and Funding (Stage 7 template).
Quantification of the expected benefits from the proposal Note: It is expected that this will be addressed in the main IA submission.	Project benefits are outlined in the Stage 7 template.
Information regarding the extent to which the potential for private sector involvement or investment has been evaluated Note: It is expected that this will be addressed in the main IA submission.	The need for Government funding is discussed in the Stage 7 template.
Likely impacts from the project proposal on citizens and the market Note: Detail is needed on how each proposal will impact citizens and the market (as two distinct groups) – positively or negatively, and the extent of the impact	Further details on the impacts are outlined in Problem Identification, Assessment and Analysis (Stage 1-6 template).
Identification of key stakeholders in the project and the complexity of stakeholder relationships	Further details on key stakeholders and relationships are discussed in the Stage 7 template.
Extent of multijurisdictional and/or private sector involvement in the proposal	No other jurisdictions or private sector entities are involved in developing this proposal.
Details of the level of innovation and information technology involved in the proposal, including in relation to information technology requirements to successfully manage/implement the proposal Note: Detail is to include identification of any new/untried methodologies or technologies to be used in the project, as well as IT requirements for the proponent agency to successfully manage or implement the proposal.	More detail on the ITS solution proposed under this project is detailed in the Stage 1-6 template below.

Details of the proposed procurement methods for the proposal Note: It is expected that this will be addressed in the main IA submission.	Procurement methods for the proposal are discussed in the Stage 7 template.
Level of complexity in construction, and any known issues in relation to the construction of the project, including environmental and heritage considerations Note: It is expected that this will be largely addressed through the main IA submission. However, the Department requires sufficient detail to fulfil its probity and accountability requirements, so any additional information not explicitly addressed in the main IA submission should be provided here.	Further details on construction and related issues are discussed in the Stage 7 template.
Any known issues in relation to contractual or service delivery obligations stemming from the proposal Note: This is to include any issues that are not currently present but could reasonably be foreseen.	There are no foreseen contractual or service delivery issues.
Details of the proposed governance arrangements for the proposal Note: This should be largely addressed in the main IA submission. However, the Department requires an explicit statement about the experience of the management team in delivering similar proposals and whether there are any expected knowledge gaps or training needs to successfully implement the proposal.	The governance model for this project is outlined in the Stage 7 template.
Details of the proposed delivery timetables and whether there are any known challenges to achieving those timeframes Note: It is expected that this will be addressed in the main IA submission.	The delivery timetable is outlined in the Stage 7 template.
Details of any significant interdependencies for the project Note: It is expected that this will be addressed in the main IA submission.	The key interdependencies for the project are outlined in the Stage 7 template.

Proposal Summary

Initiative Name:	Urban Intelligent Transport Systems, Hobart
Location (State/Region(or City)/ Locality):	Greater Hobart, Tasmania
Name of Proponent Entity:	Tasmanian Department of Infrastructure, Energy and Resources (DIER)
Contact (Name, Position, phone/e-mail):	David Spence, General Manager Infrastructure Strategy Department of Infrastructure, Energy and Resources Tel: (03) 6233 2089 Email: david.spence@dier.tas.gov.au
Executive summary	

Most passenger and freight movements use part of Tasmania's urban arterial road network at some point during their journey, making the efficiency of this network critical.

ITS is a key support mechanism to maximise the outcomes of investment in infrastructure and public transport improvements, assisting to optimise the day to day use of the road network. To the extent that ITS solutions can assist in moving traffic more efficiently on Hobart's arterial roads, it is also a strategy to defer the need for high-cost, large-scale infrastructure upgrades.

Tasmania is in the first stages of implementing Intelligent Transport Systems for road capacity management. The first major project is the introduction of Variable Speed Limit (VSL) messaging along the Tasman Highway corridor. The Tasmanian Government has identified ITS as an appropriate management tool on other key urban road corridors across Greater Hobart, including the Brooker Highway and Southern Outlet.

The key outcomes of implementing ITS along these corridors is more efficient movement for both freight and passengers and improved safety. Similarly, these solutions would also reduce transport emissions, along with providing better real-time travel information to the wider community.

Is this a new submission?	Yes
Estimated cost of problems?	The strategic framework and transport system problems to which this project responds are outlined in the Overview document and within this submission. Detailed information on project costs and benefits, to the extent that they can be quantified, is contained in the Stage 7 template.
Estimated Capital Cost of Initiative by Proponent ($M, nominal, undiscounted):	$22.2M
Commonwealth contribution sought by Proponent ($M, nominal, undiscounted):	$18.7M
Other funding (source/amount/cash flow) ($M, nominal, undiscounted):	The Tasmanian Government has committed $3.5M to introduce variable speed limit messaging on the Tasman Highway.
BCR by Proponent excluding Wider Economic Benefits	0.9
Estimated program	2014-15

Goal Definition

The objective of the project is to improve travel reliability and efficiency, and maximise the use of existing infrastructure, on Hobart's arterial urban road network.

Most passenger and freight movements use part of Tasmania's urban arterial road network at some point during their journey, making the efficiency of this network critical.

Southern Tasmania contains nearly half of Tasmania's population, with the majority of the region's industry and population located in Hobart. Future growth and development across Greater Hobart will continue to place pressure on the urban arterial road network. Key challenges include how to manage increasing volumes of passenger and freight vehicles, and maximising the use of existing transport infrastructure.

Historically, expansion of infrastructure has formed the key response to manage traffic volumes. While infrastructure solutions will continue to form part of any transport planning framework, as higher cost solutions that can be difficult to deliver in constrained urban environments, upgrades will become more targeted, focused largely on key bottlenecks major urban freight and passenger links.

The Southern Integrated Transport Plan considers options to maximise the use of existing infrastructure through:

- targeted upgrades of capacity at key bottlenecks (Tasman Bridge eastern approaches, Tasman Highway-Holyman Avenue and Brooker Highway upgrades)
- Intelligent Transport Systems to improve overall network performance by improving:
    - travel reliability (better management of incidents causing delays)
    - efficiency (managing traffic flows through key intersections and segments)

Tasmania is in the first stages of implementing Intelligent Transport Systems for road capacity management. The first major project is the introduction of Variable Speed Limit (VSL) messaging along the Tasman Highway corridor. The Tasman Highway is the principal road link between Hobart's eastern and western suburbs. This corridor includes the Tasman Bridge, which carries 65 000 vehicles per day and is Tasmania's highest volume road link. The project will begin operation in October 2012.

The Tasmanian Government has identified ITS as an appropriate management tool on other key urban road corridors across Greater Hobart.

Investment in this project will complement the existing $3.5M commitment made by the Tasmanian Government in the Tasman Highway.

Positive contribution to Infrastructure Australia and Nation Building 2 strategic priorities

The project aligns with the following Infrastructure Australia objectives:

- ***Developing Australia's cities and regions***

  This project will help to improve the efficiency of Hobart's urban arterial network, which is important in moving people and freight across the city, and to regions beyond the city. Facilitating interaction between businesses, and access for people to activities, is key for Hobart's future development.

- ***Increasing Australia's productivity***

  Improving the utilisation of existing road capacity using ITS will support the productivity benefits realised from past infrastructure investment. Increasing the productivity of existing infrastructure will also delay the need for future infrastructure upgrades.

- ***Reducing greenhouse gas emissions***

  This project will help to reduce greenhouse gas emissions, by reducing time spent in traffic, and reducing emissions associated with vehicles moving in congested conditions.

The project is submitted under the Innovation theme of Nation Building 2, and furthers the objectives of this program area:

- ***Innovation***

  Use of Intelligent Transport Systems is an innovative, low-cost solution to improve safety and efficiency, particularly on higher volume road corridors.

The project also aligns with the following Nation Building 2 theme areas and objectives:

- ***Connecting People***

  The upgrades will provide more reliable travel times for passengers on Hobart's key urban arterials.

- ***Moving Freight***

  Similar to the improvements for passenger vehicles, ITS will help improve freight efficiency and reliability on a key urban freight corridors.

- ***Safety***

  The ITS solutions proposed focus on Hobart's highest volume road corridors. These will reduce the safety risks associated with continued high traffic growth on these corridors. Similarly, accidents on these corridors have major flow-on effects in terms of traffic flows and congestion across the broader network, and ITS will allow the network to be managed much more efficiently and safely in these situations.

Problem identification, assessment and analysis

Greater Hobart has a population of over 210,000 people (2011), which is projected to increase to 250 000 by 2030. The settlement pattern is highly dispersed across a number of local government areas, with significant residential growth in outer urban areas, such as Clarence (Rokeby-Howrah) and Kingston. Due to constraints on growth in inner urban areas, and the comparative affordability of housing in outer urban areas, growth is expected to continue to be higher outside central Hobart.

A dispersed and growing population in outer urban areas is driving increased demand for travel between different parts of Hobart and into central Hobart. Parts of the arterial road network are struggling to maintain efficient traffic flows, particularly during peak periods, in the context of higher traffic volumes.

Recent travel time surveys across Greater Hobart found traffic delays are highest during the morning and evening peaks. The Brooker Highway experienced the greatest delays and

slowest travel speeds of urban arterials within Greater Hobart, across the entire day. The Tasman Highway and Southern Outlet also experience significant delays across the day, but have more significant travel delays in the morning and evening peak periods.

The Tasman Bridge carries the highest traffic volumes in Greater Hobart. This corridor currently experiences significant variations in travel time, especially in the event of delay incidents, such as break-downs or accidents. During peak periods, delay incidents cause major disturbance to the traffic flow, resulting in significant congestion across the network.

Option Generation and Assessment

The Tasmanian Government takes an integrated approach to network planning and management. This includes targeted investment in network infrastructure and public transport improvements. Relevant projects submitted under Nation Building 2 are:

- *Targeted investment in the urban arterial network*: Tasman Bridge eastern approaches; Brooker Highway improvements; Holyman Avenue Roundabout upgrades
- *Improvements to public transport*: Main Road Transit Corridor; real-time network information; planning for upgrade of the Hobart CBD Interchange

These projects will provide additional infrastructure and service capacity at key intersections and corridors; and support a modal shift away from private cars. ITS is a key support mechanism to maximise the outcomes of this investment, assisting to optimise the day to day use of the network. To the extent that ITS solutions can assist in moving traffic more efficiently on Hobart's arterial roads, it is also a strategy to defer the need for high-cost, large-scale infrastructure upgrades.

The Tasmanian Government is currently funding a $3.5M project on the Tasman Highway corridor to improve traffic flows and prevent rear end crashes, using Variable Speed Limit messaging. VSL is used to reduce the risk of accidents by decreasing overall vehicle speeds and reducing the speed of vehicles approaching congested locations. VSL also improves traffic flows and travel reliability, and supports greater utilisation of available road space during peak travel times.

There are a number of other urban corridors in Greater Hobart, where the use of similar ITS technology would be effective managing traffic flows. From a prioritisation perspective, these corridors are the Brooker Highway and Southern Outlet.

The Brooker Highway is a critical link in Tasmania's key north-south freight and passenger corridor. It is also part of Tasmania's National Network, an integrated network of land transport links within national and inter-regional land transport corridors that are of critical importance to national and regional growth. The Brooker Highway is a critical link in Hobart's arterial road network, connecting the northern suburbs, industrial areas and the Hobart CBD. The Highway contains a number of major intersections with local government roads, which are generally controlled by traffic signals.

The Southern Outlet is the primary connection between Hobart's fast-growing southern suburbs and central Hobart. This corridor is currently a dual carriageway, with a steep gradient and some tight bends in its northern section. This route generally has grade-separated intersections, however, at the CBD end there is a major signalised intersection connecting to two of Hobart's busiest roads, Macquarie Street and Davey Street.

Describe options

The primary mechanism for using ITS will be Variable Speed Limits. VSL is a recognised system capable of managing highways to improve safety and traffic flows.

Safety benefits include crash reductions in the range of 10%-50% of rear end crashes. The key efficiency benefits of VSL is minimising the number of rear end crashes and subsequent non-recurring congestion, and improving travel time reliability. The system can respond to weather and traffic conditions, and enable appropriate vehicle flow management, according to the conditions.

Similarly, in the event of a delay incident, traffic flows can be effectively managed to decrease the overall impact on flow breakdown. This includes improved vehicle flow management and safety around incidents.

The preferred option is to implement VSL on Hobart's three major arterial road corridors: the Tasman Highway, Brooker Highway and the Southern Outlet.

Works to implement VSL on the Tasman Highway corridor are complete, and this system is expected to be operational in October 2012. The project includes the installation of 43 electronic signs, along with a real-time weather station and a wind sensor on the Tasman Bridge.

The system will collect real-time traffic data, which will be analysed to enable the VSL system to anticipate the onset of a problem. The system is integrated with the traffic signal co-ordination system to allow the complimentary management of traffic signals and VSL. The current system has the potential to accommodate:

- Highway management incorporating VSL
- Ramp metering
- Lane use management
- Priority for public transport and pre emption for emergency vehicles
- Incident and event management and
- Driver and travel information

For the Southern Outlet and Brooker Highway, VSL would make a significant contribution to improving safety and efficiency on these two major arterials.

- The Brooker Highway VSL would run between Berriedale in the northern suburbs and Hobart's CBD, over a length of 10 kilometres.
- The Southern Outlet VSL would run for six kilometres from the Davey Street intersection south toward Kingston.

The inclusion of real-time traveller information is identified as a key support tool to the success of the system. This includes providing information via:

- *Variable Message Signs*, providing real-time travel and traffic information to users, influencing either route choice or timing, based on traffic conditions.
- *SMS messages to subscribers* when corridors are experiencing abnormal traffic conditions.
- *Website*, providing information as above.

The system is designed to inform users before they embark on their journey, and assist them to make informed travel choices. For example, providing information on traffic conditions will enable travellers to make informed choices, such as postponing travel or choosing an alternative route.

Initial cost estimates to implement the above system on the Brooker Highway and Southern Outlet is $18.7 million:

Project element	Cost
Brooker Highway – installation	$8.5M
Southern Outlet – installation	$3.5M
Software and signage	$2.3M
Tasman Bridge lane control	$1M
Website design and SMS traveller information system	$0.5M
Pre emption for emergency vehicles (state-wide)	$1.2M

Based on the above costs, and including benefits from crash reductions only (estimated at a 35% reduction), the Benefit-Cost Ratio is expected to be around 0.9 (7% discount rate).