Tasmanian Government
2012 Submission to Nation Building 2 Program

Transit Corridors: Main Road Transit Corridor and Greater Hobart Transit Corridor Planning

(Part of Hobart Passenger Transport Innovation Program)

September 2012

Department *of* Infrastructure, Energy *and* Resources

Tasmania
Explore the possibilities

Priority assigned by jurisdiction for NB2 funding consideration	Priority one under Connecting People
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.	**Main Road Transit Corridor:** Funding is sought for additional scoping, development and delivery of short-term infrastructure measures (1-3 years) for the Main Road Transit Corridor in the form of: • Short-term bus priority measures. • Improved bus stop infrastructure (bus stop optimisation and upgrading of major bus stops). Funding is also sought to develop medium-term (5-10 years) infrastructure measures on the Main Road Corridor: • Medium-term bus priority measures focusing on the Hobart CBD (partly dependent on outcomes of Hobart CBD bus interchange project). **Greater Hobart Transit Corridor Planning:** Funding is also sought for planning (project scoping) of an additional three Transit Corridor Plans in Greater Hobart, including: • Hobart CBD to Rosny/Shoreline. • Hobart CBD to Southern suburbs (Kingston, South Hobart). • Hobart CBD to Sandy Bay (UTAS). Further details are contained in the Stage 1-6 template. Project costs for Main Road Transit Corridor: • $2.6 million (early start, P50, total outturn costs). • $3 million (early start, P90, total outturn costs). BCRs for Main Road Transit Corridor: • Discount Rate (7%) and P50: **1.97.** • Discount Rate (7%) and P90: **1.65.** • Discount Rate (4%) and P50: **5.22.** • Discount Rate (4%) and P90: **3.87** Project costs for Greater Hobart Transit Corridor Planning: • $2 million (scoping only). **Total costs: $5 million.**

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 Transit Corridor project aligns with the Connecting People theme and the Urban Living sub-program. The project focuses on improving public transport along existing high frequency corridors which will enhance the community's access to services and improve the liveability of urban areas adjacent to the Corridor. The Main Road Transit Corridor focuses on improving access to the key activity centres of Hobart and Glenorchy.
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 Transit Corridor project aligns with the following Australian Government plans and policies: • Infrastructure Australia's theme for action 'Transforming our Cities'. • Infrastructure Australia June 2011 and June 2012 Report to COAG. • National Urban Policy. The project also aligns with relevant Tasmanian Government plans and polices: • Tasmanian Infrastructure Strategy. • Tasmanian Urban Passenger Transport Framework. • Southern Integrated Transport Plan. • Southern Regional Land Use Strategy • Draft Capital City Plan. 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 submission. The Tasmanian Government has already committed $800 000 for the planning of two Transit Corridors Plans in Greater Hobart, $400 000 of which is currently allocated to developing the Main Road Transit Corridor Plan, to be expended by 2013/14.
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.	Expected project benefits are outlined in the submission under 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 under the Stage 7 template. The Tasmanian Government has been actively working with the key stakeholders, who include Metro Tasmania, Hobart and Glenorchy City Councils on the project.

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	The proposed bus priority measures will have the following impacts on the community: • Decrease in travel time for public transport passengers (lower cost of generalised travel). • Increase in the reliability of travel time for public transport passengers, which will result in less in-vehicle travel time and reduction of waiting time at bus stops. • Decrease in travel time for passengers using other vehicles. • Reduction of on-street car parking spaces at specified locations. The proposed bus priority measures will have the following impacts on the market: • Productivity gains through reduction in passenger travel time. • Reduced operational costs for bus operators (vehicle and labour costs). The bus stop upgrades and optimisation will have the following impacts on the community: • Passengers will feel more comfortable: (provision of adequate shelter/seating), improved safety (provision of lighting and bus stops being located close to safe crossing points) and better access to information. • Bus stops will be fully accessible which will benefit those with limited mobility and the aged. • Some passengers may have to walk longer distances to access bus stops, as the number of stops will be reduced. • Some local residents and businesses may be concerned about bus stops being relocated adjacent to their properties. The bus stop upgrades and optimisation will have the following impacts on the market: • Upgrades will contribute to an improvement in the pedestrian environment and streetscape, particularly within activity centres. • Upgraded bus stops will improve the overall perception of the bus system. 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	The Tasmanian Government has been actively working with the key stakeholders, who include Metro Tasmania, Hobart and Glenorchy City Councils on the project. These organisations, together with DIER form part of the existing project Steering Committee which is responsible for overseeing the development of the Transit Corridor Plan. It is anticipated that this Steering Committee will continue its role in the implementation of projects that are funded under Nation Building 2.
Extent of multijurisdictional and/or private sector involvement in the proposal	The project does not have any inter-state linkages or implications. The Tasmanian Government has been actively working with the relevant road and planning authority on the project; Hobart and Glenorchy City Councils. The Tasmanian Government has been working closely with Metro Tasmania who is the major bus operator in Tasmania. It has also consulted with the Tasmanian Bus Association (TasBus), the peak industry body.
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.	The introduction of bus priority measures is a relatively new concept for Tasmania. Historically, cars have been given priority over other modes on urban roads. Transport planning has traditionally focused on increasing the capacity of roads to improve traffic flow for cars rather than improving public transport reliability. The introduction of bus priority measures on the Main Road Corridor will provide the means to evaluate the impact of bus priority measures in terms of travel time and patronage gains. It is anticipated that bus priority measures will be implemented on other public transport corridors, depending on the outcomes of Main Road. As part of the bus priority measures, signal priority (bus early start phase) will be installed at the Springfield/Derwent Park Road intersection. Other signal priority locations may be implemented in the future depending on the success of this initiative. As part of the bus stop upgrades, real time travel information will be installed at major bus stops on the Corridor (see separate submission).
Details of the proposed procurement methods for the proposal Note: It is expected that this will be addressed in the main IA	The bus priority measures would likely be delivered as a publicly tendered Contract with pre-registered Tenderers. Bus stop upgrades will be the responsibility of Metro Tasmania to tender and contract, if the works are not undertaken internally.

submission.	
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.	All works will occur within the existing road corridor and are predominately changes to line marking, removal of on-street car parking, signage and construction of bus stops. Therefore construction is expected to be relatively simple. Planning, environmental and heritage considerations are addressed 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.	Governance arrangements are detailed in the Stage 7 template. Scoping and Development Phases will be supervised by DIER, with work contracted out to consultants for the bus priority measures. Any internal knowledge gaps can be overcome through outsourcing to consultants or staff undertaking training.
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 submission. The key issue in relation to the Development Phase is stakeholder consultation issues in relation of removal of on-street carking and bus stop upgrades. These are known challenges which may cause a delay to the start of the Construction Phase.
Details of any significant interdependencies for the project	The key interdependencies for the project are gaining stakeholder support from Glenorchy and Hobart City

Note: It is expected that this will be addressed in the main IA submission.	Councils as the road owner and planning authority.

Proposal Summary

Initiative Name:	Transit Corridors: Main Road Transit Corridor and Greater Hobart Transit Corridor Planning
Location (State/Region(or City)/ Locality):	Hobart, Tasmania
Name of Proponent Entity:	Tasmanian Department of Infrastructure, Energy and Resources (DIER)
Contact (Name, Position, phone/e-mail):	David Hope Director Passenger Transport Policy Department of Infrastructure, Energy and Resources Tel (03) 6233 3785 Email: david.hope@dier.tas.gov.au

Executive summary

Funding is sought from Nation Building 2 for the following:

- Main Road Transit Corridor:
  - Short-term bus priority measures (scoping, development and delivery).
  - Medium-term bus priority measures (scoping and development).
  - Improved bus stop infrastructure: bus stop optimisation and upgrading of major bus stop (scoping, development and delivery).
- Greater Hobart Transit Corridor Planning: development of an additional three Transit Corridor Plans, including:
  - Hobart CBD to Rosny/Shoreline (project scoping).
  - Hobart CBD to Southern suburbs (Kingston, South Hobart) (project scoping).
  - Hobart CBD to Sandy Bay (UTAS) (project scoping).

Together, these are described as the Transit Corridors Project.

The project will achieve the goals (listed as outcomes) in the *Tasmanian Urban Passenger Transport Framework* which focus on:

- Reduced greenhouse gas emissions.
- Creating liveable and accessible communities.
- Improved travel reliability.
- Creating healthy, active communities.
- Better integration of transport and land use planning.

A Corridor Plan is being developed for the first Transit Corridor in Greater Hobart focusing on the Main Road Corridor (Elizabeth Street, New Town Road and Main Road) (the Main Road Corridor). The intent is for this plan to provide the framework for developing similar Corridor Plans in Tasmania. The Corridor Plan for Main Road is still within the strategic planning phase. Stage One of the Main Road Transit Corridor Project (completed July 2012) focused on identifying existing problems at a

Metropolitan and Corridor level from a public transport and land use planning perspective.

Funding from Nation Building 2 is sought for the Main Road Corridor to address the problems of poor travel time reliability for buses and poor quality bus stop infrastructure and pedestrian links. These are the key infrastructure components of the Transit Corridors Project.

No planning has been undertaken on the other proposed Transit Corridors. However, it is likely that similar problems exist.

The Main Road Transit Corridor Project is currently progressing through Stage Two of the planning process, which is the identification and analysis of options to improve the Main Road Corridor. The options described in this submission have already been identified through a strategic options assessment process, targeting the problems of travel time reliability and poor quality bus stop infrastructure.

A more detailed options assessment is currently underway for all options, but is not yet complete. Options for bus priority and bus stop infrastructure have been analysed in more detail for the purposes of this submission.

Further investigation is required of the bus priority measures. This includes:

- concept design and engineering survey;
- additional traffic modelling; and
- engagement with key stakeholders (Metro Tasmania, Hobart and Glenorchy City Council) to ensure these options can be effectively implemented.

Is this a new submission?	New submission
Estimated cost of problems?	The strategic framework and transport system problems to which the Transit Corridors Project responds are outlined in the submission.
Estimated Capital Cost of Initiative by Proponent ($M, nominal, undiscounted):	Project costs for Main Road Transit Corridor: • $2.6 million (early start, P50, total outturn costs). • $3 million (early start, P90, total outturn costs). Project costs for Greater Hobart Transit Corridor Planning: • $2 million (scoping only). **Total costs: $5 million.**
Commonwealth contribution sought by Proponent ($M, nominal, undiscounted):	$5 million
Other funding (source/amount/cash flow) ($M, nominal, undiscounted):	Commonwealth Government funding is required to fund this infrastructure gap, which cannot be filled by private sector funding models. The Tasmanian Government has already committed $800 000 for the planning of two Transit Corridors Plans in Greater Hobart, $400 000 of which is currently allocated to developing the Main Road Transit Corridor Plan, to be expended by 2013/14. It is considered that a national approach to funding and financing transport infrastructure, supported by all levels of government, is critical to effectively address long term transport infrastructure needs. In this context, the recent Infrastructure Australia's Finance Working Group's report "Infrastructure Finance and Funding Reform" is an important

	lead for national discussion. Tasmania is not in a position currently to adopt a unilateral approach. Further work is required on project financing and the issue of cost reflective pricing in small regional economies.
BCR by Proponent excluding Wider Economic Benefits	BCRs for Main Road Transit Corridor: • Discount Rate (7%) and P50: **1.97.** • Discount Rate (7%) and P90: **1.65.** • Discount Rate (4%) and P50: **5.22.** • Discount Rate (2%) and P90: **3.87**
Estimated program	
The estimated program for the short term bus priority and bus stop optimisation and upgrades works is as follows: • Scoping: 360 days • Development: 190 days. • Delivery: 100 days. An early start is proposed (March 2013) as there has been a 360 day timeframe allocated to stakeholder consultation, which will occur during the Scoping Phase. This will ensure delivery can occur in 2015.	

Goal Definition

Project goal

The overarching goal of the Transit Corridors Project is:

- To provide high quality public transport corridors and services in urban areas to encourage and support modal change, through guiding future Government investment along Transit Corridors and creating more supportive land use patterns.

Specific project goals are:

- Improving the travel time reliability of public transport services.
- Improving public transport frequency, by ensuring that the corridor has services operating every 10 minutes or less during peak periods on weekdays.
- Making better use of existing urban road and public transport networks through sensibly sharing road space, targeted infrastructure upgrades and use of non-infrastructure solutions to support modal change.
- Improving people's access to activity centres and key trip generators along the corridor.
- Creating additional public transport demand within the corridor through encouraging mixed use and higher residential development along the corridor.
- Ensuring public transport routes are easy to understand and consistent throughout the day.

Funding is sought from Nation Building 2 focusing specifically on improving the travel time reliability of public transport services and improving access and connectivity to the Main Road Corridor through high quality, supportive infrastructure.

The goal of improved travel time reliability is a priority over other goals because it is a key means to improve public transport patronage. Public transport use is very low in Tasmania and Greater Hobart. Despite residents in Glenorchy and Hobart City Council areas using sustainable transport more than other Greater Hobart residents, public transport use is still very low for all trips:

- Glenorchy: 4.7 percent.
- Hobart: 2.4 percent (Greater Hobart Household Travel Survey 2008/09).

Project outcomes

Transit Corridors Project outcomes are based on the *Tasmanian Urban Passenger Transport Framework* (Framework). The Framework describes the strategic direction for delivering better modal choice to people in urban areas in Tasmania.

The Transit Corridors Project outcomes are as follows:

- Reduced greenhouse gas emissions by encouraging the use of low carbon emission transport such as public transport, walking and cycling.
- Creating liveable and accessible communities through encouraging land use patterns that integrate with the public transport system to improve the attractiveness and effectiveness of public transport, walking and cycling options.
- Improved travel reliability by providing consistent travel times, in particular, the overall time of undertaking a journey, including waiting times for all users of the transport system.
- Creating healthy, active communities by encouraging use of walking and cycling trips either as part of a trip or for the total trip.
- Better integration of transport and land use planning to ensure transport and land use planning system are integrated and work together to support an attractive and effective passenger transport system.

Project description

The *Tasmanian Urban Passenger Transport Framework* identified Transit Corridors as one of the key measures to improve public transport use. The vision underpinning this is to consolidate population density and activity around designated high frequency Transit Corridors which connect to the Hobart CBD. These corridors will need to be supported by high quality infrastructure to enhance the attractiveness and reliability of public transport including:

- High frequency bus services.
- Bus priority.
- Off-bus infrastructure, such as improved bus stop infrastructure and information.
- Supportive land use change to increase population density and activity along Transit Corridors.

A Corridor Plan is being developed for the first Transit Corridor in Greater Hobart focusing on the Main Road Corridor (Elizabeth Street, New Town Road and Main Road) (the Corridor) which links the activity centres of Hobart and Glenorchy (Attachment A).

The Main Road Corridor is one of Greater Hobart's core passenger transport routes, with a high level of service frequency. It accounts for around 20 percent of Greater Hobart's public passenger boardings.

As the Main Road Transit Corridor Plan is still within the strategic planning phase, funding is sought to further scope, develop and deliver short-term infrastructure measures (1-3 years) in the form of:

- Short-term bus priority measures.
- Improved bus stop infrastructure (bus stop optimisation and upgrading of major bus stops).

Funding is also sought to develop medium-term (5-10 years) infrastructure measures on the Corridor:

- Medium-term bus priority measures focusing on the Hobart CBD (partly dependent on outcomes of Hobart CBD bus interchange project, see separate submission).

Funding is also sought for planning (project scoping) of an additional three Transit Corridor Plans in Greater Hobart, including:

- Hobart CBD to Rosny/Shoreline.
- Hobart CBD to Southern suburbs (Kingston, South Hobart).
- Hobart CBD to Sandy Bay (UTAS).

Alignment with Australian Government Planning and Policy Frameworks

Nation Building 2- proposal themes

The Transit Corridors Project aligns with the Connecting People theme and the Urban Living sub-program.

The Transit Corridors Project focuses on improving public transport along existing high frequency corridors which will enhance the community's access to services and improve the liveability of urban areas adjacent to the Corridor. The Main Road Transit Corridor focuses on improving access to the key activity centres of Hobart and Glenorchy.

Infrastructure Australia's strategic priorities

The Transit Corridor Projects aligns with the principles set out in Infrastructure Australia's theme for action 'Transforming our Cities'.

The Infrastructure Australia June 2011 Report to COAG, outlines the following principles, which are relevant to the Transit Corridors project:

- ***Making better use of existing networks:*** the Transit Corridors Project focuses on improving existing passenger transport networks and supportive infrastructure. The intent is to ensure that the existing bus-based passenger transport system operates as effectively and efficiently as possible.
- ***The efficient movement of public transport:*** the Transit Corridors Project focuses on improving the travel time reliability of public transport services, through measures such as bus priority, removing diversions from the Corridor to ensure the route is as direct as possible and bus stop optimisation.

The Transit Corridors Project also aligns with key priorities outlined in the June 2012 report to COAG:

- ***Improved strategic planning:*** the Transit Corridors Project focuses on better integration of transport and land use planning through encouraging increased residential densities and mixed use adjacent to the Corridor and around key activity centres on the Corridor. The Tasmanian Government is also working closely with key stakeholders on the project, including Metro Tasmania (public transport service provider) and Hobart and Glenorchy City Councils who are the road owners and planning authorities.
- ***Maintaining productivity:*** the Transit Corridors Project focuses on improving passenger transport travel time reliability which will have productivity benefits for commuters. Encouraging higher densities and mixed use through infill development will provide more opportunities for people to live closer to their places of work, reducing their overall travel time.
- ***Improving liveability and social cohesion:*** the Transit Corridors Project will lead to improved liveability and social inclusion by making public transport more reliable and

attractive (eg through improved bus stop infrastructure). This will benefit those experiencing transport disadvantage. Through infill development, there will be greater opportunities to provide more affordable housing options close to high frequency public transport corridors and activity centres. This will provide better access to employment and essential services.

National Urban Policy

The *National Urban Policy* sets out a number of important objectives and priorities to guide planning and development of our cities which focus on enhancing productivity, sustainability and liveability. The Transit Corridors Project aligns with the following objectives and priorities in the *National Urban Policy*:

- Integrating planning of land use, social and economic infrastructure.
- Investing in urban passenger transport, particularly public transport.
- Improving accessibility and reducing dependence on private vehicles by improving public transport options and reducing travel demand by co-location of jobs, people and facilities.
- Locating housing close to facilities and services, including jobs and public transport, in more compact mixed use development.
- Improving the efficiency of urban infrastructure by utilising smart infrastructure and demand management to enhance the performance of existing infrastructure networks and reduce the need for costly new investment.

Alignment State Government policy and planning frameworks

Tasmanian Infrastructure Strategy

The *Tasmanian Infrastructure Strategy* (TIS) provides the guiding framework for all infrastructure investment decisions across government. The Transit Corridor Projects is consistent with the TIS as it focuses on maximising the use of our existing transport network. Transit Corridors will focus on making the best use of our investment in road based infrastructure and public transport services through the use of technology and innovation, demand management, land use planning and targeted infrastructure solutions.

The Transit Corridors Project aligns with the following themes in the TIS*:*

- ***Coordinated Infrastructure Planning:*** The Transit Corridors Project is being developed in conjunction with Hobart and Glenorchy City Councils and Metro Tasmania. These organisations have responsibility for land use and transport planning and delivery of bus services on the Corridor. A key element of the Transit Corridors Project is to better integrate transport and land use planning by focusing on increasing density adjacent to the Corridor.
- ***Effective Governance and Decision Making****:* Involving key stakeholders as part of the project, regardless of jurisdictional ownership and responsibility, will deliver a better integrated public transport system.
- ***Viable and Sustainable Infrastructure:*** The Transit Corridors Project focuses on improving the existing public transport system, as opposed to building new infrastructure and investing in new services. The Transit Corridors Project concentrates on developing public transport to cater more effectively for users and ensuring that it is an attractive alternative to the car.
- ***Efficient Infrastructure Delivery:*** The Transit Corridors Project focuses on developing an integrated plan, where responsibility for improving the public transport system is developed jointly and shared between the different jurisdictional authorities.

Tasmanian Urban Passenger Transport Framework

As described above, the Transit Corridors is one of the key projects identified in the Framework to improve public transport in Greater Hobart. The key goals of the Framework that are relevant to the Transit Corridors Project (for which funding is sought) are:

- Reduced greenhouse gas emissions.
- Improved travel time reliability.

Southern Integrated Transport Plan

The *Southern Integrated Transport Plan* (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 contains actions to implement the *Tasmanian Urban Passenger Transport Framework* including the Transit Corridor project. The Plan contains objectives and strategies to encourage and support the greater use of passenger transport.

Southern Regional Land Use Strategy

The Southern Tasmanian Councils Authority (STCA), in partnership with the Tasmanian Government, has developed the *Southern Tasmania Regional Land Use Strategy* (Strategy) which will guide future settlement patterns in Southern Tasmania. DIER has been working with the STCA to ensure the strategy reflects the actions in the *Tasmanian Urban Passenger Transport Framework,* including increasing residential densities around designated high frequency public transport corridors.

The Strategy targets the area within 800 metres of the Transit Corridor and principal and primary activity centres, for increased density.

Draft Capital City Plan

In 2009, COAG announced reforms aimed at ensuring that all Australian capital cities would have comprehensive and integrated strategic plans in place by 2012. The Tasmanian Government has prepared a draft Capital City Plan (CCP) for Hobart which collates State, regional and local Government policies into a strategic document.

The CCP develops an integrated strategic framework of actions and priorities to guide Government and utility providers in their investment and planning decisions. Objectives and directions in the CCP support the Transit Corridor concept. The Transit Corridors Project will be included as one of the key projects underpinning the CCP.

Problem identification, assessment and analysis

Problem identification

Stage One of the Main Road Transit Corridor Plan was completed in July 2012 (see http://www.dier.tas.gov.au/passenger_transport/transit_corridors). The Stage One Report identifies existing problems at a metropolitan and Corridor level from a public transport and land use planning perspective (see Attachment B – Transit Corridor Assessment Report – Stage One Executive Summary for more details). The findings of the Stage One Report will be used to inform options identified as part of Stage Two of the project, which is currently under way.

Funding from Nation Building 2 is sought to improve the problems of:

- Poor travel time reliability for buses: and
- Poor quality bus stop infrastructure and pedestrian links.

Poor travel time reliability for buses:

The problems of poor travel time reliability on the Main Road Corridor prevents the goal of improved travel time reliability from being achieved. Transport planning has traditionally focused on increasing the capacity of roads to improve traffic flow for cars rather than improving public transport reliability. This has resulted in poor travel time reliability for buses, both in terms of longer travel times for buses than cars and a high variability in bus travel time.

- Reliability on the Main Road 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 Main Road 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 Main Road Corridor: the bus has to deviate from the Main Road 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.

Poor quality bus stop infrastructure and pedestrian links:

The poor quality bus stop infrastructure and pedestrian links prevents the goal of improved access and connectivity to the Main Road Corridor from being achieved, as supportive infrastructure is inadequate.

There is an inconsistency of bus stop infrastructure treatments along the Main Road Corridor, including a lack of service information for public transport users, as well as poor pedestrian connections and way-finding to bus stops.

Problem analysis

Poor travel time reliability for buses:

Analysis of bus travel times along the Main Road Corridor has been undertaken to determine the reliability of buses along the Main Road Corridor:

- The inter-peak outward trip has the longest travel times for buses at 34:28 minutes (17 km per hour), followed by the PM peak inward trip at 31:43 minutes (17 km per hour) and AM peak inward trip at 31:19 minutes (17 km per hour).
- The slowest sections for buses in the AM peak inward trip include:
    - North Hobart to Collins Street.
    - Moonah activity centre to Risdon Road.
    - Springfield Depot to Moonah activity centre.
- Bus travel time is much longer than car travel time along the Main Road 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, due to slightly different route and trip lengths).
- Analysis shows that there is significant variation in travel times along the Transit Main Road Corridor for buses, with the inter-peak outward trip having the highest level of variation, of around eight minutes.
- The 'all stops' Main Road buses have two route diversions from the Main Road Corridor which result in an increase in travel times. These route diversions are:
    - Diverting the inward bus into the Springfield 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 the Hobart CBD and the pedestrianised Elizabeth Street Mall, forces buses to divert from Elizabeth Street. This results in the following 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.

Travel time reliability workshops were held 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 Main Road Corridor.

Travel time reliability is also affected by the number and spacing of bus stops on the Main Road Corridor. As stated above, on average the Main Road Corridor has a bus stop placed every 250 metres, which is well below the suggested 400 metre placement. The large number of bus stops results in an increase in travel time:

- Increase in dwell time caused by the number of times the bus has to stop to pick up and drop off passengers.
- The bus decelerating when approaching a stop and having difficultly manoeuvring back into traffic.

Bus stops along the Main Road Corridor are also unevenly spaced, with little consistency in distance between stops. Certain bus stops are also unevenly paired (inward and outward bus stops are not directly opposite each other), which can result in passengers having difficulties locating a bus stop for their return journey.

A number of studies have highlighted travel time reliability as a key influence in increasing bus patronage in terms of punctuality, reliability and dependability of a service. Poor travel time reliability affects people's waiting time for transport and in-vehicle travel time.

Poor quality bus stop infrastructure and pedestrian links:

There is a wide variation in the standard of bus stop infrastructure along the Main Road Corridor. All bus stops have a pole and blade, but not all major bus stops have shelter or seating. Most of the shelters are aged and have a poor appearance and aesthetic. A pedestrian access assessment of ten major bus stops along the Main Road Corridor was undertaken which identified a number of issues common throughout the Main Road Corridor, including:

- Lack of route map information and locality maps.
- Pedestrian congestion at bus stops due to narrow footpaths, location of waiting areas and volumes of through pedestrian traffic.
- Poor pedestrian connections and wayfinding.
- Inconsistency in the type of shelter and seating.
- Inadequate bus stop lengths – creating difficulties for buses to stop close to and parallel to the kerb.
- Low kerb heights, making boardings difficult for some passengers.

Most bus stops are also not fully accessible, which affects people with limited mobility.

Bus stop infrastructure is an important component of the operation of the bus system and the community's perceptions of it, as it is the first interaction that passengers have with the system. Improving the design of bus stops, and the location, is a crucial element in improving the quality of bus services.

Bus stops should ideally have the following characteristics:

- Be readily identifiable as a bus stop, by having consistent branding and appearance.
- Located in a convenient and logical spot, in terms of position of surrounding trip attractors.
- Located in areas which are highly visible and have some form of passive surveillance from surrounding activity (eg. visibility from shops, places of work or residences).

Problem assessment

Poor travel time reliability for buses:

Passengers make decisions based on their perceived cost of travel, including monetary amounts (eg. Fares) and a range of other factors such as total travel time, convenience, comfort and security. Therefore, if buses on the Main Road Corridor are unreliable this will affect a potential passenger's decision to use buses or not. If the travel time reliability for public transport can be improved, the generalised cost of travel also decreases. Consequently, the demand for services increases and results in a modal shift, as travel patterns change to travel at the lowest possible overall generalised cost.

Poor travel time reliability for buses results in an economic cost to both individuals and the bus operator:

- For individuals, the economic costs are an increase in total travel time, unexpected waiting times at bus stops and late arrival. This results in a loss of productivity, especially for commuters.
- For bus operators, poor travel time reliability results in an increase in operational costs including higher bus kilometres (caused by Main Road Corridor diversions) and capital labour costs.

Research indicates that passengers value waiting time highly. It also suggests waiting for a bus with uncertain arrival times is often seen as an anxious and stressful experience (Mazloumi, Currie, Rose 2008). Consequently, minimising passenger waiting time is critical to encourage use of public transport.

Poor travel time reliability increases the environmental cost of travel through higher greenhouse gas emissions (caused by increased bus kilometres travelled and longer travel times). A reduction in travel time will result in fewer greenhouse gas emissions. If bus reliability is improved, this will result in a modal shift from cars to public transport also resulting in reduced greenhouse gas emissions.

As road space is limited on the Main Road Corridor, it currently operates as a single lane (each direction) urban main street; there is little opportunity for expansion. Widening the Main Road Corridor is not a desirable option as the Main Road Corridor contains strip shopping precincts and major activity centres, where pedestrian movement and amenity is a priority. Therefore, bus reliability is likely to decrease in the future, in the absence of bus priority intervention.

Land adjacent to the Main Road Corridor is also identified as a residential infill area under the *Southern Regional Land Use Strategy*. If this area is to increase in population, traffic volumes along the Main Road Corridor will also increase, unless demand measures are put in place to ensure public transport is more attractive.

Poor quality bus stop infrastructure and pedestrian links:

Perceptions of comfort, safety and access to information all contribute to the generalised cost of travel. If bus stop infrastructure can be improved, this will result in a lower individual generalised cost of travel and improve passenger experience resulting in an increase in patronage, but not to the extent of improving reliability or frequency (Currie, Wallis 2008). This will have economic and social benefits, as passengers will:

- Be more comfortable: through the provision of adequate shelter and or seating.
- Feel safer: because of the provision of lighting and bus stops being located close to safe crossing points (eg. pedestrian lights and refuges).
- Have access to better information: simple and easy to understand timetable and route information and/or real-time travel information.

The quality of the bus stop infrastructure affects the overall perception and brand of the bus system. Therefore, investment in bus stop infrastructure is an important marketing and branding component of creating a high quality public transport system.

Upgraded bus stops must meet the requirements of the *Disability Standards for Accessible Public Transport 2002*. Upgrades will also provide social and economic benefits for passengers with impaired mobility, the aged or people with young children. This will enable sectors of the community who are transport disadvantaged to participate more fully in society and reduce social exclusion.

Investment in bus stops will also contribute to an improvement in the pedestrian environment and streetscape, particularly within activity centres. An improvement in amenity will create a sense of place, where people want to spend time and undertake activity. Research undertaken by the Heart Foundation (2011) identified that increased pedestrian activity had the following economic and social benefits:

- Generates more business and stimulates the local economy.
- Revitalises 'drive-through' centres into lively places that people want to visit.
- Rise in property values leading to increased refurbishment and redevelopment opportunities.
- Encourage people to spend time outside of their homes.
- Health benefits.

As the bus stop infrastructure is already aged and of varying standard, the asset will further deteriorate into the future.

The bus stop infrastructure is also not fully accessible. If it is not upgraded, it will impair those members of the community with limited mobility, such as the aged. Tasmania has the oldest population profile in Australia and the population is projected to experience ageing more rapidly than other jurisdictions. In Glenorchy the population over 65 is forecast to increase from 16.8 percent in 2007 to 25.6 percent by 2032 (Demographic Change Advisory Council, 2008).

The benefits of real time travel information are discussed under a separate submission.

Option Generation and assessment

High level Corridor assessment of passenger transport options in Hobart's Northern Suburbs

As part of work undertaken in Stage One of the Transit Corridors Project, a high level review of three potential Transit Corridor options from Glenorchy to Hobart CBD was undertaken in November 2011.

The high level review investigated the following corridors in terms of delivering the Transit Corridor concept:

- Brooker Highway.
- Rail corridor.
- Main Road.

The three options were evaluated on the basis of the following criteria:

- Function: the network role and function.
- Congestion: the level of congestion and ability to improve public transport travel time reliability.
- Public transport priority and previous studies: findings in terms of previous studies, including public transport priority.
- Integration of land use planning: ability to better integrate higher residential densities and mixed use to support public transport networks.
- Public transport frequency: ability of Corridor to improve public transport frequency.
- Targeting 'wider people movement task': ability to capture the wider people movement task, eg not just focusing on commuter task.

Based on this review, it is recommended that Main Road should be the focus of the Transit Corridor investigation for the following reasons:

- The Brooker Highway is not a suitable Transit Corridor, as it is Hobart's key urban highway with a high freight and car based passenger function, as opposed to a core public transport route.
- The rail corridor has been the subject of four separate studies that have assessed the potential role of the corridor for public transport. The work completed to date suggests that the capital costs of refurbishing the rail corridor may outweigh the potential benefits of using the corridor. While further time could be invested in analysing less direct benefits in greater detail, this course of action would only be a priority if it was clear that the rail corridor was the only Transit Corridor option in the Northern Suburbs and that such work would materially improve the business case for the rail corridor.
- Main Road is an existing public transport route with a higher proportion of the population within walking distance of the corridor than other corridor options. It also contains major trip attractors and is integrated with surrounding land use patterns, such as high residential densities and mixed use.
- The development of a Transit Corridor on Main Road is also likely to have significantly lower infrastructure and service delivery costs than implementing other options on the rail corridor.

- In spite of the high public transport numbers and frequency, no serious analysis has been undertaken of what the Main Road can potentially deliver as a genuine Transit Corridor. Regardless of the ultimate decision on the rail corridor, public transport services will be likely to continue to be required from Glenorchy to Hobart via Main Road.

For further details see High level review of Corridor Options (http://www.dier.tas.gov.au/passenger_transport/transit_corridors).

The Light Rail Business Case for the Northern Suburbs was completed in August 2011. It found that the operating and capital costs of a light rail system could deliver a net benefit to the community only when a very strong 'sparks' effect of rail is assumed to influence patronage.

The proposal was forwarded to Infrastructure Australia in November 2011, to inform it of the work completed to date and to open a dialogue on potential development options. As part of the Infrastructure Australia proposal process, alternative options for delivering public transport in the Northern Suburbs need to be considered.

The development of the Main Road Transit Corridor Plan will provide a means of demonstrating this, by focusing on the comparative merits of improving the existing public transport system on Main Road.

The Tasmanian Government is commissioning a peer review of the Light Rail Business Case. The peer review will examine the methodology and assumptions used in the Business Case to determine whether the approach was consistent with the requirements of Infrastructure Australian and whether all material benefits were identified and quantified. The review is expected to be completed in late 2012.

Following completion of the Peer Review, and the Main Road Transit Corridor Plan, the Tasmanian Government will be in a position to determine its long-term vision for passenger transport priorities in Hobart's Northern Suburbs.

Main Road Transit Corridor improvement options

The Main Road Transit Corridor Project is currently in the second stage (Stage Two), which is the identification and analysis of options to improve the Main Road Corridor. It is anticipated that Stage Two – Corridor Improvements Report will be finalised in November 2012.

Strategic option assessment

As part of Stage Two, a strategic option assessment was undertaken of options identified in the Options Generation workshop (held with stakeholders June 2012) that were high and medium scoring.

This strategic option assessment enabled the Main Road Transit Corridor Project to move from a longer list of options to a shorter list of potential solutions. Options were assessed using the following selection criteria:

- Strategic policy fit: in terms of alignment with State strategic plans and the Transit Corridors Project objectives.
- Ability to address identified Corridor problems and Transit Corridors Project outcomes.
- Whether the option required a change to the Corridor or the whole transport system.
- Community acceptability.

- Ease of implementation.
- Planning and development costs.

Options identified for further investigation are currently undergoing a detailed option assessment. The detailed option assessment provides a description of the proposed option, and an assessment of the economic and social value. This assessment is essential in understanding how potential solutions will achieve the Transit Corridors Project objectives. Some options will be analysed in more detail to determine the impact on travel demand, benefits and cost estimates.

Not all options have been assessed at this stage. It is envisaged that options such as increased frequency and temporal span would be funded by the Tasmanian Government as they require on-going recurrent funding. The purpose of this submission is to seek funding for infrastructure options, which have one-off capital costs and that have already undergone the detailed option assessment.

Other options to target reliability and to improve access and connectivity that were assessed as part of the strategic option assessment are detailed in the following pages:

Figure 1 Reliability and access and connectivity improvements option assessment

PROPOSED OPTION	STRATEGIC POLICY FIT	TARGETS IDENTIFIED PROBLEMS AND PROJECT OUTCOMES	SYSTEM WIDE APPROACH VS CORRIDOR SPECIFIC	COMMUNITY ACCEPTABILITY	EASE OF IMPLEMENTATION	PLANNING AND DEVELOPMENT COSTS	FURTHER INVESTIGATION
Reliability improvements							
Bus priority measures Identification of bus priority measures to improve travel time reliability for buses including investigation of: • Signal operations and priority. • Lane management, eg bus lanes, full/part-time. • On-street car parking management. • Use of alternative corridors.	**Score: 5** Strategic Plans: • Tasmanian Urban Passenger Transport Framework (Moving People). • Draft Hobart Passenger Transport Network Plan (passenger transport priority measures). • Southern Integrated Transport Plan (investigate and implement bus priority measures within Greater Hobart). Project objectives: • Improving reliability. • Making better use of existing infrastructure (sharing road space, targeted upgrades, use of non-infrastructure solutions).	**Score: 5** Targets reliability by improving travel time for buses on the Corridor through better use of road space and bus priority measures. Will lead to improved reliability and reduced green house gas emissions though encouraging greater use of public transport.	Corridor specific	**Score: 3** Very acceptable to passengers. Car users may have concern about sharing road space.	**Score: 3** Requires identification of bus priority measures, modelling and construction of measures. Requires consultation with local businesses and residents if car parking spaces are required to be removed.	**Score: 3** Requires planning and construction of bus priority measures. Short-term measures would generally be low cost, medium term options may be more expensive.	Further investigation
Bus stop optimisation Optimising the number of bus stops along the Corridor to improve travel time reliability.	**Score: 3** Strategic Plans: • Southern Integrated Transport Plan (improve travel time reliability on key urban corridors). • Draft Hobart Passenger Transport Network Plan (bus stop amenity, information and appearance, including rationalisation). Project objectives: • Improving reliability.	**Score: 3** Targets reliability by reducing the number of bus stops along the Corridor. Will lead to improved reliability and reduced green house gas emissions though encouraging greater use of public transport.	Corridor specific	**Score: 3** Passengers may have concerns about walking further to bus stops, however their in-bus travel time will be reduced.	**Score : 4** Requires identification of bus stops to be removed or relocated. Consultation required with local residents. Needs to occur in conjunction with bus stop upgrades and bus priority measures.	**Score: 5** Low cost. Requires funding for consultation and removal costs. Some bus stops will be consolidated which requires construction of a new stop.	Further investigation
Removal of Corridor diversions Removing diversions from the Corridor which result in travel time delays eg Springfield Depot, investigating CBD one-way street network.	**Score: 4** Strategic Plans: • Southern Integrated Transport Plan (improve travel time reliability on key urban corridors). Project objectives: • Improving reliability. • Ensuring public transport routes are easy to understand and consistent.	**Score: 5** Targets reliability by removing Corridor diversions in order to make travel time savings. Will lead to improved reliability and reduced green house gas emissions though encouraging greater use of public transport.	Corridor specific	**Score : 5** Very acceptable to passengers.	**Score: 3** Removal of Springfield Depot inward diversion requires development of new inward bus stop. Diversions in the CBD requires longer term planning and needs to align with future plans for the Hobart CBD network and Hobart CBD bus interchange project.	**Score: 3** Removal of Springfield Depot inward stop requires construction of a new bus stop. CBD diversions may require planning and construction costs.	Further investigation
Managing peak travel demands Investigate mechanisms to redistribute demand during peak travel times to create peak spreading and reduce congestion including: • Staggered work and school hours. • Flexible work arrangements. Fare pricing (cheaper travel during non-peak hours).	**Score: 3** Strategic Plans: • Southern Integrated Transport Plan (manage travel demand and influence travel choice in peak periods). Project objectives: • Improving reliability.	**Score: 3** Targets reliability by reducing demand and therefore congestion during peak travel times. Will lead to improved reliability during peak travel times for public transport by redistributing demand.	Metropolitan level, measures such as staggered school and work travel times, flexible work arrangements and fare pricing would need to be implemented at a metropolitan level.	**Score: 3** Some members of the community, workplaces and schools may be reluctant to change their travel patterns and hours of operation.	**Score: 3** Would require extensive consultation with the community, schools and workplaces in terms of changing hours of operation.	**Score: 4** Generally low cost to implement.	No further investigation Does not apply specifically to the Transit Corridor, would need to be investigated as part of a metropolitan measure.
On-board bus improvements Investigation of on-board bus improvements to increase reliability: • Accessible services to make passenger boarding faster. • Changed boarding practices: passengers only alighting from the rear door, reducing dwell	**Score: 2** Strategic Plans: • Disability Standards for Accessible Public Transport. Project objectives: • Improving reliability.	**Score: 2** Targets reliability by reducing dwell times at bus stops. Will lead to improved reliability by reducing dwell times at bus stops.	Changes would need to be implemented at the metropolitan level, as differing on-board bus practices by Corridor would be confusing for passengers.	**Score:3** Introduction of accessible services would be very acceptable to the community particularly older people, people with prams and people with disabilities. Changing boarding practices would be confusing to the	**Score: 3** Changing boarding practices may be difficult to achieve. Introduction of cashless buses would require a higher uptake of Greencard (currently 50%), before it is likely to be successful. Buses will not be entirely cashless as a key feature of	**Score:3** The cost of purchasing new buses is very expensive. Introduction of cashless buses would require introduction of ticket machines which were linked to the INIT system.	No further investigation Metro already has a requirement to ensure 55% of services are accessible by 2012 and all services must be accessible by 2022. Implementation of cashless buses may be premature at this stage, until a higher level of uptake of

times. Cashless buses: greencard boardings only during peak travel times.				community. Cashless buses may be unacceptable to the community.	Greencard is the ability to 'top up' on the bus.		Greencard is achieved. Suggest that an option be pursed under fares and pricing to encourage Greencard use.
Access and connectivity improvements							
Better bus stop infrastructure Upgrade of bus stop infrastructure and information.	**Score: 5** Strategic Plans: • Tasmanian Urban Passenger Transport Framework (Moving people). • Draft Hobart Passenger Transport Network Plan (bus stop amenity, information and appearance). • Southern Integrated Transport Plan (identify and improve priority bus stops). • Tasmanian Walking and Cycling Active Transport Strategy (improved infrastructure and facilities that support walking and cycling). Project objectives: • Improving access to activity centres and key trip generators. • Making better use of existing infrastructure (sharing road space, targeted upgrades, use of non-infrastructure solutions).	**Score: 5** Targets poor quality bus stop infrastructure by upgrading bus stops. Will lead to lower greenhouse gas emissions by encouraging public transport use, through better supporting infrastructure.	Corridor specific	**Score: 4** Very acceptable to passengers. Local residents and business may have concerns about upgraded bus stops close to their properties.	**Score: 4** Requires development of bus stop hierarchy and infrastructure needs. Planning and construction of bus stop upgrades, including bus stop facilities audit. Needs to occur after bus stop optimisation and align with bus priority treatments.	**Score: 3** Requires construction of new bus stop infrastructure, which although low cost can be costly due to the number of bus stops along the Corridor.	Further investigation
Better pedestrian connections to major bus stops and activity centres Improved connectivity through targeted infrastructure upgrades or signage.	**Score: 5** Strategic Plans: • Tasmanian Urban Passenger Transport Framework (Moving legs). • Southern Integrated Transport Plan (creating a more supportive transport system for pedestrians and cyclists). • Tasmanian Walking and Cycling Active Transport Strategy (improved infrastructure and facilities that support walking and cycling). Project objectives: • Improving people's access to activity centres and key trip generators. • Making better use of existing infrastructure (sharing road space, targeted upgrades, use of non-infrastructure solutions).	**Score: 4** Targets low levels of public transport use and poor quality bus stop infrastructure by improving pedestrian connections to bus stops. Will create healthy, active communities by encouraging walking and use of public transport.	Corridor specific	**Score: 5** Very acceptable to passengers and pedestrians.	**Score: 4** Requires assessment of pedestrian connectivity and planning and construction of infrastructure upgrades.	**Score: 4** Requires construction of pedestrian infrastructure, which is predominantly low cost.	Further investigation

Scoring framework:

How well does the option align with Strategic Plans and project objectives?
- Measured on a scale of 1-5, where 1 was poorly addresses the objective and perfectly addresses the objective.

How well does the option address the identified problems on the Corridor?
- Measured on a scale of 1-5, where 1 was poorly addresses the problems and perfectly addresses the problems.

Does the option require a change to the Corridor or the whole system?
- No scoring, provides an indication of what level change needs to occur at.

How acceptable will the option be to the community?
- Measured on a scale of 1-5, where 1 was unacceptable and 5 was embraced.

How easily will the option be implemented?
- Measured on a scale of 1-5, where 1 was very difficult to implement and 5 was very easy to implement

How expensive is the option to implement, both in terms of the level of planning and development?
- Measured on a scale where 5 is very expensive to implement and was 5 was cheap.

The preferred option

Bus priority measures (short term)

Bus priority improvements have been investigated on the Main Road Corridor through external consultants. A range of bus priority measures were considered as part of the detailed options assessment including:

- Bus lanes: continuous, set-back, queue jump, transit lanes.
- Traffic signal priority: bus early start, bus phase, extended green time, phase actuation, GPS based signal priority, bus bays and left-turn slip lanes.
- Alternative routes: re-routing via Argyle Street and the rail corridor.
- Bus stop optimisation: reducing the number of bus stops.
- Bus stop improvements: improving bus stops in terms of improving draw-in and draw-out length and extension of bus zones.

The following short term bus priority treatments have been recommended:

Figure 2 Summary of short term bus priority measures for Nation Building 2 Funding

Location	Recommended Treatment	Objective	Further Investigations Required
Springfield Avenue / Derwent Park Road	Install new inbound bus stop on Main Road	Reduce travel time for inbound services	Detailed design (including Metro forecourt area)
	Inbound bus queue jump lane B phase (bus early start)	Improve egress from proposed new bus stop	Intersection modelling Detailed design
Hopkins Street	Remove parking spaces on departure side of intersection (outbound)	Allow buses to remain in left lane through signals	Consultation Intersection modelling
Albert Road	Remove parking spaces on departure side of intersection (inbound)	Allow buses to remain in left lane through signals	Consultation Intersection modelling
	Inbound approach lane allocation	Bus priority approaching signals	Consultation Intersection modelling
	Ban southbound right turns into Albert Road	Reduce congestion	Consultation Intersection modelling
Creek Road	Outbound approach lane allocation	Bus priority approaching signals	Consultation Intersection modelling
	Part time parking restrictions opposite Bromby Street	Improve traffic flow Improve access to bus priority lane	Consultation
Risdon Road	Parking restrictions and outbound approach lane allocation	Bus priority approaching signals	Intersection modelling Detailed design Consultation
	Inbound bus lane	Bus priority approaching signals	Intersection modelling Detailed design Consultation

Location	Recommended Treatment	Objective	Further Investigations Required
Cross Street	Remove parking spaces opposite intersection	Reduce congestion caused by right turning traffic	Consultation
Roope Street	Remove or relocate pedestrian refuge away from bus stop	Allow traffic to pass stopped bus	Detailed design
Augusta Road	Outbound bus lane (queue jump)	Bus priority approaching signals	Intersection modelling Detailed design
Federal Street	Right turn signal phases at Federal / Argyle and Federal / Elizabeth	Improved access around North Hobart	Intersection modelling Detailed Design
North Hobart	Extend outbound bus stop	Improve bus stop capacity	Detailed Design Consultation
	Install new inbound bus stop	Reduce bus dwell times	Detailed Design Consultation
Burnett Street	Outbound approach lane allocation	Bus priority approaching signals	Consultation Intersection modelling
	Remove parking on departure side of intersection (outbound)	Allow buses to remain in left lane through signals	Consultation Intersection modelling
Collins Street	Remove parking spaces	Reduce congestion from overflowing right turn bay	Consultation

The bus priority measures include treatments at 12 separate locations. A total of approximately 20 on-street car parking spaces will need to be removed for the whole Corridor. This does not include car parking restrictions along New Town Road between Tower Road and Risdon Road (predominately residential development with adequate off-street parking) and part-time parking restrictions opposite Bromby Street.

The location of the bus priority measures is shown at Attachment C.

A micro-simulation model was developed for Main Road from Burnett Street to the Springfield Depot. The model assessed the current traffic conditions against the proposed bus priority measures. This approach allowed a point of comparison to be made between the existing situation and what is proposed.

The results from the analysis are shown below for the current year (2012) and for estimated future traffic conditions (2022).

Figure 3 Travel times from Burnett Street to Springfield Depot (mm:ss)

	2012				2022			
	AM		PM		AM		PM	
Direction	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
Outbound								
Bus	18:39	14:43	17:44	16:14	21:27	16:31	15:02	14:58
Other Vehicle	10:51	09:42	11:47	11:18	12:26	10:59	10:08	10:02
Inbound								
Bus	18:23	15:12	16:24	14:27	20:15	17:04	15:56	13:46
Other Vehicle	10:17	09:35	09:12	09:06	11:25	10:47	09:00	08:50

The model indicates that the proposed changes may result in decreases in travel time for buses and other vehicles in both AM and PM peak periods in 2012 and 2022.

The decrease in travel time for other vehicles travelling inbound is primarily due to the right turn ban proposed at Albert Road, Moonah. The decrease for other vehicles travelling outbound is due to a minor increase in green time for through movements on New Town Road, at the intersections of Risdon Road and Creek Road.

The modelling also indicates that bus reliability improves with the proposed bus priority measures. Variations in bus travel times between the Springfield Depot and Burnett Street reduced by an average of 37 seconds. This is due to the reduced number of bus stops, which can cause delays in terms of passenger boarding and alighting and merging in and out of traffic. The bus priority measures also result in less travel time variability due to buses not been delayed by traffic at key intersections.

Travel time data was used to determine the effects of the proposed changes to the whole Transit Corridor (Hobart CBD to Glenorchy) with 2012 traffic volumes. The time savings from the micro-simulation model, plus a 10 second saving for each bus stop proposed for removal outside of the micro-simulation model study area were applied to the overall travel times, as shown below.

Figure 4 Bus Travel Times for the whole Transit Corridor (mm:ss)

	Existing Travel Time	Estimated Travel Time	Savings
AM Peak – Inbound	31:19	27:28	3:51
AM Peak - Outbound	20:29	15:43	4:46
PM Peak – Inbound	31:43	29:06	2:37
PM Peak - Outbound	28:32	26:12	2:20

Figure 4 shows that over the whole eight kilometre journey, buses can obtain travel time savings of between 12 percent (inbound) and 23 percent (outbound) in the AM peak and eight percent in the PM peak.

Depending on the success of the short-term bus priority measures, the following measures could be considered in the medium to longer term:

- Bus lanes: queue jump for lanes at key intersections in the medium-term. In the longer term set-back bus lanes for parts of or for the entire Corridor. Continuous bus

lanes are unlikely to be achievable without significant road widening and property acquisition.

- Traffic signals: extended green time and/or GPS-based signal priority treatments.
- Alternative routes:
    - Re-routing of Argyle Street. This option is not considered viable at this time due to the one-way street network. It could only be considered with conversion to a two-way network. Re-routing would also need to consider land use change along Argyle Street.
    - Re-routing via the rail corridor. The potential re-use of the rail corridor remains a future option for the Northern Suburbs public transport network. Options including light rail or bus rapid transit have been previously examined.

The proposed short-term bus priority measures are presented as concept only. More detailed planning is required to optimise the effect of the recommended treatments and resolve any outstanding issues. Further investigations that will be required include:

- Detailed survey of delays to buses to ensure treatments effectively target real delays not just perceived delays.
- Additional traffic modelling: confirmation of queue lengths at intersections where bus priority measures are being considered on approach to signalised intersections. It is critical that the length of any bus priority measure on the approach to an intersection is sufficient that a bus will be able to bypass any recurring queuing or congestion. Allowance is also required for future traffic growth.
- Stakeholder Consultation: with the Hobart and Glenorchy City Councils (road owner and planning authority) and the local community (including businesses). This will be particularly critical where changes to on-street parking availability are proposed, due to the sensitivities that commonly surround this issue. Initial consultation has taken place at an officer level, but not with the Alderman.
- Review Council car parking data to assess whether capacity exists in surrounding road network to cater for small loss of on-street car parking.
- Detailed design; preparation of detailed design for construction works.

There is a risk that the concept of the short-term bus priority measures could change based on additional modelling and stakeholder consultation. The Tasmanian Government does not own the Main Road Corridor, therefore both Councils' acceptance of the bus priority measures is crucial.

Bus priority measures (medium term)

Funding is sought from Nation Building 2 to assess options to reduce the diversion from the Main Road Corridor caused by the one-way street network in the Hobart CBD. This is considered a medium-term option because of the complexity of making changes to the CBD network and the flow on affects to key arterial roads (Macquarie/Davey Streets). In addition changes to the CBD network cannot be considered in isolation from other projects. These include the Hobart CBD Bus Interchange project (see separate submission) and the Hobart City Council's implementation of the Inner City Action Plan, which incudes investigation of reversing the one-way street network within the CBD. Both these projects are in the early planning phase.

Preliminary modelling indicates that conversion of Argyle Street to two-way, in isolation from other streets, will increase congestion on parallel routes. Delays are reduced if other CBD streets are converted to two-way operation, but the delays are generally greater than if the existing one-way street network were to be maintained.

Therefore other options will need to be developed, and modelled, to determine how travel time reliability in the CBD can be improved for buses. These could include:

- Bus lanes.
- Introduction of contra-flow lanes.

Bus stop optimisation (short term)

The location and number of bus stops along the Main Road Corridor has been reviewed. The review recommended a target average distance between stops should be set for 400 metres.

The recommendations are as follows:

- Net reduction of nine inbound stops and eight outbound stops.
- Relocation of two inbound stops.
- Consolidation of four outbound and four inbound stops to provide two outbound and two inbound stops.

As part of the bus stop optimisation process, consultation needs to occur with Metro Tasmania and the local community. Metro Tasmania has given in-principle support of the bus stop optimisation review recommendations. Consultation is required with the adjacent residents and businesses that may be affected by the relocation of bus stops as well as the broader community.

The potential travel time savings from the reduction of bus stops has been included in the overall travel time savings for the Main Road Corridor, discussed under the short-term bus priority measures.

Bus stop upgrades (short term)

As part of the bus stop optimisation review, a bus stop hierarchy was developed. The hierarchy outlined the minimum level of infrastructure and information provisions to be provided at the various stop types. Not all bus stops in the Main Road Corridor will require the same infrastructure. The type of infrastructure required will depend on a number of factors, including the patterns of boarding and alighting, surrounding land uses, and the specific locations of the stops. For example, inward stops close to the Hobart CBD serve predominately as passenger alighting stops. They therefore have minimal infrastructure requirements in terms of shelter and information etc.

For the Main Road Corridor, bus stops have been classified as either a major stop or a minor stop (excluding the two bus malls at Hobart and Glenorchy).

Funding is sought to upgrade bus stops, based on the hierarchy identified above. Before bus stop upgrades proceeds, the following steps are required:

- Undertake a detailed inventory of existing facilities at each stop. This will also include site-specific conditions, including safety and security arrangements, and the suitability of existing facilities (e.g. shelters, seating, rubbish bins etc).
- Through the inventory, a full list of the required upgrades can be developed. The inventory will also assist in the prioritisation of works, taking into account existing conditions, the extent of upgrades required, and the type of stop.

Summary of overall funding required

Funding is sought for the following reliability and access and connectivity improvements:

- Implementation of short-term bus priority measures, including removal of Springfield Depot diversion and construction of new inward bus stop, as described in Figure 2 (scoping, development and delivery).
- Planning of medium-term bus priority measures in the Hobart CBD (scoping and development).
- Bus stop optimisation and bus stop upgrades (scoping, development and delivery).
- Planning for an additional three Transit Corridor Plans in Greater Hobart (scoping).

Estimated program

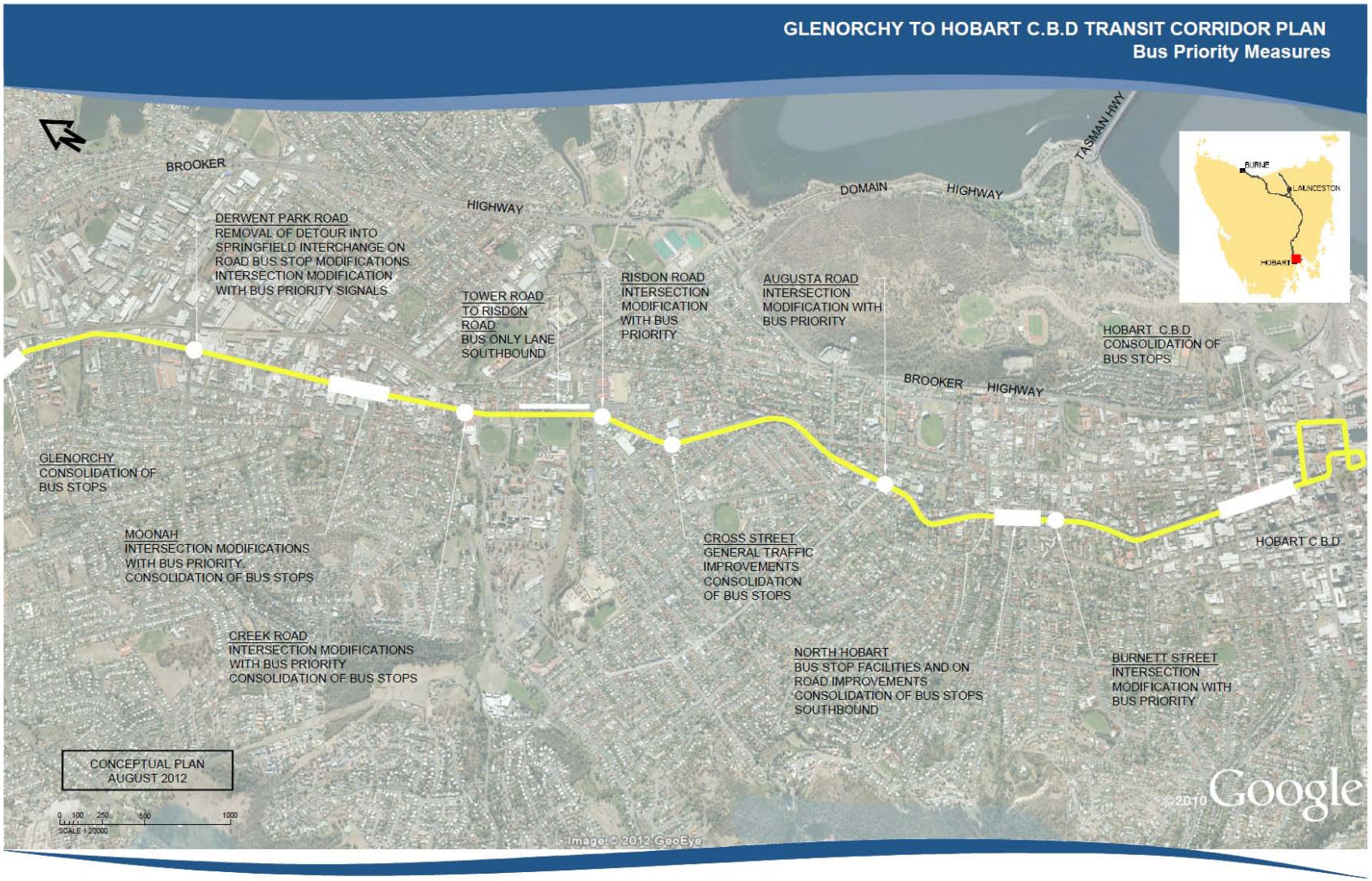
The estimated program for the short term bus priority and bus stop optimisation and upgrades works is as follows:

- Scoping: 360 days.
- Development: 190 days.
- Delivery: 100 days.

See Attachment D for the Transit Corridors Project timeframes (early start).

An early start is proposed (March 2013) as 360 days has been allocated to stakeholder consultation, which will occur during the Scoping Phase. This will ensure delivery can occur in 2015.

Appendix 1 – Maps


GLENORCHY TO HOBART C.B.D TRANSIT CORRIDOR PLAN
Bus Priority Measures
BROOKER
HIGHWAY
DOMAIN
HIGHWAY
TASMAN HWY
BURNIE
LAUNCESTON
HOBART
DERWENT PARK ROAD
REMOVAL OF DETOUR INTO SPRINGFIELD INTERCHANGE ON ROAD BUS STOP MODIFICATIONS. INTERSECTION MODIFICATION WITH BUS PRIORITY SIGNALS
TOWER ROAD TO RISDON ROAD
BUS ONLY LANE SOUTHBOUND
RISDON ROAD
INTERSECTION MODIFICATION WITH BUS PRIORITY
AUGUSTA ROAD
INTERSECTION MODIFICATION WITH BUS PRIORITY
HOBART C.B.D
CONSOLIDATION OF BUS STOPS
BROOKER HIGHWAY
GLENORCHY
CONSOLIDATION OF BUS STOPS
MOONAH
INTERSECTION MODIFICATIONS WITH BUS PRIORITY
CONSOLIDATION OF BUS STOPS
CROSS STREET
GENERAL TRAFFIC IMPROVEMENTS
CONSOLIDATION OF BUS STOPS
HOBART C.B.D
CREEK ROAD
INTERSECTION MODIFICATIONS WITH BUS PRIORITY
CONSOLIDATION OF BUS STOPS
NORTH HOBART
BUS STOP FACILITIES AND ON ROAD IMPROVEMENTS
CONSOLIDATION OF BUS STOPS SOUTHBOUND
BURNETT STREET
INTERSECTION MODIFICATION WITH BUS PRIORITY
CONCEPTUAL PLAN
AUGUST 2012
0 100 250 500 1000
SCALE 1:20000
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