Riverline

Department of Infrastructure, Energy and Resources

Riverline – Hobart Light Rail Strategic Assessment

March 2014

pwc

Tasmanian Government

Contents

1 Executive summary

PwC has been engaged by the Department of Infrastructure, Energy and Resources to prepare this strategic assessment of a potential light rail line to improve transport options in Hobart's northern suburbs.

Current situation

Hobart is a capital city experiencing moderate population growth. The city has a diversifying economic base and is centralising services and activity in the CBD core (health and education in particular). Greater Hobart has a larger geographic footprint than Manhattan but only 13 per cent of the population. The spread out (sub-urban) nature of the city at very low density makes providing quality mass transit expensive and uncompetitive in terms of travel time. It also means that the population is highly dependent on cars for meeting their daily travel needs.

This car dependence has the potential to lead to social exclusion of people who do not have access to a vehicle, it reduces the productivity of the local economy (as high vehicle capital and operating costs are largely sent off-shore) and it makes the community vulnerable to potential economic shocks (such as petrol price rises).

A *Southern Tasmanian Regional Land Use Strategy* has been developed to manage change, growth and development over the next 25 years. The document reflects an agreement between the Tasmanian government and five local councils to constrain geographic spread of the metropolitan area and to concentrate or intensify activity in the CBD and specific areas with high quality transport. The government has also invested in the development of H30 – *Hobart Capital City Plan 2011 – 2040* (draft form at the time of this submission) which has been released for public comment.

The intensification of key corridors and nodes is the most efficient way to make public transport competitive in terms of meeting everyday transport needs. It will also provide greater choice for the Hobart population in terms of housing stock and transport options. For example people who do not want a large back yard, or do not want to drive (particularly younger and older people) in many cities prefer to live in more dense urban environments with a wide range of services within walking distance of home.

However, intensification will generate increased travel demand to these locations, which given the car dependent nature of Hobart has the potential to generate increased traffic congestion (particularly in the short to medium term). This potential traffic congestion would reduce the attractiveness of the nodes and corridors and stifle potential development.

Improving public transport services along corridors and between nodes is possible using the existing bus network. Topographic constraints mean that buses will continue to be the main form of public transport in Hobart for the foreseeable future. This is particularly relevant in the east and south where the Derwent River and hilly terrain make buses the most cost effective and efficient mode of transport. However as bus use increases and Hobart CBD intensifies, bus congestion will reduce the efficiency of the system.

Hobart's northern corridor has an existing railway line which is currently used for freight services which will cease in mid-2014. This presents an opportunity to use the existing rail corridor for passenger transport which could improve both perceived and actual travel time for some travellers in the corridor (dependant on station locations and operating configuration).

Project objective

The main objective of this project is to improve transport options in metropolitan Hobart which in turn is expected to increase public transport mode share, reduce congestion in Hobart CBD, enabling an intensification of activity within the CBD and making the Hobart economy more productive. There are secondary objectives related to social inclusion and meeting the transport needs of an ageing population.

The problem that Hobart currently faces is one of a dispersed population that is very difficult to serve with public transport (of any form). Only in corridors where there is significant density of journey origins and destinations

(such as Sullivan's Cove to MONA or Hobart CBD to University of Tasmania) can public transport routes be cost effective and efficient (as they need a critical mass of demand).

Options

There are a range of potential options (including provision of light rail) which would help solve these problems. The options can be categorised as being policy, governance, operational and infrastructure based. The greatest impact is likely to come from a holistic approach that implements improvements in all categories. For example ensuring that land use policy is aligned with governance changes and operational changes related to existing public transport services is essential to gaining the outcomes predicted to arise from the light rail option.

Constructing a new piece of public transport infrastructure (such as a light rail line) will attract attention and generate some interest in the options for intensifying activity in the corridor. However, without a wide range of other interventions (policy, governance and operational) the interest is unlikely to convert into action (in terms of increased development).

Each option investigated in this report goes some way to supporting the intensification of activity in the northern Hobart corridor and Hobart CBD. This will relieve pressure from other more car dependent corridors and nodes and help to reduce overall reliance on car transport in Greater Hobart. The options also help to build the case for light rail in that they will generate greater demand for public transport, while protecting the rail corridor for future use. Examples of the high priority options include:

Policy

- Dispersed land use and out-of-centre trip generating activities have a significant negative impact on transport efficiency. It generates externalities for the community in the form of congestion, higher road maintenance costs, reduced cost recovery on public transport and isolation of members of the community. There is a need to rebalance the transport and land use development priorities which are distorted by the relative ease and low cost of developing land in peri-urban/semi-rural tree-change and sea change locations. This could take the form of differential rates (at a local level) or growth area infrastructure charges (at a State level).
- Pricing road use and parking appropriately to take account of the broader economic costs and provide a funding stream for transport improvements.

Governance

- Review land use planning controls (currently underway) to better align with strategic intent and ensure the objectives of the Southern Tasmanian Regional Land Use Strategy can be met (particularly with regard to encouraging in-fill development and reducing sub-urban sprawl).
- Clarifying the role, network service standards and key performance indicators for Metro to operate a bus network that meets Hobartian's needs in the most efficient manner possible; and ensuring that urban fringe bus service contracts are efficient and meet agreed service standards.

Operations

- Achieving more efficient operations of metropolitan and urban fringe bus services through simplifying the existing network and providing more express bus services.
- Developing and implementing Transit Corridor Plans (including the Main Rd Corridor Plan) and reviewing the northern suburbs bus network to improve services and target specific customer needs.

Infrastructure

- Consider bus priority improvements in the northern corridor which could include the provision of improved bus stops; and bus priority measures that may include bus lanes and queue jump lanes to facilitate bus priority. Implement improved terminal facilities in the Hobart CBD.
- Develop a light rail line between Hobart and the northern suburbs, specifically between Franklin Square and MONA via Macquarie Point, Moonah and Glenorchy.

2 Proposal summary

Initiative Name:	Hobart Light Rail
Location (State/Region(or City)/ Locality):	Hobart, Tasmania.
Name of Proponent Entity:	Department of Infrastructure Energy and Resources
Contact (Name, Position, phone/e-mail):	To be advised
Description of Initiative:	

Provide a 2-3 paragraph description of the initiative and the capability it will provide. The description needs to provide a concise, but clear description of the initiative's scope.

Include two maps (in pdf format) showing the location of the proposal, one showing the broader area within which the initiative sits, and one showing the initiative in more detail.

As part of the submission, attach Geographic Information System data for the initiative (either in Mapinfo tab or mif format, or ESRI shape file or geo-database format), where available.

Hobart's 'suburban sprawl' has created a situation of car dependency which impacts most significantly on the socially disadvantaged, including the increasingly aged population.

The development of dispersed suburban and peri-urban settlements has resulted in a polycentric city, with Hobart CBD lacking the scale and diversity necessary to support strong economic development.

Providing light rail services on the northern suburbs rail corridor has the potential to reduce car dependency by:

- providing a high quality, frequent, reliable, fast public transport option; and
- Supporting better value land use through high density and mixed use development along the northern suburbs corridor.

Light rail would also stimulate denser mixed use development along the corridor in the activity centres of Glenorchy and Moonah and provide stimulus for development in the Hobart CBD to increase its scale and diversity, thereby improving Hobart's and Tasmania's economy.

The *Stage 1 Light Rail Business Case - Hobart to Glenorchy 2013* indicates that providing light rail services between Hobart and Glenorchy (with a stop at Moonah) augmented by feeder bus services is capable of delivering a Benefit Cost Ratio of 1.12.

An extension of the service to the iconic Museum of Old and New (MONA) would be likely to provide additional patronage, and the service could be later extended along the rail corridor as far north as Brighton.

There is a risk that the Hobart Light Rail project will not address the identified problems if

- Hobart's economic disadvantages such as lack of scale cannot be overcome by the initiative;
- Extant conditions favouring car use (such as availability of free/cheap parking, lack of reliable, fast public transport options, low density urban form) persist.
- Land use policies are not adjusted to encourage denser urban and mixed use development along the northern suburbs corridor.

Taking into account the risks outlined above and the relatively high cost of light rail, it is considered that in the short term (and as initial steps), the most cost effective way to begin to address the identified problems are to:

- Implement strategies to reduce 'urban sprawl' and increase urban density, particularly on key corridors. This will make it more cost effective to deliver high quality public transport services to a greater proportion of the population, thereby increasing access and reducing car dependency.
- Improve the quality of bus services on key corridors, which will increase public transport mode share.

Implementing these strategies (as set out more fully below) will create conditions that are more conducive to the financing and delivery of light rail and to the ultimate resolution of the problems of car dependency and Hobart's lack of economic scale. Light rail has high potential as a means of addressing the identified problems.

Accordingly, it is strategically appropriate for the efforts of Government and other stakeholders to be focused on creating the right conditions for the successful implementation and ongoing success of light rail on the corridor.

Highest value short term (first step) options for addressing the identified problems considered to be:

Land Use Planning Strategies

- Implementation of an urban growth boundary to facilitate a more sustainable urban form (in place)
- Encourage infill development (work completed to identify enablers and barriers) particularly along transit corridors, and with a high degree of focus on the northern suburbs corridor.
- Encourage intensification of employment hubs in Hobart and along the northern suburbs corridor, requiring cooperation between state and local government to attract business into these centres.
- Public Housing policies that focus on generating social and affordable housing close to employment opportunities, services and strong public transport corridors (in progress)
- Streamlining the development approval process for infill housing, thus lowering barriers for developers by minimising delays, and increasing certainty about such developments.

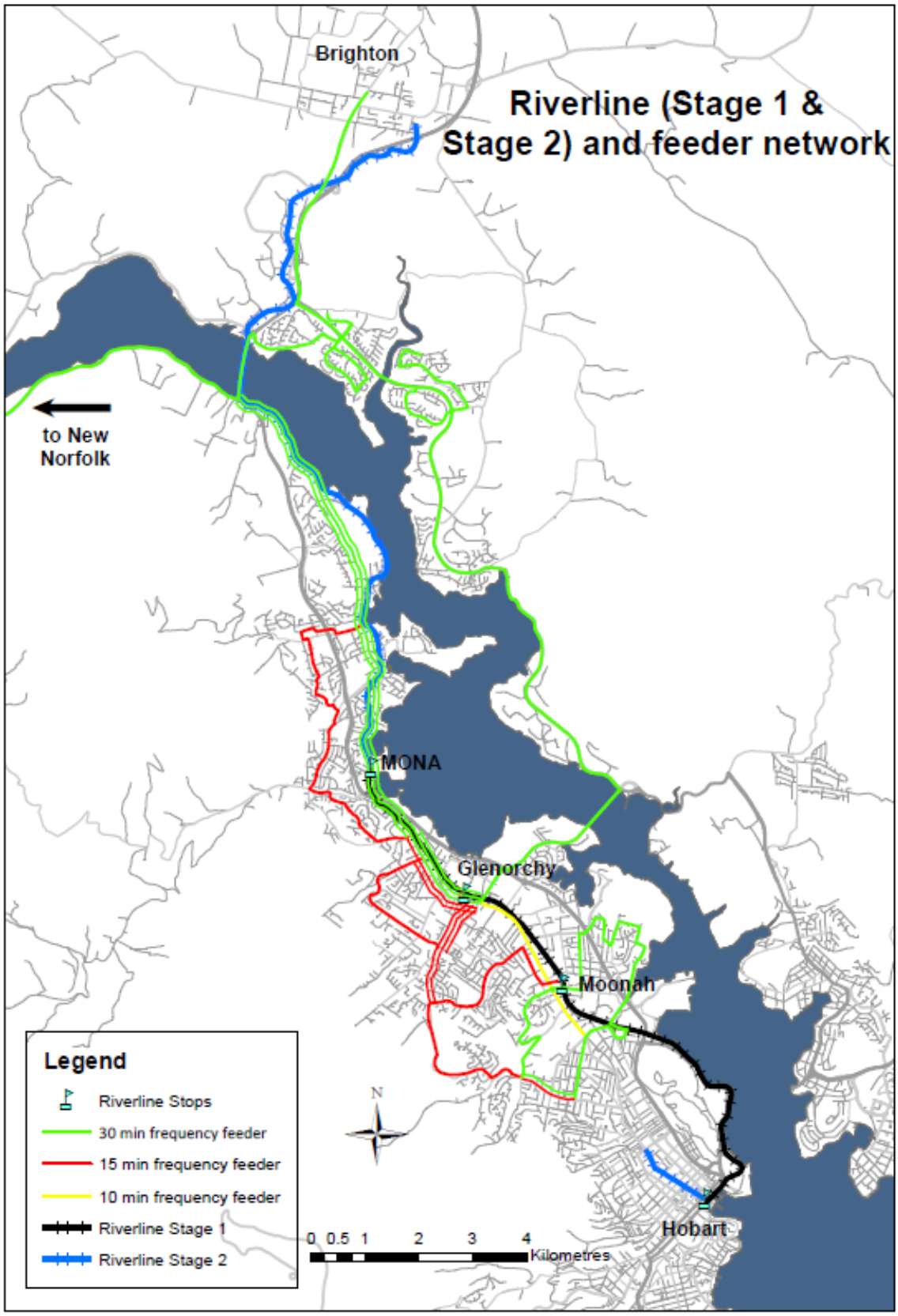
Governance

- Greater cooperation between the State and local governments in relation to land use planning to promote more sustainable land use (in progress).
- Greater cooperation between the State Government, the Hobart City Council and the University of Tasmania to bring a greater UTAS presence into the CBD with a view to invigorating the CBD (in progress)

Public Transport

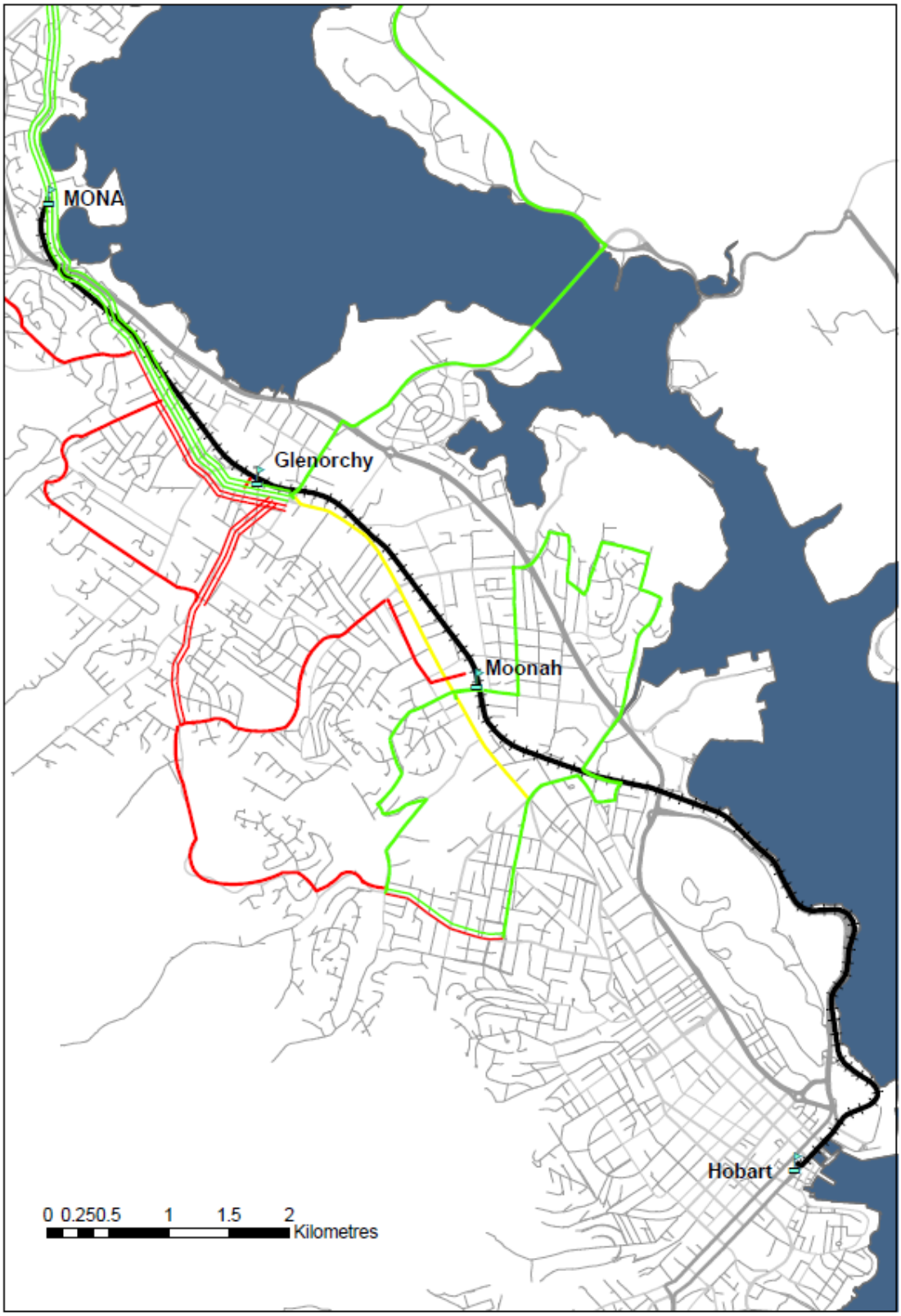
- Develop and implement public transport service standards to support more efficient provision of high quality public transport.
- Develop a simplified bus network to improve the quality of transport by focusing on high frequency corridor services, improved total journey times, reduced waiting times, and regular operation over a wide span of hours.
- Improved bus frequency on key corridors.
- Develop a 3-stop express bus service between Glenorchy/MONA and Hobart, including provision of bus priority measures, to provide a fast, reliable commuter service.
- Development of Transit Corridors (high frequency bus services along corridors, with higher density mixed use development) to make it easier for people to use public transport to access services, employment and education. In the northern suburbs this will assist in strengthening the corridor and building public transport demand, thus creating an environment for a genuinely effective investment in light rail.

Figure 1: Proposed Hobart Light Rail (All Stages) – including feeder bus system



Source: DIER 2014

Figure 2: Proposed Hobart Light Rail (Stage 1) – including feeder bus system



Source: DIER 2014

Theme alignment

- *With reference to Infrastructure Australia's themes, describe the strategic planning or decision-making task for which assessment against the Reform and Investment Framework is being undertaken e.g. Transforming [City X], Water Security for [ ], Developing the national energy market through [ ].*
- *Outline how the initiative could contribute to these themes and create national benefits.*

The project together with the suite of supportive policy, governance, operational and infrastructure improvements aligns with Infrastructure Australia's theme of "Transforming our Cities". It will concentrate activity in the CBD and northern corridor and support this through development of transport options in metropolitan Hobart – initially through existing modes. This is expected to increase public transport mode share, intensify activity within the CBD and make the Hobart economy more vibrant and efficient. There are secondary objectives related to social inclusion and meeting the transport needs of an ageing population.

It will also contribute to the achievement of the following strategic priorities:

- Strategic Priority 2: Increase Australia's productivity
- Strategic Priority 4: Build on Australia's global competitive advantages
- Strategic Priority 5: Develop our cities and/or regions
- Strategic Priority 6: Reduce greenhouse gas emissions
- Strategic Priority 7: Improve social equity, and quality of life.

The initiative aligns with the goals and objectives outlined in the:

- Tasmanian Urban Passenger Transport Framework
- Southern Tasmania Regional Land Use Strategy 2010-2035
- Glenorchy to Hobart CBD Transit Corridor Plan.
- H30 Hobart Capital City Plan (Draft)

Pipeline category nominated by proponent (please indicate one category only):	Early Stage
Capital Cost of Initiative by Proponent ($M, nominal, undiscounted):	Initial cost estimates for the total capital cost of Optimal Operating Service Model (OOSM) 1: $70.2M*. This estimate is based on standard gauge (2013) and will be revised during the planning and feasibility phase. **It should be noted that this capital cost estimate applies to the development of a light rail from the Hobart CBD to Glenorchy only.*
Commonwealth contribution sought by Proponent (if any), and outline cash flow in financial years – including any requests for project development funding ($M, nominal, undiscounted):	Planning and feasibility: NIL Total capital cost estimate: $70.2M (OOSM 1)
Other funding (source/amount/cash flow) ($M, nominal, undiscounted):	Commonwealth Government funding is required to fund this important infrastructure gap, which is unlikely to be filled by private sector financing models. The Tasmanian Government will investigate opportunities for private sector funding sources.
BCR by Proponent excluding Wider Economic Benefits	BCRs for OOSM 1: • Discount Rate (4 per cent) **1.58*** • Discount Rate (7 per cent) **1.12***

** Note that these BCR estimates apply to the development of a light rail from the Hobart CBD to Glenorchy only.*

High level development and implementation program

Show key steps, e.g. planning, the initiative's development, business case consideration, environmental approvals, procurement, and construction, with expected start and end dates.

- Initial business case developed in August 2011 (Hobart to Northern Suburbs (Claremont) Light Rail Business Case)
- Review of initial business case in December 2012 (Hobart Northern Suburbs Light Rail Business Case Peer Review)
- Stage 1 Light Rail Business Case (Hobart to Glenorchy) 2013

The Tasmanian Government is currently investigating the barriers and enablers to infill development in Hobart, with particular reference to the corridor. The report states that transport infrastructure should be leveraged in urban renewal locations that are in close proximity to existing or proposed public transport (rail, tram, bus).

Confidentiality

Indicate which part(s) of the submission have been submitted to Infrastructure Australia on a confidential basis, and provide a brief explanation of the reason(s) for the confidentiality request.

None

2.1 Structure of this submission

This document follows IA's template for stages 1 to 6:

- Proposal summary
- **Stage 1**: Goal Definition
- **Stage 2**: Problem Identification
- **Stage 3**: Problem Assessment
- **Stage 4**: Problem Analysis
- **Stage 5**: Option Generation
- **Stage 6**: Option Assessment.

The following terms are used through the report and refer to:

- *rail corridor* – the former (from 2014) freight rail corridor which runs from the Hobart CBD to Brighton
- *corridor* – the urban corridor north of Hobart which runs from the Hobart CBD to Glenorchy via Moonah and has potential for densification (Elizabeth Street, New Town Road, Main Road)
- *IASP* – Infrastructure Australia Strategic Priority

3 Stage 1: Goal Definition

Table 1: IA goal definition

Infrastructure Australia's approach to goal definition invites proponents to describe and map goals and objectives relevant to a proposed set of reforms and investments. In particular, it looks to focus on the alignment of goals and objectives across parties, and to identify other goals and objectives that might be affected by the options and initiatives that arise during later stages of the Framework.

Goal definition should result in a collection of clear statements, whether for a strategic planning or infrastructure decision-making task, that describe the fundamental economic, environmental and social goals that a proponent is looking to achieve. The key for the reform or investment decision-making task is to determine how it will contribute to these goals.

This goal-orientated approach aids in shifting decision-makers' focus towards the achievement of outcomes which can be delivered through a range of mechanisms, and away from decision making that is too readily directed towards investment oriented solutions.

Governments, industry and individual communities around Australia all have a shared interest in Australia's development. As such, they all express their own goals, aspirations and objectives for the nation, jurisdiction, locality and industry sector. If we are to work together rather than against each other, we need to understand how our goals and objectives are aligned at those various levels.

In practice, the high order goals adopted by governments often have a high degree of commonality, because they generally reflect broader economic, environmental and social aspirations. However, as the goals are translated into more specific objectives, the trade-offs between objectives (and, implicitly, the goals they support) become more apparent.

For example, several jurisdictions have published State level plans which set out the Government's high order goals and objectives. Most jurisdictions also have metropolitan planning strategies (although they may be described differently) which set out goals and objectives. In essence, Infrastructure Australia is looking to proponents – including private sector proponents - to demonstrate how their assessment of problems and initiatives is linked to these existing goals and objectives.

In addition, the options and preferred solutions which emerge during Stages 5 and 6 of the Framework may have implications for the attainment of other goals and objectives (i.e. outside the primary goal and objectives to which the task is directed). For example, a task to improve economic development prospects in a particular region through upgrading transport links may lead to increased pressure for new residential development which may in turn overstretch existing water resources (both for potable water and environmental flows). It is therefore important for all proponents to also be cognisant of other goals and objectives which may be indirectly affected by actions to address the primary goal and objectives.

This is consistent with Infrastructure Australia's mandate to consider infrastructure requirements across a range of infrastructure sectors including water, energy, telecommunications and transport.

The templates invite proponents to provide information setting out the alignment between a proponent's own goals and objectives and those of other governments and parties, whether at a national, State/Territory or local level. For example, Council of Australian Government processes are frequently used to establish nationally agreed goals and targets in various domains. For its part, Infrastructure Australia has set out its strategic priorities at a national level (see Table 2 below).

Infrastructure Australia would expect to see some alignment between a proponent's goals and objectives and those of other parties. This will help address a focus on jurisdictionally specific challenges, which is often a weakness of submissions.

3.1 Project goals and objectives

IA criteria addressed:

- *List the goal(s) that the initiative is seeking to address.*
- *List the objective(s) that the initiative is aiming to meet.*

The Hobart Light Rail proposal (HLR) seeks to improve economic, social and environmental outcomes in Hobart by providing a fast and reliable form of public transportation. More specifically, the proposal seeks to:

- Improve the economic performance of Greater Hobart by stimulating the growth in the scale and diversity of the Hobart CBD
- Improve social equity within Greater Hobart by:
  - Improving access options to the Hobart CBD for people who are ageing, the youth and people who have low incomes or are from a low socio-economic background.
  - Acting as the catalyst for denser development along the 'corridor' which will provide improved housing choice for all Hobartians.
- Reduce the environmental impact of travel in Hobart by providing a more sustainable form of transportation
- Improve the long term economic resilience of Hobart by reducing the city's car dependency (and hence susceptibility to climate change and oil price shocks) and by stimulating economic development in the innovation economy which will diversify Hobart's economic base.

3.2 Goal and objective alignment

IA criteria addressed:

- *List and provide sources for the higher and/or lower order goals such as those of a Nation/State/Region/City/other specific location with reference back to existing plans and strategies.*
- *List the higher and/or lower order objectives such as those of a Nation/State/Region/City/other specific location.*
- *Where available, outline the targets against these objectives, with references back to the documents where they originate from, e.g. 'State plans', planning strategies.*
- *Outline how the proponent's goals and objectives for the initiative align with higher and/or lower order goals and objectives of others.*

3.2.1 State Government and Greater Hobart goals and objectives

The HLR proposal draws on the goals and objectives of several Tasmanian State Government and Greater Hobart policies and strategies including the:

- Tasmanian Urban Passenger Transport Framework
- Southern Tasmania Regional Land Use Strategy 2010-2035
- Glenorchy to Hobart CBD Transit Corridor Plan.

These are discussed in Table 2 below.

Table 2: Alignment with State Government and metropolitan area goals

Strategy/ framework	Strategy/framework description and goals	Alignment with project goals
Tasmanian Urban Passenger Transport Framework, 2010	The Tasmanian Urban Passenger Transport Framework 2010 (the Framework) sets out future actions to develop the passenger transport system. The vision for the Framework is: *"A safe and responsive passenger transport system that supports improved accessibility, liveability and health outcomes for our communities in the context of the challenges of climate change"* The Framework is focused on improving outcomes in five priority areas: • Reducing emissions from the passenger transport sector, giving priority to infrastructure and travel modes with low carbon emissions. • Liveable and accessible communities, developing compact, connected communities that integrate with public transport corridors. • Travel reliability, by providing predictable journey times. • Healthy, active communities through the encouragement of active transport modes for shorter journeys. • Integrated transport and land use planning, to ensure land use and passenger transport decisions are aligned.	The Framework identifies the opportunity to reuse the existing Rail Corridor for passenger transport to deliver faster and more reliable travel times and to also encourage and support higher residential densities along the Corridor. The Framework identified this as part of a long-term strategy to improve the delivery of public transport services. The HLR proposal also aligns with the five priority areas in the Framework by: • Reducing emissions from road transport including both greenhouse gas emissions and other air pollutants by increasing the demand, for public transport (through mode shift from car) which is a low emission mode. • Providing an opportunity for transit-orientated development to occur around a high quality public transport corridor. • Providing a dedicated right of way passenger transport system, with reliable and predictable travel times. • Providing an opportunity for people to walk and ride as part of a public transport trip, either through accessing the light rail stations or using the feeder bus network. • Providing the means to ensure development of our existing urban areas is more sustainable and strongly supports the use of the public transport.

Strategy/ framework	Strategy/framework description and goals	Alignment with project goals
Southern Tasmania Regional Land Use Strategy 2010-2035	The Southern Tasmania Regional Land Use Strategy 2010-2035 (the Strategy) guides the direction for land use planning in Greater Hobart. The strategy outlines: • A 25 year infill development target within the Greater Hobart area of around 13, 900 dwellings in existing urban areas. The intent is to achieve a 50/50 ratio of greenfield to infill with the following targets: – Glenorchy City Council: 40 percent infill (5300 dwellings) – Hobart City Council: 25 percent infill (3312 dwellings) • A 20 year urban growth boundary. The Strategy targets the areas around the Main Road Transit Corridor and Primary Activity Centres (Glenorchy and Hobart CBD) for increased density to at least 25 dwellings per hectare (net density).	The HLR proposal aligns with the Strategy: • As the proposal will improve public transport along the corridor - it is in close proximity (200-400 metres) to the Main Road Transit Corridor between Glenorchy and Moonah and connects Glenorchy and the Hobart CBD. • By providing some of the conditions to facilitate transport oriented development, which will achieve a faster level of infill development around the proposed stops at Glenorchy and Moonah and complement the Macquarie Point Redevelopment site.
Main Road Transit Corridor Plan (Glenorchy to Hobart CBD) *[Developed subsequent to the Tasmanian Urban Passenger Transport Framework]*	The Main Road Transit Corridor Plan evolved from the Tasmanian Urban Passenger Transport Framework which 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 corridors which connect to the Hobart CBD. The overall project objective 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. The project outcomes which are consistent with higher level outcomes outlined in the Tasmanian Urban Passenger Framework Passenger Framework.	The proposed project aligns with the Transit Corridor Plan's objective of *providing high quality public transport corridors and services in urban areas to encourage and support modal change* by: • Improving public transport (PT) reliability, efficiency and frequency. • Relieving potential congestion arising from more buses running along the corridor • Acting as a catalyst to achieve faster levels of infill development • Providing a higher quality public transport services • Reducing transit times for key market segments • Providing high quality high visibility PT options.

The HLR proposal also aligns with the goals and objectives of *Draft H30 – Hobart Capital City Plan*, which includes a number of existing planning policy frameworks and has been released for public comment. The proposed project aligns five of the plan's six key sectors:

- Strategic land use – by providing a reliable and sustainable form of transportation which could stimulate denser residential development along the rail corridor
- Transport networks – by maximising the value of the disused rail corridor to improve the amenity and efficiency of Hobart's transportation system
- Natural environment – by providing a sustainable form of transportation to increase Hobart's resilience to climate change

- Economic innovation – by improving access to key education and research institutions in Hobart CBD from the low socio-economic status areas of Hobart's northern corridor. This builds on existing programs such as the University of Tasmania's current range of CBD developments and projects to enable easier access to the University from the northern corridor. It also ties in to the Commonwealth assisted redevelopment of Macquarie Point.

3.2.2 Other goals and objectives

The HLR initiative also aligns with the goals and objectives of other state governments and their light rail plan as shown in Table 3 overleaf.

Table 3: Alignment with other goals and objectives

Other strategies	Description	Alignment with project goals
Light rail expansion plans in other States	Other Australian states are progressing with Light Rail expansion plans, including in New South Wales, Queensland and South Australia. The cost of developing the Hobart light rail network will be lowest if the project timing fits around other projects currently more advanced in planning. This would enable skilled workforce to move from one project to another maximising experience and minimising elements of project construction risk.	The proposed project aligns with the plans of other States who will attract highly skilled light rail engineers to Australia to construct light rail networks in Gold Coast and Sydney. It may also facilitate purchase of vehicles at cost effective unit prices. The cost of progressing Hobart Light Rail given the relatively small size of the system, at a later date could lead to an increase in cost as the specialist light rail engineers have to move elsewhere because the light rail project pipeline dries up. At a later date it may prove difficult to purchase light rail vehicles (LRVs) at cost effective rates.

3.3 Alignment with Infrastructure Australia's Strategic Priorities

IA criteria addressed:

- *Outline how the proponent's goals and objectives align with Infrastructure Australia's strategic priorities (see below).*

Infrastructure Australia's Strategic Priorities is described in Table 4 below.

Table 4: Infrastructure Australia's Strategic Priorities

Strategic Priority 1	Strategic Priority 2	Strategic Priority 3	Strategic Priority 4	Strategic Priority 5	Strategic Priority 6	Strategic Priority 7
Expand Australia's productive capacity	Increase Australia's productivity	Diversify Australia's economic capabilities	Build on Australia's global competitive advantages	Develop our cities and /or regions	Reduce green-house emissions	Improve social equity, and quality of life

The HLR initiative aligns with the following strategic Infrastructure Australia priorities:

- **Strategic Priority 2**: Increase Australia's productivity
- **Strategic Priority 4**: Build on Australia's global competitive advantages
- **Strategic Priority 5**: Develop our cities and/or regions
- **Strategic Priority 6**: Reduce greenhouse gas emissions

- **Strategic Priority 7**: Improve social equity, and quality of life.

The proposed initiative's alignment with Infrastructure Australia's Strategic Priorities is described in Table 5 below.

Table 5: Hobart Light Rail project alignment with IA Strategic Priorities

IA Strategic Priority	Alignment with Strategic Priority
Strategic Priority 2: Increase Australia's productivity	As discussed in the Organisation for Economic Cooperation and Development (OECD) International Transport Forum (ITF) Spending on Transport Infrastructure Report 1995-2011[1] , transport plays a vital role in economic and social development, particularly in major cities. Efficient transport infrastructure is seen as important in providing economic and social benefits by improving market accessibility and productivity, ensuring balanced regional economic development, creating employment and promoting labour mobility. These findings are also echoed by the Grattan Institute which has highlighted in its research the economic importance of cities, and the importance of transport networks for service oriented economies[2]. The HLR proposal is expected to help address increase Hobart's and Australia's productivity by: • Improving the performance of public transportation along the corridor and in the northern suburbs. This will improve the accessibility of the Hobart CBD where important services, education institutions and employment opportunities are located. • Tasmanians spend approximately 17 per cent of their household income on transport costs.[3] A large portion of this is spent on automobiles (capital and maintenance) and fuel. The majority of these expenditures flow out of Australia with no significant benefit to the local economy. The impact on the Australian economy will diminish further as Ford, Holden and Toyota cease on-shore production. Recent research showed that the increased cost to Hobartians of travel by car (for commuting) is around $6,000 per commuter per annum (11 per cent of their average income). • Developing better public solution to meet transport needs in Hobart's northern corridor will reduce household expenditure on transport (reducing the cost of living), and generate more local economic activity as people spend more locally (on public transport), which has more localised economic multipliers. • Providing alternative options to car travel that improve the efficiency of Hobart's transport network, increase the ability to cluster more activity in Hobart CBD which will assist to retain population and skills in Tasmania.

1 Source: http://www.internationaltransportforum.org/Pub/pdf/13SpendingTrends.pdf

2 http://grattan.edu.au/static/files/assets/70b30340/514_transcript_cities_productive-cities.pdf.

3 ABS, 6530.0 - Household Expenditure Survey, Australia: Summary of Results, 2009-10, 6523.0 - Household Income and Income Distribution, Australia, 2011-12, DIER analysis

IA Strategic Priority	Alignment with Strategic Priority
Strategic Priority 4: Build on Australia's global competitive advantages	Education is a key export for the Australian and Tasmanian economies. Australia is currently the third most popular market for international students in the world generating more than $15 billion for the nation every year.[4] There are approximately 3,200 international students enrolled in higher education in Tasmania which is approximately 1.5 per cent of all international students enrolled in higher education courses in Australia.[5] The HLR proposed light rail compliments UTAS' plan to increase its presence in the Hobart CBD and attract more students of low socio-economic status by providing improved access from Hobart's northern suburbs (increased capacity and frequency) to key education facilities. This will position the currently underdeveloped northern suburbs (especially around Moonah and Glenorchy) as potential areas for student housing, urban renewal and revitalisation.
Strategic Priority 5: Develop our cities and/or regions	The HLR proposal provides a real opportunity to encourage higher residential densities and mixed use in inner urban areas, particularly in Glenorchy and Moonah. These areas are well serviced with both economic and social infrastructure as they are major urban activity centres concentrated on a traditional transit corridor. The light rail and associated feeder bus services are expected to improve public transport travel time reliability. Increasing residential density, particularly affordable housing options and a mix of housing types will help to ease the pressure to release land in outer urban areas which are poorly serviced by public transport and economic and social infrastructure. This will lead to a more sustainable urban form. Providing opportunities for people to live closer to activity centres and quality public transport systems will create a more connected and productive city, as people will be located closer to a wide range of job opportunities. Research also shows that people living in denser areas have lower levels of car dependency and are more likely to use public transport and walk and cycle, thus minimising the proportion of household income spent on transport.
Strategic Priority 6: Reduce greenhouse gas emissions	The HLR proposal will help reduce Tasmania's greenhouse gas emissions by reducing private vehicle travel in the corridor and being a focus for implementation of urban intensification policies included in the Southern Tasmania Regional Strategic Plan. The HLR could leverage one of Tasmania's advantages in clean hydro-generated energy, A light rail development between the Hobart CBD and Glenorchy could save over 110 million vehicle kilometres travelled in the first year (4 per cent reduction).

4 Source: DOIT (2013) State of Australian Cities 2013

5 Australian Government 2013, Australian Education International, International student data 2013

IA Strategic Priority	Alignment with Strategic Priority
Strategic Priority 7: Improve social equity, and quality of life.	Improved access to the Hobart CBD will lead to a better quality of life for those who are disadvantaged and lessen the risk of social exclusion by creating better connected communities. The HLR proposal will improve social equity and the quality of life by providing improved access to the Hobart CBD from the northern suburbs, some of whom are more reliant on public transport than in other parts of Hobart: • People from disadvantaged/low socio economic backgrounds, particularly those seeking employment and access to education and training will need access to the Hobart CBD but may not have access to car transportation. The Hobart CBD's importance will grow as UTAS and health facilities concentrate in the Hobart CBD. Bus service improvements already planned in the corridor will be the forerunner of HLR with the aim to build patronage to a point when bus crowding and congestion make a higher capacity mode essential. • The Hobart population is ageing at a greater rate than the rest of Australia. Elderly residents need access to health services in the Hobart CBD and would receive better journey quality from HLR.

3.4 Other goals and objectives which are impacted by the proposal

IA criteria addressed:

- *Outline other goals and objectives not directly relevant to the task which may be affected.*

Other goals and objectives which may be affected are shown in Table 6 below.

Table 6: Other goals and objectives which may be affected

Goals and objectives	Discussion
University of Tasmania (UTAS) – CBD focus & Sustainable Transport Strategy 2012-2016	UTAS is focussing growth in the Hobart CBD with several new academic facilities which will have a direct impact on residential and travel demands. UTAS also makes a significant contribution to the local economy - in 2011 15,500 people (7 per cent of greater Hobart's total population) were studying or working at UTAS. By 2020, approximately 50 per cent of all UTAS students will be attending the CBD campus. This represents a significant shift in daytime student population distribution from the year 2000, when 90 per cent of UTAS students were based on the Sandy Bay campus. This HLR proposal aligns with UTAS shifting facilities to the Hobart CBD as: • The CBD focus will over time shift residential demand towards the corridor (infill development opportunities) which will result in increased demand for travel from the north towards the Hobart CBD. • There will be an increase in economic and social activity in the Hobart CBD and on the corridor as a greater number of university residents will demand services such as cafes, supermarkets etc. which will generate further demand for travel between the corridor and the CBD. • The proposal would relieve potential congestion arising from the increasing number of staff and students located around the Hobart CBD campus, particularly if UTAS is developing a substantial presence in the Hobart CBD. UTAS' Sustainable Transport Strategy 2012-2016 has been developed to guide investment and actions that deliver more socially, economically and environmentally sustainable transport outcomes and behaviours within

	the University community. The Strategy acknowledges: • The need to reduce the vulnerability of the University and its community to the rising cost of fuel • The growing interest of the University community in using active transport • The effect that lack of infrastructure has on the uptake of walking and cycling for University generated travel • The increasing number of staff and students being located around the Hobart CBD, and the impact this has on travel and parking demand. The focus of the Strategy is to reduce car dependence for trips of up to 10km. The Strategy draws on work undertaken by University of Western Australia, which identified high potential for dramatically increasing uptake of active travel for trips of up to 2.5km by reducing actual and perceived cycle time between destinations. The HLR proposal aligns with this strategy's goals as: • The HLR will make UTAS' CBD campus more accessible (without the need for car transportation) from Hobart's northern suburbs where there is potential for the development of affordable student accommodation. • Currently Hobartians on average spend 17 per cent of their household income on transport.[6] Light rail transport is not susceptible to rising petrol prices which would shield university students and staff living in Hobart's northern suburbs from this risk.
Macquarie Point Redevelopment	The redevelopment of Macquarie Point aims to restore and energise a site that has long been associated with industrial freight and rail purposes to a significant place and hub for the people of Tasmania. While specific development parameters are yet to be established, some of the high-level principles underpinning the project require that any development concepts for the site must: • Involve a mix of uses • Promote inner city living • Be well connected to the broader Hobart environment which the site is located • Incorporate principles of sustainability • Complement, and not compete with, activity in the Central Business District of Hobart and areas of Greater Hobart • Leverage local competitive advantages, thereby delivering major socio-economic benefit to Hobart and Tasmania. The HLR proposal aligns with goals of the Macquarie Point as: • It will potentially allow access into the site with a good mix of complementary CBD attractors and residential dwellings. A Macquarie Point Light rail stop would serve other needs such as access to the nearby Hunter Street University campus and tourist facilities such as cruise ships.
Improve access to health facilities	Hobart's main medical facility (Royal Hobart Hospital) - and only medical facility for many health services in Southern Tasmania – is located in the Hobart CBD. The facility is currently undergoing a $586m redevelopment which will improve both the existing facilities and services.[7] The HLR proposal will improve accessibility to this facility, particularly for residents

6 ABS, 6530.0 - Household Expenditure Survey, Australia: Summary of Results, 2009-10, 6523.0 - Household Income and Income Distribution, Australia, 2011-12, DIER analysis

7 Department of Health and Human Services, Redevelopment RHH, accessed: http://www.redevelopmentrhh.tas.gov.au/

	living in Hobart's northern suburbs.
Ferry service from Hobart CBD to MONA	Stage 1 HLR proposal strengthens transportation between the Hobart CBD and MONA. This may supplement or compete with MONA's tourism focussed ferry service depending upon how both services are marketed in the future. Ferry services currently operate between the Brooke Street ferry terminal in the Hobart CBD and MONA. In either case the service would improve access to MONA from the northern corridor and potentially improve tourism options. It is noted that MONA are currently developing hotel accommodation on site with the capacity for approximately 150 beds. This is likely to increase travel demand between MONA to the Hobart CBD.

4 Stage 2: Problem Identification

Table 7: IA goal definition

The focus of Stage 2 is on the identification of problems that are preventing (or are likely to prevent) the goals and objectives defined in Stage 1 from being achieved. In turn, initiatives should address those clearly identified and specified problems (or opportunities/challenges): they must have an impact on the problem and lead to medium or long-term results.

The process of problem-identification sets the platform to ensure a broad range of interventions are investigated in the options generation stage. Crucially, this stage, which is similar to a 'gap' analysis, should look not only at current problems, but also future or emerging issues.

Current Problems

Current problems and their context should be described. The existing situation should be analysed and compared with the goals and objectives. Problems on infrastructure networks need to be identified before the causes and effects of these problems can be analysed. This consists of making meaningful observations about system issues or making sense out of the data displayed in foundation studies on development trends, demographic forecasts, land use requirements, infrastructure systems, feasibility studies, and pre-appraisal reports.

This stage should involve the systematic mapping and quantification of problems. It requires the objective and data-rich identification of deficiencies with the condition and operation of our infrastructure networks and the services they support. Critically, this stage calls on proponents to identify how those problems and deficiencies might hinder the achievement of the goals and objectives set out in Stage 1.

Emerging Problems

Infrastructure planning has often been criticised on the basis that decisions to invest in projects are based on a simple 'predict and provide' methodology. These criticisms have typically been aimed at the failure of initiative proponents to fully consider a range of scenarios. However, the criticisms are also relevant in other ways.

Notably, both here and overseas, there has been little acknowledgment that various factors (or 'drivers') that shape the future can be largely outside the control of individual governments and others who make infrastructure decisions. If we do not expressly consider those drivers, we run the risk of making sub-optimal infrastructure decisions. Even worse, poorly considered decisions may make the task of achieving our goals harder than might otherwise have been the case.

Depending on the interplay of these drivers, the problems we face today may persist and become more difficult in the future, or they may diminish. Other problems may arise, even though they do not exist at present.

Infrastructure Australia believes that policy and investment decisions should be made having regard to a range of potential views of the future, and that scenario assessment provides the platform for robust decision-making and realisation of goals/outcomes. Infrastructure Australia is therefore looking to proponents to assess whether:

- The problems we face are likely to be enduring and significant under a range of scenarios; and
- (At Stages 5 and 6) whether the options to deal with those problems are likely to be effective under a range of scenarios.

In this context, Infrastructure Australia is looking to proponents to present some scenario analysis at the problem identification/analysis/assessment and options assessment stages of Infrastructure Australia's seven stage framework.

Infrastructure Australia is mindful of the fact that scenario analysis is not yet widely applied. Therefore, at this time, Infrastructure Australia is not proposing a fixed methodology or approach to the scenario analysis. The material below is provided as general guidance.

Scenario Analysis

Scenario analysis is an important tool that can shed light on the implications of strategic risks and uncertainties on the case for introducing infrastructure-related reforms or investing in an initiative. Scenario analysis is more than just a simple set of sensitivity tests applied to an economic appraisal. It is a structured assessment of linkages between various drivers of change (and potential interactions between the drivers) and potential impacts on our infrastructure networks. Usually, the drivers of change are considered in establishing three or four alternate views (scenarios) of the future.

The level of certainty or uncertainty around individual drivers of change can also be considered and then translated into demands onto systems. The drivers of the future can be clustered and ranked to identify those that are most important for the goals defined during Stage 1, along with the reasons why. Then a range of 'shocks' against these drivers (scenario attributes) are set on which the scenarios can be tested through quantitative and qualitative approaches to explore for 'tipping points', and then compared with the defined goals and objectives.

Scenarios should be plausible and varied. Importantly, they should not be restricted to minor variations to a central 'business as usual' scenario. As well as setting out what the proponent believes to be a 'most likely' or 'business as usual' scenario, it is as well to articulate futures where the drivers of change operate in a materially different way to that used for the 'most likely' scenario. For example, price shocks and technological step changes are valid considerations to build into scenarios. Box 1 provides a description of some of the drivers of change commonly used in scenario analysis.

Box 1: Potential Drivers of the Future

The future is shaped by a range of 'drivers of change' that, to varying degrees, are beyond the control of individual governments or initiative proponents. The drivers interact to create alternate scenarios or futures. Scenario analysis commonly uses some or all of the six drivers of change set out below. Other change drivers have been used in scenario analysis; however, the following factors are likely to have the greatest significance for Australia's infrastructure systems:

- **Socio-demographic change** – total population, population mix (especially age profile), population distribution, values
- **Economic change** – size and mix of the economy, growth, globalisation, labour markets
- **Energy prices** – particularly the potential mix and cost of energy sources for various sectors of the economy
- **Climate change** – the impact of change in climate patterns such as temperature, run-off projections, sea level rise and storm surge probabilities on the demand for infrastructure and the maintenance of our existing infrastructure networks
- **Technological change** – whether change in technology will reduce or increase the demand for certain infrastructure systems, create entirely new demands; and/or change the way infrastructure systems are built, managed and operated; and
- **Governance change** – changes in the wider system of government (not individual initiative governance) that may shape the demand for services and/or the way in which government respond to those demands

In developing scenarios, it is important that the time horizon for analysis reflects the nature of the problems and challenges to which infrastructure reform and investment should be directed. Some of the challenges, for example those associated with climate change and the availability and cost of various energy sources, have long-term implications. Infrastructure networks also tend to have long lives. For these reasons, scenario analysis frequently involves an assessment of the future over 20, 30 or more years.

4.1 Current issues

IA criteria addressed:

- *List those current problems, issues or challenges that the proponent considers will limit the ability to achieve the goals and objectives identified in Stage 1: This could be accessibility, availability, prices/cost, capacity, emissions, safety etc. Identification should be based on empirical observations and could be generated based on surveys, interviews or studies from a wide range of sources.*

Hobart's current public transport system presents both problems and opportunities to the achievement of the Hobart's and Tasmania's economic, social and environmental goals and objectives.

A number of key issues have been identified as barriers to the achievement of the project goals outlined in Stage 1. While these issues are not purely infrastructure problems, they are all impacted by the provision of infrastructure and can be grouped in two broad topics that explain the opportunity and problem for the transport network in Hobart:

- **Problem 1**: The dispersed nature of Hobart's population means fast and reliable public transport is costly to provide.

- **Problem 2**: The Hobart CBD's lack of the scale and diversity is limiting Hobart's overall economic success.

These two broad problems are broken down into the sub problems which impact the attainment of the project goals (see Figure 3). Figure 3 also outlines the opportunity which exists within the soon to be unused infrastructure to assist with the attainment of each of the four goals.

It should be noted that while problem 1 may appear to be specific to Hobart's outer suburbs, the nature of Hobart's metropolitan area, urban development and transportation network means this problem impacts the whole of Hobart.

Figure 3: Goal and problem alignment matrix

Goal	Problem 1	Problem 2	Opportunity
Goal 1: Improve the Tasmanian economy	Slow and unreliable public transport in the low density outer sub-urban areas due to a lack of coverage and frequency resulting from cost constraints which is in turn a function of the dispersed nature of land uses. This has contributed to Hobart's car dependency and the high cost of travel in Hobart. This is negatively impacting on one of the fundamental economic advantages of a small city.	The Hobart CBD lacks the scale and diversity required to be competitive and to generate stronger economic growth, an innovation economy and employment opportunities.	The soon to be unutilised rail corridor could be leveraged, in conjunction with feeder bus services, to improve public transport in the northern suburbs which could decrease the overall cost of transportation for commuters. The corridor could also be used to stimulate development in the Hobart CBD and in the ageing industrial areas adjacent to the rail corridor. This would improve the CBD's chances of generating employment opportunities in the future which would improve the economy.
Goal 2: Improve social equity	The current public transportation system does not sufficiently meet the needs of Hobart's ageing population and people from lower socio economic backgrounds who need access to the services located in the corridor and Hobart CBD.	The Hobart CBD's can accommodate a greater density of activity. Its current lack of dense activity (and relatively small commercial /employment base) is likely to impact on its ability to attract higher skilled employment. Improving public transport to the northern suburbs extends the employee catchment of Hobart CBD by increasing the capacity of the CBD transport network.	The disused rail corridor could be used to improve access to the Hobart CBD and other key activity centres (Glenorchy) for residents living in Hobart's northern suburbs. The rail corridor could also be used to stimulate denser and more sustainable residential development along corridor. This form of housing would be located closer to importance services which may alleviate and prevent social exclusion in the long term.
Goal 3: Reduce the environmental impact of transportation	High car dependency in Hobart is resulting in a high level of emissions from transport, increasing congestion in peak periods and demands for road and parking space. The increasing demand for space that is occupied by cars compounds urban sprawl and erodes valuable hinterland.	A dense agglomeration of activity in a Central Business District (CBD) requires highly efficient modes of public transport to transport large volumes of people more efficiently. The HLR will increase the transport capacity of Hobart CBD, by reducing the demand on buses from the northern corridor.	The soon to be unutilised corridor could provide a more sustainable form of transportation for Hobart. If it is not used and maintained the track bed will deteriorate.

Goal	Problem 1	Problem 2	Opportunity
Goal 4: Improve the long term resilience of Tasmania's economy	Hobart's high car dependency means the city and its economy remains highly susceptible to future fuel price rises. Provision of space for cars (roads and parking) and decentralisation of activity is also a drag on the economy.	Hobart's economy needs more diverse and intense employment opportunities which rely on access to a large educated workforce. HLR improves access to education and the CBD from the northern corridor.	The HSLR corridor could stimulate the growth and diversification of the Hobart CBD and northern corridor and make the Hobart economy more sustainable. The corridor also represents an opportunity to improve public transport, reduce Hobart's car dependency and hence the city's susceptibility to future fuel price rises.

Problem 1: The dispersed nature of Hobart's population means fast and reliable public transport is costly to provide.

An existing railway corridor historically provided for passenger trains between Hobart, the northern suburbs, key workplace and retail attractors - such as EZ, Cadbury and the original University Domain campus – and Northern Tasmania. While previously double track through the inner Northern suburbs, the corridor currently has a single track that caters for less than four freight train movements each day. The small number of freight trains using the corridor is an underutilisation of the existing asset. The use of the corridor for freight trains will be discontinued in 2014. This will make it easier to use the corridor for light rail passenger services. Such services would improve public transport journey times and ride quality for Hobart's northern suburbs while also stimulating development in Hobart's northern corridor.

The current public transport services (bus services), particularly to Hobart's urban fringe in the northern suburbs, are infrequent, slow, relatively inefficient and operate during a constrained span of hours. This combined with growth in outer areas where land is cheap, means Hobart, including the northern suburbs which has a lower socio economic index (as shown in Figure 4), has become reliant on car transportation which has an impact on:

- The overall Tasmanian economy as car transportation is more expensive and has therefore reduced disposal income which could be spent on alternative goods and services.

- Social equity as certain demographics, who may be more reliant on public transportation because they may not have access to car transportation (elderly, unemployed or people with low incomes), have poorer access to services. The proportion of the population that experiences reduced access to services and lower engagement in the productive economy will increase unless access to and quality of public transport services is improved.

  Access to services is crucial for elderly people. This is particularly relevant to Hobart where the population is ageing faster than that of any other Australian capital city. Since 1992, Tasmania's median age has increased 8.1 years compared with 4.7 nationally[8]. This is due in part to migration of younger Tasmanians to the mainland in search of education and high value employment opportunities and migration of older Australians to Tasmania in search of better quality of life in retirement. The socio economic attributes of Tasmania's population and total population size have long meant that the State relies on Commonwealth government assistance to provide infrastructure to improve productivity of the Tasmanian economy.

  Poor access to services also results in higher costs of service provision (to government) as services may need to be brought closer to the users rather than be centrally located. This may present a significant drain on the Tasmanian and Commonwealth budgets as the cost of service provision increases and reduced or limited access impacts on the local economy as older people may not be able to engage in the productive economy.

  Poor public transportation in the outer suburbs has also affected people's capacity to access employment, education and services. Inability to access employment has been particularly noted for jobs such as hospitality where late finishes and early starts are problematic for public transport users. Again, this issue is particularly relevant for Hobart's outer northern suburbs which include some of Hobart's most disadvantaged areas.[9]

- The environment by generating more greenhouse emissions compared to scenario with greater public transport usage and reduced the amount of green space by generate demand for car infrastructure such as roads and car park.

8 Taylor, L. 2013, *Tasmania in transition (presentation at the Skills Tasmania conference)*

9 Public transport in Hobart's inner northern suburbs such as Glenorchy and Moonah

Poor public transport offerings also mean that Hobart finds itself in a vulnerable position in the long term should oil prices increase.

Problem 2: The Hobart CBD's lack of the scale and diversity is limiting Hobart's overall economic success.

The success of Hobart as an efficient, liveable and productive capital city is essential to improving the long term productive capacity of Hobart and the State. The State is progressively suffering disadvantages associated with diseconomies of scale where low population densities means it is difficult to exploit modern economies of scale. Increasing the density of employment and education opportunities in Hobart CBD is one critical element required to ensure Tasmania can attract high value employment opportunities and offer high quality education opportunities.

While nearly half of Hobart's jobs are located in the Hobart CBD, it could be argued that this figure should be even higher since Hobart is a small city with a relatively small manufacturing sector. Should the Hobart CBD continue to lack scale and diversity then this would impact on:

- Greater Hobart's economy and hence Tasmania's economy as the region would not be able to leverage economies of scale to become a more competitive economy within Australia and globally. The agglomeration of services is also important if Hobart is to develop an innovation and skills driven economy which is a priority for Hobart, Tasmania and Australia more broadly. Innovation led economic development can be facilitated by the agglomeration/co-location of educational institutions, research facilities and private sector services.

- Social equity across Hobart. This is because the CBD currently lacks scale to generate a significant number of higher paying employment opportunities. This is particularly important for Hobart where youth unemployment currently sits at 13.3 per cent – the highest of all capital cities in Australia.[10] Increased employment opportunities could also curb the exodus of youth from Tasmania. The provision of services for ageing population could also be provided more efficiently if these services were centrally located to generate economies of scale.

- The long term resilience of Hobart's economy and its susceptibility to external shocks. For example, if Tasmania's economy was overly reliant on tourism then economic downturns in other economies may result in significant fall in tourism activity in Hobart and Tasmania. This could have a detrimental effect on the Tasmanian economy if it were overly reliant on the tourism sector.

There are already initiatives underway which will assist with the intensification of services and employment in the Hobart CBD. In particular, UTAS plans to develop a number of new teaching, research and student accommodation facilities in the CBD.

Opportunity

The Tasmanian government has made considerable progress investigating the opportunities that the corridor provides. These investigations have highlighted that the corridor could be used to improve access to the Hobart CBD. End to end journey time using light rail vehicles with three stops outside Hobart CBD would be about 30 per cent faster than the current bus service, for those who live close to the proposed light rail stops. For those living in the outer northern suburbs, the combination of feeder bus services (operating with increased frequency, efficiency and over a wider span of hours) together with light rail would provide much improved access to employment, education and services.

The density and location of development (particularly residential) that would be facilitated by the HLR initiative in the corridor would also allow most customers to access the stations by walking, bike, car or feeder buses. However, it is acknowledged that light rail services would be unlikely to stimulate development in the corridor without other significant land use policy intervention.

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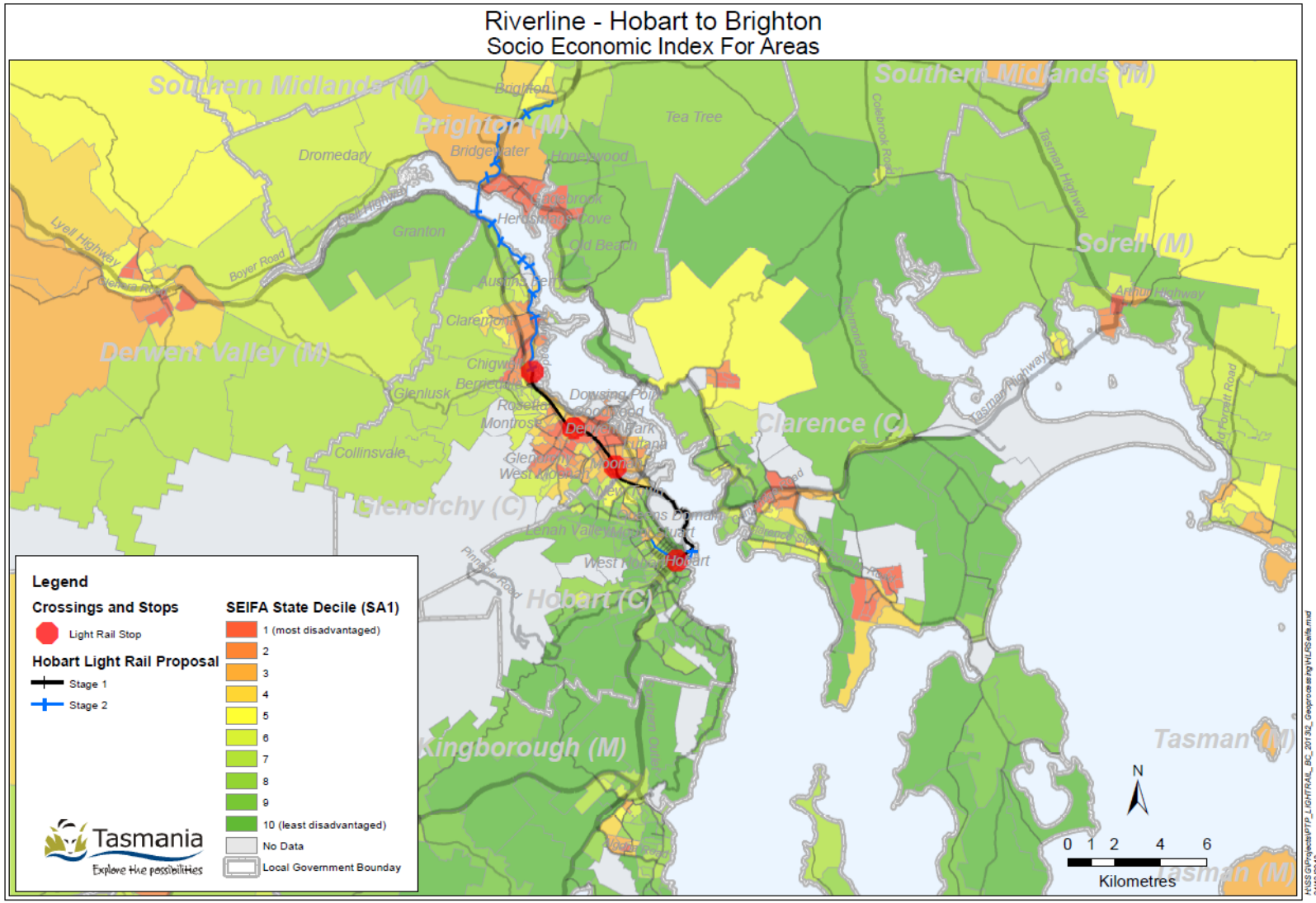
[10] Australian Bureau of Statistics (ABS), 2012. The 2011 Census, ABS, Canberra, PwC analysis. Youth unemployment has been defined as unemployed persons aged between15-24.

Figure 4: Socio economic context, HLR



4.2 Future scenarios

4.2.1 Drivers of change

IA criteria addressed:

- *Outline the 'drivers of change' that are likely to have the greatest impact on the relevant infrastructure network(s), for example: Socio-demographic change, Economic change, Energy prices, Climate change, Technological change, Governance change*
- *What are the uncertainties around these 'drivers'?*

The drivers of change that are likely to have the largest impact on the infrastructure needs of Hobart are shown in Table 8 below.

Table 8: Drivers of change

Drivers of change	Discussion	Uncertainties
Energy costs (cheap hydro-electricity and increasing petrol prices)	Increasing petrol prices will increase demand for public transport in Hobart. Strong petrol price increases in the mid 2000's led to an anecdotal increase in full fare adult passengers similar to that which occurred on other public transport networks in Australia[11]. The increase was particularly noticeable on more distant services feeding into the main corridors. As noted by the Tasmanian Oil Price Vulnerability Study, oil Tasmania is more vulnerable to the impacts of higher oil prices than the rest of Australia and that the risk is significant and probable. Tasmania has no passenger rail, its freight rail is powered by diesel, and that its vehicle fleet is the oldest (and therefore least fuel-efficient) in Australia. And being an island at the southern end of Australia, it has relatively long supplies chains for many of its imported and exported products.[12] In Melbourne, during the petrol price increases in 2005, the cross elasticity for heavy rail demand with respect to petrol price was 0.45, meaning a 10 per cent increase in petrol prices resulted in a 4.5 per cent increase in public transport demand.[13]	It is difficult to predict oil prices due to unknowns in both future demand and supply. For example, technological innovation may result in reduced reliance on oil as a source of energy and therefore reduce its demand and price. The high elasticity observed in Melbourne is an all-day elasticity and could be doubled in peak periods. The heavy rail elasticity is considered comparable to the HLR context because the Melbourne tram data was unreliable and the heavy rail network provides the main access to Melbourne CBD employment.

[11] Currie, G & Phung, J. (2006) Exploring the Impacts of Fuel Price Increases on Public Transport Use in Melbourne

[12] DIER 2012, Tasmanian Oil Price Vulnerability Study

[13] Currie, G & Phung J, Exploring the Impacts of Fuel Price Increases on Public Transport Use in Melbourne, presented at 29th Australasian Transportation Research Forum

Drivers of change	Discussion	Uncertainties
Ageing population	Hobart's population is ageing at a faster rate than the rest of Australia. This has implications for the transportation network and what Hobartians require from it. It also has implications for the services that Greater Hobart will need to provide such as health care. The corridor represents an opportunity to develop housing (and transportation options) which is suited to the elderly population.	Population flows (national) may be influenced by Government policy and incentives but ultimately cannot be controlled. Demographic forecasts rely on important assumptions such as the Federal Government's immigration policy. It is also difficult to predict changes in lifestyle preferences. There have been noted increases early retirement population flows seeking lifestyle options of a smaller city.
Geographic change resulting from UTAS moving into Hobart CBD	As discussed in section 1, UTAS are currently developing a larger presence in the Hobart CBD. As a major employer and also destination for many students, the move towards the CBD may shift demand for real estate and higher value land use towards the CBD and northern suburbs corridor.	UTAS and Hobart City Council are working together, underpinned by a formal MOU, to facilitate the development of identified UTAS sites.
Governance change from regional land use planning	The new Southern Tasmania Regional Land Use Strategy has agreed land use planning outcomes at a regional level. It aims to direct 50 per cent of all urban growth into urban infill areas.	The extent to which the Regional Land Use Strategy is implemented and adhered to is uncertain. The strategy still enables 50 per cent of growth to occur on the urban fringe which will exacerbate Hobart's car dependency.
Geographic spread and polycentric nature of Hobart continues to erode Hobart's competitiveness and productivity	The geographic spread (urban footprint) and the polycentric nature of Hobart is the most significant factor influencing the populations transport mode choices and entrenching car dependency. The polycentric nature of the city has resulted in the spread of economic land uses across Greater Hobart. The Regional Land Use Strategy established an urban growth boundary that allows for 20 years of continued residential expansion before the boundary will be reached. The suburban sprawl and polycentric nature of Greater Hobart provides cheap land for developers at the expense of people who then need to travel greater distances to access work or interact with businesses in person.	The extent to which businesses relocate away from Hobart CBD or relocate into the CBD is influenced significantly by macroeconomic factors including metropolitan property economics. The degree to which the HLR will impact on these business decisions is unknown. However the Government could use HLR as a catalyst for increased State investment in the corridor and land assembly that reduces risk of infill development. This development could be a precursor to HLR or could be as a result of HLR.

4.2.2 Future scenarios generated

IA criteria addressed:

- *Outline any scenarios that have been generated from the drivers of change, i.e. High-oil prices scenario, High-population scenario etc. – detailing the horizon year, data sets, models used, outcomes)*

Limited modelling has been completed with regard to the scenarios for drivers of change discussed in Table 8. The Tasmanian Government could conduct further investigation into the impact of each of these scenarios on the infrastructure needs of Hobart.

5 Stage 3: Problem Assessment

Table 9: Stage 3: Problem Assessment

The Problem Assessment stage involves the calculation of the economic, environmental and social costs of the current or emerging problem. In other words, to what extent does (or will) the problem impact upon the goals and objectives set out in Stage 1? This appraisal should primarily be in the form of quantified estimates to demonstrate the scale and extent of key problems and issues. Qualitative descriptions will also play an important role, since problems may not be quantifiable given the lack of quality information and data. For example, estimates of the cost of traffic congestion on a link or the carbon cost of burning fossil fuels for electricity should be readily available. However, this quantitative evidence is likely to be supplemented by qualitative information, for instance on the burden congestion imposes on family life or the social inclusion benefits of high speed broadband for the house-bound.

IA criteria addressed ('for current problems'):

- *To what extent does (or will) the problem impact upon the goals and objectives?*
- *How is the problem currently affecting the nation/ state/ region/city/ locality?*
- *Quantify the extent to which the problems may affect the attainment of the goals/objectives.*
- *List the data and evidence available to support the quantification*

The extent to which the problems identified in stage 2 affect the attainment of the goals and objectives are discussed in this section.

5.1 Current problems (opportunities)

Problem 1: The dispersed nature of Hobart's population means fast and reliable public transport is costly to provide.

Slow and unreliable public transport has contributed to Hobart's car dependency which means the cost of transportation/travel in Hobart is high.

Public transport in many areas of Hobart is relatively slow and unreliable. The average AM peak inward trip (from Glenorchy Interchange to Hobart City Interchange) on a bus takes 31 minutes.[14] Key bus routes, such as the current bus service along the corridor, also suffer from reliability issue. Analysis shows that there is significant variation in travel times along the Main Road Transit Corridor for buses, with the inter-peak outward trip having the highest level of variation, of around eight minutes. The AM peak also has a high level of variability of around 5:30 minutes for both inward and outward journeys.

As a result, Hobart has a low commuter public transport mode share with only 4.6 per cent of employed persons commuting to work by public transport. This compares to 18.1 per cent in Sydney, 12.4 per cent in Melbourne, 10.9 per cent in Brisbane and 8.7 per cent in Perth and 7.5 per cent Adelaide.[15] Private transport's share of travel in Hobart has increased by the most of any state/territory since 1977.[16]

14 Transit corridor assessment report, it should be noted that car and bus travel time data is not directly comparable

15 Australian Bureau of Statistics (ABS), 2012. The 2011 Census, ABS, Canberra.

16 Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2013, Public transport use in Australia's capital cities: modelling and forecasting, Report 129, Canberra ACT

Hobart's car dependency has a negative impact on the local economy as it represents a relatively more expensive form of transport. This means Hobartians spend a large proportion of their disposable income on transportation rather than other goods and services.

It is estimated that a commuter travelling 15km into the Hobart CBD on public transport instead of by car would save $5,948 in one year which is equivalent to 11 per cent of the median Hobart weekly household income.[17] This potential saving is already factored into the generalised cost of travel and is observed. For example in Hobart a high proportion of people drive despite the cost difference because the benefits of driving (or non-financial costs of using public transport) outweigh those potential savings.

If public transport can be improved, the difference in value would be reduced and public transport use would increase.

The current public transport offering does not sufficiently meet the needs of Hobart's ageing population and people from low socioeconomic backgrounds.

As discussed, public transport services in the northern suburbs are currently slow and unreliable which has led to high car dependency. While the northern suburbs are serviced by bus services which have high penetration, these services suffer from relatively long travel times. Again, the average AM peak inward trip (Glenorchy to Hobart) on a bus takes 31 minutes compared to 18 minutes by car.[18]

The low density pattern of development has resulted in bus routes generally being planned on a low-frequency, high-penetration basis. This means that bus routes are often very long, as they must service widely spread-out suburbs and therefore have longer travel times to reach the final destination than cars. Although there are some semi-express bus services which are patronised, these services are not particularly frequent usually operating every 30 minutes at best 20. The result is often poorer service in outer suburbs (and northern suburbs such as Brighton in particular), which can be problematic as there residents from certain demographics living in outer areas who are more likely to be dependent on public transport including:

- Elderly people residing in the area – there are currently close to 16,000 residents over the age of 55 living in the Glenorchy and Brighton local government areas.[19]

- People from lower socio economic backgrounds including a significant proportion of unemployed youth – Brighton LGA recorded a SEIFA relative socio-economic disadvantage score of 867 making in the most disadvantaged LGA in Tasmania while Glenorchy LGA recorded a SEIFA score of 915 making it the eighth most disadvantaged LGA in Tasmania by this measure.

Ageing population

Elderly people may find it difficult to access the Hobart CBD if they do not have access to car transportation and without adequate public transport. CBD access is crucial if key services, such as the hospital, are located in the Hobart CBD and may result in increased costs for accessing services for both Hobart's citizens and the Government.[20]

As discussed, Hobart's population is ageing more rapidly than in other Australian cities. Tasmania is ageing more rapidly than elsewhere in Australia. The phenomenon associated with a large baby-boomer cohort being followed by smaller cohorts from later generations is common, but in Tasmania it is exacerbated due to

17 Wang, J., 2013, Commuter costs and potential savings: Public transport versus car commuting in Australia

18 Transit corridor assessment report, note that car and bus travel time data is not directly comparable

19 ABS Census 2011

20 Part of the problem stems from the assertion that services ought to be concentrated in the Hobart CBD to generate agglomeration benefits and to achieve economies of scale. For example, it may be beneficial for the Royal Hobart Hospital to be located next the research institutions (UTAS) to facilitate the development/sharing of knowledge. It would be also beneficial for medical services to be concentrated within one facility in the Hobart CBD to generate economies of scale which would reduce the cost of service provision.

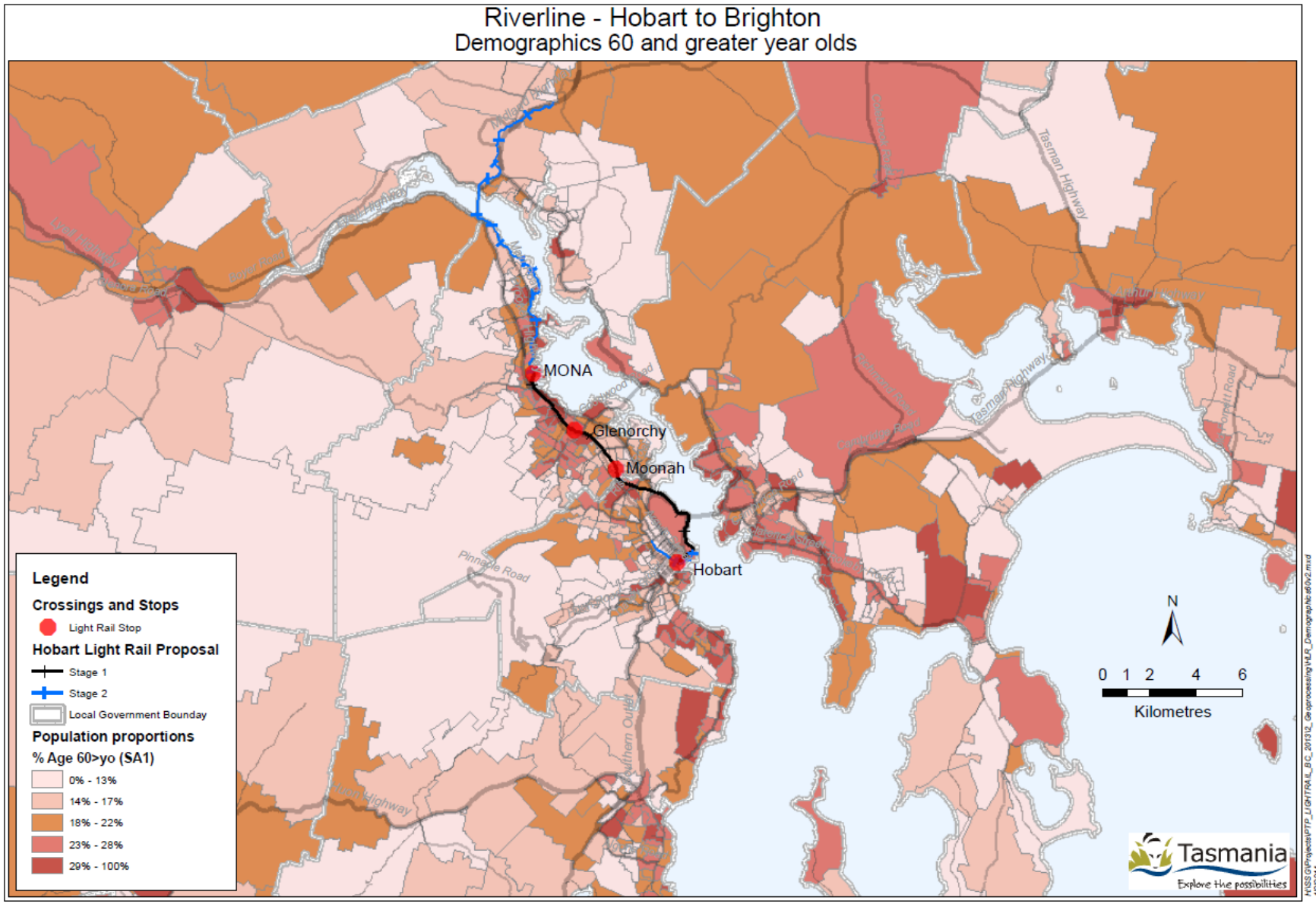
emigration to other Australian states by younger Tasmanians, and inwards migration from other states by older people seeking “sea-change” or “tree-change” lifestyles.[21]

This problem is clearly demonstrated by the dispersed nature of Hobart’s ageing population in relation to where key services are expected to be located as highlighted in Figure 5 overleaf.

The problem could also impact social equity for the elderly population though the increased cost of service provision if services need to be brought to the user or if alternative means of transport (e.g. taxi) are required for the elderly to access these services. Although there are currently no estimates of these additional costs, they are likely to be material and will either be borne by service users or the Tasmanian Government. The former would make it difficult for those with less means to access important services and therefore increase social inequity in Hobart.

[21] Jackson, N & Wilde, P. (2010) Migration Trends in Australia, Hobart information paper 4 prepared for the Demographic Change Advisory Council

Figure 5: Hobart demographics - 60 years old and greater



Source: DIER

Lower socio economic background/unemployed youth

Access to the CBD is important for all Hobartians as many services, education institutions and employment opportunities are located there. The Hobart CBD is already an important employment hub with approximately half of Greater Hobart's jobs located there and an important source of health care in the form of the Royal Hobart Hospital. Its importance will grow as its scale increases and UTAS develops teaching and research facilities in the Hobart CBD.

People from lower socio economic backgrounds may find it difficult to access to the Hobart CBD due to the cost of car travel or the quality of public transport. Inability to access these services and opportunities could result in social exclusion (see Table 9) and intergenerational poverty because it is too difficult for some people to access education, employment and services. It is noted that there are a wide range of potential solutions to this type of problem (including policy, land use and improvements to existing modes). An example is the community services hub being developed in Glenorchy which aims to make these services more accessible to the local and regional community.

Previous studies on service access have identified the link between the socio-economic status and the ability to access services. In Tasmania in 2006, 88 per cent of people aged 18 and over reported that they felt they could easily get to the places they needed to go (a broad measure of access to transport). However, only 78 per cent of people in the lowest income quintile, 73 per cent of one parent families, 72 per cent of people with a core activity restriction (disability) could easily get to the places needed, indicating that some groups still face some difficulties accessing the places they need to.[22][23]

Low quality public transportation can also contribute to poor social equity outcomes through the high cost of alternative transportation. Where public transport options do not meet community needs, people have little option but to purchase a car. The cost of a car is a fixed investment, and can thus represent a substantial burden on those with low incomes. Therefore, a lack of good public transport options may be contributing to costly car ownership and maintenance and hence social exclusion and disadvantage.

This access barrier and the high cost of transportation is particularly relevant for people living in Hobart's northern suburbs as:

- These areas already fall within the lowest SIEFA ranking in Hobart (Figure 6). People within the lower SEIFA rankings – the most vulnerable members of society – are most in need of access to services, education and employment opportunities. One study of the value of transport to the socially excluded suggests that it can be as high as $19.30 per trip, and that it declines with income.[24] While this value assumes that people suppress trips due to non-marginal access and price barriers rather than price or the need have to walk further or retime trips, it highlights the potential cost of poor access for people who are socially excluded. It is noted that as yet there is insufficient data to ascertain the extent to which transport exclusion is an issue in Hobart's northern corridor.

- There are areas in the northern suburbs where car ownership is low relative to the rest of Hobart (Figure 7). Slow and unreliable public transport in these pockets could be detrimental to the ability of residents to access key services in the Hobart CBD.

- The Brighton and Glenorchy LGAs are characterised by low weekly incomes, a high reliance on government housing, a larger share of the population aged under 15 and a corresponding large share of families with young children, a very high rate of single parent families with young children (particularly in Brighton and Glenorchy), high rates of unemployment, low rates of educational attainment, a high rate of people employed in low skilled occupations and a corresponding reliance on low skilled jobs for employment.

22 Australian Bureau of Statistics, *General Social Survey, Tasmania, 2006*, Cat No 4159.0.55.001

23 http://www.dpac.tas.gov.au/__data/assets/pdf_file/0016/111292/Preliminary_Response_to_A_Social_Inclusion_Strategy_for_Tasmania.pdf

24 Currie, G. (2004) Gap analysis of public transport needs: measuring spatial distribution of public transport needs and identifying gaps in the quality of public transport provision, Transportation Research Record: Journal of the Transportation Research Board, 1895, pp. 137–146

- Social inequity may also be exacerbated car dependence. Where public transport options are poor, people have little option but to purchase a car. A car represents a fixed investment, and can thus represent a substantial burden on those with low incomes. Therefore, a lack of good public transport options may be contributing to costly car ownership and maintenance and hence social exclusion and disadvantage.

  As discussed, it is estimated that a commuter travelling 15km into the Hobart CBD on PT instead of by car would save $5,948 in one year which is equivalent to 11 per cent of the median Hobart weekly household income.[25] The estimated savings are particularly significant for low income earners who may still need to access the Hobart CBD.

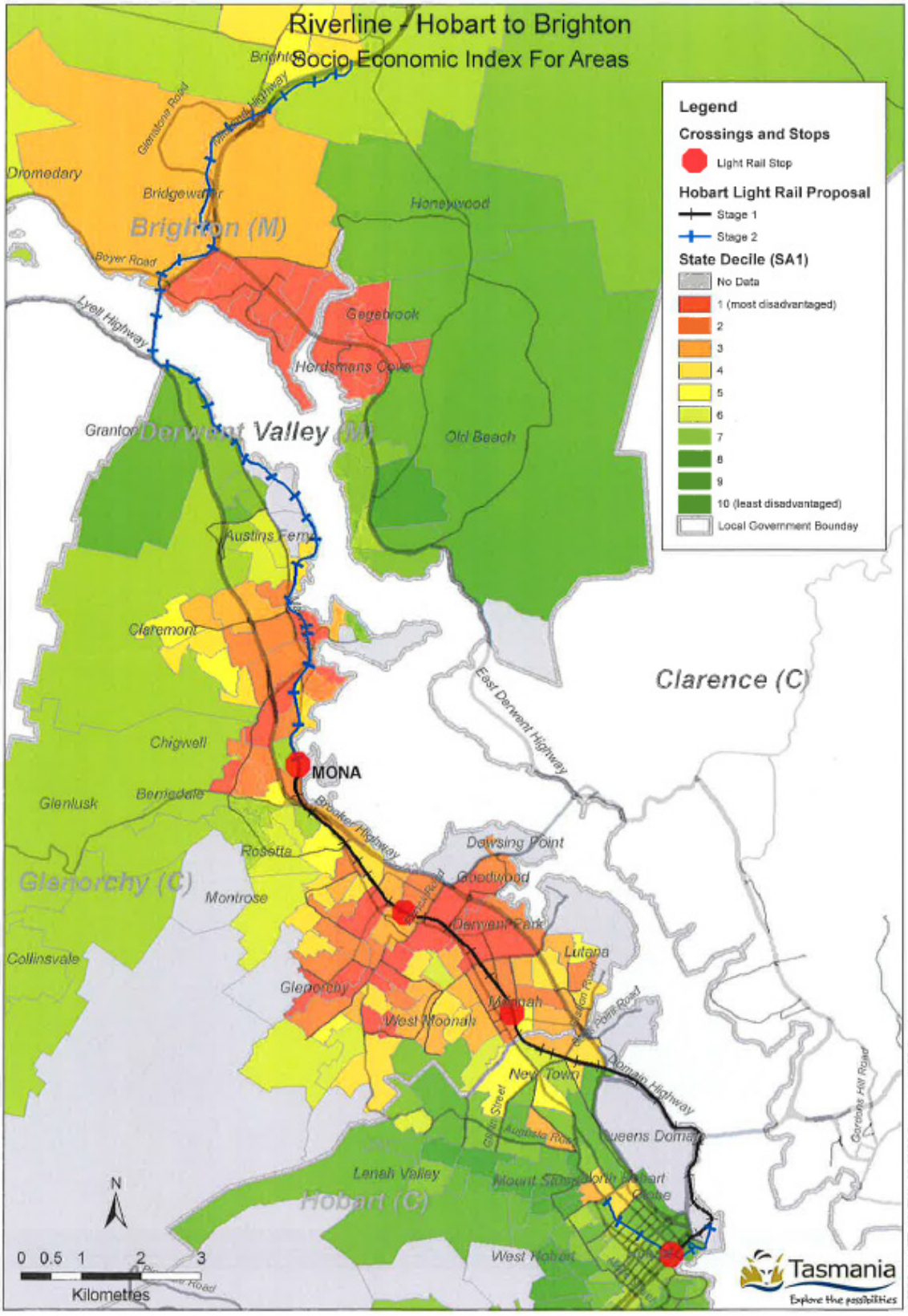
The transportation needs of the northern suburbs have also highlighted by previous studies conducted which identified the transportation disadvantages prevalent in within the corridor and the northern suburbs.[26] Disadvantage was based on whether adults have cars, accessibility (how far along a public road from home to public transport), persons aged over 60 years, persons on a disability pension, adults on a low income, adults not in the labour force, students. The results from this study can be seen in Figure 8.

To the extent that transport systems can form part of the solution to these complex and multi-faceted issues of social exclusion, it is critical that they do so.

25 Wang, J., 2013, Commuter costs and potential savings: Public transport versus car commuting in Australia

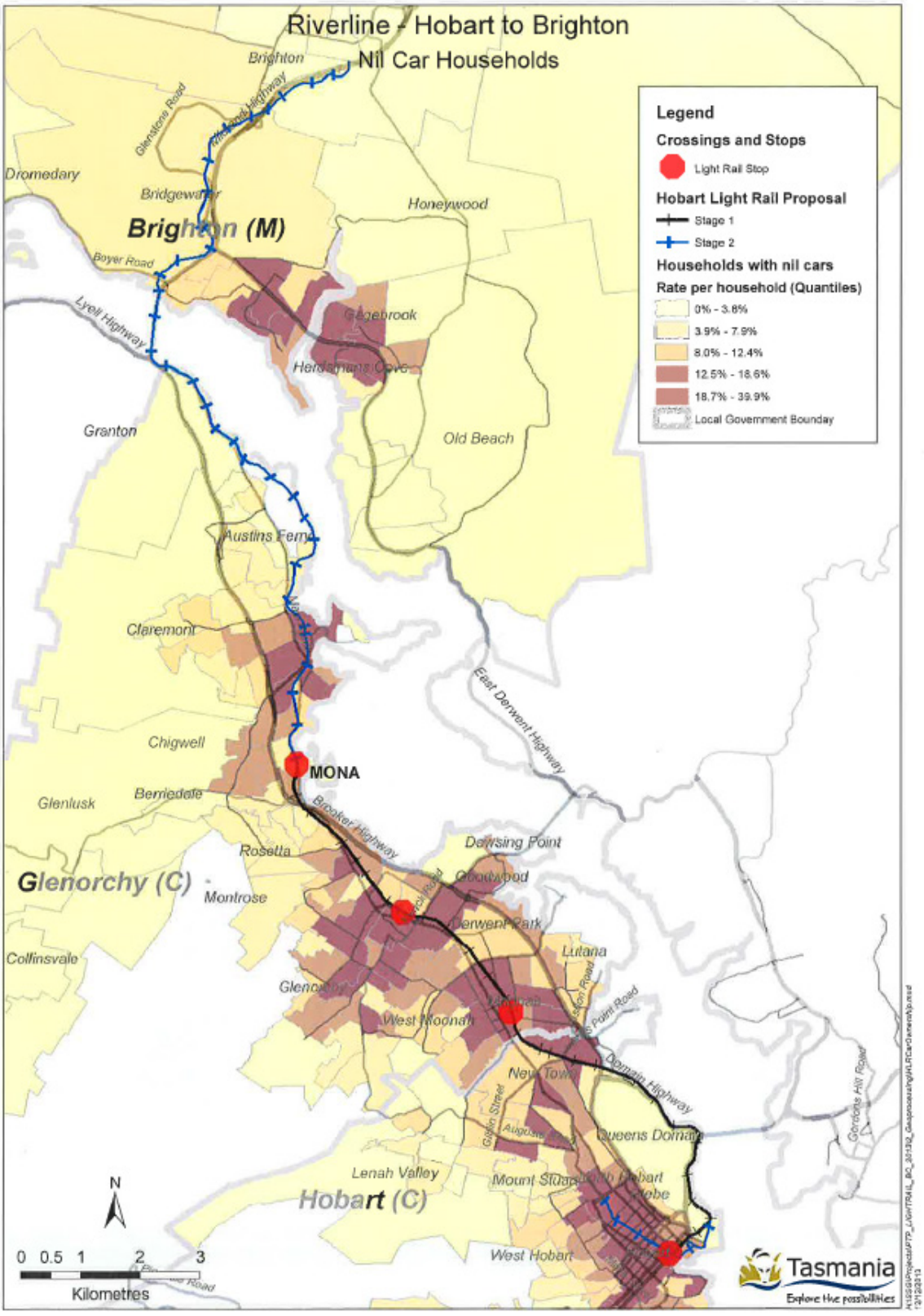
26 Booz & Company (2008) Update to the Tasmanian Transport Needs Indices, Hobart Report for DIER

Figure 6: SEIFA index



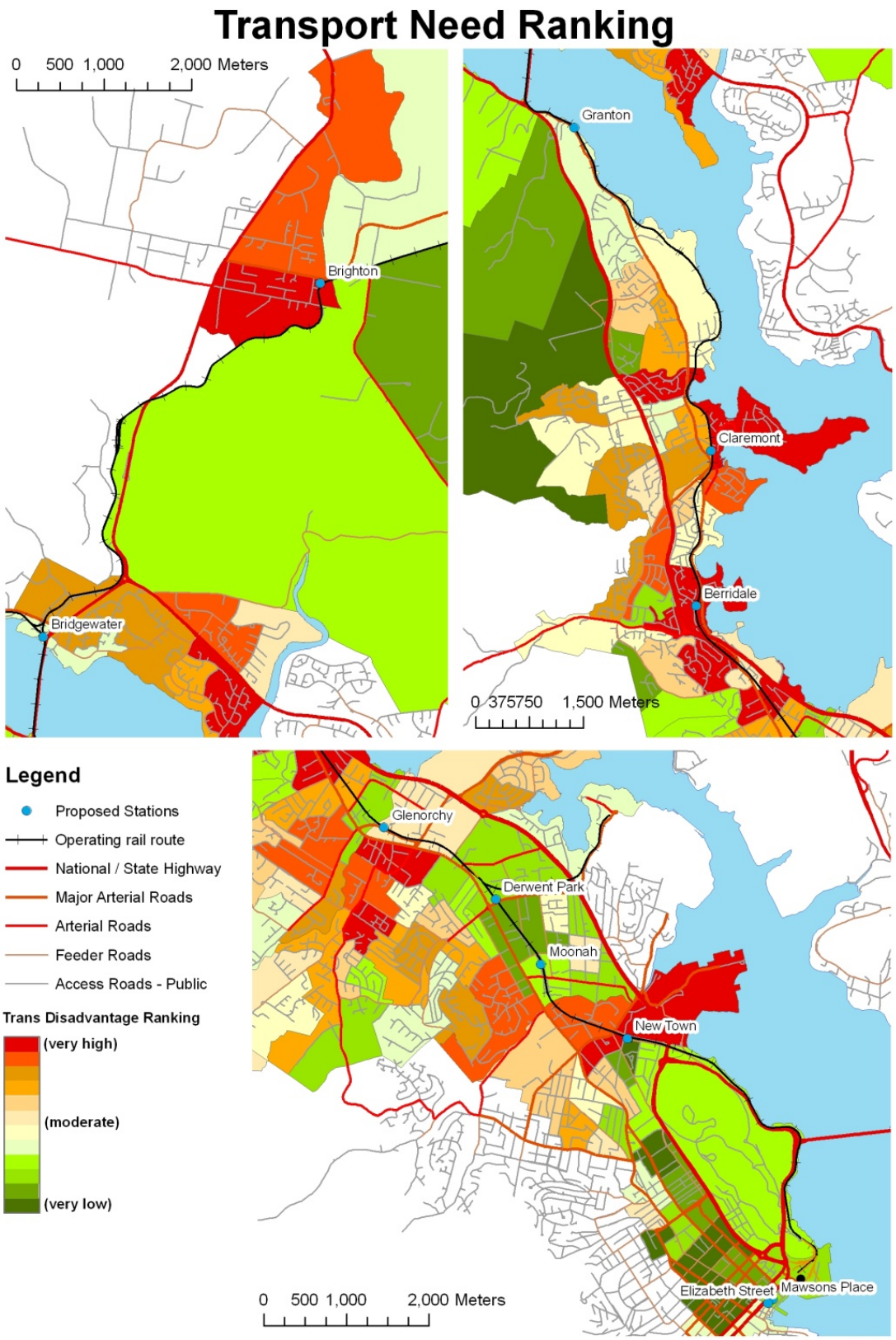
Source: DIER

Figure 7: Car ownership



Source: DIER

Figure 8: Transport disadvantage in Northern Hobart Suburbs



Source: Booz & Company (2008) Update to the Tasmanian Transport Needs Indices, Hobart Report for DIER

Table 9: Social inclusion

Social inclusion is a term that refers to whether a person has the resources, opportunity and capability to learn, work, engage (connect with people, use local services and participate in local, cultural, civic and recreational activities), and have a voice; influence decisions that affect them.[27] Social exclusion occurs when constraints prevent adequate participation in these activities.

Many factors can affect social inclusion. Low income, language barriers, isolation, education, long term unemployment and physical disability can limit people's ability to participate in some activities. Physical accessibility or the ability to reach (get transport to) desired goods, services, activities and destinations is often an important factor.

This problem would affect Hobart/Tasmania/Australia by:

- Limiting the opportunity for state to get best return on investment early intervention initiatives, education, primary health care
- Allowing existing social issues to continue which are costly for the State to fix downstream e.g. unemployment, health (health concerns may exacerbate overtime, early intervention would be less costly to address).

Table 10: Accessibility

Elderly and people with a disability are particularly affected due to their particular needs (such as for wheelchair accessible transport or ramps to access buses). In 2003, 87 per cent of people with a disability were able to use all or some forms of public transport, and of these, 11 per cent required help or assistance to do so.[28] However, a significant proportion (27 per cent) of people with a disability reported having difficulties in using public transport, such as lack of seating or difficulty standing, getting into or out of vehicles or carriages, and fear and anxiety.[29] For older people living on low incomes, the costs of public and private transport may be prohibitive. Services such as Home and Community Care (HACC) community cars provide some assistance for eligible customers.[3031]

'Urban sprawl' increases the difficulty of making transport accessible It is anticipated that the use of a high frequency lower penetration feeder bus system as proposed by this project will reduce the total bus routes and hence the need for infrastructure upgrades.

High car dependency in Hobart is resulting in transportation congestion, road/land space demands and excessive greenhouse emissions which is impacting Hobart's environment.

Transport continues to be a substantial contributor to Tasmania's emissions profile. It is the third largest producer of greenhouse gas emissions in the State, contributing 22 per cent of the State's emissions profile.[32] Ninety-two per cent of transport emissions come from road transport, predominately from cars.[33] Single-occupant car use in Tasmania is rising, while the overall use of sustainable forms of transport is declining.[34] This is resulting in an increase in pollution, congestion and other adverse effects. For example greenhouse gas emissions from transport, which are responsible for the second largest proportion of such emissions, have

27 Australian Social Inclusion Board, 2010, p15

28 Australian Bureau of Statistics, *Disability, Ageing and Carers, 2003, Tasmanian State Tables*, Cat No 4430.0

29 Australian Bureau of Statistics, *Disability, Ageing and Carers, 2003, Tasmanian State Tables*, Cat No 4430.0

30 Tasmanian Council of Social Services, 2008 *Enhancing Quality of Life: Addressing Poverty and Disadvantage through the HACC Program*, HACC Consumer Consultation Report.

31 Adams, D. (2009) A Social Inclusion Strategy for Tasmania - Appendix 1, ISBN no: 978 0 7246 5556 5, Hobart

32 Low Carbon Transport – a Perspective, a presentation to the Tasmanian Climate Change Office Low Carbon Transport Forum, Hobart, Mark Mckenzie, Keypath Consulting, June 2013

33 Australian Transport Statistics Yearbook 2009, Department of Infrastructure, Transport, Regional Development and Local Government 2009

34 Environmental issues: Waste Management and Transport Use, Australian Bureau of Statistics, 2009

grown by 12% since 1990.[35] These emissions are expected to continue to rise without some form of active intervention.

The extent to which this opportunity affects the attainment of goals/objectives can be demonstrated by the project benefits outlined in business case in particular the modal shift from car to public transport. The previously completed business case for HLR estimates a decline in car transportation from 94.3 per cent to 91.1 per cent and an increase in public transport usage from 5.7 per cent to 8.9 per cent as a result of the light rail service. It is noted that these estimates are based on particularly favourable assumptions built into the modelling, in particular not including transfer penalties, high expectations of travel time reliability and consequently low transfer times. Including the transfer penalties and accounting for the unreliability of passing loop operation could alter the results. Any impact on travel time will alter the results because the demand elasticities are applied to the change in travel time of each mode.

High car dependency has also contributed to elements of inefficient use of land within the Hobart CBD and Glenorchy. Car-related land use (such as car parking) tends to be low density, and the land could potentially be better utilised for other forms of retail development, office space or residential development. Car related use continues to occupy sites because the current property economics context of Greater Hobart (a function of land use controls and transport access) currently supports out of centre development over intensification of CBD land use.

The Housing and Community Research Unit quantified the area of land utilised by car-related industry within the Hobart CBD in 2007.[36] The report found that within the area bounded by Bathurst, Harrington, Warwick and Campbell Streets, the amount of land devoted to car-related industry was five hectares or 12 percent of the area, comprising more than 45 different car-related businesses. This represents a significant amount of land which could be used for commercial and residential development.

Hobart's high car dependency means the city is susceptible to future uncertainties around petrol price increases.

Hobart has a small, dispersed and ageing population that is highly dependent on car transportation as activity centres and services are located away from residential areas. Approximately 75 per cent of household travel is by car. Increases in oil prices impact on the cost of travel for a large proportion of households which impacts disposable income and ultimately Hobart's economy. It is noted that more fuel efficient vehicles provide Hobartians with the ability to reduce per kilometre fuel costs, but in most cases that relies on the user upgrading their car (a cost that can outweigh the fuel savings).

Rising petrol prices will also generate greater demand for a convenient, affordable and reliable public transport system and a greater emphasis upon pedestrian and cycling amenity. If this demand cannot be met and overall transportation costs remain high then it will be difficult for Hobart to improve social equity and quality of life.

While oil price uncertainty is an issue for all Australian cities, Tasmania and Hobart's economy is particularly vulnerable as its freight rail is powered by diesel, and that its vehicle fleet is the oldest (and therefore least fuel-efficient) in Australia. And being an island at the southern end of Australia, it has relatively long supply chains for many of its imported and exported products. An oil price shock/increase would damage the economic competitiveness of Hobart and also increase the price of goods for Tasmanian households.[37]

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[35] Tasmanian Urban Passenger Transport Framework, Department of Infrastructure, Energy and Resources, 2010

[36] UTAS, (2007) Housing and Community Research Unit

[37] DIER 2012, Tasmanian Oil Price Vulnerability Study

Problem 2: The Hobart CBD's lack of the scale and diversity is limiting Hobart's overall economic success.

The Hobart CBD lacks the scale and diversity required to be competitive and to generate stronger economic growth, an innovation economy and employment opportunities.

The lack of scale and agglomeration of activity in the Hobart CBD is currently limiting the economic potential of Greater Hobart and Tasmania. Concentrating employment and services in the CBD (clustering/agglomeration) can generate economies of scale and improve labour productivity.[38] Agglomeration also generates other benefits such as the ability of firms to share ideas and develop critical mass to support peripheral industries. This will subsequently make it easier for Hobart to:

- Develop research potential
- Generate high skilled jobs
- Retain youth through the variety of jobs
- Increase productivity
- Become less reliant on Commonwealth support.

In 2011, there were an estimated 31,238 jobs located in the Hobart CBD.[39] To put this figure in perspective, it is estimated that there are approximately:

- 94,000 jobs in the Southern Tasmania region
- 86,500 jobs in Greater Hobart with significant employment centres in Hobart, Glenorchy, Clarence and Kingborough local Government areas (LGA)
- 43,000 jobs in the Hobart LGA (47 per cent of jobs within region) with 18.5 per cent in Glenorchy LGA and 12 per cent in Clarence LGA.

Although the Hobart CBD is a major employment hub in the context of Hobart and Southern Tasmanian, the scale of the CBD partially stifles further investment and employment growth. While increasing the scale and diversity of the CBD may improve Hobart's economic performance it is difficult to quantify this benefit or the lost economic output from the lack of scale and diversity.

Increasing the scale and diversity and subsequently improving the economic potential of the Hobart CBD and Greater Hobart is particularly important as Tasmania is geographically isolated from mainland Australia which creates a competitive disadvantage with other industries such as manufacturing export industries (cost and time implications).

The Hobart CBD's lack of scale and diversity is likely to have restricted the growth of Hobart's economy which has contributed to the lack of employment opportunities and the poor socio economic outcomes.

A larger and more diversified Hobart CBD would generate more employment opportunities for Hobart and more high skilled jobs for the state. One element of increasing the density of activity in Hobart CBD is the ability to travel to the CBD easily (more easily than other potential employment destinations). This comparative ease of travel influences development and business location decisions (to locate in the CBD or in a far flung sub-urban location). The comparative ease of travel then influences accessibility to employment and services for the wider population.

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[38] Rawnsley, T., Szafraneic, J,. Agglomeration and Labour Productivity in Australian Cities

39 Australian Bureau of Statistics (ABS), 2012. The 2011 Census, ABS, Canberra.

Again, it is difficult to quantify the extent to which Hobart CBD's lack of scale and diversity has impacted on employment opportunities and hence the level of social equity in Tasmania. However, Tasmania has the:

- highest unemployment rate in Australia (7.8 per cent vs 5.7 per cent for Australia)[40]
- lowest median household income levels in Australia ($1,132 vs 1,442 for Australia)[41]
- highest reliance on Commonwealth assistance in Australia ($214 in average weekly social assistance per household vs $177 for Australia)[42]
- highest youth interstate migration rate (-0.25% of the State's population or -1,306 15-24 year olds in 2012-13 move interstate, only New South Wales experienced a larger exodus of youth by numbers of persons)[43]
- Highest capital city youth unemployment rate in Australia (Hobart is 13.3 per cent).[44]

While the poor performance of Hobart's economy and the lack of employment opportunities are not entirely attributable to the Hobart CBD's lack of scale, it is likely that a denser more diversified CBD would alleviate some of these issues.

Hobart's reliance on the public sector and tourism sector means Hobart's economy is susceptible to external shocks which impact these sectors.

A high proportion of jobs in Hobart are found in the 'non-market sectors' – public administration, health care and social assistance and education and training. Hobart's reliance on these sectors means the economy is more susceptible to shocks outside of Hobart's control. For example, an economic downturn in Asia could result in a significant fall in international student numbers which would impact the education and training sector. This would impact Hobart more than other cities which have a more diversified economy.

There is a need for diversification of the Hobart economy to be less reliant on public sectors. Private sector interest in Hobart can be influenced by the ease (or lack of ease) with which people can travel and access employment and entertainment activities.

[40] Australian Bureau of Statistics (ABS), (2013). Labour Force, Australia, Dec 2013, ABS, Canberra.

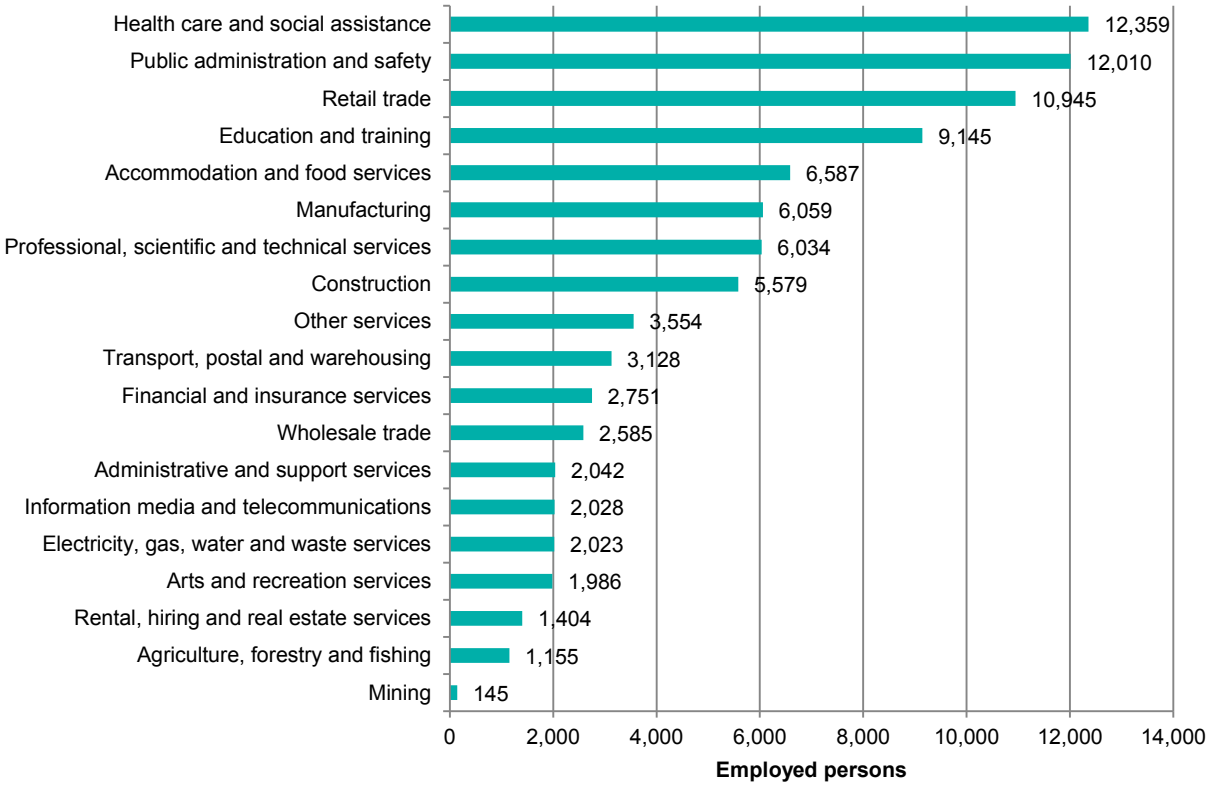
[41] ABS, (2012), Household Income and Income Distribution, Australia, 2011–12

[42] ABS, (2012), 65370DO001_200910 Government Benefits, Taxes and Household Income, Australia, 2009-10

[43] ABS, (2013), 3412.0 - Migration, Australia, 2011-12 and 2012-13

[44] ABS, (2012). 2011 ABS Census, Canberra. Youth unemployment defined as unemployed persons between the age of 15-24

Figure 11: Employment by Industry, Greater Hobart 2011



Source: ABS, (2012). 2011 ABS Census, Canberra.

Opportunity: The soon to be unutilised rail corridor represents an opportunity to improve the economic, social and environmental outcomes in Hobart and Tasmania.

The soon to be unutilised rail corridor could be leveraged to improve public transport in Hobart which would decrease the overall cost of transportation.

The unused corridor represents a valuable asset for Hobart which can be used to improve public transport journey times, ride quality and hence usage. This will help reduce the car dependence in Hobart.

Not utilising the corridor to improve public transportation in Greater Hobart may:

- Result in increased future costs for the Government should the corridor be transformed at a later date as it will degrade in the meantime. It is likely that vegetation will grow along the track once it becomes unused in 2014 and if it is not maintained (partly through regular use)
- Result in poor perceptions of PT in Hobart as the community will see the underutilised infrastructure and infer that PT is not good in Hobart.

The unutilised rail corridor could be used to stimulate denser and more sustainable residential development along the corridor and increase the skilled workforce in close proximity to Hobart CBD.

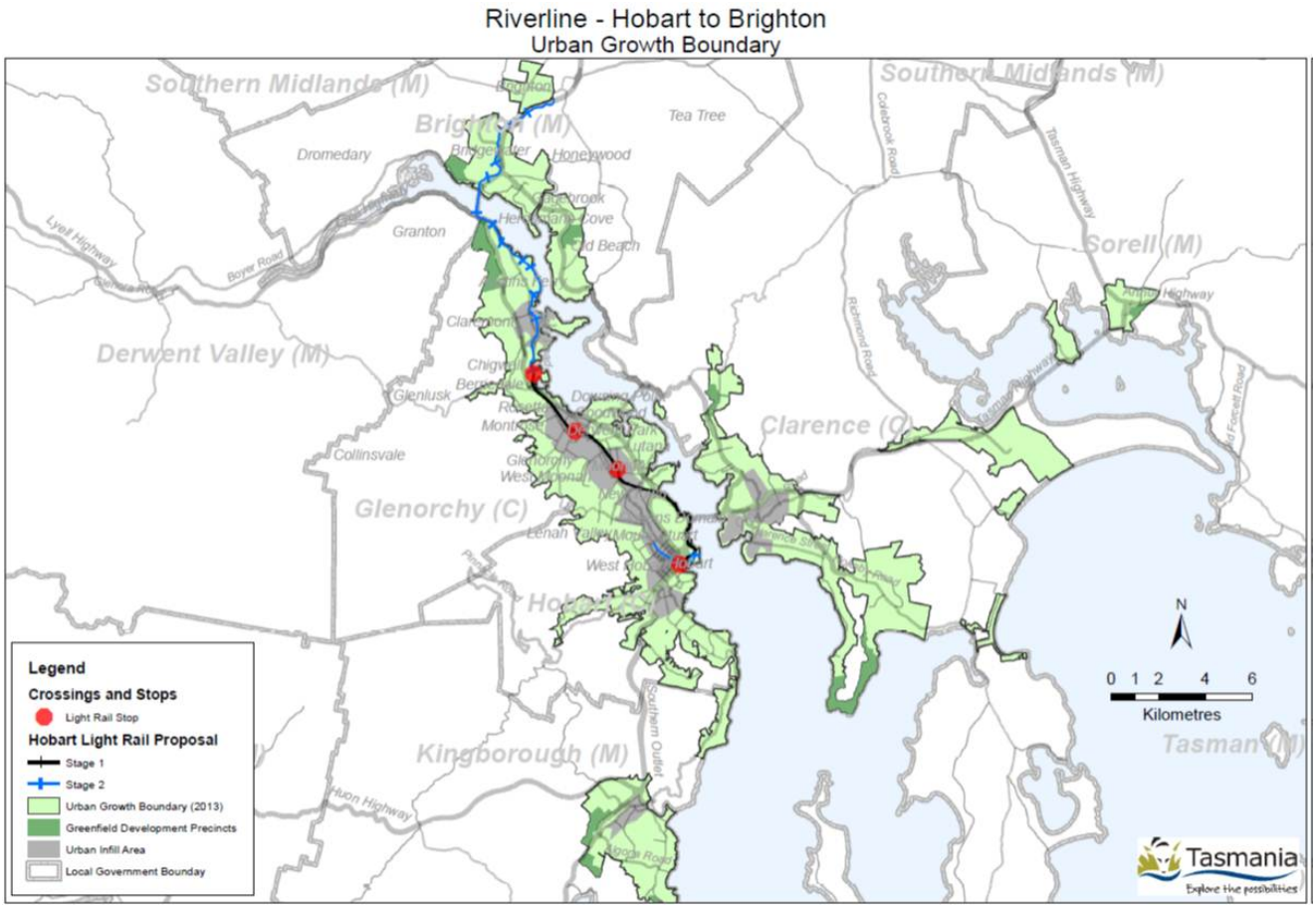
The unused corridor represents an opportunity to stimulate denser development along the corridor which would provide a long term solution to the issue of service accessibility in the form of more suitable development near activity centres. This would provide residents with greater transportation choice (public transport, cycling and walking) for a variety of trips which reduces overall congestion.

The form of residential development will be important for Hobart's economic, social and environment future. It has been estimated that the population of Greater Hobart will increase from 214,705 in 2010 to over 281,000 people by 2035. This is a 'medium-growth' estimate, and there are a range of scenarios that could result in even greater increases. Any significant increase in population will have major implications for housing availability and affordability, and will put additional pressure on existing infrastructure and services.

Based on a 'business as usual' pattern of residential development, the predicted distribution of growth in the Greater Hobart region is expected to occur largely in the greenfield areas of Kingston, Clarence and Brighton and the northern parts of Glenorchy. In Glenorchy and Hobart, where a large amount of infrastructure and services exist adjacent to underutilised land within the existing urban areas, the percentage of predicted residential growth is minimal.

However, denser development in the northern corridor will require an improved public transport offering to compliment higher density development. Improved public transport along the corridor is an important element to encourage and incentivise denser residential development along the corridor. A main attractor for living in denser developments is the downsizing of real estate assets to free up capital for retirees. Accessibility that gives people confidence they can sell one or both of their cars is important in convincing them to buy into more compact developments. This form of development is advocated by the Southern Tasmania Regional Land Use Strategy 2010-2035 which proposed an urban growth boundary and also designates areas where densification can occur as shown in Figure 12 below.

Figure 12: Areas designated for densification and urban growth boundary



Source: Southern Tasmania Regional Land Use Strategy 2010-2035

If public transport to and from the Hobart CBD along the corridor is perceived as inadequate then any potential residents may need to rely on car transportation. This means denser developments will need car parking which will increase the cost of construction and living in denser developments on the corridor – the estimated cost to

build a parking space in a multi-story car park is $30,000[45] – further discouraging living in more compact and dense developments and the densification of Greater Hobart and the corridor more specifically.

This is important in the context of potential infill development in the corridor where there is significant potential for denser development to take place, relieving some of urban sprawl issues for Greater Hobart. It is noted that there are already some denser residential developments underway in the vicinity of the corridor. These developments would be further encouraged by improved public transport in the corridor.

Not utilising the corridor to stimulate denser development in the area may mean Greater Hobart will continue to be one of the least densely settled capital cities in Australia with one of the highest proportions of single, detached dwellings. It will also:

- Mean that affordable housing will continue to be developed in undesirable areas separated from employment centres. In reviewing the existing distribution of housing and activity centres/industrial precincts, there are still many opportunities to locate housing in areas with infrastructure networks and closer to employment sources. Increased densification, particularly in the Hobart, Glenorchy and Clarence municipalities, would enable greater employment participation and reduce the cost of living.

- Reduce housing affordability which is already declining. There is currently a lack of housing choice, with the result that many young families are forced to live at the urban fringes, while the ageing population often remains in inappropriate housing, for example: multiple storeys, on steep land with poor access to services and public transport.

- Result in increased demand for more land, to support the population growth at the expense of agricultural land or land with environmental values.

- Increase the infrastructure burden in the long term as green-field developments require more costly infrastructure. For example, bus services will need to service the new low density areas.

- Make it difficult to reduce the environmental impact of transport in the long run. It is important for public transport infrastructure to be in place before residents and workers move into an area so they become accustomed to using it. When urban renewals precincts are activated with inadequate public transport access, residents and employees make decisions about how they will travel from day one, it is very difficult to get them to remake that choice.

It will also provide the opportunity for the ageing population to ‘age in place’ by providing more suitable accommodation in a suburb/area that an elderly person is familiar with.

As Greater Hobart’s population grows, more jobs within existing activity centres will be required. To reduce the demands on transport and infrastructure systems, the number and density of people living in inner-urban areas must increase so people are living close to sources of employment.

The soon to be unutilised rail corridor could provide a more sustainable form of transportation for Hobart.

The rail corridor will fall into disrepair if it is not used and maintained. There is an opportunity to use the corridor to enhance transport options to Hobart CBD. The rail corridor already provides for cyclist movements to the CBD and is used by locals for recreation and accessing Glenorchy.

A range of modal options have been considered for the corridor including bus rapid transit and light rail. Alternative options in adjacent road corridors (such as bus lanes on the Brooker Hwy) have also been considered, but they exacerbate existing traffic congestion and it is not clear that buses would attract the level of demand necessary.

[45] Hobart City Council – Parking - A Plan for the Future 2013

5.2 Future problems

IA criteria addressed ('for current problems'):

- *To what extent does (or will) the problem impact upon the goals and objectives?*
- *How is the problem currently affecting the nation/ state/ region/city/ locality?*
- *Quantify the extent to which the problems may affect the attainment of the goals/objectives*
- *List the data and evidence available to support the quantification.*

Increasing the scale of the Hobart CBD will lead to congestion in the Hobart CBD and surrounding areas

As jobs/services in the CBD increase to the 'optimal' figure for scale/self-sustainability, congestion in the CBD may arise (cars and buses). Alleviating this congestion may be more difficult than alleviating congestion that arises in the shorter term due to topographical challenges. Congestion in and around the Hobart CBD may have a major impact on freight movement and car based passengers and will therefore impact productivity and impact the Tasmanian economy. It is noted that congestion in Hobart CBD currently occurs in relatively small areas for relative short periods of time (compared with other Australian cities) and could be reduced in many ways including policy change, operational improvements or increased capacity for existing modes (including pedestrian, cyclist, bus, ferry and car).

Employment density is a key driver of public transport demand, as the location of employment is a major determinant of the direction of and demand for peak travel movements. Within Greater Hobart, Hobart LGA is the largest destination in the journey to work (45,590); with Hobart CBD attracting 31,238 people (ABS 2011). This is indicative of the role of the Hobart CBD as the principal activity centre. Since 2001, Hobart LGA has seen a 32 percent increase as a destination in the journey to work (ABS, 2001, 2011).[46] It is expected that this trend will continue should the Hobart CBD continue to grow as the city's dominant employment hub and be able to cope with additional travel demand efficiently.

There is evidence to suggest that congestion is already an issue in peak periods which will only get worse if employment growth for the Hobart CBD is strong (it needs to be concentrated here for the reasons discussed in the previous section):

- Certain roads within Hobart experience congestion at certain times of the day. In particular, the Brooker Highway and Main Road traversing the Northern suburbs experience congestion in the morning peak period, roughly between 8am and 9am. Some congestion is also evident on Main Road and the Brooker Highway during the PM weekday peak, but this is not as significant as the morning peak. This is shown in Table 10, which records average speeds and delays on a 10km section of the Brooker Highway radiating out from central Hobart in 2006.[47] This is also shown in Figure 12.

Table 10: Brooker Highway congestion

	Morning Peak In	Morning Peak Out	Afternoon Peak In	Afternoon Peak Out	Off Peak In	Off Peak Out
Delay in seconds per km (compared to travel at speed limit)	87.10	33.45	27.34	41.64	16.39	22.04
Average travel speed	27.12	46.64	49.32	42.17	58.02	54.73

Data source: DIER, 2011, pp6-7

46 ABS (2002 & 2012) 2001 & 2011 census data

47 Anecdotal evidence suggests conditions are worse now than in 2006, but DIER is undertaking the process of re-assessing congestions across Greater Hobart, and the 2006 data are the most recent available.

Speeds in the morning peak are roughly half those in the off-peak, and represent a delay of roughly 12 minutes over the course of the 10km section of highway. The afternoon peak is much more moderate. However, current congestion in Hobart is rather moderate compared with other cities.

Future travel times are forecast to increase significantly above existing conditions, largely due to constraints at key intersections. By 2031, the Brooker Highway at the Domain interchange is forecast to reach approximately 62,000 vehicles per day, a 26 per cent increase from 2009 volumes. While traffic volumes on the Brooker Highway are forecast to increase to 66,000 per day by 2031, based on historic linear growth of 1.26 per cent.[48]

Previous studies have valued the congestion relief at between 4.4 and 151.4 cents ($2008) per marginal vehicle km of travel, with an average of 45 cents. Valuations are higher for circumstances with greater degrees of traffic congestion and also where both travel time and vehicle operating cost savings are considered.[49] If congestion becomes an issue then Stage 1 of the proposed HLR could result in significant congestion savings as car travel is estimated to be reduced by over 110,000,000 km in the first year alone.[50]

Increasing bus services may also lead to further bus congestion in the Hobart CBD where the current bus terminal facilities are already facing the following issues:

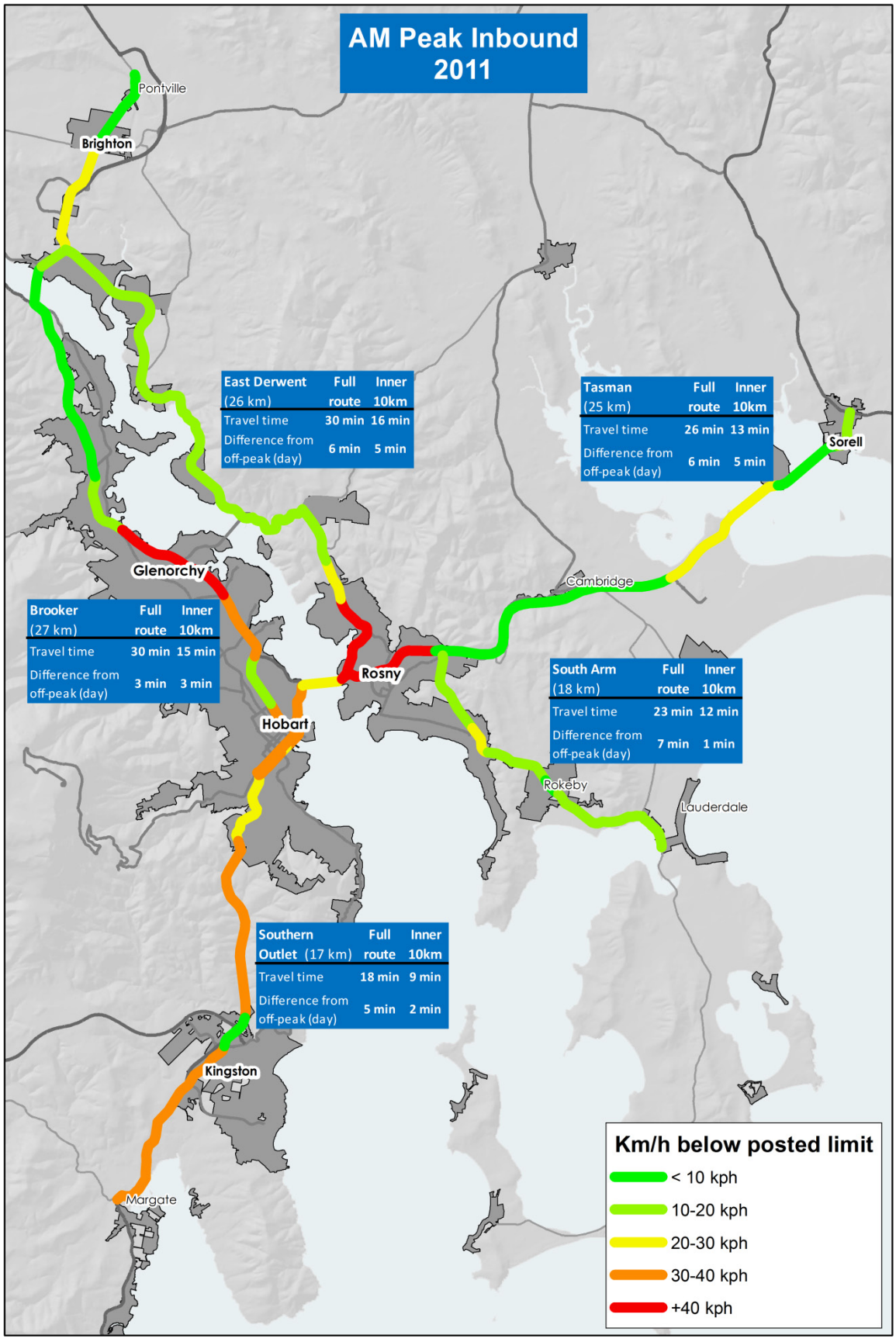
- Dispersed terminals of different bus and coach operators around the CBD, creates confusion and unexpected walking distance for passengers who want to transfer between services
- Operational in-efficiencies due to awkward approaches to and subsequent operation within the bus interchange. This is due to a one way street network and increases dead-running, increases running times and costs, add to bus congestion and create confusion for passengers
- Capacity constraints within the bus interchange are likely to become greater issues in the future, as frequency improves especially during peak periods.
- Given the nature of route design without through services the recovery time that Metro buses are given in the Hobart Central Bus Interchange increases time taken at stops. While the opportunity for efficiencies to be gained from potential through-routing of services the number of such services are limited in Hobart. This is due to an imbalance between potential through services from corridor services with unequal demand. Based on current service design there is a large need for local services to depart from Hobart CBD.
- There is a lack of passenger and urban amenity within the bus interchange, as a result of inadequate bus waiting facilities and shelters, information provision and passive surveillance.

48 Main Road Transit Corridor Plan (2012), Main Road Transit Corridor Plan – Background Reports (2011) & DIER (2011), Brooker Highway Transport Plan

49 Aftabuzzaman M., Currie, G., Sarvi, M., 2010, Evaluating the Congestion Relief Impacts of Public Transport in Monetary Terms

50 ACIL Tasman, Stage 1 Light Rail Business Case, Hobart to Glenorchy

Figure 13: Congestion in Greater Hobart – AM Peak Inbound 2011



Source: Department of Infrastructure, Resources and Energy 2013, Greater Hobart Travel Survey 2011

6 Stage 4: Problem Analysis

Table 11: Stage 4: Problem Analysis

Effective action can only be taken once the underlying cause of a problem has been diagnosed. The cause may be a market failure of some kind or a government failure in terms of planning. The crucial substantive element at this stage is to understand cause and effect, i.e. to probe the causes or explanations behind the observed problem and to identify the causes rather than the symptoms of the problems. Assessing a problem in terms of its symptoms obscures the real cause and leads to symptomatic solutions that fail to correct the basic issues and conditions. Proponents should demonstrate an understanding of why the problem has arisen or will occur, and directly link this understanding to the identification of potential solutions in the next stage of the framework.

6.1 Problem analysis

IA criteria addressed:

- *Outline the underlying causes of the problem*
- *Give the policy argument explaining the genesis of the problem (e.g. market failure, incorrect pricing, lack of investment signals, governance)*
- *Provide data and other evidence to back up the policy arguments*
- *Focus on the fundamental cause of the problem, e.g. the root cause of road congestion should not simply be claimed as a "lack of capacity" – what has caused the lack of capacity? It may, for example, be a demand/supply mismatch caused by incorrect pricing and excess demand, or a lack of supply side investment due to the absence of price signals or targeted revenue streams.*

The problem is multifaceted as is its underlying cause. However, there appear to be key policy decisions and events which have resulted in the problems discussed:

- Lack of correct pricing e.g. cheap or free parking, land use planning
- Inability to contain outer development as councils compete amongst each other to increase residents, shoppers etc. e.g. cheap parking to attracts shoppers and cheap abundant land for new houses
- Policies which have encouraged the polycentric development of Hobart
- The lack of economic stimulus which has resulted in Hobart CBD's lack of scale.

The underlying causes, policy genesis of the problem and fundamental causes of the two overarching problems are discussed in more detail below.

Problem 1: The dispersed nature of Hobart's population means fast and reliable public transport is costly to provide.

- Slow and unreliable public transport has contributed to Hobart's car dependency which means the cost of transportation/travel in Hobart is high. This has eliminated one of the key economic advantages of a small city
- The current public transportation system does not sufficiently meet the needs of Hobart's ageing population, unemployed youth or other people from lower socio economic backgrounds who need access to the services located in the Hobart CBD
- High car dependency in Hobart is resulting in transportation congestion, road space demands and excessive emissions which are impacting the environment
- Poor public transport and Hobart's high car dependency means the city and the economy remains highly susceptible to future uncertainties around climate change and oil prices.

Hobart's car dependency has resulted from various planning policies which have distorted supply/pricing and hence demand in the residential development and transportation market (in this case the policy genesis was also the underlying cause of car dependency). This has influenced the development of Hobart into a sprawling city where the provision of fast and reliable public transport is costly and difficult:

- Competition between local councils to attract residents and increase their tax base has resulted in excessive release of green-field sites for housing development. This has encouraged low density green-field development where 85 per cent of housing developments currently occur in green-field sites near the fringe of the Greater Hobart area away from activity centres.[51] High quality public transport (speed and reliability) is difficult to provide in low density area meaning residents need to rely on car transportation to access services located in activity centres.
- Councils are responding to the incentives they face. Councils release new land for housing development because they receive the benefit of increased taxes (council rates) for no real cost as the land is a free resource. However, this is not an efficient outcome as councils do not face the 'total' costs of green-field developments, which might include transport and utilities infrastructure, so they supply more land than is optimal.
- There is also a 'prisoner's dilemma' problem where councils will compete to release land quickly to attract new residents before other councils do. This seems to have happened in the past. Under the Regional Land Use Strategy a land release program is proposed for the development of land within the urban growth boundary. If this is implemented this should lead to a more orderly release of land.
- The cost of providing infrastructure for green-field development sites is not always factored into the price of land meaning land is offered to the market at a cheaper price than it should be. This means there is excess demand for green-field developments, which is usually low density in nature (excess above the amount that would be considered efficient), in relatively distant locations where the provision of fast and reliable public transport is difficult. Studies have found that the cost to service new lots in terms of provision of utilities, community services and transport by Government in Australia was:
  - $80,000 per lot for urban fringe areas
  - $26,000 per lot for infill development.[52]
- Car parking has been provided by councils and some developers for free to attract customers to their activity centres. This does not reflect the true cost of a car park and hence the true cost of driving which has resulted in increased demand for car transportation above the efficient level. If the cost of car transportation were higher (at its true value) then public transport utilisation may be higher.

[51] Southern Tasmania Regional Land Use Strategy 2010-2035

[52] Curtin University Sustainability Policy Institute (2009) Assessing the costs of alternative development paths in Australian cities

Planning policies Greater Hobart have also been ineffective in encouraging significantly more dense development in inner areas. This has also contributed to the car dependent nature of Hobart.

While not necessarily a policy issue, the relative ease of travel around Hobart (in off-peak times) and low land costs has also led to low density developments in fringe areas. Greenfield sites are often located within an acceptable distance from the Hobart CBD (30 minutes with low congestion). This means people continue to demand housing in these areas which may be undesirable in the context of the goals and objectives of this initiative.

Problem 2: The Hobart CBD's lack of the scale and diversity is limiting Hobart's overall economic success.

- The Hobart CBD lacks the scale and diversity required to be competitive and to generate stronger economic growth, an innovation economy and employment opportunities
- The Hobart CBD's lack of scale has restricted the growth of Hobart's economy which has contributed to the lack of employment opportunities and the poor socio economic outcomes
- Hobart CBD's lack of scale and diversity and over reliance on the public sector and tourism means Hobart's economy is vulnerable to external shocks which impact sectors.

Hobart CBD's lack of scale can be traced to the city's historic economic development, the historic growth patterns of the city and competition between local councils to attract employment to their municipalities:

- Greater Hobart is also a polycentric city which is slightly unusual for a city of its population size 211,656 (2011) but less unusual for its geographic size. This has also contributed to Hobart CBD's lack of scale as satellite activity centres have drawn activity away from the CBD.

  This is partially attributable to local councils try to attract business to their municipalities at the expense of the Hobart CBD. This is demonstrated by the current trend for 'big box' and campus style offices developed in outer areas including the Entura office development in Cambridge and the Antarctic division and Vodafone offices located in Huntingfield (Kingston).

- Hobart did not have the natural advantages that other cities in Australia did. It is geographically isolated from mainland Australia which creates a competitive disadvantage with other industries such as manufacturing export industries (cost and time implications). It is also isolated from global commercial centres and has minimal mineral resources. This has resulted in lower economic and population growth from the outset, which has reduced the city's economic competitiveness. This led to lower overall economic activity (investment, consumption) resulting in low economic growth.

  The lack of economic and population growth together with Hobart's geographic disadvantage has restricted the growth of the Services economy. This in turn has meant that the Hobart CBD lacks scale in its current form.

Opportunity: The soon to be unutilised rail corridor represents an opportunity to improve the economic, social and environmental outcomes in Hobart and Tasmania.

The opportunity is greatest while the rail corridor is still in good condition. Whilst a basic maintenance regime will be in place, the condition of the rail corridor and associated infrastructure (i.e. signals etc.) is expected to deteriorate over time.

Without a commitment to develop the proposed Hobart Light Rail, key development sites such as Macquarie Point may proceed without consideration being given to light rail access and this may limit future opportunities. Decisions made about the rail corridor in 2014 are likely to impact on the ability to reach the longer term vision for the city as a whole.

Future problem

Increasing the scale of the Hobart CBD will lead to congestion in the Hobart CBD and surrounding areas

Congestion may arise in the future if the Hobart CBD grows in scale as this would increase travel demand to the Hobart CBD. While congestion may have a number of root causes, key causes of car transportation congestion may be the:

- Lack of a fast a reliable public transport alternative;
- Geographic spread of residential areas and employment scattered across metropolitan Hobart will increasingly cause traffic congestion as more people live further away from where the work and recreate.

One response to congestion may be to increase public transport services (this is discussed further in stage 5). However, this may also result in congestion, particular in the Hobart CBD and around the CBD terminal facilities. The underlying cause for this form of congestion could be the:

- Lack of space in the Hobart CBD for buses to move around in and also stop to drop off and pick up passengers. This due to limiting one way streets and the pedestrian Mall in Elizabeth Street. Consequently services from Hobart's northern suburbs require a diversion of 950 meters in order to access the Hobart City Interchange compared to a 300 meters walk.
- Volume of bus movements all competing for road space in the CBD during peak hour.
- Limited number of available bus stop as priority is given to on street metered car parking and commercial zones.
- Inability to provide alternative modes for populations south or east of Hobart (due to the Derwent River and hilly topography to the south and west) means that the northern corridor is the only place where there is an opportunity to increase public transport capacity through a higher capacity mode such as light rail.

6.2 Problem Prioritisation

IA criteria addressed:

- *Identify why this problem has been prioritised against other problems across that network and/or region – i.e. demonstrate which problems are most likely to hinder the achievement of goals and objectives.*

Without any formal prioritisation process, these problems have been discussed and acknowledged in various land use, transportation and economic development strategies released by the Government.

7 Stage 5: Option Generation

Table 12: Stage 4: Option Generation

Infrastructure Australia's approach to infrastructure planning and investment has consistently emphasised the principle that infrastructure policy should include both supply and demand-side solutions. In light of this principle, once rigorous problem identification, assessment and analysis has been undertaken, a broad spectrum of options should be developed. The spectrum of options should represent a range of reasonable alternatives (both conventional and un-conventional) to solve the problems. As outlined in its December 2008 report, and various subsequent reports, Infrastructure Australia notes that significant aspects of the ongoing national demand-side reform agenda remains unfinished. It further notes that, given the potential for these reforms to address many of the problems facing infrastructure networks today, many capital investments should only take place after reforms are in place – and not before.

IA criteria addressed:

- *Short description of the option, and how it is likely to achieve the goals/objectives.*

The problem analysis identified a number of underlying causes to the problems. The Tasmanian Government understands there are a plethora of options which could address the underlying causes of the problems discussed and have made progress in undertaking some of these options.

For the completeness of this submission, a comprehensive range of high level options (including those already underway) and progress made to date are outlined in Table 13. These options include:

- Policy options
- Governance options
- Operations options
- Capital options.

While recognising that planning policies, price signals and the lack of economic stimulus appear to be the underlying cause of the problems, these causes have persisted over many years and will require more than options targeted at these causes for the goals to be achieved. For example, while planning policies which discourage sprawl and car dependency in favour of more sustainable development near activity centres could and are already being pursued, there remains significant housing stock in areas where car dependency remains high. Other options will need to be generated to address these issues.

Some of these options are aimed at improving the speed and reliability of public transport and reducing car dependency which will:

- Decrease the cost of transportation and therefore improve the Tasmanian economy
- Improve the ability of those who rely more heavily on public transportation (elderly, people from low socio economic backgrounds) to access important services
- Reduce the environmental impact of transportation
- Improve the resilience of the Tasmanian economy should oil prices continue to rise.

Other options are aimed at stimulating the growth of the Hobart as hub for services, research and employment which will:

- Increase the scale of the Hobart CBD, the amount of economic activity generated there and hence improve the Tasmanian economy.
- Create more employment opportunities to alleviate youth unemployment and the living standards of all Hobartians, especially those from low socio economic backgrounds.
- Diversify Hobart's economy away from its current reliance on public sector services and tourism to ensure the economy can resist future external shocks.

Table 13: Options

Option	Description	How is it likely to achieve goals/objectives	Progress
Policy			
Implement a metropolitan Urban Growth Boundary	Employing an urban growth boundary (UGB) designed to limit housing development in green-field sites.	The UGB will restrict the ability of councils to release new green-field land for housing developments in areas which are destined to become highly car dependent. This will also direct and encourage future housing developments towards existing activity centres.	The Southern Regional Land Use Strategy outlines a Greater Hobart Residential Strategy to manage residential growth by establishing a 20 year urban growth boundary. Amendments to the Regional Land Use Strategy, including the Urban Growth Boundary were approved by the Minister in October 2013. Councils will be responsible for adhering to the Urban Growth Boundary through the development of their Interim Planning Schemes.
Encourage infill development	Developing policies to encourage infill development as a substitute for green-field development.	This initiative would complement the UGB, which is designed to restrict green-field developments, by encouraging development closer to existing activity centres. The overall effect would be a reduction in car dependency in Hobart which will decrease the cost of transportation and therefore improve the Tasmanian economy. It will also improve the resilience of the Tasmanian economy should oil prices continue to rise. • Increase Hobart's productivity by reducing travel distances between residential areas and services/employment hub(s). • Improve social equity and quality of life by encouraging the development of sustainable communities that are accessible to important health and education services.	The Southern Regional Land Use Strategy outlines a Greater Hobart Residential Strategy to manage residential growth by establishing a 20 year urban growth boundary and proceeding on the basis of a 50/50 ratio of green-field to infill (brown-field) development. The Strategy recommends an Infill Development Program to identify key redevelopment opportunities, without relying upon small scale subdivision and unit development to promote these changes. Councils will be responsible for adhering to the infill targets through the development of their Interim Planning Schemes. DIER, STCA, DED and some metropolitan Councils are currently working together to identify barriers and opportunities and intervention mechanisms to encourage greater levels of infill development. There has also been a shift toward providing affordable housing and public housing in the CBD, close to Activity Centres and close to high frequency public transport corridors.

Option	Description	How is it likely to achieve goals/objectives	Progress
Intensify provision of services (education, health) in corridor	Developing policies that facilitate, encourage and prioritise the development of important services, such as education and health services, along the corridor. This could be in the form of: • Improving communication between key stakeholders such as service providers, councils and service users. • Providing incentives for the private sector to develop facilities along the corridor i.e. rezoning land to allow for appropriate development, speeding up development application process. • Councils actively combing land allotments to allow for development of sufficient scale.	Encouraging the intensification of services along the corridor will potentially: • Improve productivity by co-locating related services in an area which are readily accessible to users of the services. • Reduce car dependency and greenhouse gas emissions by locating services in the public transport corridor. • Improve social equity and quality of life by locating services in areas accessible by both car transportation and public transportation to ensure the services can be accessed by all Hobartians.	While a formal strategy/policy that encourages the intensification of key services in the corridor has not been established, progress has been made in the form of: • Royal Hobart Hospital upgrade - the facility is currently undergoing a $586m redevelopment which will improve both the existing facilities and services.[53] • King George V (Glenorchy CBD) oval redevelopment - $8.7m redevelopment including allied health, physiotherapy and remedial health facilities, social and function rooms and a migrant centre.[54] • Hobart Showgrounds (Glenorchy) – multimillion dollar upgrade to replacing ageing infrastructure, develop new exhibition and event venues and development of a commercial precinct.[55] • UTAS developing a new campus/teaching and research facilities in the Hobart CBD. • Creation of Macquarie Point Development Authority.

53 Department of Health and Human Services, Redevelopment RHH, accessed: http://www.redevelopmentrhh.tas.gov.au/

54 http://www.themercury.com.au/sport/afl/plans-for-8-million-makeover-of-kgv-oval/story-fnj4f7h7-1226779299076

55 http://www.hobartshowground.com.au/redevelopment

Option	Description	How is it likely to achieve goals/objectives	Progress
Encourage intensification of employment hubs	Providing policy incentives to encourage concentration of employment in hubs in the Hobart CBD and also along the corridor. For example, land zoning policies could be relaxed to allow more intensive commercial development.	Encouraging the intensification of employment hubs will potentially: • Improve the sharing of knowledge and hence productivity within commerce/industry (IASP2). • Increase Australia's productivity (IASP2) by reducing travel distances between residential areas and services/employment hub(s).	Councils are developing new Interim Planning Schemes which provide for mixed use and inner residential zones adjacent to key public transport corridors. DIER, STCA, DED and some metropolitan Councils are working together to identify barriers and opportunities and intervention mechanisms to encourage greater levels of infill development. Mechanisms being explored include bonus floor/density space ratio, identification of priority areas for infill development and establishment of planning guidelines.
Growth (fringe) tax (GAIC)	Applying a tax to new greenfield housing developments to capture the costs incurred by government for providing new infrastructure in the area.	This option would raise the cost of greenfield development to its true value and ensures that the quantity of greenfield developments is appropriate and efficient. This would: • Reduce overall car dependency, assuming development is redirected to areas where multiple transportation options are provided (PT, active transport). • Reduce the infrastructure burden on government as the tax could be used to fund transport projects of metropolitan significance • Reduce greenhouse gas emissions. • Facilitate the development of our cities (IASP5) by making dense infill development relatively more attractive - relative to green-field development - than it currently is.	The Tasmanian Government could investigate the viability of this option.

Option	Description	How is it likely to achieve goals/objectives	Progress
Public housing policies	Develop policies to ensure future public housing developments are located in areas with strong public transportation links and access to the Hobart CBD where important services are located.	This option is designed to ensure that future public housing residents (elderly, people from lower socio economic backgrounds) are located in areas with strong transportation links and access to important services, education and employment opportunities. This will improve social equity.	The Tasmanian Government has adopted standards/guidelines for the development of public housing which reflects the need to develop housing in infill areas and along transport corridors. The Tasmanian Government has committed to the construction of social housing in inner infill areas including the proposed Trinity Hill housing project in North Hobart which includes 46 independent living units.[56]
Maximum parking requirements	Develop maximum parking requirements for new developments to reduce the availability of parking in the Hobart CBD and along the corridor.	Reducing the availability of parking will potentially: • Reduce congestion by making it relatively less attractive to drive into the Hobart CBD/corridor as parking will be more expensive or more difficult to find • Reduce greenhouse gas emissions by reducing the demand for car transportation.	There is some maximum car parking requirements provided for in the draft Interim Planning Schemes in central commercial zones – e.g. Hobart City Council. If coupled with improved public transport options this approach to limiting parking supply could also be used in Glenorchy and Moonah.
Parking levy	Applying a parking levy in the Hobart CBD and along the corridor to increase the cost of parking and hence car transportation, particularly in areas with strong public transport services and connections	The application of parking levies is designed to discourage car transportation in favour of other forms including public transport and active transportation which will: • Reduce greenhouse gas emissions. • Reduce congestion. • Increase public transport usage.	The Tasmanian Government could investigate the viability of this option in conjunction with relevant Councils.

[56] http://www.dhhs.tas.gov.au/housing/about/major_capital_projects/trinity_hill

Option	Description	How is it likely to achieve goals/objectives	Progress
Road tolls	Applying road tolls to key arterials in Greater Hobart.	Roads tolls are designed to increase the cost of car transportation which will disincentive car transportation and encourage public transport usage as it becomes relatively less expensive. This would: • Reduce congestion in the arterials and activity centres including the Hobart CBD and along the corridor. • Increase public transport usage. • Reduce greenhouse gas emissions. • Facilitate the development of our cities (Infrastructure Australia Strategic Priority 5) by making dense infill development relatively more attractive - relative to green-field development - than it currently is.	The Tasmanian Government could investigate the viability of this option.
Tax on second car	Applying a tax to the purchase of a second car for each person/household.	This would make ownership of a second car more expensive which would: • Reduce congestion in the arterials and activity centres including the Hobart CBD and along the corridor. • Increase public transport usage. • Reduce greenhouse gas emissions. It is important that any potential policies on taxes for a second car be designed to ensure that people from lower socio economic backgrounds are not affected by this (say if public transport were not a viable alternative).	This option has not been investigated

Option	Description	How is it likely to achieve goals/objectives	Progress
Taxi legislation reform	The role of taxis in the transport network and supporting legislation could be reviewed to improve service and reduce costs	This may: • Increase transportation options (both in quantity and price) for all areas of Hobart and therefore improve access to the Hobart CBD for Hobartians, particularly the elderly • Improve the social equity and the quality of life of Hobartians, particularly the elderly (Infrastructure Australia Strategic Priority 7)	The Tasmanian Government could investigate the viability of this option.
Governance			
Greater cooperation between the State Government and local councils	Fostering greater cooperation and communication between the State and local Government in land use planning	Greater Hobart lacks a unified governance body or strategic context, and consists of several independent Local Government areas, each with their own objectives and priorities. This together with a historic lack of clear State Government direction has contributed to a sprawling polycentric city that lacks coherent or integrated planning at a whole-of-city level. Greater communication between the local councils and the State Government will ensure greater alignment between the objectives of the State Government and local Governments particularly around land use planning. This will ensure the smooth implementation of Southern Tasmania Regional Land Use Strategy 2010-2035 (and other initiatives as they arise) which will curb urban sprawl, encourage denser developments and hence decrease car dependency in Hobart.	The Southern Tasmanian Regional Land Use Strategy 2010 -2035 was jointly developed by the Southern Tasmanian councils and the Tasmanian Government. The parties will continue to work together to implement the Strategy including working to ensure that Planning Schemes reflect the Strategy. The State Government will continue to support the Strategy through the work being undertaken in relation to passenger transport planning, including the development of Transit Corridor Plans. The Draft H.30 Hobart Capital City Plan 2011-2040 has been developed jointly by State and Local Government.

Option	Description	How is it likely to achieve goals/objectives	Progress
Continuing cooperation between the Hobart City Council, State Government and UTAS	Continuing cooperation and communication between UTAS, Hobart City Council (HCC) and the Tasmanian Government.	Continuing cooperation between these three parties will support UTAS' development of teaching, research and residential facilities in the CBD, which will increase the scale and invigorate the CBD, increase its scale and diversity, attract investment and improve the economic performance of the region.	The Tasmanian Government, HCC and UTAS will continue to work together to support the development of UTAS' teaching, research and residential facilities in the CBD. This has included cooperation aimed at improving passenger transport options (including active transport and public transport links) for students and staff of the University.
Tasmanian Government– development and implementation of service standards for public transport	Developing and implementing service standards to provide a framework for the provision of more efficient (reliable, frequent etc.) public transport. This includes ensuring that public transport services are procured by Government in a consistent manner with resources allocated equitably based on need and minimum service standards.	Developing and implementing State wide service standards are intended to improve quality (speed, frequency, reliability) of public transport, and hence reduce car dependency, by: • Providing a better definition of what government wishes to procure. • Improving the efficiency of public transport services by placing priority on corridor services which in turn are linked to by access services from areas outside corridors. • Defining customer awareness and accurate expectations of services in their area. • Focusing public transport resources to provide services with high frequency over a largest possible span of hours. • Encouraging the design of more direct, faster and higher frequency routes. • Placing priority on corridor services which in turn are linked to by access services from areas outside corridors,	The Tasmanian Government is currently developing service standards for public transport.

Option	Description	How is it likely to achieve goals/objectives	Progress
Streamline the development approval processes in the corridor	Making it easier and quicker for developers to gain planning approval along the corridor – as long as the developments are compliant i.e. dense, well designed development.	Streamlining the development approval process for certain types of development would encourage developers to become more active along the corridor which would: • Facilitate the development of our cities (IASP5) by increasing dense infill development • Increase public transport usage by diverting development and residents towards key public transport corridors • Reduce overall car dependency and greenhouse gas emissions by diverting some development away from green-field car dependent sites.	The Tasmanian Government could investigate the viability of this option.
Creating a parking policy accord	Developing a uniform approach to parking across all LGAs to ensure LGAs are not offering cheap (free) abundant parking in competition with other LGAs.	A uniform approach to parking will remove the current competition between LGAs to offer free and abundant parking. This will make car transportation relatively less attractive and therefore : • Increase public transport usage, thereby creating more demand and the likelihood of more services, which will in turn improve transport access and options. • Reduce greenhouse gas emissions • Reduce road congestion.	The Tasmanian Government could investigate the viability of this option in concert with local government.
Operations			
Marketing – public transport usage	Creating and engaging in marketing campaigns to encourage people to use public transport.	This initiative is designed to increase demand for public transport.	The Tasmanian Government is promoting the 'Turn Up and Go' initiative where a maximum wait time is specified on the main road corridor between Hobart and Glenorchy.

Option	Description	How is it likely to achieve goals/objectives	Progress
Simplified bus network (whole metropolitan region)	Simplifying the metropolitan bus network (bus routes and timetabling) in alignment with the State wide public transport services standard.	A simplified bus network should improve the quality of public transport and hence its viability as a transportation option by : • Focussing on low penetration high frequency services with a focus on high frequency corridor services with access services provided from areas outside the corridor. • Improving total journey travel times with reduced waiting times. The reliability of buses in Hobart will improve which will increase usage and decrease car transportation in Hobart. • Provisioning services which regularly operate over a large span of hour seven days a week to improve the ability of all Hobartians, particularly the elderly and people from lower socio economic backgrounds to access the Hobart CBD and the services available there.	The Tasmanian Government could investigate the viability of this option in conjunction with bus operators.
Introduce express bus services (MONA to Hobart CBD)	Introducing express bus services travelling via the Main Road corridor from the northern suburbs (commences at MONA) with stops in Glenorchy, Moonah then Hobart.	These services would be designed to increase the speed of public transportation (frequency and reliability may also be improved) from the northern suburbs to the CBD. This means: • Public transport becomes a viable option in the northern suburbs which will reduce the cost of transportation and improve the economic performance of Hobart. This will also reduce car transportation and therefore reduce the impact of transportation on the environment. • Improved access to the CBD for elderly residents and people from lower social economic background which improves overall social equity.	The Tasmanian Government could investigate the viability of this option.

Option	Description	How is it likely to achieve goals/objectives	Progress
Improve bus frequency	Improving the frequency of bus services throughout Hobart.	This will reduce wait times and therefore improve the attractiveness of public transport and also improve access to services and the Hobart CBD.	The Tasmanian Government could investigate the viability of this option.
Public transport pricing	Variable fares on bus services depending on whether travel is occurring in peak or outside peak periods. This is particularly applicable to well underutilised weekday inter peak periods.	Discounted travel costs in off peak periods may encourage bus usage during off peak periods where capacity is available on services. This will lower the cost of transportation for some commuters and therefore improve the accessibility of services (particularly important for the elderly and people from lower socio economic backgrounds).	The Tasmanian Government could investigate the viability of this option in concert with Metro and other operators.
Marketing – housing choice	Creating and engaging in marketing campaigns to encourage people, particularly elderly people, to live in denser areas with easy access to essential services.	This initiative is designed to address the demand side of denser development. It will also discourage demand for residential development in outer fringe areas where the cost of transportation is high and access to important services and the Hobart CBD is relatively weaker. It does not address supply side issues.	The Tasmanian Government could investigate the viability of this option.

Option	Description	How is it likely to achieve goals/objectives	Progress
Capital			
Main Road Transit Corridor Plan (Glenorchy to Hobart CBD)	Developing high quality infrastructure to enhance the attractiveness and reliability of public transport along the Main Road corridor including: • High frequency bus services. • Bus priority measures. • Improved off-bus infrastructure such as waiting facilities and service information.	Improved public transport along the corridor will make public transport a more viable option and therefore reduce the cost of transportation in the corridor. It will also support denser residential development to reduce car dependency in Hobart in the long term.	A Final Plan for the Main Road Transit Corridor has been prepared and is being considered by local Government stakeholders. The Tasmanian Government has allocated $350,000 to progress planning and public consultation for short-term bus priority measures and bus stop optimisation on the Corridor. A BCR was developed for the implementation of the bus priority and bus stop optimisation measures which showed the benefits clearly outweigh the costs. The project had a BCR of 1.65 under the least generous assumptions to 5.22 under generous assumptions. The 'Turn Up and Go' (or Main Road Service Enhancement Trial) initiative was introduced in November 2013 as an early step in the implementation of the Main Road Transit Corridor Plan. 'Turn Up and Go' means that passengers need to wait no more than ten minutes to catch a bus between 7am and 7pm during weekdays, and also provides some earlier and later services on the corridor. Early indications suggest overall patronage has increased by 3.4% with fare paying passengers increasing by 6.5%. The strongest increases noted during commuter peak and shoulder peak periods.

Option	Description	How is it likely to achieve goals/objectives	Progress
Transit Corridor Plan – other transit corridors	Developing high quality infrastructure to enhance the attractiveness and reliability of public transport along other key transit corridor in Hobart including: • Hobart CBD to Kingston. • Hobart CBD to Shoreline. • Hobart CBD to Sandy Bay (UTAS).	Improved public transport along key public transport corridors will make public transport a more viable option and therefore reduce the cost of transportation.	The Tasmanian Government has provided funding to the planning of a second Transit Corridor Plan focusing on the corridor between the Hobart CBD and Kingston.

Option	Description	How is it likely to achieve goals/objectives	Progress
Bus Way (Hobart CBD to MONA)	Develop a bus way along the disused rail corridor between the Hobart CBD and MONA (and eventually to Brighton).	The Bus Way may: • Improve the economic performance of Hobart and Tasmania by reducing the cost of transportation. • Improve the quality/reliability of public transport from the northern suburbs to the Hobart CBD and therefore improve social equity by improving access to the CBD, particularly for elderly residents and people from lower socio economic backgrounds. • Reduce the environmental impact of transportation in Hobart by offering a form of transportation that is more sustainable than motor vehicles. • Assist with increasing the scale and diversity of the CBD by improving transportation links to the Hobart CBD and therefore making the Hobart CBD a more attractive location for businesses, research institutions etc. to locate. • Catalyse denser development (and the development of housing stock that is suitable for the elderly and also suitable for the promotion of social inclusion) along the corridor. • Improve the resilience of Hobart in the long term by reducing the city's car dependence and hence vulnerability to oil price shocks.	This option has been investigated - Northern Suburbs to Hobart Port (Pitt and Sherry) 2009 where a Bus Way was costed between Claremont and Hobart CBD. The Tasmanian Government could further investigate the viability of this option.
Bus fleet replacement	Replace segments of the current bus fleet with new vehicles.	New buses might improve the quality (and perceptions of quality) and hence viability of public transportation which has the potential to reduce car transportation. This will lead to lower transportation costs. A new bus fleet may also comply more successfully with DDA requirements.	The Tasmanian Government already funds Metro for bus replacement and could further investigate the viability of increasing funding for this purpose.

Option	Description	How is it likely to achieve goals/objectives	Progress
Hobart Light Rail	Develop a light rail from the Hobart CBD to the northern suburbs of Hobart along the disused rail corridor. The light rail would be developed in stages: • Stage 1: Hobart to MONA • Stage 2: MONA to Brighton (or Bridgewater) and extension from Hobart to North Hobart.	The proposed light rail is designed to: • Improve the economic performance of Hobart and Tasmania by reducing the cost of transportation. • Improve the quality of public transport from the northern suburbs to the Hobart CBD and therefore improve social equity by improving access to the CBD, particularly for elderly residents and people from lower socio economic backgrounds. • Reduce the environmental impact of transportation in Hobart by offering a more sustainable form of transportation. • Assist with increasing the scale and diversity of the CBD by improving transportation links to the Hobart CBD and therefore making the Hobart CBD a more attractive location for businesses, research institutions etc. to locate. • Catalyse denser development (and the development of housing stock that is suitable for the elderly and also suitable for the promotion of social inclusion) along the corridor. • Improve the resilience of Hobart in the long term by reducing the city's car dependence and hence vulnerability to oil price shocks. • Provide a zero emission mass transit alternative capable of easily accommodating future transport demand increases.	Investigation of the feasibility of providing light rail services on the rail corridor: - Hobart Northern Suburbs Light Rail Business Case (ACIL-Tasman) 2011 - Hobart Northern Suburbs Light Rail Business Case Peer Review (AECOM) 2012 - Stage 1 Light Rail Business Case Hobart – Glenorchy (ACIL-Tasman) 2013. - Hobart Light Rail - Strategic Assessment (PWC) 2014 - Wider Economic Benefits/Funding and Financing Options Identification (PWC) 2014 - Preliminary Planning (PWC) 2014

Option	Description	How is it likely to achieve goals/objectives	Progress
Brooker Highway upgrades	The capacity of the Brooker Highway can potentially be improved in many ways including: • Widening the road. • Remodelling or removing intersections. • Installation of bus lanes.	Planned capacity improvements are focussed on improving efficiency for cars and freight as this is a key freight and car passenger route. This may provide benefits to public transport (Brooker express buses) as travel flow will be improved. Improved capacity will potentially reduce congestion in this location, but may lead to increased demand for car travel which could exacerbate congestion in the future. The Brooker Highway is not the most suitable public transport route in the northern corridor, as it is the main urban highway to the north and has a high proportion of freight and car use. The land use surrounding the Brooker Highway is not conducive to a key public transport corridor. The Highway also does not exhibit the number of trip attractors found along the Main Road and rail corridor, in particular activity centres such as Glenorchy, Moonah and North Hobart, together with schools. It would be undesirable to increase residential density along the highway for amenity reasons (traffic noise) given it is a major highway. Commercial development along the Highway is also undesirable as it is important to limit the number of access points onto the Highway for safety and efficiency reasons.	Some specific options for improving bus reliability have been previously investigated. The modelling results indicated that where bus priority measures resulted in a decrease in travel time for buses, this caused a significant increase in travel time and delays for all other road users. Measures that increase travel time for other users are problematic given that the Highway is a major freight and car commuting route. Funding has recently been announced under Nation Building 2 ($29.6 million) to improve the efficiency of the Brooker Highway, including: • Creating a single intersection for Goodwood and Elwick Roads. • Converting the Howard Road roundabout into a single intersection. • Improving capacity of the Domain Highway interchange.

Option	Description	How is it likely to achieve goals/objectives	Progress
Derwent River ferry service	Developing an expanded ferry service on the Derwent River utilising three routes between Waterman's Dock and the following areas: • Bellerive Village • Lindisfarne Montagu Bay • Howrah Point	An expanded ferry service on the Derwent River is likely to achieve the goals/objectives: • By offering another transportation option to access the Hobart CBD which may also increase activity in the Hobart CBD. • By offering a potential alternative to car transportation which would decrease the environmental impact of car transportation.	In 2009, the Tasmanian Government commissioned AECOM to undertake a high level estimation of infrastructure and service delivery costs associated with establishing an expanded commuter ferry service on the Derwent River. The study found that the commercial viability of a potential ferry service (based around the routes, infrastructure and vessels adopted in this study) is questionable and would require significant subsidy from government to operate. The Government has recently obtained consultant advice on current stakeholder views regarding new ferry services. The report of this work recommends that further analysis be undertaken to estimate the demand for such services.
Cycling priority	Developing cycling priority infrastructure along the current cycling trail (which runs adjacent to the rail corridor). This could involve the development of crossing signals or actuated signals to improve safety and convenience.	Improved cycling infrastructure may improve the viability of cycling as a transportation option and encourage modal shifts from car transportation (and other forms of transportation) towards cycling. This may result in reduced environmental impact of transportation.	The Tasmanian Government could investigate the viability of this option.
Heritage railway	A heritage train operator could be given access to lease the corridor.	Allowing the operation of a heritage train service in the short term could assist to maintain the track bed and protect the corridor for future transport projects which can address the identified problems. The main goals and objectives would not be met by this option.	Whilst recognising that this options does not directly address the identified problems, the Government could investigate this option further if there were perceived to be benefits. Government involvement in the operation of any heritage rail should be limited to negotiating a lease that protects the government's long term interests (maintenance of the track bed).

8 Stage 6: Options Assessment

Table 14: Stage 6: Options assessment

Once a range of options has been identified, a structured process should be used to assess those options and, on the basis of their merit, move from a longer list of potential options to a shorter list of potential solutions.

The process of narrowing down options should be structured, objective, and evidence-based. Options should not be ruled out on the basis of prejudice, political or presentational difficulties, or in any way which precludes genuine consideration of certain options. Options should be ruled out only on the basis that they do not address the problem in an efficient way.

To give an indication of the type of structure required, the following three step outline process is offered:

1 Step one could be a quantitative multi criteria analysis of the long list of options, showing, at a high level, each option's impact on the goals and objectives identified in Stage 1 of the overall Reform and Investment Framework. The best performing options move to step two:

2 Step two could be a rapid or high level, cost benefit analysis of a shorter list of options; alongside a more detailed multi criteria analysis to pick up any impacts not captured in the rapid economic appraisal. The best performing options move to step three:

3 Step three would complement the more detailed multi criteria analysis with a detailed economic cost-benefit analysis of, for example, the two or three lead options.

Infrastructure Australia is mindful of the fact that scenario analysis is not yet widely applied. Therefore, as part of any submission made by proponents, we are not expecting detailed modelling of an initiative's costs and benefits under different scenarios. Rather, we are looking to proponents to provide a qualitative assessment of:

- The impact(s) of different scenarios on an initiative's strategic fit (i.e. whether a potential initiative's ability to contribute to the goals and objectives identified in Stage 1 is stronger or weaker under different scenarios); and
- The likely impact of the scenario on the initiative's costs and benefits.

Clearly, if explicit modelling of alternate scenarios is available, Infrastructure Australia would seek to view the outputs of that modelling.

The options outlined in Stage 5 have been assessed in this Stage using a structured approach. At this stage, the initial list has been narrowed down to an interim list by applying a high level multi criteria analysis. It is noted that additional analysis is required before a shortlist can be generated as there is currently limited quantitative evidence to support the potential impact of some options.

Each option has been assessed against the following criteria:

- **Ability to achieve goals/mitigate problems** – the aggregate impact the option will have on the goals and objectives
- **Cost effectiveness** – the 'value for money' associated with an option
- **Ease of implementation** – the ease at which the option can be implemented where 'high' would apply to options which can be easily implemented with relatively less time and resources
- **Likelihood of success** – an assessment of how risks or uncertainties around the success of the proposed option could impact on the likelihood of successful implementation (i.e. the impact of various scenarios on the option's strategic fit, costs and benefits).

The **overall rating** describes the ability of the option to address the problem in an efficient way and is based on each option's rating against each of the criteria described.

The options have been assessed in isolation (as independent options) in this section for the purpose of developing a shortlist for further analysis. However, it is noted many of these options are complimentary and their potential impacts are greater when implemented in conjunction with complimentary options.

The results from the multi criteria analysis are summarised in Table 15 and discussed in more detail below.

Table 15: Multi criteria analysis summary

Option	Ability to achieve goals or mitigate problems	Cost effectiveness	Ease of implementation	Likelihood of Success	Overall priority rating
Policy					
Implement an urban Growth Boundary	Medium	High	High	Medium	High
Encourage infill development, particularly in the corridor	High	Medium	Low	Medium	High
Intensify provision of services (education, health) in corridor	High	Medium	Medium	Medium	Medium
Encourage intensification of employment hubs	High	High	Medium	Medium	High
Growth (fringe) tax (GAIC)	Medium	High	Medium	Medium-Low	Medium
Public housing policies	High	Medium/High	Medium	High	High
Maximum parking requirements	Medium	High	Medium	Medium/Low	Medium
Parking levy	Low	High	Low	Medium	Medium
Road tolls	Medium	High	Low	Low	Medium/Low
Tax on second car	Low	High	Low	Low	Low
Taxi legislation reform	Low	Unknown	Low	Medium	Low
Governance					
Greater cooperation between the State Government and local councils	High	High	Low	Medium	Medium
Greater cooperation between the State Government, the Hobart City Council and UTAS	High	High	High	High	High
Tasmanian State Government – development and implementation of service standards for public transport	High	High	Medium	Medium	High
Streamline the development approval processes in the corridor	Medium/High	High	Medium	Medium	Medium/High
Create a parking policy accord	Medium	Medium	Medium	Low	Medium

Option	Ability to achieve goals or mitigate problems	Cost effectiveness	Ease of implementation	Likelihood of Success	Overall priority rating
Operations					
Simplified bus network (whole metropolitan region)	High	Medium/High	Medium	Medium/High	High
Introduce express bus services MONA to Hobart(3 stops)	Medium	High	Medium	Medium/High	Medium/High
Improve bus frequency on key corridors	High	High	High	High	High
Variable public transport pricing	Low/Medium	Medium	High	High	Medium
Marketing – housing choice	Low/Medium	Medium	High	Medium	Medium
Marketing – public transport usage	Low/Medium	Medium	High	Low/Medium	Medium
Capital					
Transit Corridor Plan - Glenorchy to Hobart CBD (Main Road)	High	High	Medium	High	High
Transit Corridor Plan – other transit corridors	Medium/High	High	Medium	Medium/High	Medium/High
Bus Way (Hobart CBD to MONA)	Medium	Low/Medium	Low	Medium	Low/Medium
Bus fleet replacement	Low	Low	High	Low/Medium	Low/Medium
Hobart Light Rail	High	Low	Low	Medium/High	Medium
Brooker Highway upgrades	Low	Low	Low	Medium	Low
Derwent River ferry service	Low/Medium	Low	Medium	Low/Medium	Low/Medium
Cycling priority	Low	Medium	Low	Low	Low
Heritage railway	Low	Unknown	Low	Low	Low

8.1 Policy options

8.1.1 Implement a metropolitan Urban Growth Boundary (in progress)

Impact on goals: Medium

Enforcing an urban growth boundary (UGB) to set the physical extent for a 20 year supply of residential land for the metropolitan area may have significant implications for the future development of Hobart and the city's car dependency.

Eighty-five per cent of current housing developments occur in green-field sites where residents are more likely to be dependent on car transportation to access services. The UGB and other densification initiatives proposed in the Southern Tasmania Regional Land Use Strategy 2010-2035 sets a target of 50 per cent of new development to occur within infill sites with the remaining 50 per cent to occur in green-field sites. The strategy also targets a minimum net residential density of 15 dwellings per hectare (compared to 7-10) for current green-field developments.

There is forecast demand for an additional 26,500 dwellings over 2010 to 2035. Successful implementation of the UGB could increase development in the corridor by 13,500 dwellings (50 per cent of 26,500). This figure is significant as it is close to 10 per cent of the current number of dwellings in Hobart (94,192).[57]

Even if 10 per cent of future dwellings continued to be developed in greenfield developments then this would worsen Hobart's car dependency which would impact all four goals (improve the Tasmanian economy, improve social equity reduce the environmental impact of transport and improve the long term resilience of Hobart).

However, while the UGB together with other densification initiatives will steer future development towards a more sustainable urban form, the impacts will not be realised until the long-term and will need to be coupled with other measures to reduce Greater Hobart's car dependency.

Cost effectiveness: High

Applying an urban growth boundary represents a low cost option from the Government's perspective.

Ease of implementation: High

Amendments to the Regional Land Use Strategy, including the UGB were approved by the Minister in October 2013. Councils are now responsible for adhering to the UGB through the development of their Interim Planning Schemes. It is important that the UGB is adhered to. There are examples in other States, such as in Melbourne and Sydney where an urban growth boundary concept has been undermined through pressure from developers.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if:

- The UGB is not enforced in planning decisions.
- Infill development proves more expensive in Hobart compared to green-field developments which decreases housing affordability in the short to medium term which decreases social equity.
- Demand for infill development is currently low, however, provision of improved public transportation infrastructure (see options below) could be the catalyst for developers and other government agencies to intensify in the light rail corridor.

[57] ABS Census 2011, http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/6GHOB?opendocument&navpos=220

8.1.2 Encourage infill development, particularly in the corridor (in progress)

Impact on goals: High

The Southern Tasmania Land Use Strategy 2010-2035 sets a target for 50 per cent of all future residential dwelling developments to occur within infill areas. This would represent a significant increase on the current level of infill development which accounts for only 15 per cent of residential development.

With a forecast requirement for an additional 26,500 dwellings to 2035, this would equate to approximately 13,250 dwellings in infill sites. More importantly, this option aims to shift development away from green-field sites where 85 per cent of residential developments currently occur. The new infill target could mean 9,275 dwellings (close to 10 per cent of Hobart's current stock of dwellings) will be developed in infill sites instead of green-field areas. If the infill development were to be focused around transit corridors and the Main Road corridor in particular, the benefits would be increased further.

Cost effectiveness: Medium

Setting an infill development target could result in moderate costs if it is assumed that Government will invest seed funding to facilitate site assembly and streamline approvals processes. Once the property economics is more reasonable (the risk/reward profile is more acceptable to developers) it is a very cost effective way of improving transport outcomes and addressing the problems identified.

Ease of implementation: Low

Councils can encourage infill development but if the property economics favour a different investment then it is difficult, without Government intervention to make the option more attractive, to get developers to take on the risks associated with infill development.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if:

- Local councils do not enforce it adhere to the UGB in their Interim Planning Schemes.
- Infill development proves more expensive in Hobart compared to green-field developments which decreases housing affordability in the short to medium term which decreases social equity. Research by the National Australian Housing Supply Council in 2010 highlighted that an average infill dwelling costs around $136,400 more to construct than an equivalent Greenfield dwelling. This is due to the cost of aggregating land, higher construction costs, delays in securing finance (with higher capital outlays) and community opposition to infill development.[58]
- Within the corridor, higher density and higher priced infill development is more likely to be in demand closer to the CBD whilst lower density infill development is likely to be popular and feasible north of New Town. Exceptions may arise on a site specific basis.
- Given Hobart's low population growth and lack of 'experience' with infill, developers see the demand and return for Greenfield's being stronger, and the risk as being lower.

8.1.3 Intensify provision of services (health and education) in the corridor

Impact on goals: High

Despite the preliminary nature of this option, it is anticipated that the impact of intensifying the provision of services in the corridor would have a significant impact on goals of this project.

The Tasmanian Government could investigate the potential impact of intensifying services along the corridor further by analysing the potential efficiency gains from co-locating services. Analysis could also be conducted into the number of people who will be able to access services/access services more easily.

[58] National Australian Housing Supply Council (2013) Housing Supply and Affordability Issues 2012–13

If the Government is relying on the private sector to relocate services then further work will need to be conducted to gain a better understanding of the potential to relocate services and the immediate need to develop new services.

Cost effectiveness: Medium

Setting service intensification targets as a policy represents a low (or medium) cost option for Government.

There would be additional capital costs potentially faced by the Government if it is responsible for relocating or developing new services along the corridor before current assets are have reached the end of their economic life. There is currently limited understanding around these costs but it could be investigated further.

Ease of implementation: Medium

While setting the policy is relatively simple, coordination between various government departments (health, education etc.) and the private sector may be required.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if some residents that are (or perceive themselves to be) worse off to the extent that they petition against the changes. It is understood that there is demand for services to be located locally, to this may be a factor even if overall access options improve (public transport availability along the corridor).

8.1.4 Encourage intensification of employment hubs (new option)

Impact on goals: High

It is anticipated that this option could have a moderate impact on goals based on the well documented economic benefits of agglomeration. However, the potential impact that this policy will have on Hobart's economy is unclear. Further analysis would be necessary to gain a better understanding on the potential impact of intensifying employment hubs in Hobart and along the corridor.

Cost effectiveness: High

Setting policies to encourage the intensification of employment hubs represents a low cost option from the Government's perspective.

Ease of implementation: Medium

Establishing the policy will require significant coordination between the Tasmanian State Government, relevant local councils and some negotiation with private sector businesses.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if:

- Public transport remains inadequate and the intensification of employment hubs may lead to increased car travel from current levels.
- There is no demand or desire from the private sector to concentrate employment in designated centres.
- Intensifying employment hubs may draws activity away from other existing activity centres which may not be designated as an employment hub.
- Local councils have competing interests and oppose the intensification of employment hubs.

The likelihood and potential impact these risks are considered moderate.

8.1.5 Growth (fringe) tax (GAIC) (new option)

Impact on goals: Medium

The application of a growth tax on developments in fringe areas is anticipated to have a moderate impact on goals based on the experience of cities. However, there is currently limited understanding on the potential

impact of a growth tax on urban development patterns for Hobart. The Tasmanian Government could investigate the potential impact of this option.

Cost effectiveness: High

This policy would be relatively low cost for Government to enact.

Ease of implementation: Medium

A Growth tax may be applied with relative ease to property developers.

Likelihood of Success: Low/Medium

This initiative will not result in the achievement of the project goals and objectives if:

- It increases the cost of housing in Hobart which will affect the social equity by decreasing housing affordability and disposable incomes.
- Development in outer suburbs is not replaced by infill development and construction activity and employment falls in Hobart which will damage the local economy.
- Local Governments' interests create insurmountable opposition to tax.

8.1.6 Public housing policies (in progress)

Impact on goals: High

This will have a significant impact on all four goals by ensuring that people who rely on affordable/public housing are increasingly provided with housing that will not result in high transportation costs.

Housing Tasmania has completed a study as part of their Strategic Asset Management Plan and found (among other things) that there is a growing and unmet demand for housing in inner-suburban/urban areas. There is a strong desire from Housing Tasmania to increase the amount of affordable housing (either social housing or privately developed through affordable housing initiatives) in the Glenorchy/Hobart Corridor where there are employment opportunities and services as well as strong public transport links.

Through various housing initiatives, Housing Tasmania and its partners have delivered around 200 new homes in Glenorchy in the past four years. More homes are planned, and as there is limited unimproved land in Hobart and Glenorchy, this will require collaboration between Government and the private and community sectors.

Cost effectiveness: Medium/High

Infill development is generally more expensive than green-field development. This means that Government will need to incur an incremental cost

However, this policy may result in longer term savings for Government. There is currently limited understanding of the potential savings.

Ease of implementation: Medium

The Tasmanian Government has already realigned social housing policies such that future housing projects are more likely to meet the goals of this initiative i.e. social housing developments will be located near activity centres or near transportation corridors.

Developing a denser form of social and affordable housing in areas which are more accessible to activity centres/services will require Government to redevelop public land in close proximity to transport services and to work collaboratively with the private and community sector to fund new development or acquire appropriate land.

Likelihood of Success: High

This initiative will not result in the achievement of the project goals and objectives if the redevelopment of existing sites or the purchase of new sites is slow to occur. The likelihood and potential impact of these risks is considered low.

8.1.7 Maximum parking requirements (new option)

Impact on goals: Medium

Setting maximum parking requirements may decrease car ownership and the proportion of trips made by car which will reduce the environmental impact of transportation. It is difficult to isolate the impact of this option on this goal as the reduction in car trips is more likely to arise from the implementation of the UGB and infill development initiatives. The availability of low cost and free parking in Hobart is currently high, and this policy would not affect the availability of existing parking; consequently the benefits would be long-term in nature.

The draft Interim Planning Schemes for the Southern Region propose a regional 'optional' provision for maximum car parking standards. This means that Councils may choose to apply the provision in the development of their Interim Schemes.

The Hobart City Council has also proposed a maximum car parking provision in the Central Business Zone (Hobart CBD).

Cost effectiveness: High

Setting maximum parking requirements for future developments represents a cheap option from the Government's perspective.

Ease of implementation: Medium

This would require a change in planning policy which is relatively simple and could be implemented as part of the Interim Planning Schemes. It may require some cooperation and coordination between councils to ensure consistency across multiple council areas.

Likelihood of Success: Low/Medium

This initiative will not result in the achievement of the project goals and objectives if:

- This option deters future developments by making them less attractive to potential buyers.
- Is opposed by councils with a stake in shopping centre developments.
- Efficient public transport is not available.

8.1.8 Parking levy (new option)

Impact on goals: Low

Previous analysis conducted by the Tasmanian Government modelled the potential impact of a car parking levy which artificially increases the cost of parking in central Hobart. Under this measure, car kilometres travelled would reduce by 2% and a shift in public transport mode share from 6.7% to 9% was recorded. More pronounced growth in public transport share was experienced during the peak periods, particularly during the morning peak where total share almost doubled.[59] This suggests that demand for public transport use is relatively inelastic with respect to car parking prices.

Experience from other capital cities has had varying results in reducing traffic congestion and consistent results in terms of increasing revenue that can be hypothecated to CBD transport improvement priorities.

Cost effectiveness: High

This policy would be relatively low cost for Government to enact.

Ease of implementation: Low

This may require coordination and agreement with local councils to ensure that parking levies are adhered to. If one council does not enact this policy then activity centres in that council may become artificially attractive (free

[59] Tasmanian Urban Passenger Transport Framework (DIER, 2010a, p17)

parking). Activity would be drawn towards this council at the expense of other council areas and car transportation will not be curbed.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if:

- It increases the cost of coming to work which it may harm those from lower socio-economic backgrounds, or provide disincentives for the unemployed.
- Similar pricing structures are not applied across all activity centres. This may result in business relocation to areas where parking costs are lower.
- Council interests result in some or all Councils deciding not to apply levies, resulting in relocation of businesses to areas where parking costs are lower or free.
- Substantial free parking can still be sourced in the relevant areas, for example due to legislative exemptions or in close proximity to the boundary of the levy zone.
- Public transport is not available to enable people to access services, employment and training.

8.1.9 Road tolls (new option)

Impact on goals: Medium

Road tolls are likely to reduce car transportation and potentially increase public transport usage. Tolls collected could also be used to fund other transportation projects.

There is currently limited understanding on the potential impact of this initiative on Hobart and hence the impact on project goals and objectives. The Tasmanian Government could investigate the potential impact, cost, ease of implementation and risk as a next step.

Cost effectiveness: High

Road tolls can potentially represent a cost effective method to solving the problems as they are relatively low cost to implement.

Ease of implementation: Low

The cost of this option depends on the approach to implementation. There is currently limited understanding around the ease of implementing toll roads in Hobart. This option could be explored further the Government.

Likelihood of Success: Low

This initiative will not result in the achievement of the project goals and objectives if:

- Increasing the cost of car transportation makes the Tasmanian economy less competitive and reduces social equity by reducing accessibility to services and employment opportunities and decreasing disposable income.
- Introducing charges on the key arterials pushes traffic onto surrounding streets which are less equipped to handle it. This may in fact increase congestion. This can be obviated by charging a cordon tariff, as in Singapore or London, for all vehicles entering a particular zone. However, the costs of implementing this given the number of roads in and around Hobart, is likely to far exceed any benefits. It is thus not considered to be a suitable option for achieving the project goals.

8.1.10 Tax on second car (new option)

Impact on goals: Low

There is currently limited understanding on the potential impact of this initiative on project goals and objectives however its impact is anticipated to be minimal. This option may increase the overall cost of transportation for residents in Hobart if public transport alternatives are not adequate.

Cost effectiveness: High

This policy would be relatively low cost policy option for Government to enact.

Ease of implementation: Low

This option would be relatively difficult to implement due to the need to determine whether the relevant measure is a second car per household or per individual, and in the case of the former what constitutes a household.

Likelihood of Success: Low

This initiative will not result in the achievement of the project goals and objectives if:

- The tax for a second car is set at a rate which is too high and public transport is not a viable alternative leading to an increase in the cost of transportation. This will damage the Tasmanian economy and worsen social equity in Hobart.
- Strongly opposed by the public which is likely.

8.1.11 Taxi legislation reform (new option)

Impact on goals: Low

At a qualitative level this legislative solution could have some impact on improving accessibility to services (and the Hobart CBD) as it is aimed at better filling niches on the outskirts of Hobart at time of the day when buses are not particularly efficient.

In particular it may be more suitable to addressing social exclusion, and issues around ageing, because it provides a more flexible way in which to address this niche section of the market. The same is true of modal choice; many people will be able to go from one choice (the car, if they have one) to two.

Despite these potential benefits, the impact of this option is anticipated to be low due to the niche nature of the service.

The specific option could include changing legislation, or could rely on Metro contracting taxi operators to provide specific services. To better understand the impact of such changes the options including potential costs benefits and risks need to be explored further.

Cost effectiveness: Unknown

While the cost of enacting the policy is relatively low for the Government, the total cost of implementing this option is unclear at this stage as it will depend on the adopted approach.

Ease of implementation: Low

There are significant legislative changes and market impacts to consider before this option can be implemented. There are also industrial relations and logistical issues with taxis becoming a de-facto part of Metro's urban operations. While there are a range of issues to be sorted through this type of arrangement has recently been implemented in some Victorian towns with taxi operators contracted to provide specific services by time of day, week or geographic area.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if it results in increased emissions as people who are currently not travelling begin to do so by car. The likelihood and potential impact this risk is considered moderate.

8.2 Governance options

8.2.1 Greater cooperation between the State Government and local councils (in progress)

Impact on goals: High

The development of a coherent land use policy that is acceptable to both the State Government and the local councils will have a major impact on land use in Hobart, transportation costs and hence the Tasmanian economy, social equity, the environmental impact of transportation and the long term reliance of Hobart.

As noted earlier, the Southern Tasmania Land Use Strategy 2010-2035 sets a target for infill development and suggests an UGB for Hobart. If implemented these will potentially reduce green-field development by 13,250 dwellings (50% of all new dwellings) and increase development in the corridor in a way that supports public transport. The challenge is to ensure that the Southern Tasmania Land Use Strategy is implemented and that infill targets and the UGB are not amended through pressure from Councils or developers.

Cost effectiveness: High

The cost of fostering greater cooperation between the State Government and local councils is relatively low; however there may be ongoing resourcing requirements to monitor the implementation of the Regional Land Use Strategy.

Ease of implementation: Low

This option may be relatively difficult to implement as the State Government and local councils may have conflicting interests which are difficult to balance. Conflicting interests may also be found between councils, for example, infill development may be in the interest of some municipalities but not others.

The challenge will be to develop an incentive structure where local councils can capture some of the benefits associated with denser development in place of green-field developments.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if:

- Cooperation between Local Governments is not achieved because of conflicting interest.
- Housing affordability is adversely affected in the short to medium term as a consequence of a focus on infill development.

8.2.2 Greater cooperation between the State Government, the Hobart City Council and UTAS (in progress)

Impact on goals: High

The impact of a further cooperation between the State Government, Hobart City Council and UTAS on the project's goals and objectives is likely to be high due to UTAS importance to Hobart's economy - in 2011 15,500 people (7 per cent of greater Hobart's total population) were studying or working at UTAS.

UTAS have already committed to establishing teaching and research facilities in the Hobart CBD and have an existing memorandum of understanding with Hobart City Council.

State Government and Metro is working with UTAS and Hobart City Council to facilitate public and active transport links that support the MOU.

Cost effectiveness: High

The cost of this option is relatively low although there may be cost implications in terms of provision of active and public transport links.

Ease of implementation: High

An MOU exists between Hobart City Council and UTAS, and therefore this option should be relatively easy to implement.

Active transport links are being developed and work is underway to create improved public transport links.

Likelihood of Success: High

This initiative will not result in the achievement of the project goals and objectives if UTAS receives inappropriate priority in key development sites in Hobart and the Hobart CBD at the expense of other businesses and institutions. The likelihood and potential impact this risk is considered low.

8.2.3 Tasmanian State Government – development and implementation of new service standards for public transport (new option)

Impact on goals: High

Introduction of public transport service standards would make the public transport service offer easier to market and easier for customers to understand. Perceptions of improved public transportation will satisfy social exclusion goals.

Cost effectiveness: High

The cost of this option is relatively low in financial terms. It will require reallocation of resources between temporal periods and areas. Such reallocation may have political costs associated with implementation.

Ease of implementation: Medium

Implementation of this option would be likely to require alternative contractual arrangements and need for integration of services across operators. While overall a highly effective way to progress public transport, modest implementation costs are likely to be incurred by Government.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if the service standard proves too difficult to implement with current resources. The likelihood and potential impact this risk is considered moderate.

8.2.4 Streamlining the development approval processes in the corridor (new option)

Impact on goals: Medium/High

Streamlining the planning approval process to ensure processes are efficient and provide certainty for compliant high density developments in identified infill areas could encourage more developments of this form. Streamlining the approval processes may require amendments to the *Land Use Planning and Approvals Act 1993* (LUPAA) and/or development of a code based (design guidelines) assessment for designated infill areas.

If development processes are streamlined then this would encourage more infill development and could address the project goals if it leads to lower overall car dependency

Cost effectiveness: High

This cost of this option would be relatively low for the Tasmanian Government. There may be some costs associated with redesigning the current development approval process and developing a code based assessment however these costs are anticipated to be relatively low.

Ease of implementation: Medium

This option may require changes to existing legislation (LUPAA) and development of codes (design guidelines). The development of codes needs to be undertaken jointly between State and local Government in the strategic planning phase and applied to all infill developments with a designated area. The development of codes may

be a time consuming process as a balance is required to ensure that infill development is well designed, whilst ensuring the guidelines are not onerous that they add excessive costs to developments and erode feasibility.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if streamlining the development approval process results in a less rigorous assessment process. This could mean that some developments which may otherwise have been assessed as being unsuitable are approved to the detriment of the local community and Hobart. The initiative will not result in the achievement of goals and objectives if there are other over-riding market factors that make infill development less attractive to developers, such as price or demand.

8.2.5 Creating a parking policy accord (new option)

Impact on goals: Medium

Developing a parking accord to increase the cost of parking across councils and establish consistency between parking fees across councils is anticipated to have a moderate impact on

- Supporting better land use by discouraging the use of land for parking (leaving it for higher value uses)
- Encouraging public transport use

The impact of this option may be limited as a large proportion of parking in areas such as Kingston, Rosny, Moonah and Glenorchy contain large private car parks which offer free parking. Councils would need to establish a mechanism for charging private land owners for provision of car parking. There is also a significant amount of free on-street parking in these areas.

The impact of this option would be greater if implemented in conjunction with options which aim to improve the quality of public transport.

However, without further details around potential parking fees it is difficult to quantify the potential impact that a parking accord will have on the demand for car transportation and public transportation in Hobart.

It is also difficult to estimate the longer term impact that this option will have on residential development patterns.

The cross price elasticity and the quality of alternative forms of transportation will also need to be taken in account in further analysis.

Cost effectiveness: Medium

The cost for the Tasmanian Government and local governments is expected to be low compared to major capital projects.

Ease of implementation: Medium

Councils in the Greater Hobart area see free or low cost parking as an effective mechanism for supporting business in their activity centres and therefore it would be difficult to achieve an accord that required councils to eliminate free parking, or increase the cost of parking. The differing nature of activity centres (i.e. differences between the nature of parking requirements in Hobart CBD vs Rosny/Glenorchy or Moonah) would make this task more difficult. This option may require additional staff and infrastructure resources to enforce parking restrictions. For example, local councils may need to employ additional parking inspectors and also install parking meters/ticket machines.

Likelihood of Success: Low

This initiative will not result in the achievement of the project goals and objectives if

- Some Councils ‘opt out’ of the policy as this will result in development around the sites where parking remains free/low cost.
- Public transport remains slow and unreliable, in which would have a negative impact on the performance of Hobart’s economy.

8.3 Operations options

8.3.1 Simplified bus network (whole metropolitan region)

Impact on goals: High

This option could have a major impact on the goals and objectives of this project. The Tasmanian Government could conduct further analysis to quantify the impact this option will have on public transport usage.

Cost effectiveness: High/Medium

The cost of the option would depend on the extent to which the current bus system needs to be adjusted to achieve a more simplified, faster and more reliable bus network. While it is unlikely that this option will cost more than any major infrastructure investments, the Tasmanian Government would need to investigate this option further before the cost can be determined.

Ease of implementation: Medium

A simplified bus network could be implemented and some initial work has commenced. The Tasmanian Government is investigating the costs and impacts of such a system via development of public transport Service Standards. Metro have examined the current network and developed a potential Network Plan for Greater Hobart. Work to date suggests that significant changes to bus routes and timetabling would be required and are likely to produce significant passenger benefits.

Likelihood of Success: High/Medium

This initiative would be most effective if underpinned by service standards that provide a framework to determine appropriate service levels. It will not result in the achievement of the project goals and objectives if there is significant community opposition to service optimisation where that results in the cessation of services on some routes; focus on key corridors rather than high penetration routes; or removal of bus stops.

However, this may be offset by an overall improvement in the bus system through frequent, faster and more reliable services.

8.3.2 Introduce express bus services MONA to Hobart (3 stops) (new option)

Impact on goals: Medium

High level analysis has been conducted on provision of an Express Bus Service (from MONA to Hobart CBD with stops at Glenorchy and Moonah) via Main Road. The analysis suggests that:

- Patronage for this option could be in the vicinity of 1 to 2.5 million passenger trips per year.
- The estimated travel time from MONA to Hobart would be 29 minutes in the peak period and 25 minutes in the non-peak period. This compares to a travel time of up to 42 minutes for current peak bus services between MONA and Hobart CBD.

Given that this service would operate on the most direct and fastest route (that is, the relatively congested Main Road, Argyle and Campbell Streets), significant bus priority is required on these roads. Bus lanes are required in Argyle and Campbell streets with bus priority on The Main Road primarily at intersections. The benefit of this option would depend largely on the ability of the transportation infrastructure to allow an express bus service to operate at speed and reliability. This may be an issue in peak travel periods where, as previous noted; there are already signs of congestion.

This option is likely to have a low impact on goals and objectives without any accompanying capital infrastructure improvements such as the provision of bus priority infrastructure (e.g. bus lanes and signal priority).

Cost effectiveness: High

The cost of this option would depend on the cost of any bus priority measures required to ensure reasonable travel times for buses, and the cost of delivering the services. Cost effectiveness will be dependent on travel time savings achieved and resulting patronage increases, and how new express bus services form part of the

overall bus timetable. Provision of additional express bus services is likely to require sourcing additional buses and bus drivers whereas the cost would be lower it is assumed that resources are allocated from elsewhere in the network.

High level analysis conducted by the Tasmanian Government suggests that capital costs for this option will total $11.1 million under the median and low scenarios. Operational expenditure would be approximately $3.0 million per annum under the median option and $2.1 million per annum under the low scenario.[60]

Ease of implementation: Medium

The ability to implement this option successfully depends on the level of congestion on key roads used by the bus services as this will determine whether introducing express bus services are feasible and the difficulty in implementing bus lanes and priority at intersections. This success of this measure is reliant on the introduction of bus priority measures, which may result in the loss of on-street car parking which may be resisted by some Councils and adjacent residents and businesses.

Likelihood of Success: Medium/High

This initiative will not result in the achievement of the project goals and objectives if the service is too slow due to inability to achieve bus priority. Nor will it result in the achievement of project goals if new express bus services offered at the expense of some existing services reduce the ability for some people to access to the Hobart CBD and the services and employment opportunities located there. If express buses are introduced at the expense of existing services, there may be community opposition to the initiatives unless service is considered better. Any reduction in service elsewhere in the network may impact on access for the elderly or socially disadvantaged people in which case the ability to address problems and achieve goals would be compromised.

This option represents a strong road-based solution; the closest of these to light rail (Option 8.4.5).

8.3.3 Improve bus frequency on key corridors (new option)

Impact on goals: High

The Government is currently trialling a 'Turn up and Go' high frequency service on the Main Road corridor between Glenorchy and Hobart. Evaluation conducted to date indicates that since the introduction of the trial there has been a 3.4% increase in patronage on the corridor.

Increasing the frequency of bus services in Hobart on key public transport corridors and core routes suburbs could have a significant impact on the goals of objectives of this project by encouraging more public transportation usage (which is a cheaper form of transportation), reducing car dependency and also by improving access to the Hobart CBD. However, the impact that this option may have in Hobart is limited by the capacity for additional bus movements within the existing road network including the Hobart CBD bus interchange.

The Hobart City Interchange during both the inward morning peak and outward evening peak already experiences bus congestion. The congestion results in some delays for services departing from bus stops in the Interchange and Franklin Square.

Northern Suburb bus services already have to undertake a complex route which involves a two block CBD deviation caused by the siting of a pedestrian mall and one way road system.

These barriers to increasing the frequency of bus services could be overcome by capital investment to improve the Hobart CBD bus interchange to reduce bus congestion and improve reliability.

[60] DIER, (2013) Internal analysis, Hobart to MONA ideal bus operations and costs

Cost effectiveness: High

This option may require further investment into new buses and also staff to operate the additional services. While not as large capital expenditure associated with the development of new infrastructure, the labour and capital requirements of this option are expected to a significant ongoing operational cost.

The Hobart CBD bus interchange may require an infrastructure upgrade and development of bus priority to reduce congestion and improve reliability for buses entering/existing the interchange.

Ease of implementation: High

The ability to implement this option successfully depends on the level of congestion on key roads used by buses, as this will determine the extent to which improvements in frequency and reliability are feasible. This proposal is also reliant on the introduction of bus priority measures, which may result in the loss of on-street car parking which may be resisted by some Councils and adjacent residents and businesses.

Likelihood of Success High

This initiative will not result in the achievement of the project goals and objectives if:

- The option leads to congestion for both car users and also buses themselves as the capacity of the existing transport network in Hobart CBD is constrained by limited road widths. Due to Hobart's topography there are limited arterial road options, therefore buses often need to travel on key car and freight routes and as a result experience slower travel times at peak periods.

- This does lead to bus congestion on the approach to the Hobart CBD in certain periods especially during commuter and student peaks.[61].

8.3.4 Variable public transport pricing (new option)

Impact on goals: Medium/Low

Variable pricing based on when travel occurs is unlikely to impact the goals significantly without improvements to the speed and reliability of bus services (and improvements to frequency in the outer suburbs).

The Tasmanian Government could investigate the responsiveness of changes in bus fares and determine price elasticity of public transportation in Hobart and hence the potential impact of this option.

Cost effectiveness: Medium

The cost of implementing variable pricing is expected to be relatively low. However, further analysis would need to be conducted by Tasmanian Government to understand the impact that this may have on total revenue.

Ease of implementation: High

The implementation of variable pricing may lead to additional complexities within the current ticketing system.

Likelihood of Success: High

This initiative will not result in the achievement of the project goals and objectives if:

- Prices increase in certain travel periods resulting in increased transportation costs. Cross price effects mean people may shift to other forms of transportation.

- Variable pricing may results in larger Government subsidies for bus transportation reducing the amount of funding available to improve public transportation.

61 Typically these major corridors do feed into constrained road space Main road (north) Tasman Bridge (east) and Southern outlet (south).

8.3.5 Marketing – housing choice (new option)

Impact on goals: Low/Medium

Marketing campaigns to promote living in denser housing near activity centres may influence housing choice and also draw attention to hidden costs of living in outer areas with poor access to services. The effectiveness of the option would be dependent on there being infill housing available at variable price points and of a type that meets consumer needs

Cost effectiveness: Medium

A large marketing campaign could be relatively expensive with the appointment of marketing/advertising agencies and the production and broadcast of marketing materials (e.g. radio and television timeslots).

Ease of implementation: High

A marketing campaign is likely to be outsourced to external agencies.

Likelihood of Success: Medium

This initiative will not result in the achievement of the project goals and objectives if the cost of living near activity centres is too high or this form of residential development is not available. The likelihood and potential impact of this risk is considered to be moderate developers should respond to consumer demands over time.

8.3.6 Marketing – public transport (in progress)

Impact on goals: Low/Medium

Marketing campaigns to promote public transport are likely to increase demand as 'lack of awareness' and perceptions about service levels are key factors that influence travel choices. Marketing campaigns following the simplification or improvement of bus services are very effective ways promote and increase public transportation usage. DIER has recently spent $100,000 on marketing and promotion of the "Turn Up and Go" high frequency bus service trial in the Main Road corridor.

In addition the Premier's Physical Activity Council (PPAC) was established in June 2001 to provide a coordinated approach to the promotion and provision of opportunities for physical activity in Tasmania. The PPAC undertakes initiatives in social marketing, planning, policy, program and resource development and assists external organisations to work towards achieving the vision of all Tasmanians participating in regular physical activity as part of their everyday life. Among its key messages, PPAC encourages Tasmanians to choose active forms of transport (walking and cycling) as well as public transport to improve their health and reduce their impact on the environment.

Cost effectiveness: Medium

A large marketing campaign could be relatively expensive with the appointment of marketing/advertising agencies and the production and broadcast of marketing materials (e.g. radio and television timeslots)

Ease of implementation: High

A marketing campaign is likely to be outsourced to external agencies.

Likelihood of Success: Low/Medium

This initiative will not result in the achievement of the project goals and objectives if:

- Public transport services are not frequent, reliable and convenient to access.
- Marketing campaigns to promote public transportation usage increases public transport usage significantly resulting in congestion. This may damage perception of public transportation and draw people away from public transportation on a more permanent basis.

8.4 Capital options

8.4.1 Main Road Transit Corridor Plan (Glenorchy to Hobart CBD)

Impact on goals: High

The project focuses on improving public transport along the existing high frequency corridor which will enhance the community's access to services and improve the liveability of urban areas adjacent to the Corridor. Bus priority measures will improve the travel time reliability of bus services along the Corridor.

This option is likely to stimulate denser residential development along the corridor by providing improved transportation access to the Hobart CBD. This will assist with meeting the infill development targets set out in the Southern Tasmanian Regional Land Use Strategy.

The impact of this option would be to make existing bus services in the corridor more reliable and more frequent. It will replicate most of the improvements expected of the HLR, with the exception of ride quality and vehicle capacity. It will provide better service frequency than the proposed.

It would improve the ability to attract people to Hobart CBD and thereby improve the ability to intensify CBD activity and scale.

Cost effectiveness: High

While the cost of bus priority infrastructure is known, the quantum of infrastructure required remains unknown. The Tasmanian Government is investigating this option further.

Ease of implementation: Medium

This option will require infrastructure works, some of which will impact on on-street parking supply and may be opposed by some stakeholders. The option will require consultation with local stakeholders to determine priority improvements and key risk mitigation strategies.

Likelihood of Success: High

This option may have reduced impact depending on the specific implementation outcomes, level of commitment to bus priority and ongoing funding streams necessary to provide the infrastructure and services.

8.4.2 Transit Corridor Plans for other corridors (being developed)

Impact on goals: Medium/High

Bus priority measures including bus lanes on the Tasman Bridge, Southern Outlet and on other arterial roads will improve the speed and reliability of bus services in Hobart (which will increase their viability, provide access for the socially disadvantaged and the aged, improve access to the Hobart CBD) and increase activity in the CBD .

These corridors may have slightly less impact on the achievement of goals because the lower level of current development means that the agglomeration benefits are less pronounced along these corridors into the CBD; the corridors are not as strong in a public transport sense; and the potential for improving land use along these corridors is not as consistently strong. The levels of social disadvantage are not as pronounced in these corridors, thereby affecting the capacity for these corridors to impact on the achievement of goal 2.

The success of this option requires corridor plans to be developed, funding for implementation to be secured and implementation to take place. These are less developed that the Main Road Transit Corridor Plan.

Cost effectiveness: High

The cost and quantum of bus priority infrastructure is unknown, but based on the work done on the Main Road Transit Corridor the nature of infrastructure interventions are likely to be relatively low cost. The cost of service augmentation may be offset in part by reallocating resources from other parts of the network. The Tasmanian Government is investigating this option further.

Ease of implementation: Medium

This option requires significant investigation and preparation of specific plans that target the public transport bottlenecks and issues in each corridor. Each plan will then require infrastructure works in key locations and the key barrier to implementation is likely to be around removal of parking to facilitate bus priority.

Likelihood of Success: Medium/High

This initiative will not result in the achievement of the project goals and objectives if the plans are not completed, or remain unimplemented. The improvements in other corridors can be expected to have less of an impact than the Main Road corridor due to the nature of the corridors.

8.4.3 Bus Way (Hobart CBD to MONA)

Impact on goals: Medium

It is assumed that the Bus Way would retain priority over other modes at intersections. This has the opportunity to create faster travel times for public transport during peak periods.

In a qualitative sense, the bus way option could also:

- Stimulate denser development along the corridor and also stimulate development in the Hobart CBD to increase its scale and diversity which would improve Hobart's and Tasmania's economy.
- Improve the long term resilience of Hobart by reducing the city's dependence on oil.
- Reduce emissions compared to cars, and depending on traction could have a similar emissions profile to light rail.

Implementing a Bus Way would be expected to improve the speed and reliability of bus services on this key corridor. Providing priority at intersections would however, be likely to cause queuing and significant delays for motor vehicles and freight vehicles along higher volume sections of the road network including Elwick Road, Lampton Avenue and Derwent Park Road. Traffic flow on the Brooker Highway and Main Road could also be impacted.

A Bus Way would be likely to create more traffic delays than a light rail system because more buses would be required (than light rail vehicles) to undertake the transport task. In a Bus Way scenario, buses would cross road intersections more frequently than light rail. This impairs the ability of this option to achieve the goals.

A Bus Way would need to operate on a tidal flow basis as bi-directional travel could not be achieved given the size of buses and the number required to meet demand. As a consequence benefits would only be available to travellers in once direction at any one time (either peak or off-peak).

This option also does not address the long term resilience of Hobart because this form of transportation is susceptible to oil price rises.

Cost effectiveness: Medium /Low

Estimated cost of construction of a slightly longer (Hobart to Claremont) bus way option is $115M (in 2009 dollars). While this allows for some passing-storage bays[62] the likely high volume of bus movements would not allow the operation of the Bus Way on a bi-directional basis. The cost effectiveness of this option is likely to be less than the HLR because the construction cost estimate is higher and patronage expectations would be lower (due to travel speeds and ride quality).

[62] It is noted that the high number of vehicles required to complete the transport task would not allow the operation of bus services in both directions unless there were additional and longer passing loops than those proposed in the above costing. .

Ease of implementation: Low

This option represents a significant capital undertaking and would also require a service operator (most likely Metro) to operate the service once complete.

Operation would be hampered by the likely need to operate a single lane bus way in peak direction only. This would create some confusion for passengers who would face two different routes for one journey depending on time of day.

Likelihood of Success: Medium

Whilst putting train-like transport services in a corridor might provide incentives for people to move closer to the corridor in high density living as envisaged in the Southern Tasmania Land Use Strategy 2010-2035 (and other documents), buses are generally considered less attractive neighbours than light rail vehicles, because of the health effects associated with particulate emissions in their exhaust.

Impacts on social disadvantage are also unclear. There are, potentially, significant impacts on transport disadvantage if the service encourages more people to ride the buses. However, many of these benefits can arguably be achieved by increasing bus frequency, rather than spending new money on a bus corridor.

It should be noted that any future conversions of the bus way to light rail will most likely require significant work. Further, we note that conversion to a bus way would mean that heritage would be unable to utilise the corridor (unless track were laid for this purpose) whilst it is being used as a bus way.

8.4.4 Bus fleet replacement (ongoing)

Impact on goals: Low

The State Government currently provides funding to Metro for the regular purchase of new buses. While new buses may be more reliable, comfortable and present a more attractive image (particularly if utilisation is made of ideas that may be publicly attractive, such as double-decker buses with well designed livery), there is limited evidence available to suggest that new buses alone will significantly increase public transport usage in Hobart.

This option also does not address the long term resilience of Hobart because this form of transportation is susceptible to oil price rises.

Cost effectiveness: Low

The cost of this initiative would depend on the number and types of buses that are to be replaced and the rate of replacement. However, in order to comply with Commonwealth legislation the urban passenger transport fleet (not including school buses) will need to be 80% low floor vehicles by 31 December 2017. Given this overriding imperative the cost effectiveness of improvements for all passengers of a newer fleet is relatively high.

Ease of implementation: High

The implementation of this option will depend on the funds available for the purchase of new buses. It is assumed that the current bus drivers will be able to operate new buses with minimal training required.

Likelihood of Success: Low/Medium

This initiative will not result in the achievement of the project goals and objectives if car transportation continues to be preferred. New buses alone are unlikely to attract significant additional patronage unless services are also improved, including travel time and reliability. This suggests minimal growth in bus patronage, car dependence remaining high and none of the four goals being achieved.

8.4.5 Hobart Light Rail

Impact on goals: High

The Tasmanian government has made considerable progress investigating the opportunities that the corridor provides in relation to the development of light rail. These investigations have highlighted that:

- Public Transport speed would improve significantly as end to end journey time using light rail vehicles with three stops outside Hobart CBD would be about 30% faster than the current bus service (for those who live close to the proposed light rail stops). This would improve access to the Hobart CBD for commuters in the northern suburbs and improve social equity. Unlike a Bus Way, a light rail service would provide passenger benefits throughout both peak and inter-peak periods.

- The density and location of development (particularly residential) in the corridor would allow many customers to access the stations by walking, bike, or feeder buses which would reduce car usage and hence environmental impact of transportation.

- A light rail development between the Hobart CBD and Glenorchy could save over 110 million vehicle kilometres travelled in the first year (4 per cent reduction).[63]

In a qualitative sense, the light rail option could also:

- Stimulate denser development along the corridor and also stimulate development in the Hobart CBD (including supporting the new Macquarie Point Development) to increase its scale and diversity which would improve Hobart's and Tasmania's economy.

- Improve the long term resilience of Hobart by reducing the city's dependence on oil.

These benefits could be explored in greater detail by the Tasmanian Government as a next step. The Tasmanian Government is aware of some of the limitations surrounding the assumptions which have been applied to the business case developed for this initiative (sparks effect, absence of transfer penalties) and will investigate the sensitivity of benefits to these assumptions.

Cost effectiveness: Low

This option represents a large capital investment, with an estimated cost of $70.2 million for the establishment of light rail between the Hobart CBD and Glenorchy. There would also be a significant ongoing operating cost estimated to be between $2.3 and $2.5 million per annum for the first 20 years and $3.2 million per annum thereafter.

Providing priority for the operation of light rail would impact on vehicle and freight movements in the northern suburbs, though to a lesser extent than a Bus Way. This due to the far higher capacity of light rail vehicles and the consequently smaller number of vehicle movements required to transport a given number of passengers.

Ease of implementation: Low

This option requires significant capital works, the establishment of a passenger rail operator, and the establishment of a feeder bus system which must operate very reliably if the benefits of this option are to be realised.

The implementation of light rail would also necessitate changes to the wider road network including changes to the operation of the traffic signals system to manage the traffic implications of at-grade crossings, and changes to the road network in CBD locations to allow for on-road running.

The implementation of a light rail service would have potential implications for the operation of TasPorts' activities.

Likelihood of Success: Medium/High

This initiative will not result in the achievement of the project goals and objectives if:

- Hobart's economic disadvantages, such as its lack of scale, cannot be overcome by this initiative and economic development is not spurred on by this project.

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63 ACIL Tasman, Stage 1 Light Rail Business Case, Hobart to Glenorchy

- This development does not result in a reduction in the preference for car transportation.
- Land use policies are not adjusted to encourage denser development along the corridor.
- Feeder bus services do not integrate efficiently with the light rail services.

The likelihood and potential impact of these risks is considered moderate. If this option is pursued, it will need to be complemented by other options such as the change in land use policies, – which is already underway and changes to car parking policy in the Greater Hobart area.

8.4.6 Brooker Highway upgrades (some upgrades funded and in progress)

Impact on goals: Low

The capacity of the Brooker Highway could potentially be improved in many other ways including:

- Widening the road.
- Remodelling or removing intersections.
- Installation of bus lanes or queue jump lanes.

Planned capacity improvements are focussed on improving efficiency for cars and freight as this is a key freight and car passenger route. This may provide benefits to public transport (existing Brooker express buses) as travel flow will be improved.

Improved capacity will potentially reduce congestion in this location, but may lead to increased demand for car travel which could exacerbate congestion in the future.

The Brooker Highway is not the most suitable public transport route in the northern corridor, as it is the main urban highway to the north and has a high proportion of freight and car use.

The Brooker Highway is not a key public transport route (it carries 20% of Northern Suburb bus passengers while Main Road carries 80%). Furthermore there is limited scope for intensification of land use along the Booker Highway (in a form that would support public transport) while the Main Road corridor offers significant intensification potential.

Funding has recently been announced under Nation Building 2 ($29.6 million) to improve the efficiency of the Brooker Highway, including:

- Creating a single intersection for Goodwood and Elwick Roads.
- Converting the Howard Road roundabout into a single intersection.
- Improving capacity of the Domain Highway interchange.

Similar upgrade projects at other locations such as between the Domain Highway and Brisbane Street could be viable options to improve capacity of the Brooker Highway for all road users. This could be part of a corridor strategy to improve private vehicle and freight movement on Brooker Highway while restricting private vehicle movement (in favour of bus priority) in the Main Road corridor.

Cost effectiveness: Low

This option could have some positive effect on the operation of existing Express Bus services on the Brooker Highway. Bus priority measures have previously been investigated on the Brooker Highway and found to have a detrimental impact on car and freight efficiency so are not considered cost effective interventions for this location.

Ease of implementation: Low

The implementation of traffic improvements would benefit the efficiency of the existing Express Bus services on the Brooker Highway and bus priority measures are not envisaged for this location because they would impact negatively on freight and car efficiency, surrounding land uses and community expectations.

Likelihood of Success: Medium

The risk is that the general improvements planned for the Brooker Highway will have minimal impact on the speed and reliability of bus services that operate on the corridor. The scope of potential improvements and costs is unclear.

8.4.7 Derwent River ferry service

Impact on goals: Low/Medium

A ferry service is expected to have minimal impact on the goals and objectives. The walk on catchment for ferry services is limited and in order for significant patronage to be generated, feeder buses would be required to attract patronage from surrounding suburbs and the efficiency of these would be affected by the same factors that affect the reliability and speed of other bus services.

Many passengers would be required to transfer from bus to ferry and this may impact on patronage.

A ferry service may however, assist with increasing density in some sites on the eastern (and western shores) by improving access to the Hobart CBD. Ferries are seen as an attractive transport option and there would be a perceived benefit for passenger in not needing to cross the Tasman Bridge. The Tasmanian Government has recently undertaken further work regarding the potential of ferries as a transportation mode in Hobart.

Cost effectiveness: Low

A previous study conducted in 2009 indicated that to operate peak only weekday services on three routes to Hobart from the Eastern Shore areas of Bellerive Village, Lindisfarne, Montagu Bay and Howrah Point:

- Capital costs (including vessels and infrastructure costs) would be approximately $4.3 million (in 2009).
- Operating costs would be approximately $600,000 per annum (in 2009).

Ease of implementation: Medium

Provision of infrastructure to support ferry operations (wharf facilities and potentially feeder buses integrated with ferry services) would be moderately easy to deliver. The operation of ferry services could be outsourced to an external service provider with Government developing the terms and conditions of the operation.

Likelihood of Success: Medium/Low

This initiative will not result in the achievement of the project goals and objectives if:

- Residential density within walking distance of the wharf does not increase along the eastern and western shores.
- A ferry to the eastern shore appears to be the most feasible option, but its effectiveness would be dependent on increases to residential density. Even then the ferry would not provide a timely alternative for the majority of the population living in the car dependent eastern suburbs.

8.4.8 Cycling and pedestrian priority

Impact on goals: Low

There are currently 275 cyclists using the cycleway in the morning peak period, along with a number of pedestrians. This may increase if the environment was improved for cyclists and pedestrians. However, it is not anticipated that uptake will reach levels that will have a significant impact on Tasmania's economy, equity, environmental impact or Hobart's long term resilience. The potential uptake of cycling with improved conditions could be investigated further.

The option (installing signals at crossings) may also worsen travel times for cyclists and pedestrians who may need to wait for the signals to cross. It is also likely to result in costly delays for car traffic, buses and commercial vehicles operating in the industrial northern suburbs corridor.

Cost effectiveness: Medium

High level analysis suggests that the development of crossing signals along the cycling trail would cost between $120,000 and $156,000 per crossing. Costs would depend on the complexity of the crossing and there may be flow-on effects across the network relating to management of traffic delays. There would be some improvements in safety although there is not a significant crash record at intersections along the route.

Ease of implementation: Low

The majority of the infrastructure is already in place (the track). This initiative will require the construction of a number signalised crossings which represents a relatively small undertaking, along with manipulation of the traffic signals system across the wider network to manage changes in traffic flow.

Likelihood of Success: Low

This initiative will not result in the achievement of the project goals and objectives if:

- Improved crossings and safety for cyclists and pedestrians come at the expense of motorists in the form of delays. Further investigation into the potential impact of crossings on car transportation would be required to determine the feasibility of this option.

8.4.9 Heritage railway

Impact on goals: Low

The likely speed and frequency of the heritage railway means it does not represent a viable passenger transport option for peak or off-peak travellers. . This option is therefore unlikely to impact on the project's goals and objectives.

However, it should be noted that allowing the operation of a heritage railway service could preserve the rail corridor for any future transportation infrastructure development.

Cost effectiveness: Unknown

Costs associated with this initiative will depend on the scale of the operation envisaged as this will impact on the infrastructure requirements. In terms of rail operation, some services may be operable by volunteer community based organisations at no cost to government; other services may be envisaged that could be provided by a commercial operator at no cost to Government.

This is the case with other similar railways in Australia such as Puffing Billy, Don River and Daylesford Railways.

Ease of implementation: Low

There may be issues around rail safety regulations. There may also be some difficulty around securing a heritage railway operator to operate the service. However, it is anticipated that the operator will be responsible for dealing with these issues.

Likelihood of Success: Low

This initiative will not result in the achievement of the project goals and objectives and there may be political risks in engaging with the initiative if it leads to expectations of continuing heritage services at the expense of the corridor being used for passenger transport.

The initiative itself may be compromised if: there is uncertainty around how long the service could operate for before the rail corridor needs to be converted to transportation use. This may impact the financial and time commitment from heritage railway or commercial operator groups.

8.5 Interim list

The high priority options are shown in Table 16 below.

Table 16: High Priority Options

Option	Ability to achieve goals or mitigate problems	Cost effectiveness	Ease of implementation	Likelihood of Success	Overall priority rating
Policy					
Implement an urban Growth Boundary	Medium	High	High	Medium	High
Encourage infill development	High	Medium	Low	Medium	High
Encourage intensification of employment hubs	High	High	Medium	Medium	High
Public housing policies	High	Medium/High	Medium	High	High
Governance					
Greater cooperation between the State Government and Local Government	High	High	Low	Medium	High
Greater cooperation between the State Government, the Hobart City Council and UTAS	High	High	High	High	High
Streamline the development approval process in the corridor	Medium/High	High	Medium	Medium	Medium/High
Tasmanian State Government – development and implementation of service standards for public transport	High	High	Medium	Medium	High
Operations					
Simplified bus network (whole metropolitan region)	High	Medium/High	Medium	Medium/High	Medium/High
Introduce express bus services Northern Suburbs to Hobart (3 stops)	Medium	High	Medium	Medium/High	Medium/High
Improved Frequency on Key Corridors	High	High	Medium	High	High
Capital					
Transit Corridor Plan - Glenorchy to Hobart CBD (Main Road)	High	High	Medium	High	High
Transit Corridor Plans – greater Hobart	Medium/High	Medium	Medium	Medium/High	Medium/High

Appendices

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Riverline