

Tasmanian Government
2012 Submission to Nation Building 2 Program

Murchison Highway Upgrades

September 2012

Department of Infrastructure, Energy and Resources



<p>Priority assigned by jurisdiction for NB2 funding consideration</p>	<p>Priority seven under Moving Freight</p>
<p>Details of full scope of project, including objectives, service requirements, project status and project phase(s) seeking funding.</p> <p>Note: It is expected that this will be largely addressed through the main IA submission. However, the Department requires cost estimates to be provided using the Best Practice Cost Estimation Standard and at both P50 and P90. Also to use both 4% and 7% for BCRs.</p>	<p>Information on project objectives, strategic context and options analysis is discussed in the Stage 1-6 template.</p> <p>Information on the technical and delivery aspects of the project, including benefit cost analysis, project risks and delivery program is discussed in the Stage 7 template.</p> <p>BCRs for Murchison Highway upgrades are:</p> <ul style="list-style-type: none"> • Discount Rate (7%) and P50: 0.76. • Discount Rate (7%) and P90: 0.71. • Discount Rate (4%) and P50: 1.20. • Discount Rate (4%) and P90: 1.13.
<p>Alignment with objectives of NB2</p> <p>Note: This should include how a project aligns with the overarching objective of NB2, as well as how it aligns with the objective of each relevant NB2 subprogram.</p>	<p>The Murchison Highway Upgrades is submitted under the Moving Freight theme (Local Freight sub-program) of Nation Building 2.</p> <p>This project focuses on road upgrades to provide a consistent standard for high productivity vehicles. The Murchison Highway is the key transport corridor linking western Tasmania to export ports, industrial areas and population centres in north west Tasmania.</p>
<p>Alignment with broader Commonwealth and state/territory policies and plans</p> <p>Note: Specific plans/policies to be addressed (at a minimum) include the Commonwealth's Infrastructure Investment Framework; the National Urban Policy; the National Ports and Land Freight Strategies; and the Australian Government commitment on the incorporation of ITS for major urban roads (as appropriate).</p>	<p>The project aligns with a number of Infrastructure Australia's strategic priorities, including:</p> <ul style="list-style-type: none"> • Expand Australia's productive capacity • Increase Australia's productivity • Build on Australia's global competitive advantages • Reduce greenhouse gas emissions • Improve social equity, and quality of life, in our cities and our regions <p>The project aligns with the National Land Freight Network Strategy's strategic initiative of freight infrastructure improvement and access through road upgrades to provide consistent standard for high productivity vehicle access on the key transport corridor linking western Tasmania to ports and cities in north west Tasmania.</p> <p>The project aligns with the National Ports Strategy strategic priority of improving</p>

	<p>landside efficiency.</p> <p>Further details are contained under Goal Definition (Stage1 - 6 template).</p>
<p>Overall financial exposure including identification of other partner funding</p> <p>Note: It is expected that this will be addressed in the main IA submission.</p>	<p>Full details of cost estimates are outlined in the Stage 7 template.</p>
<p>Identification of key strategic risks to the project</p> <p>Note: It is expected that this will be addressed in the main IA submission</p>	<p>A Risk Management Register has been developed for the project. Risks are detailed in the submission under Costs, Risks and Funding (Stage 7 template).</p>
<p>Quantification of the expected benefits from the proposal</p> <p>Note: It is expected that this will be addressed in the main IA submission.</p>	<p>Project benefits are outlined in the Stage 7 template.</p>
<p>Information regarding the extent to which the potential for private sector involvement or investment has been evaluated</p> <p>Note: It is expected that this will be addressed in the main IA submission.</p>	<p>The need for Government funding is discussed in the Stage 7 template.</p>
<p>Likely impacts from the project proposal on citizens and the market</p> <p>Note: Detail is needed on how each proposal will impact citizens and the market (as two distinct groups) – positively or negatively, and the extent of the impact</p>	<p>Further details on the impacts are outlined in Problem Identification, Assessment and Analysis (Stage 1-6 template).</p>
<p>Identification of key stakeholders in the project and the complexity of stakeholder relationships</p>	<p>Further details on key stakeholders and relationships are discussed in the Stage 7 template.</p>
<p>Extent of multijurisdictional and/or private sector involvement in the proposal</p>	<p>No other jurisdictions or private sector entities are involved in developing this proposal.</p>
<p>Details of the level of innovation and information technology involved in the proposal, including in relation to information technology requirements to successfully manage/implement the proposal</p>	<p>An ITS solution is not considered to be applicable to the issues this project addresses.</p>

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

<p>Note: It is expected that this will be addressed in the main IA submission.</p>	
<p>Details of any significant interdependencies for the project</p> <p>Note: It is expected that this will be addressed in the main IA submission.</p>	<p>The key interdependencies for the project are outlined in the Stage 7 template.</p>

Proposal Summary

Initiative Name:	Murchison Highway Upgrades
Location (State/Region(or City)/ Locality):	West Coast, Tasmania
Name of Proponent Entity:	Tasmanian Department of Infrastructure, Energy and Resources (DIER)
Contact (Name, Position, phone/e-mail):	David Spence, General Manager Infrastructure Strategy Department of Infrastructure, Energy and Resources Tel: (03) 6233 2089 Email: david.spence@dier.tas.gov.au
Executive summary	<p>The Murchison Highway is the key freight and passenger route connecting the west and north west regions of Tasmania.</p> <p>The West Coast region is the centre of Tasmania's mining industry, with major, long-term producers located at Mt Lyell, Rosebery and Savage River. In 2011, approximately 2.8 million tonnes of mineral resources were moved out of the West Coast, the majority for export through Burnie Port and a private facility at Port Latta. Several major new mines are proposed in the area, the majority of which will use the Murchison Highway as the primary freight transport route, reflecting the dispersed and remote location of most mine sites. The West Coast region also has an expanding aquaculture industry, focused on Macquarie Harbour.</p> <p>In 2011, the Murchison Highway carried 260 000 tonnes of freight, which is forecast to increase to 650 000 tonnes by 2030</p> <p>The Murchison Highway between Cradle Mountain Development Road and Anthony Road is part of the primary road freight corridor connecting Zeehan, Strahan and Queenstown and most major mines on the West Coast, with Burnie Port and the National Network. The existing Highway does not meet the Tasmanian guidelines for High Productivity Vehicles. The road has narrow lane widths, tight curves and insufficient overtaking opportunities.</p> <p>The Tasmanian Government has undertaken significant strategic and corridor planning on the West Coast, including joint development with industry and local government of the <i>Western Tasmania Industry Infrastructure Study</i> (2012). The Government has identified a package of projects to improve efficiency and safety on the Murchison Highway between Cradle Mountain Development Road and Anthony Road, starting with a \$21 million investment by the Tasmanian Government on priority sections of the Murchison Highway. The upgrades proposed under Nation Building 2 build on this investment, to deliver an efficient, safe and compliant heavy vehicle freight corridor.</p>
Is this a new submission?	Yes
Estimated cost of problems?	The strategic framework and transport system problems to which this project responds are outlined in the Overview document and within this submission. Detailed information

	on project costs and benefits, to the extent that they can be quantified, is contained in the Stage 7 template.
Estimated Capital Cost of Initiative by Proponent (\$M, nominal, undiscounted):	\$34M
Commonwealth contribution sought by Proponent (\$M, nominal, undiscounted):	\$34M The proposed upgrades extend the State Government's existing \$21M investment on the Murchison Highway.
Other funding (source/amount/cash flow) (\$M, nominal, undiscounted):	Cost reflective pricing for heavy vehicle access to the road network and road funding reform is being considered as part of the national Heavy Vehicle and Investment Reform agenda, and the Tasmanian government will continue to actively participate in this reform process. Tasmania has many attributes for a pilot study of approaches developed through national processes. It is considered that a national approach to funding and financing transport infrastructure, supported by all levels of government, is critical to effectively address long term transport infrastructure needs. In this context, the recent Infrastructure Australia's Finance Working Group's report "Infrastructure Finance and Funding Reform" is an important lead for national discussion. Tasmania is not in a position currently to adopt a unilateral approach. Further work is required on project financing and the issue of cost reflective pricing in small regional economies.
BCR by Proponent excluding Wider Economic Benefits	0.71
Estimated program	Project planning and development 2013-14; construction 2014-16.

Goal Definition

The goal of the proposed project is to improve efficiency and safety for freight and passenger vehicles, on a key intra-regional transport corridor.

Specific project objectives are to:

- Improve vehicle operating costs arising from pavement rehabilitation and strengthening
- Improve safety for all road users
- Improve travel times for all vehicles
- Deliver a consistent high productivity vehicle-compliant cross section between Cradle Mountain Development Road and Anthony Main Road

The Murchison Highway is the key freight and passenger route connecting the west and north west regions of Tasmania. It is critical for the movement of mining product to Burnie Port for export, and to other locations within Tasmania, with the majority of mining freight moved via this road. Sections of the Highway do not meet high productivity vehicle standards, with limited overtaking opportunities, narrow lanes and tight curves.

Upgrade of the Highway has been identified as a priority by the Tasmanian Government, councils and industry, including through the Western Tasmania Industry Infrastructure Study (2012) and Murchison Highway corridor planning project (2011).

The proposed upgrades will provide a consistent and compliant geometric cross-section for heavy vehicles, between Cradle Mountain Development Road and Anthony Main Road, consolidating the Tasmanian Government's investment in the adjacent southern section of the Highway.

Positive contribution to Infrastructure Australia's strategic priorities

The project aligns with a number of Infrastructure Australia's strategic objectives, including:

- ***Improving the efficiency of connections to major road and rail freight corridors to facilitate domestic trade and international exports*** – the Murchison Highway is the key transport link connecting West Coast industries to Burnie Port for export, with a critical role in moving mining product. The West Coast contains the majority of Tasmania's active mining operations, including long term producers at Mt Lyell, Roseberry and Savage River, and a number of major new mines proposed. In 2009/10, resource extraction contributed an estimated \$837 million to Gross State Product, representing 16.2% of Tasmania's export earnings. The combined mining and mineral processing sectors represent almost 50% of the State's export earnings and provides employment for an estimated 3,400 people. The region also has an expanding aquaculture industry. The Murchison Highway is the key transport corridor for the movement of freight into and out of the Region.
- ***Achieving better utilisation of existing infrastructure*** – the Tasmanian Government has identified a package of projects to maximise efficiency and safety outcomes on this key corridor. An initial \$21 million Tasmanian Government commitment will address significant safety and efficiency issues on the Murchison Highway between Cradle Mountain Development Road and Rosebery. The upgrades proposed under Nation Building 2 focus on remaining deficiencies between Cradle Mountain Development Road and Anthony Road to deliver an efficient, safe and compliant heavy vehicle freight corridor north to Cradle Mountain Development Road. The upgrades are low-cost relative to outcomes, and represent an appropriate balance between new infrastructure and targeted upgrades of the existing highway.

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

- ***Moving Freight***

Upgrade of the Murchison Highway will improve travel times, reliability and vehicle operating costs on the key freight connection for the West Coast. The highway

provides the road connection to ports for the major industries of mining, forestry and aquaculture which operate in the region.

- **Connecting People**

The upgrades will provide more reliable travel times for passenger vehicles travelling between the northwest coast cities, West Coast towns and major tourist destinations. The interaction of passenger vehicles with freight vehicles on narrow, winding and high gradient roads with few passing opportunities often results in 'platooning' over a long distance of groups of vehicles behind a single slower truck. These upgrades will reduce this effect and improve travel time reliability

- **Safety**

The Murchison Highway is the key freight and passenger route connecting the west and north west regions of Tasmania. The proposed upgrades improve the road width and surface conditions of the road as well as adding several overtaking opportunities through pullout bays. These measures will reduce the safety risks for all road users particularly in light of an increase in both freight operations and tourism in the future.

Alignment with State/regional strategic plans

The strategic importance of the Murchison Highway is recognised in Tasmania's transport planning frameworks.

Tasmanian Infrastructure Strategy

The Tasmanian Infrastructure Strategy coordinates effort across the major infrastructure sectors of transport, water, energy and digital. It guides future infrastructure priorities and decision making for the planning, provision and use of infrastructure in Tasmania. Relevant priorities and directions include: ensuring Tasmania has adequate international and national gateways and connections; development and implementation of a Freight Strategy to guide Tasmania's freight system; and the delivery of key infrastructure projects across sectors.

Tasmanian Economic Development Plan

The *Tasmanian Economic Development Plan* (EDP), released in 2011, builds on and complements the *Tasmanian Infrastructure Strategy*. The Plan outlines the Government's economic development priorities over the next ten years, organised into four goals:

- Support and grow business in Tasmania;
- Maximise Tasmania's potential in key sectors;
- Improve the social and environmental sustainability of the economy: and
- Support and grow communities within regions.

Regional economic development plans will translate the directions within the EDP, providing specific direction for each of Tasmania's three regions. The sector profile for mining within the EDP highlights the importance of ensuring capacity of infrastructure, through pursuing the recommendations of the *Western Tasmania Industry Infrastructure Study*.

Western Tasmania Industry Infrastructure Study

The Western Tasmanian Industry Infrastructure Study, released in June 2012, identifies priority infrastructure projects for western Tasmania to support economic development in the region. The Study focused on the economic infrastructure sectors of transport, energy, telecommunications and water, over a 20 year horizon.

The Study included detailed interviews with industry, other infrastructure users in the area, as well as organisations providing and managing infrastructure in and servicing the region.

The Study identified transport as the key infrastructure sector for investment, delivering the greatest economic benefits to the region through targeted upgrades across both road and rail. The Study identifies upgrades to the Murchison Highway as a priority project.

Tasmanian Road Safety Strategy 2007 – 2016

The Murchison Highway upgrade packages form part of a coordinated program of works in line with the Tasmanian Road Safety Strategy 2007 – 2016. These upgrades focus on the efficient delivery of roads infrastructure in order to provide safer travel speeds. In particular the upgrades will target sites with a known crash history to improve safety for all road users.

Draft Tasmanian Transport Policy and Draft Tasmanian Freight Strategy

Strategic fit with the State's draft Transport Policy and Draft Freight Strategy is addressed in the Tasmanian Government Submission Overview.

Problem identification, assessment and analysis

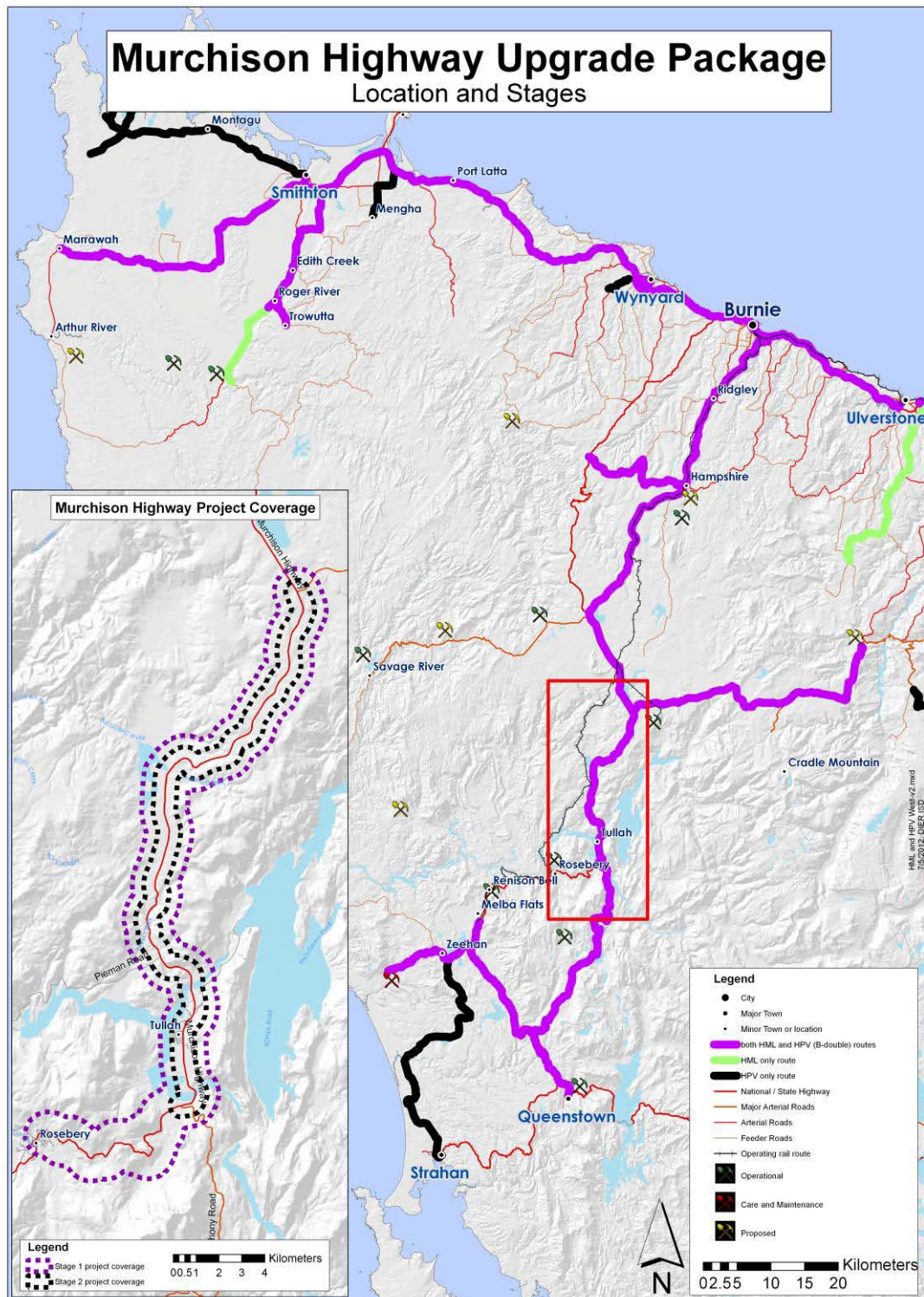
The Murchison Highway, connecting north to Ridgley Main Road and the Bass Highway, is a strategically important route for West Coast industries and communities (Figure 1). The route is part of the Tasmanian high productivity vehicle network, providing B-double access for mining and forestry products from the West Coast to Burnie Port and processing centres. The Highway is also the primary route for passengers travelling to/from the North West Coast.

Within the West Coast, southern sections of the Highway connect local communities and mine sites, providing a shorter journey for general access vehicles travelling between Zeehan and Strahan, including vehicles involved in the aquaculture industry.

The section of the Murchison Highway between Cradle Mountain Development Road and Rosebery is deficient in terms of current and future vehicle productivity needs. The section between Cradle Mountain Development Road and Anthony Road is HPV gazetted, but does not meet the Tasmanian guidelines for High Productivity Vehicles, with narrow widths, tight curves and insufficient overtaking opportunities. The southern section between Anthony Road and Roseberry is not HPV gazetted due to the steepness of the terrain and it is not intended to incorporate this section into the HPV network.

Freight traffic is forecast to experience rapid growth over the next ten years due to increased mining and aquaculture activity on the West Coast. Tourism traffic is also anticipated to grow due to increased regional tourism in the north-west region of the State.

Figure 1. Murchison Highway Upgrade Package - Location



Traffic volumes and demand forecasts

The Murchison Highway is a Category 3, Regional Freight Road, under the *Tasmanian State Road Hierarchy*. Regional Freight Roads perform a strategic regional function, supporting

freight and passenger transport across regional areas, connecting to major intrastate networks.

The freight task on the Murchison Highway is dominated by three main sectors – mining, forestry and agriculture (dominated by aquaculture).

- **Mining** – most ore from mining operations in Rosebery and Queenstown utilised the rail network for transport of ore. In 2011, 55 000 tonnes was transported on the Murchison Highway, however the volume of mining freight can change dramatically in line with operations commencing and ceasing. For example, in 2009, an additional 250 000 tonnes of ore was transported in a southward direction for processing in Rosebery. Mining freight on the Murchison is projected to increase to over 260 000 tonnes by 2018 if new mine proposals proceed.
- **Aquaculture**. The aquaculture industry located out of Strahan with three businesses using the waters of Macquarie Harbour. Currently moving around 36,000 tonnes of smolt, feed and harvested fish, proposed expansions expect these volumes to rise by about 50,000 tonnes by 2017.
- **Forestry** – while currently in a state of change, the forestry task will continue to impact on tonnages on the Murchison Highway, with task feeding onto sections of the highway north of Tullah and also from Strahan and Zeehan areas largely via the Anthony Road joining the Murchison Highway south of Tullah. Total forestry volumes on the Murchison are projected to fluctuate between 65,000 tonnes and 125,000 tonnes depending on harvesting cycles.

Current traffic volumes for the Highway are shown in Table 1. Annual Average Daily Traffic volumes are for two-way traffic, with an approximately 50/50 split between northbound and southbound vehicles, and 16% heavy vehicles.

Table 1 Murchison Highway Current AADT and Freight Volumes

Murchison Highway								
From	To	Length (km)	HPV Route	HPV comp	Road Cat	AADT	% HV	kT/yr ¹
Zeehan Hwy	Melba Flats	4.5	Y	N	3	901	TBC	200
Melba Flats	Rosebery	18.5	N	TBA	3	701	17	90
Rosebery	Anthony MR	10	N	TBA	3	1,676	10	100
Anthony MR	Cradle Mtn DR	28	Y	N	3	958	15	210
Cradle Mtn DR	Ridgley Hwy	16.5	Y	N	3	950	17	260
Ridgley Hwy	Bass Hwy (Somerset)	63	N	TBA	5	1,400	6	70

¹ Source: 2011 volumes based on DIER, 2009 Tasmanian Freight Survey adjusted for changes between 2009 and 2011.

Crash statistics

A review of ten year crash data (January 2001 to December 2010) shows 246 separate crashes on this section of the Highway, with severity as follows:

- 5 fatal crashes
- 19 serious injury crashes
- 65 minor injury crashes
- 9 first aid crashes
- 148 crashes property damage only

The overall profile of crashes along this section of the Highway follows a typical pattern for rural highways in Tasmania. The most common crash types were 'off-path, on curve' crashes, 'off-path on straight' crashes, and 'head-on' crashes. The proposed upgrades target these safety issues. Generally, the provision of wider lanes and improved shoulder condition reduces run-off road crashes by approximately 40%.

Infrastructure condition

The Murchison Highway between Anthony Main Road and Cradle Mountain Development Road is a High Productivity Vehicle (HPV) and Higher Mass Limit (HML) gazetted route (supporting B-doubles up to 26m, 67.5t GVM). The Tasmanian Government has a defined set of road design standards to support the use of HPVs. While this section of the Murchison Highway is HPV gazetted, it does not meet the Tasmanian guidelines for HPVs.

The structural integrity of the pavement of this section of the Murchison Highway is also at its limit in several locations.

Geometrically, the existing design does not support an 80km/h speed environment. There are issues with superelevation sight distance horizontally and vertically in many locations. Road users often travel in excess of 80km/h, which is a contributing factor to the Highway's crash history. Analysis of crash history indicates a number of "off-alignment" crashes (single vehicles leaving curves), supporting vehicle speed and geometric issues on parts of the Highway.

There are few overtaking opportunities along the Highway. An effective northbound overtaking opportunity exists in the form of a slow vehicle turn-out, on approach to the highest point of the Highway, however it is understood freight vehicles do not pull over if the queue is too long as the opportunity to re-enter the traffic flow becomes limited. Flatter sections (e.g. north and south of Animal Creek) offer the opportunity to overtake in specific circumstances by entering the opposing traffic lane. However, the sections are generally short, narrow and provide a dangerous temptation to motorists.

Option Generation and Assessment

Regional options assessment

The Tasmanian Government recently released the Western Tasmania Industry Infrastructure Study, a significant and detailed review of infrastructure priorities in the West Coast region. Projects were identified at a strategic level based on their contribution to economic

development, and assessed based on cost, timeframe and relative benefit (the number and scope of beneficiaries, including employment and wider benefits to the local community).

As a key part of the main freight and passenger corridor connecting the West Coast to the north west, and as an HPV network, the Murchison Highway was included in the priority projects list under the Western Tasmania Industry Infrastructure Study.

Corridor options assessment

Mining is the key freight task on the West Coast. Mine sites are highly dispersed across the region, with at least ten major locations. Variation and lack of certainty in the life of individual mines; significant variations in tonnages; and relatively short haulage distances for most mines, mean road is likely to remain the major transport mode for the movement of mining-related freight, especially for new mines.

Notwithstanding this, rail is a key mode for two existing, major mines on the West Coast, and is actively pursuing new, potentially very high-volume mining developments. Significantly higher freight volumes on the road network would require major upgrades in excess of those proposed here, and in this context the approach to the two networks are complementary, with rail targeting higher volume tasks where this is logistically feasible.

The Tasmanian Government has reviewed the Murchison Highway in detail from a strategic and economic development context (Western Tasmania Industry Infrastructure Study, 2012) and in terms of corridor issues, infrastructure condition and upgrade costs (Murchison Highway corridor planning project, 2011). The upgrades proposed under Nation Building 2 represent the outcomes of these two processes, focusing on lower-cost upgrades to meet higher vehicle productivity standards and address key safety issues.

The Tasmanian Government is investing an initial \$21 million to address safety and efficiency issues on the Highway. The upgrades proposed under Nation Building 2 consolidate the benefits delivered by this investment.

Appendix 1 – Map

