

# Tasmanian Government's 2012 Submission to Infrastructure Australia

Department of Infrastructure, Energy  
and Resources



Hon David O'Byrne MP  
**Minister for Economic Development**  
**Minister for Innovation, Science and Technology**  
**Minister for Infrastructure**  
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Mr Michael Deegan  
Infrastructure Coordinator  
Infrastructure Australia  
GPO Box 594  
CANBERRA ACT 2600

03 AUG 2012

Dear Mr Deegan *Michael*

I am pleased to present the Tasmanian Government's 2012 submission to Infrastructure Australia for your consideration.

The Tasmanian Government recognises the challenges the nation is facing in the provision of infrastructure to support future economic development and national prosperity. The Tasmanian Government understands the critical need to improve infrastructure planning, policy development and project development and assessment.

The form of the submission has been determined following discussions with your staff and the Department of Infrastructure and Transport.

The attached submission provides an update on all of Tasmania's projects currently in the IA pipeline.

- **Bell Bay Intermodal Expansion Project** – an update status report is attached for this project which aligns with your theme for action of competitive international gateways. Significant market changes have taken place since the project was first proposed. In the 2010 submission to IA, the original proposal was modified focusing on immediate improvements to the Burnie Port and assessing development of Bell Bay for the longer term. It is noted that this project will be reviewed as part of the development of the proposed Tasmanian Principal Freight Network Strategy (outlined below) and a proposed Tasmanian Ports Strategy. It is sought to retain the status of this project as one of Real Potential in the IA pipeline while this work is completed.
- **Hobart – A World Class Liveable Waterfront City** – Given the Australian Government's recent allocation of \$50 million for the most significant component of this initiative, the Tasmanian Government will not be pursuing additional funding through the IA pipeline process. On this basis, the project does not need to remain in the IA pipeline. However, as significant work has been undertaken since the most recent submission to IA in 2011, it is considered appropriate to provide a brief report on progress made to date.



- **An Innovation Strategy for Tasmania: Focus on Food Bowl Concept** – an updated submission has been provided for this project which aligns with your theme of adaptable and secure water supplies. This project also addresses the key future national challenge of food security. This submission presents Tranche Two for irrigation schemes building on the success of Tranche One.
- **Water and Sewerage Reforms** – an update status report is provided on this project which aligns with your theme of adaptable and secure water supplies.

In relation to your proposal to undertake a **Hobart to Launceston Transport Strategy**, the Tasmanian Government recognises the importance of long term planning for critical freight corridors and is seeking to rename this proposal **Tasmania's Principal Freight Network Strategy** and expand the scope of work to include the strategic road transport corridor from Hobart to Burnie, with key feeder links, in addition to the Hobart to Launceston and Bell Bay corridor. The Strategy would also include all segments of the rail network and ports. This work will result in a long term, fully integrated network strategy that incorporates rail, roads and ports planning.

It is proposed that funding provided by the Australian Government under the Exporters Assistance Package will be used to develop the strategy, drawing on experience from other regional areas of Australia. This work will be undertaken under the aegis of the Tasmanian Infrastructure Advisory Council through the establishment of an industry lead Freight Logistics Coordination Team.

In a national context, Tasmania's transport system is not complex. Through previous work – including the development of strategic documents such as the 2007 AusLink Corridor Strategy, and recent analysis undertaken to inform the development of a Tasmanian Freight Strategy – the Tasmanian Government has a good understanding of the current challenges facing the system and the specific issues that need to be addressed in the short to medium term on the network.

It is in this context that the projects in the attached submission are put forward for assessment by Infrastructure Australia and inclusion in the Nation Building 2 program. These include:

- **Tasmanian Rail Revitalisation Program** – an updated submission which aligns with your theme of a national freight network. As recommended by IA, further detailed demand analysis has been undertaken for this submission.
- **Midland Highway**
  - Bridgewater Bridge – land acquisition and planning
  - Bagdad – land acquisition and planning and upgrade of existing alignment
  - Perth to Breadalbane
  - Illawarra Main Road
- **Brooker Highway**
  - Domain – Brooker Highway intersection
  - Elwick – Goodwood and Howard Road
- **Bass Highway**
  - Latrobe to Deloraine – planning

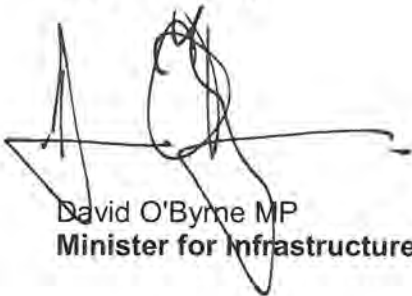
Further projects under the IA threshold limit of \$100 million will be forwarded to the Department of Infrastructure and Transport for assessment for inclusion in Nation Building

2. These include safety related projects on the Midland Highway and other freight and passenger transport projects.

In preparing the transport submission, particular note has been taken of IA's relevant publications – including the 2012 Report to the Council of Australian Governments *Australian Infrastructure: Progress and Action*, the National Ports Strategy, and the National Land Freight Strategy Discussion Paper. In addition, your report to The Hon Anthony Albanese on Tasmania's Ports and Shipping issues has been a valuable input.

These documents will continue to drive the direction of work undertaken by the Tasmanian Government to enhance the productivity of our freight system, and we look forward to continuing to work with IA on the future development of Tasmania's proposals.

Yours sincerely



David O'Byrne MP  
**Minister for Infrastructure**

c.c. Mr Phil Clark, Chair, Tasmanian Infrastructure Advisory Council



**Tasmanian Ports  
Corporation Pty Ltd**

Tasports Bell Bay  
Intermodal Expansion

Infrastructure Australia Update

July 2012

**Confidential**

## 1. Proposal Summary

Initiative Name:	Bell Bay Intermodal Expansion
Location (State/Region(or City)/ Locality):	Bell Bay, Northern Tasmania
Name of Proponent Entity:	Tasmanian Government and Tasmanian Ports Corporation
Contact (Name, Position, phone/e-mail):	<p>Phil Cooke            General Manager Infrastructure and Maintenance            Tasmanian Ports Corporation</p> <p>Phone: 0418 931 845            Email: philip.cooke@tasports.com.au</p> <p>Head Office            48 Formby Road, Devonport            PO Box 478            Devonport, Tasmania 7310</p>
Executive summary	<p>Tasmania's port activity will increase with growth in total tonnage, bulk trade and container volumes. Port throughput is currently focused on the three northern ports at Burnie, Devonport and Bell Bay. To meet the challenges of increased freight growth over the long term, the Tasmanian Government and Tasports identified a long-term strategy, in the mid 2000's, to consolidate container traffic at Devonport and Bell Bay, with the highest growth targeted at Bell Bay. To progress this project, a submission was made to Infrastructure Australia in 2008 for a \$150M intermodal expansion to the port of Bell Bay.</p> <p>The Project was submitted under the Competitive International Gateways theme. The theme focuses on developing more effective ports and connecting land transport systems to efficiently cope with imports and exports. Project updates were provided in 2009, 2010 and 2011.</p> <p>Significant market realities/structural changes have taken place since the project was first proposed. Based on studies and the information that has been gathered on market drivers Tasports updated the submission to IA in 2010 to modify the original proposal to a short and long term strategy focusing on immediate improvements through the Burnie Port and the long term objective of the Bell Bay development through a staged approach to construction.</p> <p>These changes included:</p> <ul style="list-style-type: none"> <li>• Lower than projected container growth in Tasmania</li> <li>• The loss of container shipping service from Bell Bay (AAA, ANL, Agility)</li> <li>• Consolidation of container freight through Burnie primarily (Toll) and Devonport (SeaRoad)</li> <li>• The ability of Burnie and Devonport to handle the projected growth of container freight in the short to medium term.</li> </ul> <p>Given the size of the Tasmanian international container market, and the limitations in vessel size that can navigate the Tamar River, it is unlikely that a viable international shipping service will return to Bell Bay in the foreseeable future. On this basis it is not anticipated that the Bell Bay Intermodal Expansion would be required before 2020.</p>

The long term Tasmanian port strategy, which is under development in line with the national ports strategy, is based on:

1. Port access including channel and depth restrictions
2. Port development potential
3. Links to Tasmanian freight network

The port development strategy is based on the principle of specialised ports to avoid duplication of facilities, with the three northern Tasmanian ports becoming specialised terminals of a single integrated port system.

The strategy involves:

- a. The short term development of container terminal and intermodal capacity at Burnie to meet cost efficiency objectives and volume forecasts (0-5 years)
- b. Medium to long term – Tasmanian Port development (3 terminals)
  - i. Bulk minerals terminal at Burnie and dry bulk terminal at Bell Bay
  - ii. Specialised terminal (i.e. TT-Line, Cement Australia) at Devonport
  - iii. Priority Container terminal (Location still being developed)

The port of Hobart would become a specialised port for Antarctic and cruise vessels

Tasports is developing a Tasmanian port strategy which will focus on port specialisation, and is likely to move toward a single container port for Tasmania. The location of this port is yet to be determined.

The Bell Bay Intermodal expansion remains a project with real potential but is not an immediate requirement to handle the Tasmanian freight task.

Pipeline category nominated by proponent	Real Potential
Estimated Capital Cost of Initiative by Proponent (\$M, nominal, undiscounted):	Bell Bay Stage 1: \$56 million Bell Bay Stage 2: \$25 million Bell Bay Stage 3: \$55 million Bell Bay Stage 4: \$14 million Total: \$150 million
BCR by Proponent excluding Wider Economic Benefits	The preliminary BCR is 1.6. Final BCR is to be determined following comprehensive re-evaluation of existing analysis and confirmation of assumptions through investigative studies.

## 1. Description of Initiative

Tasmania's port activity will increase with growth in total tonnage, bulk trade and container volumes. Port throughput is currently focused on the three northern ports at Burnie, Devonport and Bell Bay. To meet the challenges of increased freight growth over the long term, the Tasmanian Government and Tasports identified a long-term strategy, in the mid 2000's, to consolidate container traffic at Devonport and Bell Bay, with the highest growth targeted at Bell Bay. To progress this project, a submission was made to Infrastructure Australia in 2008 for a \$150M intermodal expansion to the port of Bell Bay.

The Project was submitted under the Competitive International Gateways theme. The theme focuses on developing more effective ports and connecting land transport systems to efficiently cope with imports and exports.

## 2. Project Background

Tasmania is reliant on port infrastructure with over 99 per cent of total import and export freight by volume being moved by sea. Of this freight task, 99 per cent of imports and exports move through the three northern Tasmanian ports of Bell Bay, Burnie and Devonport and it is likely that the movement of the majority of freight through the North of Tasmania will continue due the shorter sea distance relative to the Port of Hobart.

To drive a state wide strategy for the Tasmanian ports, Tasports was formed in 2006, and since this time, Tasports has been working to develop a cohesive strategy for the Tasmanian ports. This strategy is aimed at consolidating freight into and out of Tasmania, and reducing the duplication of facilities at the ports.

On this basis Tasports and the Tasmanian Government applied for funding from Infrastructure Australia (IA) in 2008 and provided project updates in 2009, 2010 and 2011. The Bell Bay Intermodal Expansion project was categorised by IA as a pipeline project that required more information prior to further consideration to fund the project. This was updated in IA's June 2010 report to a project with real potential and this status was maintained in IA's 2011 report.

Significant market realities/structural changes have taken place since the project was first proposed. Based on studies and the information that has been gathered on market drivers Tasports updated the submission to IA in 2010 to modify the original proposal to a short and long term strategy focusing on immediate improvements through the Burnie Port and the long term objective of the Bell Bay development through a staged approach to construction.

These changes included:

- Lower than projected container growth in Tasmania
- The loss of container shipping service from Bell Bay (AAA, ANL, Agility)
- Consolidation of container freight through Burnie primarily (Toll) and Devonport (SeaRoad)
- The ability of Burnie and Devonport to handle the projected growth of container freight in the short to medium term.

The loss of an international container service into Bell Bay was due to a number of factors, not related to a lack of port facilities. Most significant are reduced container numbers for AAA and the restrictions in both depth and navigation in the Tamar River. The limitations on entering the Port are a maximum draft at high tide of 11.4m, and a maximum length of 262m.



This can be contrasted with the Port of Melbourne which can now accommodate container vessels up to 14m draft.

Given the size of the Tasmanian international container market, and the limitations in vessel size, it is unlikely that a viable international shipping service will return to Bell Bay in the foreseeable future. To change this outlook would require dredging of the Tamar River, both to increase depth, and to straighten the channel. The cost of this would be prohibitive and would result in unacceptable environmental outcomes.

Tasports is working towards the development of a Tasmania Port Strategy in line with the National Ports Strategy. This strategy considers:

- Port access including channel and depth restrictions
- Port development potential (including depth, navigation and access to open water)
- Links to the Tasmanian freight network

In the development of this strategy, consideration of a “one port” model is contrasted with the current arrangement of three major northern Tasmanian ports and one southern port.

Tasmanian freight falls in the broad categories of:

- Containers
- Bulk Liquids and Gas
- Minerals/metals/Mining
- Forestry
- Ferries/cruise/tourism/fishing
- Antarctic

To service all of these categories at a single port would be impractical in terms of cost and the lack of a suitable location for a “mega port”. The strategy is aimed at developing a single port system of specialised terminals (one northern port with three terminals at Bell Bay, Devonport and Burnie). This specialisation would be aimed at avoiding duplication of facilities in the State, and providing the optimum freight movement from the landside road and rail network through the ports.

The strategy involves:

- a. The short term development of container terminal and intermodal capacity at Burnie to meet cost efficiency objectives and volume forecasts (0-5 years)
- b. Medium to long term – Tasmanian Port development (3 terminals)
  - i. Bulk minerals terminal at Burnie and dry bulk terminal at Bell Bay
  - ii. Specialised terminal (i.e. TT-Line, Cement Australia) at Devonport
  - iii. Priority Container terminal (Location still being developed)

The port of Hobart would become a specialised port for Antarctic and cruise vessels.

The objectives associated with the strategy are looking in the short term to improve the current constraints within the existing infrastructure. In particular Burnie Port initially was identified as being at capacity but through alterations based on a master planning exercise, the Port can be optimised to handle more freight. This would fulfil the short term requirement associated with the objective of security of shipping for cargo owners, improved efficiency and competitiveness of ports and improve the reliability of the Toll shipping

service. In addition to this master planning for the port, rail operations have been reviewed to handle longer trains with less splitting of wagons to decrease the train turn-around time.

It is estimated that Burnie through proposed expansions can handle up to 350,000 TEU's per annum. Based on this figure and a projected 3% growth, Burnie is predicted to reach capacity at this level in approximately 2020.

Based on the above discussion, it is not anticipated that the Bell Bay Intermodal Expansion would be required before 2020, and development of the Tasmanian Port Strategy will consider the market forecasts for freight growth and customer requirements. The outcome of the strategy will be a development program based on linkages to the landside freight network, and reduction in the duplication of facilities at the ports.

### 3. Project Update

Over the last 12 months, a number of issues have impacted on freight to and from Tasmania and have had a bearing on the projected capacity of the Northern Ports. These include:

- The loss of all container services into the Port of Bell Bay
- The transfer of the bulk of the container traffic from Bell Bay to Burnie
- Flat growth in the Tasmanian container market
- Increased freight costs for customers resulting from the need to tranship containers through Melbourne.
- Loss of export woodchip volume due to the forest industry restructure

The current container freight volumes through the Ports are within the current Ports capacities and the commercial arrangements currently in place support the strategy of short term development at Burnie with a future development to increase capacity for containers through the northern ports in 2018-20.

The long term strategy of upgrades to the Bell Bay intermodal facilities will support an increase in capacity at Bell Bay, making a significant contribution to meeting Tasmania's medium to long term container growth forecasts, however, the development at Bell Bay will be dependent on the overall container growth and the development of the Tasmanian Port Strategy.

In the short term, the loss of a container service into Bell Bay, while significant, will not decrease the importance of the Port. Current long term Bell Bay customers include metals and materials through Rio Tinto Alcan and Temco, fuel supplies and woodchips. These imports/exports are less affected by the loss of the container service, and will continue to utilise the port. Other prospective port customers, including coal developers are exploring the potential to ship product out of Bell Bay.

Discussions have commenced between Tasports, TasRail and Burnie customers to proceed with the initial stages of the Burnie optimisation project to accommodate the short term shift in volume from Bell Bay to Burnie. Recently announced funding for the first stage of the Burnie Optimisation project will ensure that capacity constraints at Burnie will not be of concern in the short term.

#### 4. The preferred option

At this time, the preferred option for the development of the Tasmanian Port system is:

1. Proceed with Stage 1 of the Burnie optimisation project (expected to commence in 2012)
2. Develop a Tasmanian Port strategy with a 30 year horizon in line with the National Ports Strategy
  - a. Northern port system
  - b. Three specialised terminals

The current development strategy is to have a staged approach to increased capacity at Bell bay or Burnie with staging as below:

- Stage 1 – Burnie Upgrades in 2012/13 (increased freight from 250,000 to 350,000 TEU's.
- Stage 2 – Bell Bay upgrades for removal of constraints 2018/2020 (increase freight from 150,000 to 200,000 TEU's) at an estimated cost of \$56M. Stage 2 is not likely to be required before 2020.

#### 5. Summary

The Bell Bay Intermodal expansion was submitted to IA in 2008 and was subsequently rated as a project with real potential. Since the project was submitted, significant changes have occurred to freight movements into and from Tasmania. Based on these changes, the proposal was changed from an immediate \$150M expansion to cater for all container traffic into and from Tasmania to a short term expansion at Burnie, with the potential for a future expansion at Bell Bay in a staged manner over a period of years.

Tasports is developing a Tasmanian port strategy which will focus on port specialisation, and is likely to move toward a single container port for Tasmania. The location of this port is yet to be determined.

The Bell Bay Intermodal expansion remains a project with real potential but is not an immediate requirement to handle the Tasmanian freight task.

# **Hobart: a world-class, liveable waterfront city**

## **Update to Infrastructure Australia**

**by the Department of Economic Development, Tourism and the Arts**

The following provides an update on the progress of Tasmania's Infrastructure Australia (IA) submission entitled *Hobart: a world-class, liveable waterfront city*.

This submission was first lodged with IA in 2009 and was followed by an update in December 2010. At that time the submission was assessed as being at the 'early stage' of the IA assessment process. Since then, the Tasmanian Government has continued to develop the initiative.

Given the Australian Government's recent allocation of \$50 million for the most significant component of the initiative – that is, the remediation of the Macquarie Point Railyards site – the State Government will not be pursuing additional funding through the IA process. However, as significant work has been undertaken since the most recent submission to IA in 2010, it is considered appropriate to provide a brief report on progress made to date.

### **Recent activities and progress**

Since the State Government's 2010 update, the following progress has been made:

The Tasmanian Ports Corporation (Tasports) has commenced the redevelopment of Macquarie Wharf No. 2 Shed to accommodate Australian Antarctic Division operations and the French Antarctic program, as well providing for a new international cruise ship terminal.

The Tasmanian Government has negotiated the transfer of Princes Wharf No.2 Shed to the University of Tasmania, which has now commenced construction works to develop a facility to accommodate the Institute for Marine and Antarctic Studies.

In October 2011 the Minister for Economic Development released the Antarctic Sector Development Plan, which has a major focus on the role of Hobart's port in attracting other East Antarctic nations to Hobart, using the city as a base for logistical support and as an international centre for Antarctic science and research.

The State Government has completed a \$15 million redevelopment of Princes Wharf No. 1 Shed to provide a large-scale event space on the Hobart waterfront.

Tasports has appointed a consortium to progress the redevelopment of Macquarie Wharf No.1 Shed for hotel accommodation and public amenity.

These projects demonstrate the state's ongoing commitment to the goals and objectives of the original submission, which aims to develop Hobart as:

- the Antarctic and southern ocean gateway
- a place of research excellence and learning
- a place to live, work and visit
- a place of arts, culture and recreation
- a small but vital working port

In March 2012, the Australian Government committed \$110 000 under its Liveable Cities Program for work to support the Macquarie Point Railyards project, complementing a matched contribution from a range of railyards project partners, including the Department of Economic Development, Tourism and the Arts; the Hobart City Council; the Department of Infrastructure, Energy and Resources and Tasports.

This has supported a number of studies and assessments that will inform future work on the railyards site. These studies are currently being finalised and include the following:

- a comprehensive market and demand analysis of the Hobart property sector
- planning assessment, social impact assessment and climate change assessment
- traffic impact assessment
- site remediation review
- risk assessment in the context of the adjacent working port
- cost benefit analysis (CBA)

In conjunction with the above work, a number of concepts have been developed for the site, providing a basis for the considerable public consultation that will be required. Work to establish these concepts commenced with an Enquiry by Design workshop, which was held in Hobart in February 2012 and attended by approximately 30 key stakeholders.

As an 8.4 hectare parcel of land on Hobart's doorstep, the site will play a major role in the future economic and social growth of the city for at least the next 50 years. For this reason, extensive community consultation will be critical to ensure the community contributes to and shares in the site's ultimate development.

The consultation process will proceed until early 2013, after which time a final decision will be sought from the Tasmanian Government about the site's future development.

As a major boost to the initiative, on 22 June 2012 the Federal Minister for Infrastructure and Transport, Anthony Albanese, made a \$50 million commitment to the remediation of the Macquarie Point Railyards site and the redevelopment of public infrastructure components of Brooke Street Pier, both of which are key elements in the IA submission.

In making the announcement, the minister noted the national significance of the project, and its alignment with the principles, goals and objectives of the National Urban Policy. It will be important that all future work on the site continues to support and adhere to these principles, goals and objectives.

### **Cost Benefit Analysis**

The recently-completed CBA focuses on the Australian Government's \$50 million contribution and is based on three development concepts that originated from the initial Enquiry by Design workshop.

The concepts also reflect the Sullivans Cove Master Plan, which proposes the railyards site be developed for mixed-use purposes. Each concept outlined in the report reflects a different potential mix, depending on the major theme identified for the respective concept.

Combined with the CBA, the findings in the concept analysis report provide a greater degree of certainty in relation to the merits of each of the potential development concepts. An overview of the concept analysis report is outlined in the CBA, which is attached.

The CBA provides an understanding of the economic merits of the project, for both Australia and Tasmania, by assessing the anticipated future benefits and costs. It found that the development of the Macquarie Point railyards site is economically desirable across all discount rates examined (that is, four per cent, seven per cent, 10 per cent and 15 per cent), with the identified benefits outweighing the costs of the development to both Australia and Tasmania.

Sensitivity testing indicates the net present value (NPV) of the development has a 90 per cent probability of ranging between \$80.4 million and \$177.5 million at a seven per cent discount rate, based on the benefits and costs examined.

It should be noted that a number of associated costs and benefits were identified, but not included in the final modelling of the benefit cost ratio (BCR), due to data limitations. However, on balance, it is assessed that these benefits and costs would otherwise provide an overall net increase in the NPV. For these reasons, based on the existing assumptions, the CBA can be considered a conservative estimate of the potential benefits from the redevelopment of the Macquarie Point railyards site.

Assuming a discount rate of seven per cent, the NPV of the preferred option of the Macquarie Point railyards site development is estimated to be \$140.9 million, with a national BCR of 2.22, which implies a return in present value terms of \$2.22 for every dollar cost.

The assumptions in the CBA have undergone a peer review by the consulting firm, Ernst and Young.

## Next steps

As noted above, following Cabinet approval, the development concepts will be put forward for public consultation during the latter part of 2012. *As the concepts still require Cabinet approval, the information related to this component of the update is not for public dissemination.*

Another important step will be the creation of legislation in order to establish a Public Non-Financial Corporation (PNFC) to manage the remediation of the Macquarie Point Railyards site and the redevelopment of public infrastructure at Brook Street Pier.

This is a condition of the Australian Government's \$50 million contribution to the railyards site project. Legislation to establish the PNFC, to be known as the Hobart Waterfront Development Corporation, is expected to be tabled in State Parliament in late 2012 or early 2013.

Anticipated major project milestones for the Macquarie Point Railyards site and the redevelopment of public infrastructure at Brook Street Pier are noted in the table below:

<b>Milestones</b>	<b>Date</b>
Development options and cost benefit analysis for Macquarie Point Railyards site project completed. Planning permit for Brooke Street Pier in place and detailed design in progress.	01/11/2012
Hobart Waterfront Development Corporation operational and detailed Macquarie Point Railyards site remediation plan under development. Building approvals and cost estimates for Brooke Street Pier finalised.	01/06/2013
Detailed Macquarie Point Railyards site remediation plan completed. Works on Brooke Street Pier commenced.	01/11/2013
Contractors engaged and remediation on Macquarie Point Railyards site commenced. Redevelopment of Brooke Street Pier completed and construction of commercial facilities commenced.	01/06/2014
Macquarie Point Railyards site remediation proceeding	01/11/2014
Remediation complete and final report accepted by Commonwealth	01/06/2016



Just  
add  
water



# What we are seeking

The bottom line of this proposal:

**\$130 million public contribution to five Tasmanian irrigation schemes**

**\$54 million private contribution**

**\$220 million on-farm private investment**

**\$282 million national economic benefit**

**310 direct and indirect employment growth**

Funding of \$130 million under this proposal would enable \$54 million to be leveraged in private sector investment through the sale of water entitlements. This would give a total private investment in Tasmanian irrigation scheme infrastructure of \$180.8 million.

Further private sector investment will occur through on-farm development. This covers such items as pivots, farm machinery and dams.

This on-farm investment resulting from the five irrigation schemes in Tranche Two is conservatively estimated at \$220 million, or \$1.69 for every \$1 of public contribution.

Success will be measured by:

**delivering the identified projects within agreed timeframes and budgets;**

**and the increase in output of Tasmania's agricultural sector;**

**and the flow-on effect to regional communities.**

ON-FARM  
INVESTMENT OF



FOR EVERY DOLLAR OF  
PUBLIC CONTRIBUTION

Reliable irrigation is important for all the people in the region. It creates stable employment for the small towns and communities. It means that the schools, the hospitals, all those things are maintained.

*Tunbridge farmer  
Richard Gardner*



# Proposal summary

## Initiative name

### Just add water...

(An Innovation Strategy for Tasmania: Focus on Food Bowl Concept)

## Location

Tasmania – statewide

## Name of Proponent Entity

Tasmanian Irrigation Pty Ltd & Tasmanian Government

## Contact

Mr Chris Oldfield

Chief Executive Officer, Tasmanian Irrigation Pty Ltd

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## Executive summary

Tasmanian Irrigation's goal is to develop a system of irrigation schemes that will add significant economic value to the state and nation's agricultural production.

Firstly, water will be delivered sustainably and economically to the most productive land and the most productive use. Secondly, sustainable agricultural production will be maximised for national economic benefit and in the interests of global food security. These aims are consistent with the Tasmanian Government's Economic Development Plan and Infrastructure Strategy.

Secure, high reliability water being available to Tasmanian farmers is critical to the success of the State's Economic Development Plan. The most efficient way to address this problem is through the establishment of true public private partnerships (PPP) to develop regionally significant irrigation schemes.

Tasmanian Irrigation is seeking \$130 million in public funding to develop another five irrigation schemes, Tranche Two, building on the irrigation schemes across Tasmania that are being developed under the National Partnership Agreement on Water for the Future between the Australian and Tasmanian Governments. A commitment of \$130 million in public funds would enable a further \$54 million to be leveraged in private sector investment through the sale of water entitlements.

In addition, on-farm private investment from the five schemes is conservatively estimated at \$220 million, or \$1.69 for every \$1 of public contribution. The total economic benefit from this public investment of \$130 million, on the basis of a combined economic NPV at farm gate of \$94 million, has been estimated by economic consultants Marsden Jacob Associates to have a flow-on economic effect of up to an additional \$188 million, that is, an economic multiplier of three.

## Is this a new submission?

No, currently on Infrastructure Australia's 2012 Infrastructure priority list under the Early Stage Category.

## Estimated cost of problems?

The Australian Bureau of Statistics estimated the gross value of Tasmanian agricultural production for 2010-11 was over \$1.15 billion. Professor Jonathan West, author of *An Innovation Strategy for Tasmania A New Vision for Economic Development, Conceptual Overview and Options Outline* (which informed the Tasmanian Government's Economic Development Plan) has identified agriculture as one of the key opportunities for growth in the state economy. Professor West has identified that agriculture could generate an additional \$5 billion per annum with additional irrigation water.

## Estimated capital cost of initiative by proponent (\$m, nominal, undiscounted):

\$184 million

## Commonwealth contribution sought by proponent (\$m, nominal, undiscounted):

\$130 million

## Other funding (source/amount/cash flow) (\$m, nominal, undiscounted):

\$54 million – sale of water entitlements to the private sector

## BCR by proponent excluding wider economic benefits:

1.4 excluding wider economic benefits

## Estimated program

Full utilisation of new irrigation capacity could occur within three to five years. Tasmanian Irrigation has the capacity, if there is a smooth transition from Tranche One to Two, to commence the development of all five new projects simultaneously within the next year.



## ECONOMIC MULTIPLIER OF THIS SCHEME

Marsden Jacob Associates



## ADDITIONAL AGRICULTURE GENERATION POSSIBLE THROUGH ADDITIONAL IRRIGATION WATER

Professor Jonathan West



To create jobs,  
just add water...



# Background

**There is a revolution under way in Tasmania that sets in cement the state's reputation as the most reliable source of food and fibre in a continent challenged by climate change.**

Tasmania has only one per cent of the nation's land mass but, because of its unique maritime climate at the edge of the Southern Ocean, it has 13 per cent of Australia's total rainfall run-off. It is twice as much as the Murray Darling Basin.

The rain-bearing westerlies that unburden themselves after passing over the mountains of the Tasmanian west coast are on a constant circumnavigation in the latitudes called the Roaring Forties. The westerlies flow around the world, their path impeded only by South America. They arrive back in Tasmania, "their clouds pregnant with water after visiting the Amazon", as one irrigator describes it.

So in Tasmania there is always a potential deluge waiting to happen. The key for farmers is to capture that water, to harness that rainfall run-off for later use before it runs to the sea. It is a task beyond the scope of any individual farmer, but it is one in whose cost they have been more than willing to share in a successful public private partnership.

Large-scale, multi-user irrigation schemes developed under a true public private partnership (PPP) model are a more efficient use of capital than the sum total of individual storage schemes on farms. Under the PPP approach, the public sector assists farmers to establish the schemes and their associated delivery systems and the farmers meet part of that cost as well as the ongoing charges for using the water.

There are no expensive buy-backs like in the Murray-Darling Basin.

Tasmania already has:

- a temperate climate
- fertile soils
- the biosecurity benefit of isolation because it is an island
- an emerging class of skilled and increasingly innovative farmers
- established processors
- established domestic and international markets
- a sound research, development and extension foundation through the Tasmanian Institute of Agriculture, the University of Tasmania and local CRCs
- the Tasmanian Freight Equalisation Scheme for eligible freight across Bass Strait, and the credibility and strength, both nationally and internationally, of the Tasmanian brand.

Creating further water storages and irrigation for primary production unlocks the greater potential of Tasmania's food production and helps the transformation from traditional pursuits such as forestry into higher-value outcomes.

Each of the proposed schemes undertakes to provide 95 per cent reliability of water supply to farmers, possibly a level of security previously unachievable anywhere else in Australia.

The Tasmanian Government has charged state-owned company Tasmanian Irrigation Pty Ltd with delivering the schemes. The first tranche of 10 is already well under way, with four completed and two under construction. They have all been models of this partnership between public and private sector enterprise.

The precedent of the 10 nominated projects in Tranche One gives an insight into the likely economic impacts of those in Tranche Two. The \$140 million Australian government expenditure in Tranche One, when completed, will activate total direct capital expenditure of \$575 million: \$310 million on actual project construction and \$265 million on on-farm capital expenditure. This is expected to deliver a direct economic benefit at the farm gate of \$192 million. The additional economic value-add of Tranche One irrigation schemes is put at \$384 million.

Under this Tranche Two proposal, Tasmanian Irrigation is seeking \$130 million of public funding to develop another five additional and regionally significant irrigation schemes.

That commitment of \$130 million will leverage an additional \$54 million in private sector investment through the sale of water entitlements. Further on-farm investment from the five schemes is conservatively estimated at \$220 million, or \$1.69 for every \$1 of public contribution. On the experience of Tranche One, it is very conservative.

In addition, the total economic benefit from this public investment of \$130 million (on the basis of a combined economic NPV at farm gate of \$94 million) has been estimated by economic consultants Marsden Jacob Associates to have a flow-on economic effect of up to an additional \$188 million. That is an economic multiplier of three which is a very sound return on capital for the nation.

Under the terms of the existing irrigation development arrangements, the Australian and Tasmanian governments and the private sector have shared the \$310 million capital cost of the schemes:

- the Australian Government provides \$140 million under its Water for the Future program;
- the Tasmanian Government provides \$80 million from its Water Infrastructure Fund; and
- private capital accounts for \$90 million through the purchase of tradeable water entitlements in each scheme.

This initial funding is producing 10 irrigation schemes, but there is more to be done, hence, this application for Tranche Two.



13%

**OF AUSTRALIA'S  
TOTAL RAINFALL RUN-  
OFF IS IN TASMANIA**



95%

**SURETY OF SUPPLY**

# About Tasmanian Irrigation Pty Ltd

**A PROVEN  
TRACK RECORD**

**\$46.2  
million**

**IN PRIVATE  
INVESTMENT SECURED**



**WINNER 2012 SMART  
PROJECT AWARD:  
INFRASTRUCTURE  
PARTNERSHIPS  
AUSTRALIA**

The peak national body, Infrastructure Partnerships Australia, conducts annual awards to recognise infrastructure excellence. Tasmanian Irrigation's development of a suite of regionally-significant irrigation schemes in Tasmania was selected by the national industry as the cleverest infrastructure project in Australia and received the accolade of the 2012 SMART Infrastructure Project of the Year Award. Tasmanian Irrigation also was a finalist in the Excellence in Government Partnerships category.

Tasmanian Irrigation is the state-owned entity that has the merged assets and roles of the Rivers and Water Supply Commission, the Tasmanian Irrigation Development Board Pty Ltd and Tasmanian Irrigation Schemes Pty Ltd.

The company provides the technical, financial and project management skills to take irrigation schemes from their concept through feasibility, detailed design and approval stages, construction and operation.

**Its record to date is:**

- four new irrigation schemes operating, providing 16,640 ML high surety, 95 per cent secure water to farmers (Sassafras Wesley Vale Irrigation Scheme, Winnaleah Irrigation Scheme), Augmentation, (Whitemore Irrigation Scheme, Headquarters Road Irrigation Scheme)
- two schemes under construction including the nationally significant Midlands Water Scheme and the Lower South Esk Irrigation Scheme
- a seventh scheme has obtained final approvals (Kindred North Motton Irrigation Scheme)
- detailed business cases completed for the eighth and ninth schemes (South East Irrigation Scheme and the Upper Ringarooma Irrigation Scheme)
- a preferred option study completed for a 10th scheme (Dial Blythe Irrigation Scheme)
- preferred option studies for an 11th and 12th scheme (Great Forester Brid and Southern Highlands irrigation schemes, both included in the Tranche Two submission).

In the seven schemes that have gone to the market so far, Tasmanian Irrigation has secured \$46.2 million in private investment by way of water entitlements. This is farmers and investors putting their money where their mouth is. The PPP model for infrastructure development has gained wide interest, including from New Zealand.

In April 2012, Tasmanian Irrigation was acknowledged at the Infrastructure Partnerships awards. Tasmanian Irrigation won the prestigious SMART project award and was a finalist in the government partnership category.



# Broadening the agricultural canvas

The creation of water supplies in the most productive, arable regions of Tasmania maximises the retention and sustainable use of rainfall run-off that has traditionally been lost to primary production and assists in addressing climate change impacts.

Economically, this largely integrated system of schemes broadens the scope for traditional cropping and livestock production areas to allow for diversification. As importantly, and with climate change or global warming as an ally rather than a foe, irrigation broadens the canvas upon which our farmers exercise their creative minds.

The ongoing program advances the cause of water reform. The Tasmanian program demonstrates the value of the blending of public and private capital investment. It delivers tangible benefits that are visible in the landscape as well as in the financial bottom lines of the national economy and of individual agribusinesses.

It accords with Infrastructure Australia's theme of regional water reform. One of the schemes has the significant additional benefit of improving the reliability of drinking water supply for the town of Bothwell, which ran out of water during the most recent drought.

The program implements the National Water Initiative reforms through detailed planning and implementation and the creation of secure and fully tradeable water allocations.

The delivery model ensures that the schemes once constructed are self-funded through user charges. There is no public subsidy for operation or refurbishment. In 2004 COAG reaffirmed its commitment to water reform by drawing up a long-term action plan called the National Water Initiative (NWI).

#### The NWI strives to:

- maintain the momentum for change further clarify water allocations and entitlements
- ensure the health of river and groundwater systems

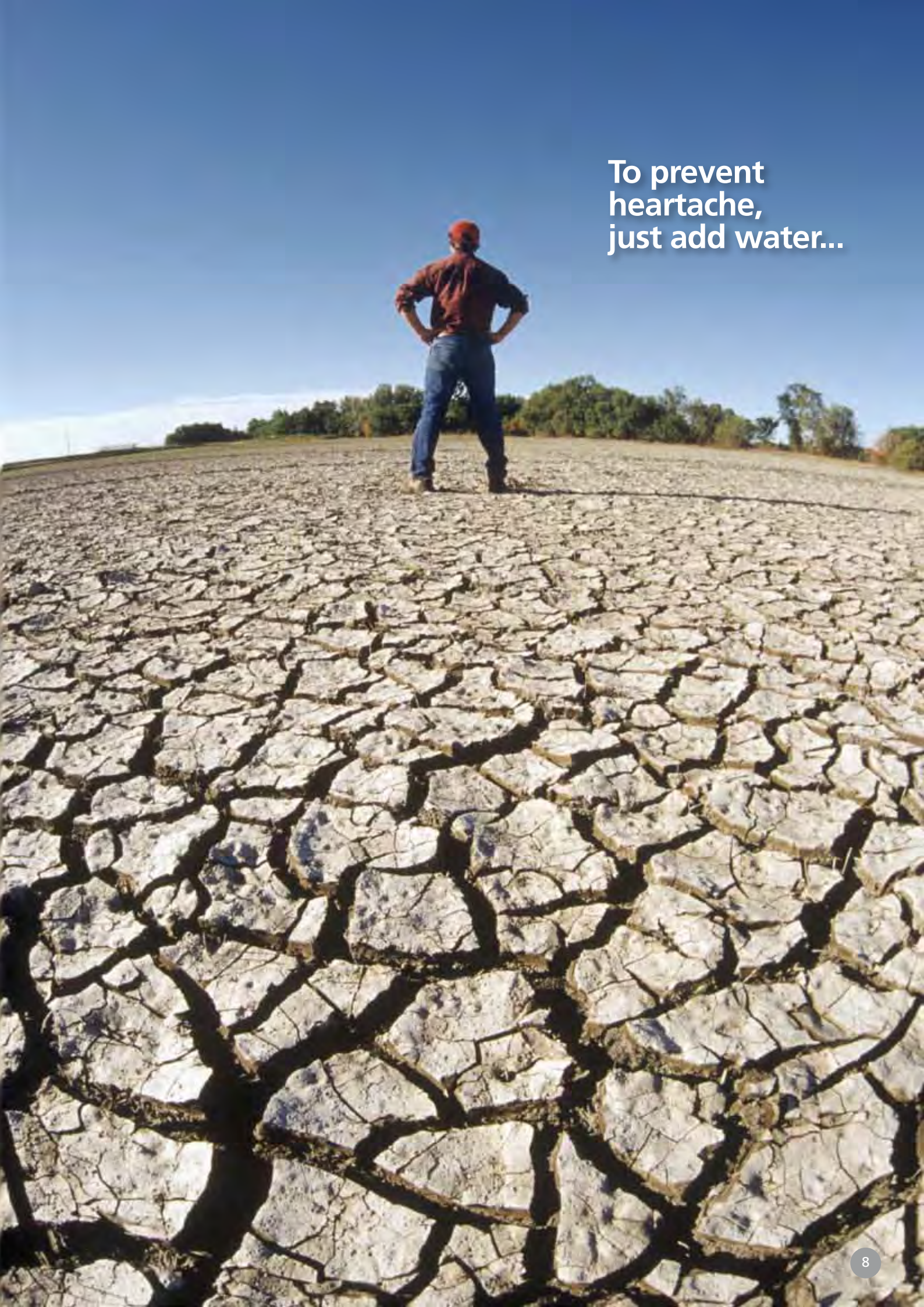
The Australian Government and all states and territories, with the exception of Western Australia, have signed on to the National Water Initiative. The objective of the NWI is to achieve a nationally compatible market, regulatory and planning based system of managing surface and groundwater resources for rural and urban use that optimises economic, social and environmental outcomes.

What this in fact means is that much needed reform in irrigation practices and water trading is now occurring on the back of the NWI and the resultant activities of Tasmanian Irrigation.

Tasmanian Irrigation has an excellent relationship with key stakeholders and, in particular, with the state Department of Primary Industries, Parks, Water and the Environment. There is strong commonality of purpose in pursuing genuine reform.



To prevent  
heartache,  
just add water...



## A case study: Houston Farms



In 1957 Maitland and Bunty Houston migrated to Tasmania from Ireland with their six kids. They lived in shearing quarters at Ouse while Maitland and Bunty worked on a nearby dairy farm. It was not quite *Angela's Ashes*, but you get the picture.

Maitland eventually bought a small dryland farm near Hobart Airport, transferred his chooks from the Derwent Valley and sold their eggs. In 1989 the Coal River Irrigation Scheme pipeline was driven through their property. The farm, now in the hands of twins Anthony and Colin Houston, hooked into the pipe. A friend, a lettuce farmer, told the Houston boys that, with irrigation on tap, there was more money in lettuces than eggs. The Houstons started off with a patch six metres square. Today Houston's Farm sells 40,000 cases of salad leaves a week throughout Australia. They are sold through 1,200 supermarkets as well as independent grocers.

Their annual turnover is \$35 million with 175 employees. They are the major employer in their district.



THANKS TO WATER

Water on land has been the biggest advantage to the whole valley, not only this farm. It is now employing 175 people and producing around 20% of Australia's fresh baby-leafed salads.

*Colin Houston*





# The Goal

## What this is all about

Just add water... has two goals that support the State's Economic Development Plan and the Tasmanian Infrastructure Strategy:

- to deliver water efficiently, sustainably and economically to its most productive land and to its most productive use with 95 per cent surety of supply
- to maximise sustainable agricultural production for the national economic benefit and in the interests of global food security.

## How it meshes with Tasmania's Economic Development Plan

In 2008 the Tasmanian Government set a new economic direction for the state. It involved innovation, skills and infrastructure strategies that included the accelerated development of rural water infrastructure and rural water reform. This food and agriculture initiative underpins the government's overarching Economic Development Plan for the state.

The essential elements of the water strategy are that water is delivered to its most productive use and it is managed commercially on real time information. The end game is to increase the productivity of arable land on the island with its associated economic benefits but with the higher objective of contributing to national and global food security in a sustainable way.

The by-products of that ethos are to focus research, encourage innovation and competition in primary production, promote skills development and to investigate fresh markets.

## The story so far

The \$310 million committed in the first tranche of the irrigation program will provide more than 70,000 ML of water when those schemes are completed. That is equivalent to 28,000 Olympic-size swimming pools. Those schemes embrace the north-east and north-west of Tasmania, the midlands and the south-east, but there is more we can do.

The Second Tranche of projects covers another five regions where irrigation development is feasible and would return a positive economic benefit to Tasmania and to the nation. The Second Tranche requires a public contribution of \$130 million and private investment of \$54 million.

**Table 1:**  
Tasmanian Irrigation –  
Irrigation Development  
Projects Tranche Two

Scheme	Capital Expenditure	Public Contribution	Economic Benefit (NPV)	Benefit Cost Ratio
Great Forester–Brid Irrigation Scheme	\$46.2m	\$31.8m	\$9.4m	1.2
Southern Highlands Irrigation Scheme	\$22.5m	\$14.7m	\$14.6m	1.5
Circular Head Irrigation Scheme	\$60.7m	\$36.2m	\$50.5m	1.7
Evandale Irrigation Scheme	\$13.0m	\$9.4m	\$3.6m	1.3
Swan River Irrigation Scheme	\$12.0m	\$8.4m	\$15.5m	2.1
Project financing		\$15m		
Project management		\$14.5m		
<b>Total</b>	<b>\$154.4m</b>	<b>\$130m</b>		<b>1.4</b>

The net economic benefits (and hence the benefit cost ratio) in Table 1 are highly conservative and are based on a methodology that ensures that a base investment case is highly robust by not including "blue sky" factors. They reflect only the expansion of existing agricultural activities in a region, that is, the increased value of existing crop or livestock enterprises.



**SURETY**

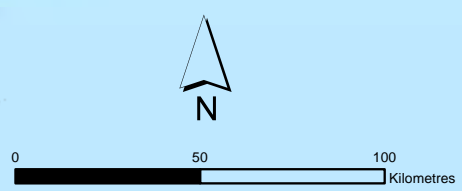
An Innovation Strategy for Tasmania:  
Focus on Food Bowl Concept  
*Tranche Two Irrigation Schemes*



Legend

- Operational/Under Development
- Highways
- Major Roads

Base data from the LIST- [www.thelist.tas.gov.au](http://www.thelist.tas.gov.au).  
© State of Tasmania and from Commonwealth of Australia. © Commonwealth of Australia 2004. The Commonwealth gives no warranty regarding the Data's accuracy, completeness, currency or suitability for any particular purpose. Map updated by FB - TI 06/07/2012. GEN-M0316-000 Version 00.



# The Goal Cont.

No account or forecast has been made of new enterprises that one would expect to arise from an assured supply of water, such as the shift from low-value to high-value cropping and new enterprises. By adopting this approach, which may in fact well “undersell” the benefits of the schemes, Tasmanian Irrigation is assured that at a minimum, all schemes that reach development will have a proved and definable positive economic impact.

As well, Tasmanian Irrigation has assessed the economic benefit of each scheme on income generated at the farm gate. Each assessment does not consider the substantial economic linkages and multiplier effects post-farm gate such as manufacturing, retail and other commercial uses. The multipliers for agriculture vary significantly but are generally recognised to be in the order of two to three. That is, every dollar of agricultural output is worth \$2 or \$3 to the economy in total as a result of flow-on effects. However, this multiplier would increase with value-adding of agricultural product, notably processing. When such value-added processes are included the total value can be two to three times the initial multiplier.

Tasmanian Irrigation conservatively estimates the five proposed irrigation schemes would provide employment for more than 310 (200 on-farm and 110 indirect) full-time jobs. Most would be located in regional communities. This is particularly important at the current time where many regional communities across the state are transitioning from traditional industries such as forestry.

**Table 2:**  
An Innovation Strategy for Tasmania:  
Focus on Food Bowl Concept – Alignment  
with state and national strategic plans

Strategic Plan	Initiatives
<input checked="" type="checkbox"/> National Water Initiative	<ul style="list-style-type: none"> <li>- clear, nationally compatible characteristics for secure water access entitlements</li> <li>- transparent, statutory-based water planning</li> <li>- statutory provision for environmental and other public benefit outcomes</li> <li>- progressive removal of barriers to trade water</li> <li>- water accounting that covers planning, monitoring, trading, environmental management and on-farm management</li> <li>- recognises the link between surface and groundwater resources</li> </ul>
<input checked="" type="checkbox"/> National Partnership on Water for the Future	<ul style="list-style-type: none"> <li>- secure water supplies to adapt to climate change through efficient water use and management</li> </ul>
<input checked="" type="checkbox"/> National Partnership Agreement on Water for the Future	<ul style="list-style-type: none"> <li>- assist Tasmania to optimise its irrigation water use sustainably and efficiently</li> </ul>
<input checked="" type="checkbox"/> Tasmania's Implementation Plan for the National Water Initiative	<ul style="list-style-type: none"> <li>- expand water markets for greater permanent trade in water</li> <li>- promote flexible and profitable water use</li> <li>- increase confidence of water investors</li> <li>- improve water planning and accounting</li> <li>- improve water allocation, use and management from an environmental perspective</li> </ul>



To ensure  
food security,  
just add water...

# What's in this for Infrastructure Australia

**Just add water...** makes a positive contribution to Infrastructure Australia's strategic priorities.

By helping to provide highly reliable irrigation water in Tasmania, Infrastructure Australia is expanding the nation's agricultural capacity and productivity and creating employment opportunities in Tasmanian regional communities.

In doing that, Tasmania is able to build on its climatic advantages to produce high quality food and fibre far beyond the needs of its own population and help feed the nation.

The assessments of the world's demand for food and agricultural production to the year 2050, when the population is expected to peak at nine billion, are relatively consistent in the future. We have to increase food and animal feed production substantially to meet this resultant demand. For instance, the International Water Management Institute cites a target of between 70 and 90 per cent.

Through its irrigation program, Tasmania is positioning itself to play an increasing role in the task of feeding the world. The key to this is the combination of climate, irrigation and the high skills of our farmers.

## Funding Return on Investment

The proposal will utilise the successful private public partnership approach developed and refined for the Tranche One projects.

Under this framework, irrigators typically contribute around 30 per cent of the total capital cost of projects through the sale of water entitlements. Importantly, contractual agreements, including a 10 per cent deposit, are made with growers before construction starts. A pre-determined sales threshold, typically 60-70 per cent of total water entitlements is required.

Under current and future arrangements, 100 per cent of the on-going operation, maintenance and future refurbishment costs is borne by irrigators.

The agreements with the state and federal governments require no return to be made on the initial investment. However, should a return on investment be required in the future, Tasmanian Irrigation could examine pricing options that incorporate such a return.

Any return on investment component would be built into the fixed charge component of the annual charge for irrigation water.

The requirement for a return on investment would need to be undertaken as part of the preferred option phase held before water sales in order for potential irrigators to make appropriate investment decisions. Tasmanian Irrigation would also need to examine equity implications relating to schemes developed under Tranche One and the proposed Tranche Two funding arrangements.

## Social Benefits

Tasmanian Irrigation's schemes provide important social benefits to the regions in which they are located. They derive from the improvements in the economic base attributable to the schemes and include greater community resilience and ability to adapt to change, maintenance of social cohesion through maintenance of community facilities and infrastructure. Importantly, the schemes, through the provision of reliable irrigation water, minimise or avoid income and employment losses that occur during extended periods of low rainfall.



100%

**OF ON-GOING  
OPERATION AND  
MAINTENANCE COSTS  
BORNE BY IRRIGATORS**

# The Problem

## So what is the problem?

In a nutshell: too much rainfall run-off is being wasted and agricultural development is suffering accordingly. As a result, the significant economic benefit and growth identified by Professor Jonathon West, of up to an additional \$5 billion, is not being achieved and is unlikely to be without reliable irrigation.

Unlike any other state, Tasmania has enough rainfall to maximise its agricultural output but most of the run-off flows into rivers and out to sea. This small island has 13 per cent of Australia's rainfall run-off but much of it is wasted. Tasmanian farms could produce more food, animal feed, pharmaceuticals and fibre if they could harness this supply of water to ensure themselves of water year round, or close to it.

Tasmanian Irrigation can do that. For a relatively low public cost, but with an appropriately serious investment by the farmers themselves, irrigation water can be on tap with at least 95 per cent reliability in the state's prime farming areas.

As we have already outlined, Tasmania is a significant food producer, significant beyond its size. Not only does it produce the range of meat, fish, vegetables, and dairy products, fruit and wine that much of the world requires, all of it is of premium quality.

It can do better than \$1.1 billion a year at the farm-gate if our farmers can maximise their potential. The numbers speak for themselves. Of that \$1.1 billion, around 60% derives from land that is irrigated, and that constitutes only eight per cent of total farmland. In other words, we are only scratching the surface of Tasmania's farmland potential.

This is because we have only just embarked on this Just add water... program, stemming the flow of water to the sea and using it.

Nevertheless, taking the \$1.1 billion as a benchmark and applying the conventional industry multiplier factors, the farm-dependent economy contributes about \$5.4 billion to gross state product. That is 18 per cent, better than one dollar in every six. Similarly, that sector of the economy accounts for 17,000 jobs, one in every six in the state.

Understandably, Tasmania wants to capitalise further on the comparative advantage that it has with the scale of its water run-off enabling us to also contribute to the successful achievement of relevant State and National strategic interests.

## Farmers can't do it by themselves

Large-scale, multi-user irrigation schemes are a more efficient use of capital than the sum total of individual storage schemes on farms, but they require a public private partnership in which the public sector assists farmers to establish the schemes and their associated delivery systems and the farmers meet part of that cost as well as ongoing charges for using the water.

## What happens if Tranche Two does not proceed?

The impact of not progressing with further irrigation in the state will see comparable development, particularly in the case of the proposed Circular Head project referred to below, being developed offshore. The same could well happen to Tasmania's poppy industry.

From an employment perspective, loss of jobs in regions often equates to loss of services and ultimately the loss of local communities. With the dramatic downturn in the forest industry in Tasmania, this is a very real scenario that is currently being acted out.



**Tasmania's water expansion is unique in Australia because elsewhere water has been free and it has been wasted. On the mainland Federal money is put into restoring the health of rivers and in order to do that they have been buying back water. Here we are harnessing our water more efficiently and selling it.**

*Water Investor  
David Williams*

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## The modus operandi of providing irrigation schemes in Tasmania

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### The three hurdles

Tasmanian Irrigation has three development criteria that each scheme must meet:

#### One

It must be **economically viable**

Based on the region's existing agricultural activities, each scheme must show that it will generate more wealth at the farm gate than the combined costs of construction and operation. Otherwise, it doesn't get to first base.

#### Two

It must be **environmentally sustainable**

The water resource and the irrigation infrastructure must harmonise with the landscape, Tasmania's greatest asset. Tasmanian Irrigation's demands exceed the requirements of local, state and national regulations. Scheme hydrology, for instance, is tested against the CSIRO's future climate models.

Water can only be applied to the land according to an approved farm water access plan that has water, soil and biodiversity modules.

#### Three

There has to be a **social licence**

That means the local community supports it. Tasmanian Irrigation sits on the same side of the table as the community it partners. If a community does not want a scheme, Tasmanian Irrigation does not seek to coerce.

### Tasmanian Irrigation's development phases

There are five phases of development for any scheme:

- Prefeasibility
- Feasibility
- Detailed design and approvals
- Construction
- Operation

In the prefeasibility stage, Tasmanian Irrigation defines a preferred option for a scheme.

The Tasmanian Government must approve the preferred option to allow a business case to be prepared. In many senses it is the critical phase because it requires:

- public meetings to establish local irrigator groups under the auspices of the Tasmanian Farmers and Graziers Association
- expressions of interest by irrigators for water entitlements
- preliminary assessments of land capability, pipeline alignments and dam sites
- a basic design
- engagement of the representative irrigator groups in the concept
- detailed feasibility studies that include environmental flows, stream geomorphology, hydrology (including sustainable yield impacts), flora and fauna, cultural heritage and geotechnical
- preliminary engineering design and cost estimates
- a socio-economic report.

In the feasibility stage, the business case is progressed to the point where the government may approve it with set conditions following a period of public consultation.

Once the detailed design is complete, state and local governments must approve its construction.

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**viable + sustainable + supported**

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To inspire  
innovation,  
just add water...



## Crunching the numbers

Here we outline how Tasmanian Irrigation evaluates a scheme. In the next section we set out the separate evaluations for each of the five schemes in Tasmanian Irrigation's Tranche Two irrigation projects.

### How we evaluate an irrigation scheme

Each scheme is subjected to a detailed economic assessment where the main economic outcomes expected from the completed scheme are analysed and the risks quantified. The benefits stream and full life-cycle costs are examined and if the difference between the two is positive, the project is deemed to deliver net benefits to Tasmania and Australia.

Tasmanian Irrigation commissioned financial and economic consultants Marsden Jacobs Associates to review the methodology of assessing the socio-economic values of new irrigation schemes. Their report describes all stages of a comprehensive socio-economic assessment, from data collection to financial and economic modelling of the scheme's performance. It also offers a basis for a scheme's demographic profiling. A copy of the Marsden Jacobs Associates' socio-economic assessment methodology is in Appendix 6.

### Estimates of economic cost

The economic cost of a project includes:

- capital costs of the project plus capital costs associated with the on-farm developments including irrigation layouts, plant and equipment, packing sheds, and other infrastructure
- its operating, maintenance, administration and refurbishment costs, regulatory, licensing and compliance costs
- increase in operating costs of irrigators and primary processors
- loss of income from "without case" (i.e., the situation without the project proceeding)
- environmental impacts (to the extent that a monetary value can be estimated).

### Capital development costs

The capital development cost estimate derives from engineering cost data reported in the planning documents that are commissioned in the feasibility and pre-feasibility assessments.

Items assessed in the capital development cost estimate include pipelines, dams, mini-hydro scheme add-ons, pump stations, land purchases, compensation, fittings, planning and design and a level of contingency.

The level of contingency is consistent with recommendations in professional standards for engineers. The capital costs associated with the on-farm developments are incorporated within the estimates for the enterprise margins and are based on current commercial costs provided by leading agricultural advisors.

### Operating costs

Operating costs consist of variable (pumping costs, water purchase) and fixed (scheme management, overheads and maintenance, asset refurbishment) costs.

### Asset refurbishment and maintenance

These estimates are often presented as an annual equivalent amount and expressed as a percentage of the capital cost (e.g., one per cent of the purchase price of pumps, and 0.5 per cent for pipes). Alternatively, these costs can be directly included in the cost model by identifying the forecast timing and value of the cost. The former method, while less precise, is often preferred, given the uncertainty about the future maintenance and refurbishment schedule.

# The Evaluation Cont.

## Economic benefit estimates

An irrigation scheme may have a number of direct economic benefits attributable to it:

- the returns to irrigators represented by estimated margins per ML for the principal crop and livestock enterprises
- returns for mini-hydro stations.

There may also be economic benefits associated with recreational uses of water supplies and positive environmental impacts.

## Enterprise margins

Margins, expressed as dollars per ML, represent the economic value of water to irrigators (or other consumptive uses), and are specific to the type of crop or consumptive use.

We calculate an enterprise margin using an economic model of a farm enterprise to produce an estimate of farm profits (net of all capital costs). This profit can be expressed as a profit per hectare (say, \$1,000 per ha for crop A) and, in turn, the margin per ML can be estimated. If crop A requires 5 ML per annum, then the margin for crop A is \$200 per ML.

The enterprise mix and farm margins for each supply zone are used to estimate the weighted average farm margin that is used to estimate the benefits from use of water in the economic model. Experienced agricultural advisors using current actual costs derived from client records develop these enterprise models.

Adjustments to margins include:

- the capital cost of developing irrigation and other infrastructure
- the cost of on-farm storages.

In addition, the dryland returns must be deducted, as the aim is to determine the benefit from using water that can only be realised if water is supplied.

## Demand estimate

For each irrigation scheme, a standard demand assessment is undertaken reviewing land capability, existing water supplies, farm surveys and economic returns from irrigation enterprises suited to the region. The demand assessment will provide an estimate of:

- the total volumetric demand for a region
- the rate of up-take (water entitlements and usage) and
- the key risk factors that could lead to either the sale of water rights or the overall usage level being less than predicted.

The demand up-take rate impacts significantly on the present value estimate of each irrigation scheme's benefits and costs. A slow up-take rate in terms of the usage of water entitlements impacts the economic performance of the scheme as this determines the rate at which economic benefits (or margins) from water use are achieved.

It is predicted water usage up-take will be most rapid where irrigators already have irrigation skills, existing infrastructure and equipment. If there are high levels of latent demand and strong demand relative to the overall volume of new water, then it is reasonable to expect a rapid up-take rate. An element of judgement will be required about the up-take rate.

However, indications of high up-take rate include:

- high volumetric demand relative to scheme capacity
- high-value crops
- well-established irrigation areas/skills
- availability of capital (if farmers have low debt levels this may reduce inertia in the up-take rate).

Other issues to take into account in assessing the up-take rate include:

- attitudes to irrigation – some graziers may prefer not to switch to irrigation. This issue can be overcome by operators with irrigation skills leasing land from graziers. However, in some cases, the switch to irrigation may not occur until the property is sold. The higher returns from irrigation are factored into the purchase price and the new owner will generally need to move into irrigation to achieve a reasonable return on the investment
- indicative sale price for water entitlements (impacts up-take of water entitlements)
- indicative annual water charges (impacts usage up-take rate).

## Assumptions and parameters

For the economic evaluation, a standard government discount rate for project evaluation is applied – typically six per cent.

Tasmanian Irrigation undertakes its economic assessment assuming a 40-year evaluation period.

Each assessment includes a range of sensitivity tests on key variables of the analysis.

Typically, these sensitivity tests include:

- capital development costs (+/-10%)
- operating costs (+/-10%)
- enterprise margins (+/-10%)
- discount rate (5%, 7%)
- demand sensitivities (slow up-take, rapid up-take).

For some projects, there may be other relevant sensitivity tests that should be undertaken. For example, if a mini hydro scheme is included, the economic costs and benefits of including the scheme should be assessed for a range of throughput volumes and electricity prices.

Threshold analysis may also be undertaken for an irrigation project. This involves calculating the amount by which economic model variables can change before the project is no longer economically viable or generates net economic losses. This is an important part of the analysis because it informs us about the economic risks of the project.

## The established bottom line

The precedent of the 10 nominated projects in Tranche One gives an insight into the likely economic impacts of those in Tranche Two.

The \$140 million Australian government expenditure in Tranche One activated total direct capital expenditure of \$575 million: \$310 million on actual project construction and \$288 million on on-farm capital expenditure. This, in turn, is expected to induce a further economic stimulus of at least \$288 million, assuming a multiplier of 1.5, that is, economic activity created by the supply of construction materials, transport, and hospitality services during the construction phase.

On an annual basis, the federal funding is equivalent to \$8.4 million (\$140m at 6% over 40 years) and provides direct net economic benefits to Tasmania of about \$20 million annually. Indirect or flow-on benefits would contribute a further \$10 to \$20 million annually to the state's economy.

However, such estimates are considered conservative as they are largely based on an assumed expansion of existing enterprises.

Over time, the availability of reliable irrigation water across geographically different regions of Tasmania provides the foundation for Tasmanian agriculture to evolve from traditional agricultural enterprises such as dairying, livestock, poppies, processed vegetables, cereals into development of niche, high-value enterprises with targeted markets.

This evolution has commenced already, evidenced by the state's reputation for premium sparkling and cool climate wines, speciality cheeses, and salad vegetables, stone fruit and berry-fruit production.

The South East Irrigation Scheme (SEIS) and Dial Blythe Irrigation Scheme (DBIS) to be developed under the Tranche One funding will enable significant expansion of fresh salad vegetables production in the south-east and berry fruit production in the north-west. Such developments typically involve significant on-farm capital expenditure on irrigation infrastructure, plant and equipment, cool stores and packaging facilities of the order of \$50,000 to \$80,000/ha. A high proportion of this expenditure is spent in Tasmania, providing an important stimulus for the state's economy during the construction/development phase of the schemes.

Moreover, such developments are more labour intensive than traditional enterprises. For example, the SEIS is estimated to result in an additional direct employment of about 370 FTEs, equivalent to 1 FTE for every 14 ML of entitlement. For the DBIS, direct additional employment of about 70 FTEs is estimated as 1 FTE for every 40 ML of entitlement. Indirect employment in upstream and downstream activities is likely to add at least half to one FTE for each direct FTE employed.

While the direct economic benefits of these speciality, niche enterprises are high, e.g., net margins of \$1700/ML for fresh vegetables and \$2360/ML for berry fruit compared to \$400/ML for dairy to \$650/ML for poppies, the indirect or flow-on economic impacts are also much higher due to:

- the higher demand for downstream goods and services including packaging materials, specialised transportation services, marketing and point-of-sale material
- the higher demand for upstream goods and services including specialist technical (irrigation and agronomic) and financial services
- income effects as a consequence of the higher employment requirements with a high proportion of employee wages spent directly in the immediate local and regional economies, further stimulating the provision of goods and services in these regions.

## A case study: Rob and Jo Bradley



Photo: Chris Crerar

Rob and Jo Bradley are farming 1200 ha on two properties, Woollen Park and Rosemount, the amalgam of several former sheep properties in the Longford–Cressy area. In 2009 Rob won a Nuffield scholarship that took him to the US and the UK to investigate how to integrate livestock and pasture into an irrigated cropping system that would improve soil quality and deliver a profitable and sustainable farming enterprise.

“What I found was that we are one of the only places in the world that does mixed cropping, in terms of mixing livestock and crops, and that our livestock operations provide enormous opportunity to improve and maintain our soils in good condition so as to be able to continue to crop them.”

Both the Bradley properties are on the Cressy–Longford Irrigation Scheme. Their pivot irrigators have revolutionised what they can do.

“They are a wonderful tool. It means that we can crop in the spring and summer when water is vital for germination.

“We will continue to develop our irrigation. There is a lot of development work still to do and we will continue to improve our cropping mix so that we have high-value crops and a pasture phase.”

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**We will continue to develop our irrigation. There is a lot of development work still to do and we will continue to improve our cropping mix so that we have high-value crops and a pasture phase.**  
*Rob and Jo Bradley*

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To build healthy communities,  
just add water...

### Great Forester–Brid Irrigation Scheme

#### Project summary

The Great Forester–Brid Irrigation Scheme (GFBIS) is a 9,300 ML dam on Camden Rivulet, 18 km south of Scottsdale in north-east Tasmania.

The scheme would give a significant and enduring socio-economic boost to the region. It has lost primary product processing facilities in the past 10 years and suffered the virtual closure of its forest industry, including the loss of Scottsdale's two softwood sawmills.

The project would deliver 8,600 ML a year (before transmission losses) to be applied to dairying, cropping, vegetable production and some livestock finishing. The direct (on-farm) employment boost is estimated to be 42 full-time equivalents with a further 21 indirect jobs.

The dam will fill with winter flows from the Camden Rivulet, which are surplus to environmental and water licence requirements. A two-way pipeline from the dam to a pump station located on the St Patricks River will enable supplementary filling of the dam using surplus winter flows. This will meet Tasmanian Irrigation's objective of 95 per cent average reliability of supply.

During the summer irrigation season, water from the dam will be released via the two-way pipeline to the St Patricks River pump station. That will pump water over a 50-metre rise before descending 300 metres to a 2,000 KW mini-hydro power station located immediately above the existing Headquarters Road Dam.

Water will be discharged from the mini-hydro station into Headquarters Road Dam, which will act as a balancing storage and header tank. From Headquarters Road Dam water will be supplied to irrigators at Scottsdale, Springfield and Waterhouse.

#### Scheme details

scheme capacity (water entitlements)	8600
scheme delivery (ML)	8222
years of operation for full up-take (usage)	5

#### Scheme benefits and costs assessment

feasibility expenditure (business case)	\$1.1m
detailed design and approvals expenditure (ready to construct)	\$0.9m
construction expenditure	\$42.2m
total capital expenditure	\$46.2m
annual variable and fixed operating expenditure	\$0.8m
enterprise net margins (weighted average)	\$530/ML

#### Economic assessment and sensitivity analysis

	Economic benefit (NPV)	Benefit cost ratio
base case	\$9.4m	1.2
increase in capital expenditure (+10 per cent)	\$4.9m	1.1
decrease in capital expenditure (-10 per cent)	\$14.0m	1.3
increase in operating expenditure (+10 per cent)	\$9.1m	1.2
decrease in operating expenditure (-10 per cent)	\$9.8m	1.2
increase in enterprise margins (+10 per cent)	\$14.9m	1.3
decrease in enterprise margins (-10 per cent)	\$3.9m	1.1
discount rate – 5 per cent	\$17.2m	1.3
discount rate – 7 per cent	\$3.3m	1.1
slow demand – water usage	\$7.6m	1.1
fast demand – water usage	\$10.5m	1.2

#### Project status

A detailed preferred option of the GFBIS has been developed including detailed capital expenditure estimates, demand assessment and an economic analysis, but has not yet been submitted to the Tasmanian Government for consideration and endorsement. The preferred option is located in Appendix 1.2 of this submission.

To progress the GFBIS to a construction-ready position, a 12-month detailed design and approvals process is required, costing \$2 million.

Construction time is two years.

## Southern Highlands Irrigation Scheme

### Project summary

The Southern Highlands Irrigation Scheme (SHIS) is to deliver 6500 ML of high reliability, summer irrigation water to the greater Bothwell region in the southern central highlands.

This \$22.5 million project is designed to deliver summer water to a region held back by a lack of reliable water. It can serve 8000 ha of farm land that experiences highly variable water availability. The water will be used primarily for cropping, especially poppy opiates, and irrigated grazing with the potential to convert to dairying. At the time of writing, the Australian and Tasmanian governments were considering allowing the import of poppy straw to maintain local production of opiates.

The project is designed to capture winter flows from the Shannon River in a dam with 6500 ML storage. This water will be supplied during summer to irrigators through a 32.5 km pipeline network.

This scheme was previously named the Shannon Clyde Irrigation Scheme (SCIS). It began in 2009. A business case was submitted to the Tasmanian Irrigation Development Board (now Tasmanian Irrigation) in 2010. For a number of reasons, the project was parked. Following the resolution of the external factors, Tasmanian Irrigation revisited the project and undertook a desktop review that resulted in the latest concept.

The project has the significant additional benefit of improving the reliability of drinking water supply for the town of Bothwell, which ran out of water during the most recent drought.

Scheme details		Economic assessment and sensitivity analysis		Economic benefit (NPV)	Benefit cost ratio
scheme capacity (water entitlements)	6500	base case		\$14.6m	1.5
scheme delivery (ML)	6500	increase in capital expenditure (+10 per cent)		\$12.3m	1.4
years of operation for full up-take (usage)	3	decrease in capital expenditure (-10 per cent)		\$16.9m	1.6
		increase in operating expenditure (+10 per cent)		\$13.8m	1.5
		decrease in operating expenditure (-10 per cent)		\$15.5m	1.5
		increase in enterprise margins (+10 per cent)		\$19.0m	1.6
		decrease in enterprise margins (-10 per cent)		\$10.2m	1.3
		discount rate – 5 per cent		\$23.7m	1.8
		discount rate – 7 per cent		\$7.3m	1.3
		slow demand – water usage		\$13.9m	1.5
		fast demand – water usage		\$15.0m	1.5
		no supply from Great Lake		\$11.1m	1.4
<b>Scheme benefits and costs assessment</b>					
feasibility expenditure (business case)	\$1.0m				
detailed design and approvals expenditure (ready to construct)	\$0.6m				
construction expenditure	\$20.9m				
total capital expenditure	\$22.6m				
annual variable and fixed operating expenditure	\$0.5m				
enterprise net margins (weighted average)	\$392/ML				

### Project status

There is a detailed preferred option of the SHIS, including detailed capital expenditure estimates, demand assessment and an economic analysis. At the time of writing, this is under consideration by the Tasmanian Government. The detail preferred option is located in Appendix 1.3 of this submission.

To progress the SHIS to a construction-ready position, a 12-month detailed design and approvals process is required, costing \$1.8 million.

Construction time is 18 months.

## Circular Head Irrigation Scheme

### Project summary

The Circular Head Irrigation Scheme (CHIS) will deliver 20,000 ML of high surety summer irrigation water to Tasmania's far north-west.

It integrates with two large-scale private investments worth \$250 million in downstream processing of dairy produce and also with State priority projects that are being funded by the Federal Government under the Tasmanian Forest Agreement.

Under the dairy initiatives, Tasmania's annual milk production will rise in the next five years from 730 million litres to more than one billion litres. Responding to the risk that demand and downstream processing capacity will outstrip supply, the Australian Government is providing \$1.5 million to upgrade power supplies in the far north-west to allow lower-value beef production farms to convert to high-value, labour-intensive dairy production.

The proposed irrigation scheme will take 20,000 ML from the Arthur River and deliver it to the upper reaches of the Duck, Montague and Welcome Rivers. Included in the project is a 15,000 ML off-river storage for harvesting winter flows for use in the summer.

The project will support between 30,000 and 40,000 additional cows at 30 new dairies with an average on-farm employment requirement of five full-time positions per dairy (150 direct full time positions in total). The flow-on benefits from new dairies are considerable. The average capital investment for a 1000-cow dairy is \$7 million.

### Scheme details

scheme capacity (water entitlements)	20000
scheme delivery (ML)	19000
years of operation for full up-take (usage)	5

### Scheme benefits and costs assessment

feasibility expenditure (business case)	\$0.7m
detailed design and approvals expenditure (ready to construct)	\$2.3m
construction expenditure	\$53.7m
total capital expenditure	\$60.7m
annual variable and fixed operating expenditure	\$1.3m
enterprise net margins (weighted average)	\$530/ML

### Economic assessment and sensitivity analysis

	Economic benefit (NPV)	Benefit cost ratio
base case	\$50.5m	1.7
increase in capital expenditure (+10 per cent)	\$44.7m	1.6
decrease in capital expenditure (-10 per cent)	\$56.3m	1.9
increase in operating expenditure (+10 per cent)	\$48.5m	1.7
decrease in operating expenditure (-10 per cent)	\$52.2m	1.8
increase in enterprise margins (+10 per cent)	\$62.4m	1.9
decrease in enterprise margins (-10 per cent)	\$38.6m	1.6
discount rate – 5 per cent	\$67.1m	1.9
discount rate – 7 per cent	\$37.3m	1.6
slow demand – water usage	\$44.0m	1.6
fast demand – water usage	\$61.4m	1.9

### Project status

The analysis of the potential irrigation development opportunities for the CHIS has been completed, including examining its water sources, infrastructure requirements and capital expenditure estimates, but has not yet been submitted to the Tasmanian Government for consideration and endorsement. This report is in Appendix 1.4 of this submission.

To progress the CHIS to a construction-ready position will require an 18-month detailed design and approvals process costing \$3 million.

Construction time is two years



### Evandale Irrigation Scheme

#### Project summary

The proposed Evandale Irrigation Scheme is yet to be fully scoped.

The Evandale region is located to the east of Launceston, near the airport. It is a productive agricultural area with diverse enterprises including cereals, seed production, poppies and potatoes. Summer irrigation water would provide enhanced security for existing irrigated enterprises within the region. At the time of writing, the Australian and Tasmanian governments were considering allowing the import of poppy straw to maintain local production of opiates. The economic benefits listed in the table are estimates.

Scheme details		Economic assessment and sensitivity analysis		Economic benefit (NPV)	Benefit cost ratio
scheme capacity (water entitlements)	3000	base case		\$3.8m	1.3
scheme delivery (ML)	2850	increase in capital expenditure (+10 per cent)		\$2.4m	1.2
years of operation for full up-take (usage)	3	decrease in capital expenditure (-10 per cent)		\$4.8m	1.4
		increase in operating expenditure (+10 per cent)		\$3.5m	1.2
		decrease in operating expenditure (-10 per cent)		\$3.7m	1.3
		increase in enterprise margins (+10 per cent)		\$5.4m	1.4
		decrease in enterprise margins (-10 per cent)		\$1.8m	1.1
		discount rate – 5 per cent		\$5.8m	1.4
		discount rate – 7 per cent		\$1.8m	1.1
		slow demand – water usage		\$3.4m	1.2
		fast demand – water usage		\$4.0m	1.3
<b>Scheme benefits and costs assessment</b>					
feasibility expenditure (business case)	\$0.4m				
detailed design and approvals expenditure (ready to construct)	\$0.7m				
construction expenditure	\$11.9m				
total capital expenditure	\$13.0m				
annual variable and fixed operating expenditure	\$0.2m				
enterprise net margins (weighted average)	\$490/ML				

#### Project status

To progress the Evandale Irrigation Scheme to a construction-ready position, a two-year detailed design and approvals process is required, costing \$1.1 million. The scheme has strong community support.

Construction time is 12 months.

## Swan River Irrigation Scheme

### Project summary

The proposed irrigation scheme for the Swan River is yet to be fully scoped.

The Swan River is on Tasmania's east coast. It is a grazing, irrigated cropping, walnut farming and grape production area. There are outstanding prospects for the wine industry.

The region has had a history of ongoing droughts. They are of major concern to the local farming communities. Irrigation development here would provide long-term water surety. The economic benefits listed in the table are estimates.

Scheme details		Economic assessment and sensitivity analysis		Economic benefit (NPV)	Benefit cost ratio
scheme capacity (water entitlements)	3000	base case		\$15.5m	2.1
scheme delivery (ML)	2850	increase in capital expenditure (+10 per cent)		\$14.4m	2.0
years of operation for full up-take (usage)	3	decrease in capital expenditure (-10 per cent)		\$16.7m	2.3
		increase in operating expenditure (+10 per cent)		\$15.4m	2.1
		decrease in operating expenditure (-10 per cent)		\$15.7m	2.2
		increase in enterprise margins (+10 per cent)		\$18.5m	2.3
		decrease in enterprise margins (-10 per cent)		\$12.6m	1.9
		discount rate – 5 per cent		\$19.6m	2.4
		discount rate – 7 per cent		\$12.3m	1.9
		slow demand – water usage		\$14.3m	2.0
		fast demand – water usage		\$16.0m	2.2
<b>Scheme benefits and costs assessment</b>					
feasibility expenditure (business case)	\$0.4m				
detailed design and approvals expenditure (ready to construct)	\$0.6m				
construction expenditure	\$11.0m				
total capital expenditure	\$12.0m				
annual variable and fixed operating expenditure	\$0.2m				
enterprise net margins (weighted average)	\$800/ML				

### Project status

To progress the Swan River Irrigation Scheme to a construction-ready position, a two-year detailed design and approvals process is required, costing \$1.0 million.

Construction would take 12 months.

## INFRASTRUCTURE AUSTRALIA: PROPOSAL UPDATE – JULY 2012

<b>PROJECT NAME</b>	Water and Sewerage
<b>PROPONENT ORGANISATION</b>	Department of Treasury and Finance
<b>CONTACT PERSON</b>	Chris Lock
<b>CONTACT EMAIL</b>	Chris.lock@treasury.tas.gov.au
<b>CONTACT PHONE</b>	03 6233 2646

### PROJECT UPDATE:

While the revised submission provided to IA, in May 2011, in relation to *Tasmania's Water and Sewerage Reform* remains unchanged, there have been significant developments in the progress of water and sewerage reform in Tasmania since an update was provided in October 2011.

The water and sewerage corporations are undertaking investigations of options for rationalising the number of wastewater treatment plants along the Tamar River and Derwent River, and have also commenced work investigating the introduction of water and sewerage services to the un-serviced Southern Beaches area, east of Hobart.

These projects will each require expenditure of between \$150-\$250 million, and are expected to commence in the 2015-16 financial year.

The challenge will be how the corporations can afford the expenditure whilst keeping headline increases in revenues at an acceptable level in a community that is struggling with the transition to equitable pricing and full cost recovery.

### ***Pricing Determination***

- The water and sewerage corporations have submitted their first Price and Service Plans (which include proposals for Operational Expenditure, Capital Expenditure, and Tariffs) to the Economic Regulator, which covers the period from 1 July 2012 to July 2015.
- Tasmania's Independent Economic Regulator has completed its price determination investigation into prices and service standards for water and sewerage services and published its Final Report and Final Price Determinations.
- The determinations set maximum prices for water and sewerage services to apply from 1 July 2012.
- The Regulator has approved a price reform approach that transitions customers to defined target tariffs, and uses caps on annual increases in prices. Prices will be transitioned towards one consistent set of tariffs in each region. However, given the disparity in existing prices, it will take some time to transition all customers to these target tariffs.
- The Regulator has also determined consistent policies around developer charges, service extension, connection, water sub-metering and service charges that all three corporations are required to adopt.

- The Final Report, Price Determinations, and a paper outlining the Regulator's response to issues raised in the submissions received, are available on the Regulator's website: [www.economicregulator.tas.gov.au](http://www.economicregulator.tas.gov.au).

### ***Proposed Sector Expenditure***

- The water and sewerage corporations have allocated \$338 million for capital expenditure during the three year period from July 2012 to July 2015.
- The capital expenditure is driven by various factors including network growth, asset renewal, service level improvements, compliance obligations and improvements.
- Part of the proposed capital expenditure includes expenditure to improve the quality of drinking water provided to many small towns across the State. All twenty of the towns outlined in Tasmania's initial submission to IA are scheduled to receive improved drinking water services over the next three years. (Note: an upgrade has already been completed for one town – Waratah). However the Corporations are questioning the viability of extending the small towns program beyond that detailed in the previous IA submission.

### ***Merger***

- The Council owners of the water and sewerage corporations have approved merging the corporations into a streamlined single entity, subject to reaching an agreement with the State Government around a number of requirements associated with governance and transitional arrangements.
- It has been estimated that that savings from the creation of a single corporation would be in excess of \$5 million annually.

Tasmanian Government  
2012 Transport Submission to  
Infrastructure Australia

# Overview

August 2012

# Tasmanian Government

## 2012 Transport Submission to Infrastructure Australia - Overview

### Purpose of this document

This document provides a strategic overview of Tasmania's transport system as context for the road and rail project proposals submitted by the Tasmanian Government to Infrastructure Australia under Nation Building 2. Individual submissions should be read in conjunction with this Overview.

The Tasmanian Government will also provide an integrated package of freight and passenger related projects, covering state, regional and urban corridors for consideration and assessment by the Department of Infrastructure and Transport as part of Nation Building 2. However, reflecting the focus of Infrastructure Australia on improved freight productivity and its role in assessing large-scale projects, this submission focuses primarily on targeted improvements to the key Burnie to Hobart road and rail freight corridor, together with continuing improvements to the Melba Line (rail network).

By tonnage, traffic volumes, and strategic land use connections, the Burnie to Hobart Corridor is Tasmania's most significant freight corridor. Extending from Burnie Port to Hobart, it includes the Bass Highway, Midland Highway, Illawarra Main Road, Brooker Highway, and the north-south rail line, connecting major ports, the Brighton Transport Hub and key industrial and manufacturing centres in all three regions. It is Tasmania's key corridor for the movement of containerised freight. Forecast freight growth will see larger volumes of freight moving through Tasmanian's ports, intermodal facilities and over the land transport network.

In planning and managing this corridor, the Tasmanian Government's priorities are to:

- provide a connected, integrated and efficient freight network, focusing on connections between Tasmania's major export points, freight generating areas and distribution centres; and
- deliver ongoing improvements to support productivity gains over the long term.

The key proposed projects are:

1. Brooker Highway Upgrade Package: intersection upgrades and forward planning to address the two major bottlenecks on the Highway.
2. New Bridgewater Bridge: continued planning to replace this critical link in the north-south supply chain and support future connectivity between key freight distribution centres in the southern region.
3. Midland Highway – Mangalore to Bagdad Upgrades and future Bagdad Bypass: interim upgrades to deliver improved safety and efficiency on a constrained section; continued planning for the future Bagdad Bypass.
4. Midland Highway – Duplication, Perth to Breadalbane: duplication to meet future capacity requirements and address safety issues on the approaches to Launceston and connecting to the Bell Bay Port and industrial area.

5. Illawarra Main Road Upgrades/South Perth Bypass: bypass of the constrained eastern section of the Road to deliver a high speed, dual-carriageway link that avoids residential areas; targeted upgrades to support existing improvements west to the Bass Highway.
6. Bass Highway – Latrobe to Deloraine: initial planning to investigate issues and options on the Bass Highway east of Devonport, a deficient section of the Bass Highway.
7. Tasmanian Rail Revitalisation Program: Concrete re-sleepering of the rail network between Burnie Port and the Brighton Transport Hub and relaying life-expired rail track.

Together, these projects will deliver significant benefits for the movement of freight, providing targeted upgrades to deliver travel time savings, improved reliability and greater connectivity to export points, industrial and distribution areas, as well as improved safety. The location of these projects on a single corridor (with the exception of key regional rail links) represents a targeted and integrated approach to improving freight efficiency and productivity from port to distribution centres. On the Burnie to Hobart corridor, rail complements the road system by providing a dedicated freight route for the movement of containerised bulk products. Although rail is expected to increase its intermodal market share, the substantial majority of freight movement will still occur by road, due to the natural affinity of many products with the more flexible nature of road transport.

The Tasmanian Government supports the incremental upgrade of the road network to support future higher productivity vehicle improvements and all new Nation Building 2 projects submitted to Infrastructure Australia have been designed to a standard capable of supporting super-B vehicles. While the introduction of these vehicles is likely to be a longer term scenario for Tasmania and significant investment is required to provide an overall corridor that meets the requisite design standards, the Government recognises that over the long life of transport infrastructure, future proofing needs to occur now to support changing demands. Similarly, works currently being undertaken, and those proposed, on the rail network are being done with a view for the future. Works such as concrete re-sleepering, replacing life expired rail and bridge refurbishments/replacements will result in the network being capable of increased axle loads (up to 25 tonnes). However, there will remain a number of bridge structures that will be limited to current axle load constraints as these assets are not included within the proposed program of works.

## **Hobart to Launceston Transport Strategy**

In its recent report to COAG on national infrastructure priorities, Infrastructure Australia identified a **Hobart to Launceston Transport Strategy** as a key initiative for Tasmania. The Tasmanian Government recognises the importance of long term freight planning, and is supportive of undertaking the proposed strategy. However, the Government is seeking to expand the scope of this strategy to focus on **Tasmania's Principal Freight Network**, which includes the three key northern ports, the strategic road transport corridor from Hobart to Burnie, key feeder links, and the Hobart to Launceston (Bell Bay) corridor and the full operational rail network.

A strategy with this scope provides the opportunity to develop a long term, fully integrated network strategy for Tasmania that incorporates rail, roads and ports planning, and all significant transport networks, export/import points and key industrial areas. The strategy will take a long term approach with a focus on identifying the infrastructure requirements to meet the next generation of

productivity improvements, and better understanding logistics issues and industry needs as these relate to an efficient freight system.

The development of an integrated strategy for Tasmania's Principal Freight Network would occur under the stewardship of the Tasmanian Infrastructure Advisory Council, with funding provided by the Australian Government under the \$20 million Exporters Assistance Package used to develop the strategy. Experience from other regional areas of Australia would inform the approach and options considered under the strategy.

The Tasmanian Government sees this strategy as complementary to existing frameworks – including the Infrastructure Strategy, Integrated Transport Policy (under development), regional integrated transport plans and a number of local network plans.

Through previous work – including the development of strategic documents such as the 2007 AusLink Corridor Strategy, analysis undertaken to date to inform the development of a Tasmanian Freight Strategy and the Tasmanian Freight Survey – the Tasmanian Government has a good understanding of the current challenges facing the transport system, likely future demand, and the specific issues that need to be addressed in the short to medium term. This work and understanding forms the basis for the current projects submitted to Infrastructure Australia for assessment under the Nation Building 2 Program.



## **PART 1. Strategic context for Tasmania's transport system**

### *Tasmanian Economy and Population*

Tasmania is a small, open economy reliant on trade as a major source of income. Tasmania is connected to and part of the national economy, but is generally growing at a lower rate. In a national context, Tasmania can be considered a discrete economic region.

Tasmanian industries are linked to the rest of the world through global markets. Nearly 20 per cent of all goods produced in Tasmania are sold overseas, with a further 20 per cent sold to the Australian mainland.

The Tasmanian economy is currently undergoing a period of structural change driven by a downturn in traditional industries such as forestry. Tasmanian Treasury forecasts indicate Tasmanian Gross State Product is expected to grow at a rate of 1 ¾ per cent in the short term and at a rate of 2 ¼ per cent per year in the medium term.

Tasmania has a small, highly dispersed population of just over 500,000. Population projections for the State indicate a moderate population growth over time with growth focused in urban areas. Tasmanian Treasury forecasts indicate Tasmania's population will remain steady at 0.4 per cent in 2012-13, increasing to 0.5 per cent for 2013-14 and subsequent years. The highest growth is likely to occur in greater Hobart. Launceston is likely to grow in line with the overall population, with lower growth in the Burnie-Devonport region.

Economic activity underpins demand for transport infrastructure. Forecast population growth and growth in key sectors of the economy such as agriculture and mining will lead to increased demand for passenger and freight movement over the next 30 years. Detailed assessment of future demand across key industry sectors, together with analysis of current and likely future infrastructure constraints will drive the long term supply strategies for Tasmania's transport infrastructure.

### *Tasmanian Infrastructure Advisory Council*

The Tasmanian Government has established the Tasmanian Infrastructure Advisory Council (TIAC) to provide advice broadly on issues related to the State's economic infrastructure. This role encompasses priority infrastructure projects and issues related to the use and provision of infrastructure. TIAC includes membership from all major infrastructure owners/managers, the Tasmanian Planning Commission and peak interest groups. TIAC has produced priority project lists based on a similar methodology as that employed by IA. The Chair of TIAC has established broad networks both nationally and in Tasmania. In that context, he has established close contact with IA. TIAC has provided advice to the Tasmanian Government on its 2012 submission to IA including a focus on the Transport component.

### *Existing Tasmanian Government Strategy and Policy Frameworks*

There are a number of existing frameworks in place that inform the development of strategic priorities for the Tasmania's Transport System.

The **Tasmanian Economic Development Plan** aims to improve the prosperity of all Tasmanians through economic development which is socially and environmentally sustainable. The Plan articulates four key goals:

- To support and grow businesses in Tasmania;
- To maximise Tasmania's economic potential in key sectors;
- To improve the social and environmental sustainability of the economy; and
- To support and grow communities within regions.

The Economic Development Plan will be supported by Regional Economic Development Plans in Tasmania's three major regions: north, north-west and southern. The Plan identifies infrastructure as one of the key levers that can assist in achieving these goals.

The Tasmanian Economic Development Plan identifies ten key sectors where Tasmania has a competitive advantage. These are: **Antarctic Tasmania, Building and Construction, Food and Agriculture, Forestry and related products, ICT, Mining and Mineral processing, Renewable energy, Science and Research, Specialist manufacturing and Tourism**. At least seven of these sectors are identified as significant current users of the transport system and will continue to generate future demand.

The **Tasmanian Infrastructure Strategy** is a long term framework to guide future infrastructure priorities and decision making for the planning, provision, use and maintenance of infrastructure in Tasmania.

The Strategy focuses on four key economic infrastructure sectors – water, digital, energy and transport. Five key focus areas are identified as priority issues that need to be addressed and priority actions have been identified to support each:

- Coordinated infrastructure planning;
- Effective governance and decision making;
- Viable and sustainable infrastructure
- Efficient infrastructure delivery; and
- Leveraging our natural advantage.

Tasmania's **Integrated Transport Policy**, which is currently under development, outlines five objectives for the State's transport system:

- A system that supports productivity and economic prosperity;
- An accessible system that connects communities;
- An environmentally responsible system;
- A safe and healthy system; and
- A system that works together.

The draft Transport Objectives identify, at a high level, what the Government is trying to achieve through the transport system in terms of economic development, social inclusion and environmental sustainability.

The **Tasmanian Freight Strategy**, which is currently under development, will provide a strategic plan for the management and provision of Tasmania's freight system. The objectives for Tasmania's freight system outlined in the draft strategy are to:

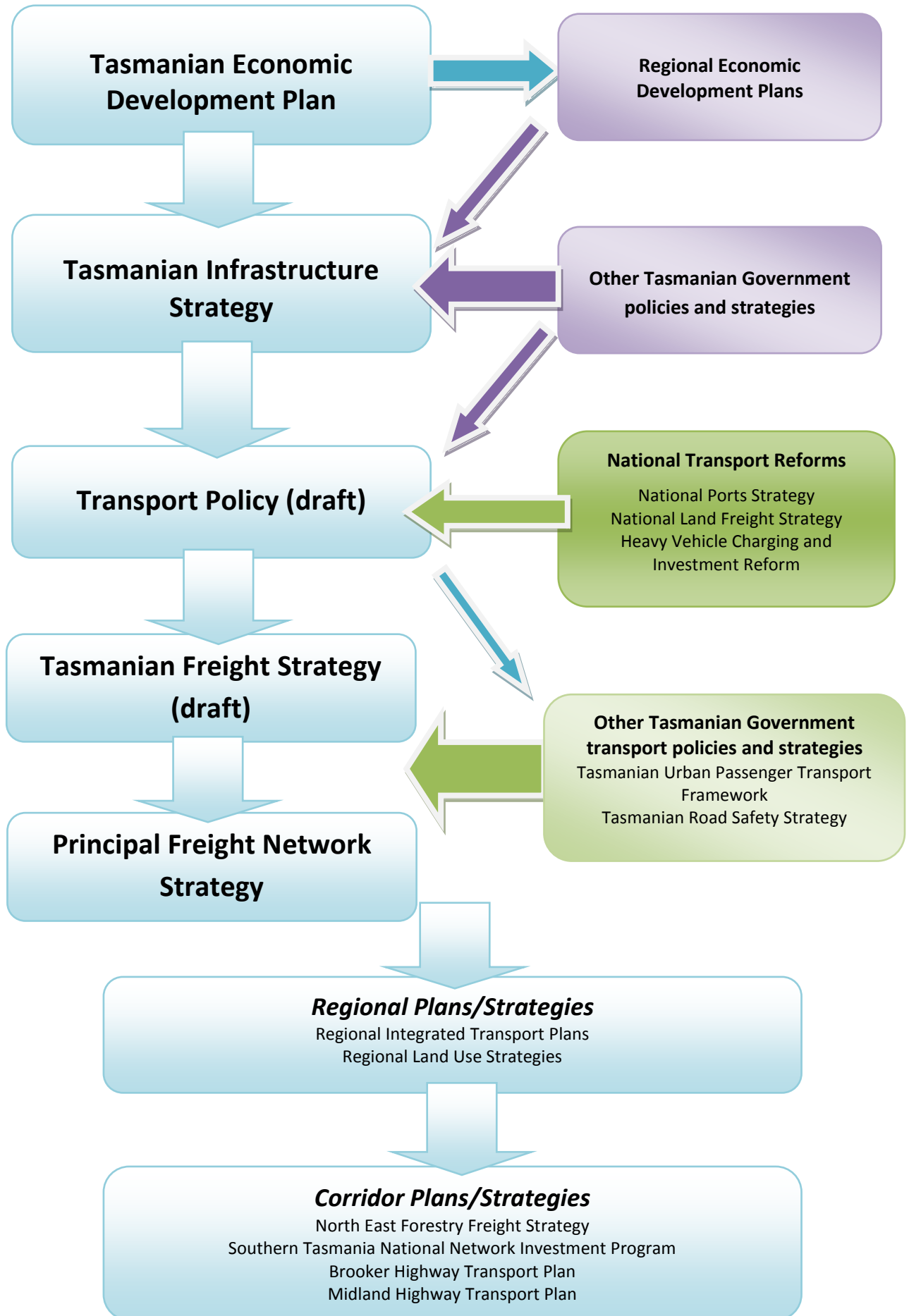
- Support efficient movement of freight in Tasmania, now and in the future;
- Facilitate reliable supply chains and a competitive freight and logistics sector;
- Facilitate efficient cost effective and sustainable investment in the freight network; and
- Minimise the impact of freight movement on communities and the environment.

The **Tasmanian Urban Passenger Transport Framework** aims to provide a framework for achieving a safe and responsive passenger transport system that supports improved accessibility, liveability and health outcomes. The Framework provides strategic direction to guide the development and delivery of economically, socially and environmentally sustainable transport options for urban areas over the long term.

Supporting transport planning frameworks are provided at the regional level through the **Northern, North West and Southern Integrated Transport Plans**. In addition, long term partnership agreements have been negotiated with local governments for the Brooker and Midland Highway.

Relationships between these strategic frameworks are show in Figure 1, below.

Figure 1: Tasmanian Strategic Policy and Planning Frameworks



## 1. Key challenges

**Maximising Tasmania's competitive advantages:** Tasmania has a diverse range of agricultural, mining and forestry resources and significant potential for value adding service industries. Increased transport infrastructure investment is critical to facilitate productivity improvements and industry investment in key sectors.

**Growing, diverse and spatially separated freight demand:** Forecast freight growth will see larger volumes of freight moving through Tasmania's ports, intermodal facilities and over the land transport network. Tasmania's road and rail networks face significant deficiencies in supporting this growth.

Tasmania's freight task is highly dispersed across the network. While a portion of these movements are on major roads or rail, movements are often on regional roads that are not designed to carry heavy freight, and do not support more productive vehicle configurations (longer and higher mass vehicles). Without significant investment these restrictions will constrain freight productivity, leading to higher transport costs for industry and higher maintenance costs for governments.

Productivity Commission modelling (2007) indicates that because Tasmanian industries have a relatively high export content and large freight demand, the Tasmanian economy would experience a greater increase in economic activity from freight industry productivity improvements than for Australia as a whole.

**Transport cost impacts on Tasmania's export-oriented industries:** Transport costs are a significant input cost for industries that are operating in increasingly competitive global markets. Transport productivity improvements are critical, as cost savings in the transport of goods increases the scope for competitive pricing. Continuing transport infrastructure improvement is critical to ensure that Tasmanian industries remain competitive and future growth is not constrained.

**An extensive and substantially mature transport system with high recurrent costs:** Much of Tasmania's road and rail and port infrastructure is reaching the end of its life cycle and requires major maintenance funding and capital investment.

The age of existing transport infrastructure means that it has not been designed to meet the longer term challenge of productivity growth. While funding for maintenance is essential, assets must also be upgraded to meet this challenge.

The Tasmanian rail system is currently going through a period of revitalisation. While improvements have been made to safe and reliable operations, considerable investment is required to ensure that rail continues to meet the needs of existing customers and is seen as a viable option for new freight tasks.

**Changing demands resulting from changing social demographics:** Tasmania has a highly dispersed settlement pattern with a relatively small overall population. Over 60 per cent of the population lives outside the major urban areas of Hobart and Launceston, and most households

have diverse trip needs. Continued growth in low density outer urban areas is likely to continue, leading to a corresponding higher level of private vehicle use. Key freight corridors are shared with passenger vehicles. Higher traffic volumes on major urban freight routes will continue to impact on travel times, reliability and access to major industrial areas and distribution centres for freight vehicles.

## **2. Tasmania's transport system**

### *Road*

The road network in Tasmania is a multiple user network, with a significant proportion of use related to personal transport.

In terms of kilometres travelled, over 40 per cent of Tasmania's freight task is carried on the National Land Transport Network connecting Tasmanian's three northern ports and four major urban centres (Hobart, Burnie, Devonport, Launceston and Bell Bay).

Tasmania has an extensive road network, with ageing infrastructure that is reaching the end of its life cycle. The road network has multiple owners, including the State Government and 29 local governments. These issues create significant challenges for planning, managing and operating the network.

Unlike the rail sector, the road sector does not operate within a market framework. Although heavy vehicle registration charges are set to cover past expenditure on roads used by these vehicles, there is currently little direct relationship between use of the road network and road funding allocations. Within current frameworks, the opportunity for private sector funding of freight roads is limited.

### *Rail*

The Tasmanian Rail Network dates from the late 1800s and is a single rail line, narrow gauge transport system consisting of a total of 632 kilometres of operational lines and a further 213 kilometres of non-operational lines.

The rail network integrates its operations with ports, road transport terminals and large industries as part of an integrated supply chain which is vital to improving the overall efficiency and productivity of freight transport in Tasmania.

Rail complements the road network by playing a key role in moving large volumes of bulk commodities (mineral ore, coal, and cement). Rail also participates in the intermodal market (containerised goods – for example paper products, zinc ingots and retail products) primarily on the north-south line between Hobart and the Port of Burnie. In this market sector rail competes with road transport. Based on current and projected freight tasks, rail is expected to increase its intermodal market share.

After a period of private ownership, where network and service operations were undertaken by separate entities, TasRail was established as a vertically integrated State owned corporation in 2009.

## *Sea Ports*

Tasmania's sea ports are the key link to international and interstate markets. Due to the Tasmanian economy's reliance on exports and bulk commodities, the reliability, capacity and efficiency of port and shipping infrastructure and operations is a significant factor in industry competitiveness.

In 2006 TasPorts was established as a State-owned corporation to operate Tasmania's major ports on a commercial basis.

Currently, the key ports for the bulk and container freight task are Burnie and Devonport (container and bulk) and Bell Bay (bulk). There are limited freight ships from Hobart Port, which is primarily focused on Antarctic and cruise vessels.

The three major northern ports of Burnie, Devonport, and Bell Bay handle approximately 80 per cent of Tasmania's import and export freight task by tonnage and move virtually all of Tasmania's containerised interstate and international freight task. Southern Tasmania relies on the three northern ports for the majority of international and interstate freight, and this is likely to continue due to the shorter sea distance to the northern ports relative to the Port of Hobart.

In the short to medium term, the Bell Bay port will continue to service the bulk freight needs of major industrial customers near the port. In addition, a master planning exercise at the port of Burnie has identified a range of changes within the port precinct that will enable the port to accommodate more freight and facilitate more efficient shipping and rail operations. Stage 1 of these enhancements are underway.

## *Airports*

The privately owned Hobart and Launceston airports play an important role in interstate business and tourist travel to and from Tasmania.

Both airports provide belly-hold cargo services via regular passenger services to a range of interstate destinations, including Melbourne and Sydney, as well as dedicated freighter services. Approximately 17,000 tonnes of freight, including high value products such as live seafood, fruit and cut flowers are air-freighted each year, representing less than 1 per cent of the overall freight task by volume.

## *Shipping and transport services*

Freight shipping and transport/logistics services to Tasmania are generally provided by the private sector on a commercial basis. These services provide the important linkages for Tasmanian businesses to interstate and overseas markets.

The key shipping services for most of the State's freight demanders are interstate container services, operating from Burnie and Devonport. The majority of these services go to the Port of Melbourne, and Tasmanian freight is estimated to comprise around 20 per cent of the annual throughput of the Port of Melbourne.

There are no direct international container shipping services at any of Tasmania's ports. International imports and exports are all moved through interstate ports, predominantly the Port of Melbourne.

TOLL is a major operator in the freight and logistics market in Tasmania, operating shipping, logistics and road transport services. TOLL operates a regular roll-on, roll-off service six days a week between Burnie and Melbourne. Searoad is a significant provider of shipping, logistics and road transport services, operating a regular roll-on, roll-off service six days a week between Devonport-Melbourne.

A third shipping service is provided by TT Line, a Tasmanian Government-owned passenger ferry service between Melbourne and Devonport. These services run seven days a week, with capacity to carry roll-on, roll-off freight.

Bulk shipping services are chartered by specific industries, such as mining, to move product out of Tasmania direct to interstate and international destinations.

### **3. Function and performance of the transport system**

#### *Moving freight*

Road is the dominant mode for the movement of freight in Tasmania, with the highest volumes moved on the National and State Road Networks.

Tasmania's four highest freight tonnage roads are on the National Network:

- The Bass Highway carries an average of 3.6 million tonnes between Burnie and Launceston;
- The Midland Highway connects northern and southern Tasmania, and carried up to 2.4 million tonnes in 2009;
- The East Tamar Highway is a key link in northern Tasmania – carrying up to 3.3 million tonnes in 2009; and
- The Brooker Highway is Hobart's major urban freight link, carrying 2.7 million tonnes in 2012.

The majority of containerised freight is transported on the National Network, with 80% carried between Burnie and Hobart.

Tasmania's State Road Network carries around 39 per cent of the state's total freight task, with a number of key regional roads carrying significant freight volumes. The majority of the freight is agricultural products from farms, logs and other forestry freight, with high volumes of mining product moved on the West Coast. Key regional links include:

- Bridport Main Road, the Tasman Highway (between Scottsdale and Derby) and the Esk Main Road in the north;
- Ridgley Highway, Murchison Highway and Bass Highway (between Burnie and Smithton) in the north west; and
- Lyell Highway, Tea Tree Road, Fingerpost Road, Tasman Highway and the Huon Highway in the south.



Local Government roads carry a smaller proportion (7.1 per cent) of the State's overall freight task, but are important for the 'last mile' of the overall freight task from freight producers to the State and National Networks, and to freight demanders. Bathurst-Wellington and Davey-Macquarie Street couplets are significant local government roads, with a high freight volume and strategic function related to movement through Launceston and Hobart respectively. Local government roads in the Glenorchy municipal area carry high volumes connecting to/from the Brooker Highway to adjacent warehousing, manufacturing and heavy industrial sites.

Nearly 2.3 million tonnes of freight was moved by rail in 2008-09, representing 8.1 per cent of the total freight task by tonnage and 12.5 per cent by net tonne kilometres. The majority of freight is moved over long distances, however some bulk freight is carried over shorter distances, such as mined ore and cement. Major freight tasks on the rail network include:

- cement between Railton and Devonport;
- mined ore between the west coast and Burnie;
- paper and newsprint between Boyer and Burnie;
- general containers between Macquarie Point (Hobart) and Burnie;
- zinc between Macquarie Point (Hobart) and Burnie; and
- coal and briquettes between Fingal and Railton.

In terms of the network segments, the Western Line and South line carry the highest tonnages. The highest volume task moved on the rail network is the cement task between Railton to Devonport. Other key commodities carried on the rail network include general container movements, zinc and paper. There is also a large mineral ore task on the Melba line between the west coast and Burnie Port, and movement of coal along the Fingal line to Railton.

### *Moving People*

Tasmania's urban areas have small but highly dispersed populations. Efficient personal transport is essential to access work, education and social opportunities.

Tasmania's urban areas have developed around car-based travel and road-based solutions. Significant investment in arterial roads has greatly improved mobility for people with cars, making outer urban areas more attractive places to live by reducing travel times. Tasmanians are continuing to move from urban areas into urban fringe areas. This growth is expected to focus on the fringes of Greater Hobart and Greater Launceston and will result in increased use of the transport system.

Tasmania has high per capita motor vehicle ownership and low use of public transport and other non-car based modes. In 2006, an estimated 1.47 billion vehicle kilometres was travelled by car, compared to 0.025 billion vehicle kilometres travelled by bus. Use of public transport is not growing in Tasmania, and has either gradually declined or remained constant since the mid 1980s. Across Tasmania less than 3 per cent of people travel to work on public transport. Bus services can be characterised as "high penetration, low frequency" in nature, meaning that services provide access to a large area but do not run frequently.

While traffic volumes are increasing, traffic congestion is generally minor with limited travel delays in the peak periods on specific routes.

The most heavily trafficked roads are in the Hobart and Launceston urban areas. Sections of the Brooker Highway carry more than 50,000 vehicles a day, with the Tasman Bridge on the Tasman Highway carrying over 66,000 vehicles per day.

Tasmania's small, dispersed population is a key influence and challenge for the delivery of effective urban public transport.

### *Efficiency and Productivity*

As noted in the 2007 AusLink Corridor Study, the national road network is generally providing efficient road transport movements, however there are still significant areas for improvement. As the network is shared between freight and passenger vehicles there still are some conflicts between these functions in the urbanised areas. Urbanised areas are the key destinations for freight due to the location of ports or processing facilities.

The majority of the road freight network has high productivity access. The focus is on improving efficiency by upgrading the network. The focus for the medium to long term is providing access for super B-Doubles and the next generation of higher productivity vehicles.

The older parts of the network still have direct access points on to the highway which impact on safety and efficiency. This is particularly an issue where the major highways, such as the Midland, pass through urbanised areas.

Although considerable improvements have been made to rail network productivity in recent years, there is still a need for further enhancement to ensure rail is sustainable. With recent Tasmanian and Australian Government rail funding packages, rail is close to achieving a 24 hour turnaround cycle on the North-South line; this outcome will be fully realised when the Brighton Hub is operational and the first stage of optimisation of Burnie Port is complete in 2012-13.

### *Accessibility and Reliability*

The overall reliability of Tasmania's road network is good.

A key focus in urban areas will be on achieving improved travel reliability, by aiming to provide consistent travel times for all transport users, including public transport users, to ensure predictable journey times and reliable journey planning.

The relocation of the rail intermodal facility to the Brighton Transport Hub will reduce heavy vehicle movements on the most congested road segments in greater Hobart, especially the Brooker Highway, with benefits for both freight and personal users.

As a result of recent Australian Government and Tasmanian Government investments, rail system performance has significantly improved. However improving reliability remains a critical objective for Tasrail, as it is a key issue for customers whose operations are driven by on time arrivals rather than warehousing products for on shipment.

## *Safety and sustainability*

Safety performance of the road network has gradually improved in recent years. In 2011 Tasmania had 25 road fatalities (a 46.3 per cent decrease of the 5 year average of 46.6 for 2006-2010) and 296 serious casualties (a 13.0 per cent decrease on the 5 year average of 340.4 for 2006-2010).

42.9 per cent of the 2011 serious casualties were single vehicle run off road crashes and 48.6 per cent occurred in speed zones of 100km/h or more.

On the National Network, for the period 2007-2011, serious casualty crash densities were highest on sections of the Bass, Brooker, and Midland Highways; 44 per cent of these were single vehicle run off road crashes and 27 per cent were head on crashes.

As a result of recent investments, the overall safety performance of the rail network has improved substantially. The number of derailments is trending downwards and was significantly lower in 2011-12 compared to the long term trend. Safety incident reporting has increased over recent years reflecting the strong and growing safety culture at Tasrail.

The environmental performance of Tasmania's rail network will also substantially improve with the recent purchase of new locomotives. These locomotives have much greater haulage capacity and will deliver significant fuel and emissions savings, as well as provide future capability for bio-diesel fuels.

## *Complementary freight modes*

Road and rail transport both play an important role in providing an efficient, safe and sustainable transport system in Tasmania. Tasmania is seeking to maximise overall transport system outcomes by utilising the inherent advantages of each mode in an integrated and complementary way.

Road transport is the dominant land transport mode, and this situation will not change. However the Tasmanian Government's *'Tasmanian Rail Network: Objectives and Priorities for Action'* clearly articulates a role for a viable rail system in the delivery of a transport system that supports productivity and economic prosperity, and has a long term objective of moving a greater proportion of Tasmania's growing freight task by rail.

Much of the rail network duplicates the road network. This means that rail has few unique markets, nor a geographic advantage in serving its markets, and faces strong competition from road transport.

However rail is well suited to some tasks, such as the movement of bulk freight, as it can potentially operate with less labour and larger loads, and it may cost less to provide increased capacity in certain situations. In these situations the rail system complements the road system.

A portion of the intermodal freight task is contestable, where road and rail are in direct competition.

Even if rail attracts its full market share of the contestable freight task, the substantial majority of freight movement will still occur by road. Road freight and rail freight offer very different service characteristics. Road freight is more flexible than rail and is especially suited to carrying perishable, fragile or time sensitive freight and the collection and distribution of goods. This flexibility has facilitated the use by business of 'just-in-time' stock management, smaller inventories, and door-to-

door delivery, which generally requires more frequent movement of smaller volumes of freight and shorter haul deliveries.

There is a continuing need to upgrade both rail and road infrastructure to meet Tasmania's future transport needs. As noted above, road will continue to be the dominant mode but rail will continue to meet a transport need that cannot be fulfilled as efficiently as road.

## 4. Foreseeable changes and likely future demand

Freight volumes will be highest on the Burnie to Hobart road corridor. The Bass Highway carries the highest freight volumes in Tasmania, with the section just prior to Burnie Port carrying 4.4 million tonnes of freight in 2008/09. This is forecast to double over the long-term. Other higher volume roads include the Midland, Illawarra and Brooker Highways.

High growth in freight volumes, but from a lower base, is forecast to occur on some regional roads (e.g. Bass Highway between Smithton and Burnie, the Huon Highway) and on parts of the rail network. Future industry developments, particularly mining, will see significant freight increases on key regional roads and on the rail network; for example, proposed mines on the West Coast and at Fingal will both see 1 million tonnes of product moved annually via regional rail or road links onto the inter-regional freight corridors.

**Table 1: Projected freight volumes on key inter-regional corridors**

<i>Road corridor</i>	<i>Forecast volumes</i>	<i>Forecast growth</i>
<b>Bass Highway:</b>	2009 – 3.56 MT to 4.39 MT	85.1 - 96.4%
<i>Burnie to Illawarra Main Road</i>	2029 – 6.59 MT to 8.62 MT	(3.1 - 3.4% annually)
<b>Midland Highway:</b>	2009 – 2.49 MT to 3.01 MT	51.2 - 82.7%
<i>Bridgewater to Launceston</i>	2029 – 4.55 MT	(2.1 - 3.1% annually)
<b>East Tamar Highway:</b>	2009 – 3.25 MT	39.4%
<i>Launceston to Bell Bay</i>	2029 – 4.53 MT	(1.7% annually)
<b>Brooker Highway:</b>	2009 – 2.3MT	
<i>Hobart CBD to Midland Highway</i>	2029 – 4.4MT	
<i>Rail corridor</i>	<i>Forecast volumes</i>	<i>Forecast growth</i>
<b>South line:</b>	2009 – 0.40 MT to 0.67 MT	65.7 - 82.5%
<i>Western Junction to Brighton Transport Hub</i>	2029 – 0.73 MT to 1.11 MT	(2.6 - 3.1% annually)
<b>Western line:</b>	2009 – 0.48 MT to 1.63 MT	38.0 – 70.8%
<i>Western Junction to Burnie Port</i>	2029 – 0.82 MT to 2.25 MT	(1.6 - 2.7%)

**Table 2: Projected freight volumes on regional corridors**

<i>Corridor name</i>	<i>Forecast volumes</i>	<i>Forecast growth</i>
<b>Huon Highway</b>	2009 – 1.19 MT	108.4 %
<i>Southern Outlet to Huonville</i>	2029 – 2.48 MT	(3.7 % annually)
<b>Ridgley Highway and Murchison Highway</b>	2009 – 2.16 MT	63.9 %
<i>Burnie to West Coast</i>	2029 – 3.54 MT	(2.5 % annually)
<b>Bass Highway</b>	2009 – 1.99 MT	122.6 %
<i>Burnie to Smithton</i>	2029 – 4.43 MT	(4.1 % annually)
<b>Frankford-Birrree-Batman corridor</b>	2009 – 1.69 MT	56.2 %
	2029 – 2.64 MT	(2.3% annually)

<b>Bridport Main Road</b>	2009 – 1.39 MT	33.1%
	2029 – 1.85 MT	(1.4% annually)
<b>Esk Main Road</b>	2009 – 0.62 MT	54.8%
<i>St Marys to Midland Highway</i>	2029 – 0.96 MT	(2.2% annually)
<b>Melba line</b>	2009 – 0.3 MT	33.3%
<i>Melba Flats to Burnie</i>	2029 – 0.4 MT	(1.4% annually)

Source: DIER Tasmanian Freight Survey 2008/09

The bulk of Tasmania's freight task is generated by agriculture, construction, mining, and until recently, forestry. Changes to industry structures, particularly within the forestry sector, and to interstate and international markets will see Tasmania's freight task continue to change significantly in the future.

Based on data collected from the Tasmanian Freight Survey in 2008/09, where companies surveyed were asked to estimate their current use of the freight system and their growth prospects over the coming five years, and GSP forecasting from a number of national studies, it is estimated that over the next 30 years, the average freight growth rate across all commodity sectors (excluding forestry) will be 2.3 per cent per annum. By 2029, Tasmania's freight task (excluding forestry<sup>1</sup>) is projected to increase to over 35 million tonnes, an increase of around 80 per cent over 20 years.

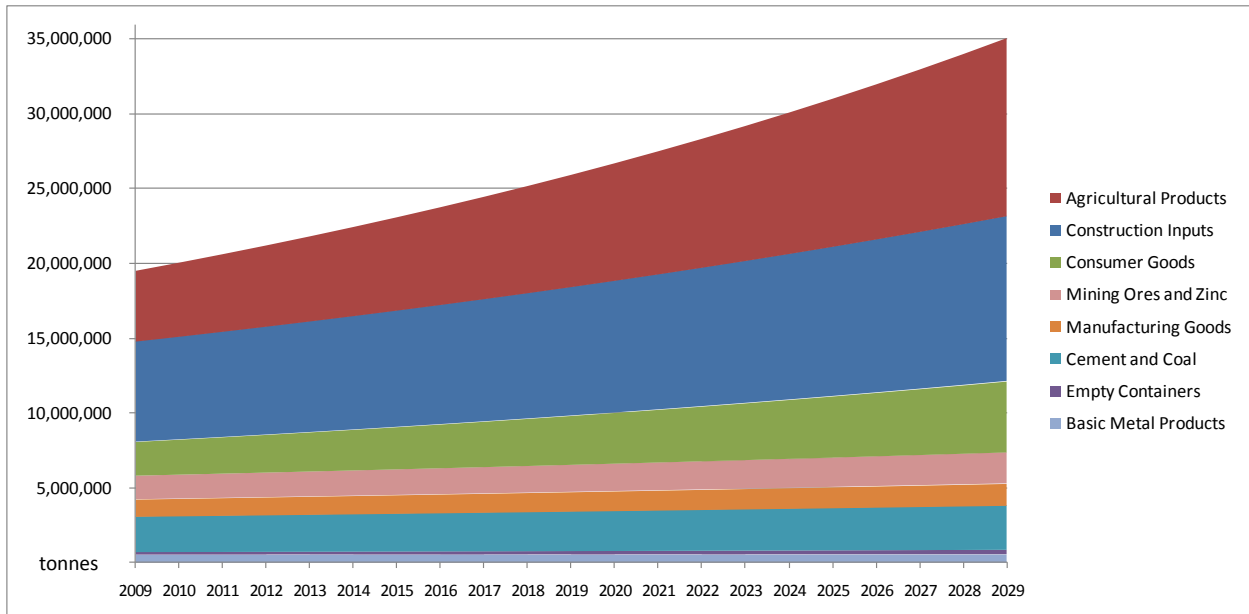
**Table 3: Tonnage by sector**

Commodity group	2009	2029	% Increase
Construction Inputs	6,734,000	11,054,000	64%
Agricultural Products	4,734,000	11,909,000	152%
Consumer Goods	2,267,000	4,766,000	110%
Empty Containers	177,000	309,000	75%
Cement and Coal	2,377,000	2,965,000	25%
Manufacturing Goods	1,164,000	1,478,000	27%
Basic Metal Products	501,000	524,000	5%
Mining Ores and Zinc	1,569,000	2,075,000	32%
<b>All Commodities (excluding forestry)</b>	<b>19,523,000</b>	<b>35,080,000</b>	<b>80%</b>

Combined, construction inputs, agricultural products and consumer goods are projected to comprise nearly 80 per cent of Tasmania's state-wide freight task by 2029. The majority of freight growth will occur in the agricultural sector, with nearly half of the future growth in the freight task projected to come from increased production. Consumer goods are also forecast to have a large increase, but will make up a relatively small proportion of the overall task. Demand for construction inputs is also expected to continue to increase, as building activity continues across the state.

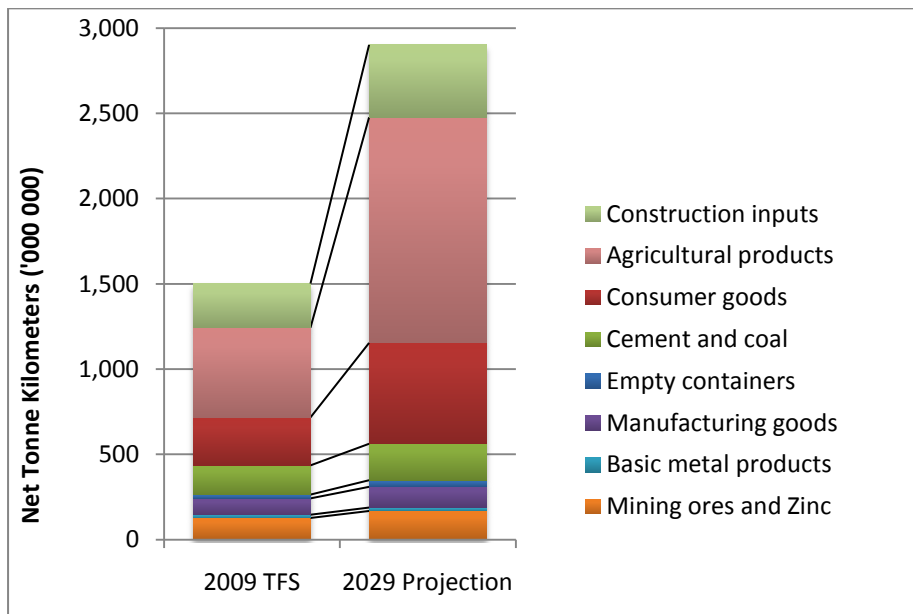
<sup>1</sup> With recent changes in the forest industry, most notably the large decline in native forest harvesting, forestry freight volumes are likely to decrease in the future. Due to the considerable uncertainty about the future of the forestry industry, forestry freight has not been included in the forecasts. All forecasts exclude forestry, and will be updated once better information on the future forestry task is available.

**Graph 1: Projected freight growth by sector**



In terms of tonne kilometres travelled, agricultural inputs are projected to comprise a large proportion of the overall freight task. While other components, such as construction inputs and consumer goods, are significant in terms of tonnage growth, agriculture makes up a large proportion of the projected net tonne kilometres travelled, as agricultural products generally make longer freight journeys.

**Graph 2: Projected net tonne per kilometre by sector**



### *Future Demand – Road*

The following sectors are expected to generate increased demand for road freight.

The **agricultural industry** in Tasmania has two major freight components – movement of product from the farm gate to processors, and movement of processed goods from processors to market. Farm gate movements are widely dispersed across Tasmania, and often peak during different

seasons. Movements from processors to market are more focussed on key corridors to major ports and urban centres.

The agriculture task is forecast to grow strongly in the future. The majority of current agricultural production is in the north-west and north, and these regions are likely to expand their productive capacity and produce higher volumes of agricultural products. However, most processors are located in the north-west, and this trend is likely to continue into the future.

Most of the agriculture task moves on the road network, and as such, roads in the north and north-west are likely to experience the greatest increases in agricultural freight. These roads include:

- Bass Highway – Smithton to Illawarra Main Road;
- Bridport Main Road, Frankford Main Road, Birralee Main Road and Batman Highway – linking the north-east to processors in the north-west; and
- Midland Highway – moving agriculture products from southern Tasmania to the northern ports.

In Tasmania, most **consumer goods** are brought into the State via one of the three northern ports. These products are generally moved to urban centres via larger vehicles before being distributed to individual businesses by smaller vehicles. The rail network currently plays a key role in moving consumer goods between ports and southern Tasmania.

Growth in consumer goods is closely linked to population growth and economic growth. Forecast increases in Tasmania's population and improvements in economic conditions are projected to drive increased demand for consumer goods across Tasmania. Movement of consumer goods is likely to increase most strongly on the road and rail corridors between key container ports (Burnie and Devonport) and major urban centres (Hobart, Launceston, Burnie and Devonport).

Key corridors where growth in the consumer goods task is expected include:

- Bass Highway – Burnie to Launceston; and
- Midland Highway.

Current forecasts indicate that **heavy manufacturing** activity across Tasmania is likely to continue to decline. Some of manufacturers in Tasmania have relatively old, high cost operations, and face significant competition with other manufacturers across the world.

As most heavy manufacturers are located near major urban areas and/or key sea ports, the key transport corridors for manufacturing-related freight are:

- Midland Highway;
- Bass Highway – Illawarra Main Road to Burnie; and
- major urban roads, such as the Brooker Highway and Southern Outlet.

## *Future Demand - Rail*

Rail freight operations are split into two broad markets: 'bulk' and 'intermodal'.

Bulk freight consists of cement (transported from Railton to Devonport), mineral ore concentrates (transported on the Melba Line from the West Coast to Burnie Port) and coal (transported from Fingal to Railton). Intermodal freight consists of containerised goods – for example paper products, zinc ingots and retail products, primarily on the main north-south line between Hobart and the Burnie Port.

### **Bulk freight activities:**

Mining activity in Tasmania is predominantly located in the west and north-west regions. This area has a long mining history and is widely recognised throughout the world as being geologically rich in metallic and non-metallic minerals including iron, copper, lead, zinc, tin, gold, and high-grade silica. In addition to mining activity on the West Coast, the mining of thermal coals from the Fingal Valley for domestic use in the paper and cement industries is component of the rail 'bulk' freight task.

In addition to mining, the manufacture of cement at Railton is a significant bulk commodity rail task.

TasRail is working closely with the Tasmanian minerals sector to determine how mining freight that is currently being carried by road can be transferred to rail. In particular, TasRail is working closely with the proponents of two potential large mining projects, the Venture Minerals Mount Lindsay Project located on Tasmania's West Coast and the Hardrock Coal Project located in the Fingal Valley to undertake the primary transport task. .

**Venture Minerals Mount Lindsay Project** – this project is for the transport of one million tonnes per annum of Direct Shipping Ore from Mount Lindsay (on Tasmania's West Coast) to the Port of Burnie for a period of five years.

**Hardrock Coal Mining Fingal** - this project is for the transport of one million tonnes per annum of coal from Fingal to Bell Bay Port for export. The coal reserves at Fingal are reported to be extensive (a total inferred resource 110 million tonnes<sup>2</sup>) and therefore this project is expected to be of a long-term nature, with annual tonnages potentially increasing above the initial task of one million tonnes per annum.

TasRail has also engaged with the forestry sector, identifying a number of potential opportunities. Trial transportation of logs between the north and south of the State have been undertaken over the last six months using refurbished rolling stock. This is a sector that has not used rail for many years due to numerous derailments over time. However, TasRail is now confident that the track is now in a much better condition, and forestry product is now of a much more consistent nature (i.e. regrowth product) allowing improved load distribution.

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<sup>2</sup> [www.hardrockcoal.com](http://www.hardrockcoal.com).



### **Intermodal freight activities:**

Some heavy manufacturers are major users of the State's rail system, as their logistics chains have been established to use rail, and they have direct connections to the rail network (for example, the production of paper products at Boyer).

Excluding these specific manufacturing tasks, rail also competes with road for a portion of the contestable intermodal market, primarily consumer goods. In addition to the intermodal task that is currently carried on rail, market analysis projects a contestable market share of intermodal task estimated to be an additional **800,000 tonnes**.

## **5. Future supply of transport: Strategic priorities**

The following strategic priorities are a response to the key transport system challenges, current system performance, and foreseeable changes to the transport system, including future demand. They have been developed with consideration of national policies and priorities including the National Land Freight Strategy discussion paper, the National Ports Strategy and the recent Infrastructure Australia Review of Tasmanian Ports and Shipping issues.

**Promote seamless intermodal connections at ports and freight hubs:** The long term aim is for inter-operability, allowing for compatibility of freight transfer from road to rail to shipping services. In the short term a key focus is to capture the benefits of the Brighton Transport Hub, which will provide a consolidation and deconsolidation point for freight and allow for the transfer of containers between modes.

The design of the new rail terminal will facilitate longer trains with reduced shunting and a more efficient interface with customers – consistent with Tasrail's objective to increase intermodal volumes and achieve a reliable 24 hour service turnaround between the hub and the northern ports.

Proposed work at Burnie Port will streamline rail and heavy truck operations within the port precinct allowing the full benefits of the efficiencies at the Brighton Hub to be captured.

**Maximise benefits of recent investment in rail revitalisation:** There has been a considerable recent investment in the Tasmanian Rail network with substantial funding provided by the Australian and Tasmanian governments. To gain the full benefit of this large sunk investment, a further program of work is required.

A safe, reliable and efficient rail freight network that integrates operations with ports, road transport terminals, and large industries is part of an integrated supply chain that is a key component in improving the overall efficiency and productivity of freight transport across modes.

The aim of any further investment is to ensure that operational lines are maintained or upgraded to support safe and reliable rail freight services, and to assist in establishing a financially sustainable rail operation where maintenance costs per kilometre are in line with national benchmarks, and limited ongoing subsidy is required for below rail maintenance.

Rail productivity improvements will focus on unlocking existing capacity through more efficient locomotives with greater haulage capacity. Below rail enhancements are required to support this focus.

Enhanced reliability and safety performance will ensure that rail can continue to meet the needs of existing customers and ensure that rail is seen as a viable option for new freight tasks.

**Plan and design the network for higher productivity and to provide a 'safe system':** Providing for projected long term growth in traffic and freight volumes in the safest and most efficient way involves ensuring that any proposed upgrades allow for increased productivity. This means ensuring road upgrades are consistent with future use by higher productivity vehicles such as super B-doubles, and that Tasmania's safe system infrastructure design principles are applied. Programmed improvements to the rail network such as track upgrades and replacing steel sleepers with concrete will be designed to facilitate the provision of increased axle loads in the future.

**Targeted productivity enhancement of transport network:** Based on projected freight growth, there is unlikely to be a case for investing in *global* productivity enhancements for both road and rail (such as system wide higher mass limits, or increased rail axle loads). Based on analysis, the nature of the task is unlikely to change substantially over the coming 30 years. The priority will be to consider targeted enhancement of the network to provide productivity improvements, where it is clearly linked to demand. This is more likely to be related to a specific task, such as mining or agriculture.

**Targeted safety and efficiency enhancement of network:** Deliver projects that focus on reducing bottlenecks on freight critical links of the national network, such as Illawarra Road and Midland Highway, and improve reliability of journey times for freight and personal users on key urban routes such as the Brooker Highway.

**Ensure the protection and preservation of future capacity requirements:** Better integration of freight infrastructure with land use planning is important for long term productivity and community amenity. Further consideration of building in adequate protection of key corridors in planning schemes is required. In the short term, funding will be sought to secure and preserve corridors for future planned developments on the Midland Highway, such as the Bagdad Bypass and new Bridgewater Bridge.

**Improved transport system planning through the completion of a Principal Freight Network Strategy and the creation of an industry led Freight Logistics Coordination Team:** Though substantial work has been undertaken to date on developing a draft Freight Strategy, there is an opportunity to work with industry to further develop this analysis. It is envisaged that a Freight Logistics Co-ordination Team would guide the development of a detailed long term freight planning exercise focusing on Hobart to the Northern Ports. This work would incorporate longer-term ports planning for the State and would inform the development by Tasports of a Tasmanian Ports Strategy. It is envisaged the Freight Logistics Coordination Team will

be established in 2012 and will work under the stewardship of the Tasmanian Infrastructure Advisory Council.

Tasmania regularly collects freight data through the Tasmanian Freight Survey. This survey will be undertaken during the 2012-13 period, providing more up to date data as an input to this task.

**Efficient supply of ports and enhanced longer term port planning:** Preliminary analysis supports developing the existing multi-port system and transitioning to a ports specialisation model. However further analysis is required to determine the most appropriate long term economically efficient supply strategy for Tasmania's ports.

Detailed consideration of whole-of-supply chain issues over a 50 year horizon is required, including future industry requirements, shipping trends, port development potential, port access, and land transport impacts, in line with the objectives of the National Ports Strategy. This analysis would be an input to the development by TasPorts of a Tasmanian Ports Strategy.

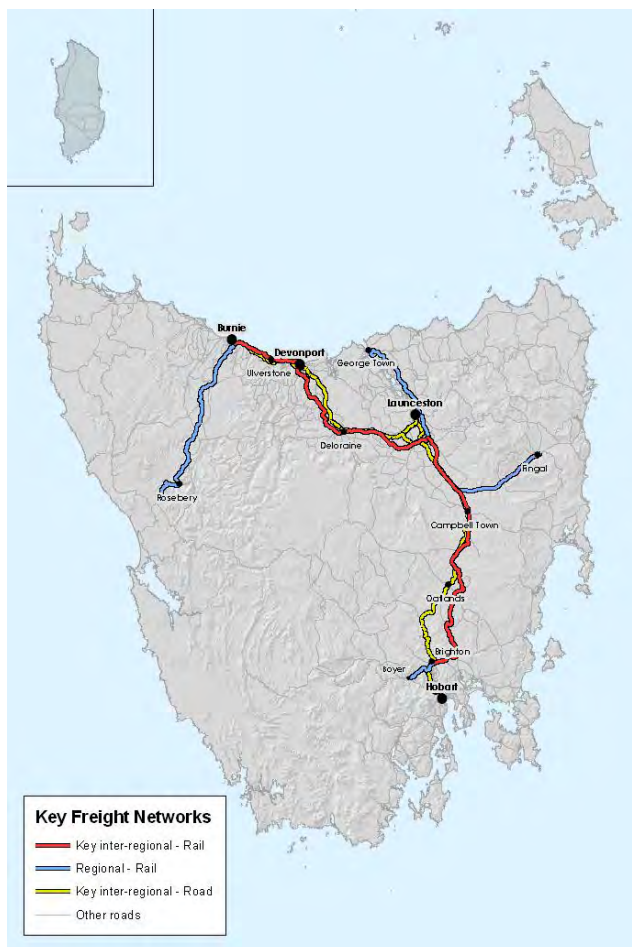
**Consideration of alternative funding and financing of transport infrastructure:** Cost reflective pricing for heavy vehicle access to the road network and road funding reform is being considered as part of the national Heavy Vehicle Charging and Investment Reform agenda, and the Tasmanian government will continue to actively participate in this reform process. Tasmania has many attributes that make it suitable 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 Finance Working Group's *Infrastructure Finance and Funding Reform* Report is an important lead for national discussion. Tasmania is not in a position currently to adopt a unilateral approach. Further work is required in relation to project financing and the issue of cost reflective pricing in small regional economies.

## PART 2. Burnie to Hobart Freight Corridor

This corridor is the focus of the submission to IA. This section expands on the rationale for this focus. A package of projects is presented on the corridor comprising road (\$306 million) and rail (\$240 million).

By tonnage, traffic volumes, and strategic land use connections, the Burnie to Hobart Freight Corridor is Tasmania’s most significant freight corridor. It extends from Burnie Port to Hobart, and includes the Bass Highway, Midland Highway, Illawarra Main Road, Brooker Highway, and the north-south rail line, connecting major ports, the Brighton Transport Hub and key industrial and manufacturing centres in all three regions. It is Tasmania’s key corridor for the movement of containerised freight.

The Corridor connects Tasmania’s two highest volume ports at Burnie and Devonport. Together, the two ports handled over seven million tonnes of freight during the 2010/11 financial year, with the majority accessing the ports via the road network.



Map 1: Burnie to Hobart Freight Corridor

All containerised freight currently moves through Burnie and Devonport Ports with the task split around 73 per cent to 27 per cent respectively. Both ports have seen substantial growth in the volumes of TEU’s passing over the past decade (see Table 4).

Table 4: Port throughput, Burnie and Devonport

Port	Tonnes 00/01	Tonnes 10/11	% Growth
Burnie	3.48Mtpa	3.98Mtpa	14.36
Devonport	2.80Mtpa	3.20Mtpa	14.28
	TEU Vol 00/01	TEU Vol 10/11	% Growth
Burnie	140,572	231,615	64.76
Devonport	129,117	184,041	45.54

Source: Tasports Annual Report 2010-2011

The Burnie to Hobart road corridor carries around 53 per cent of Tasmania’s total freight task and 80 per cent of all containerised traffic.

The Bass Highway carries the highest freight volumes of any section of Tasmania's land transport freight network, with the section just prior to the Burnie Port carrying 4.4 million tonnes of freight in 2008/09. Freight volumes on the Highway are forecast to double over the long-term.

The Bass, Midland, Illawarra and Brooker Highways are among Tasmania's highest volume freight roads:

- Bass Highway: average of 3.6 million tonnes (between Burnie and Illawarra Main Road);
- Illawarra Main Road: 1.5 million tonnes;
- Midland Highway: 2.4 million tonnes; and
- Brooker Highway: 2.3 million tonnes.

In 2011/12, the rail network carried 2.3 million tonnes, around 1.5 million tonnes of which was bulk product. The north-south rail line carried 700 000 tonnes, and this is forecast to increase over time as greater proportions of intermodal and other freight moves to rail.

**Burnie Port** is Tasmania's highest volume port, and the State's major container port. The Port has rail access and is located directly adjacent to the Bass Highway, part of the National Network. The ability of the Port to cater for future container and bulk freight growth is a constraint over the short to medium term, however changes to port layout will provide sufficient space to support medium term freight growth.

In southern Tasmania, the Tasmanian Government has developed a new \$79 million transport hub at **Brighton**, north of Hobart. The Hub is located on the main north/south transport corridor between Hobart and the northern ports, and is replacing the existing, constrained Macquarie Point site with a new purpose-built, road-rail terminal. The layout includes provision for industrial-zoned land, expanding the adjacent Brighton Industrial Estate.

Both investments will deliver significant benefits for the road and rail networks and to industry, reducing travel times between Burnie to Hobart and providing significantly more efficient operations at these two key intermodal points.

Over the long term, the Bass Highway between Burnie and Illawarra Main Road is projected to nearly double its freight volumes by 2029 to between 6.6 and 8.6 million tonnes. This growth will see the Highway remain as the highest volume land transport freight corridor in Tasmania. Volumes will also increase significantly on the Midland and Brooker Highways (see Map 2).

Generally, capacity issues between Burnie to Hobart are focused in urban areas, particularly Hobart and Launceston. Based on a Level of Service D, the following segments are at or forecast to be at capacity within 10 years:

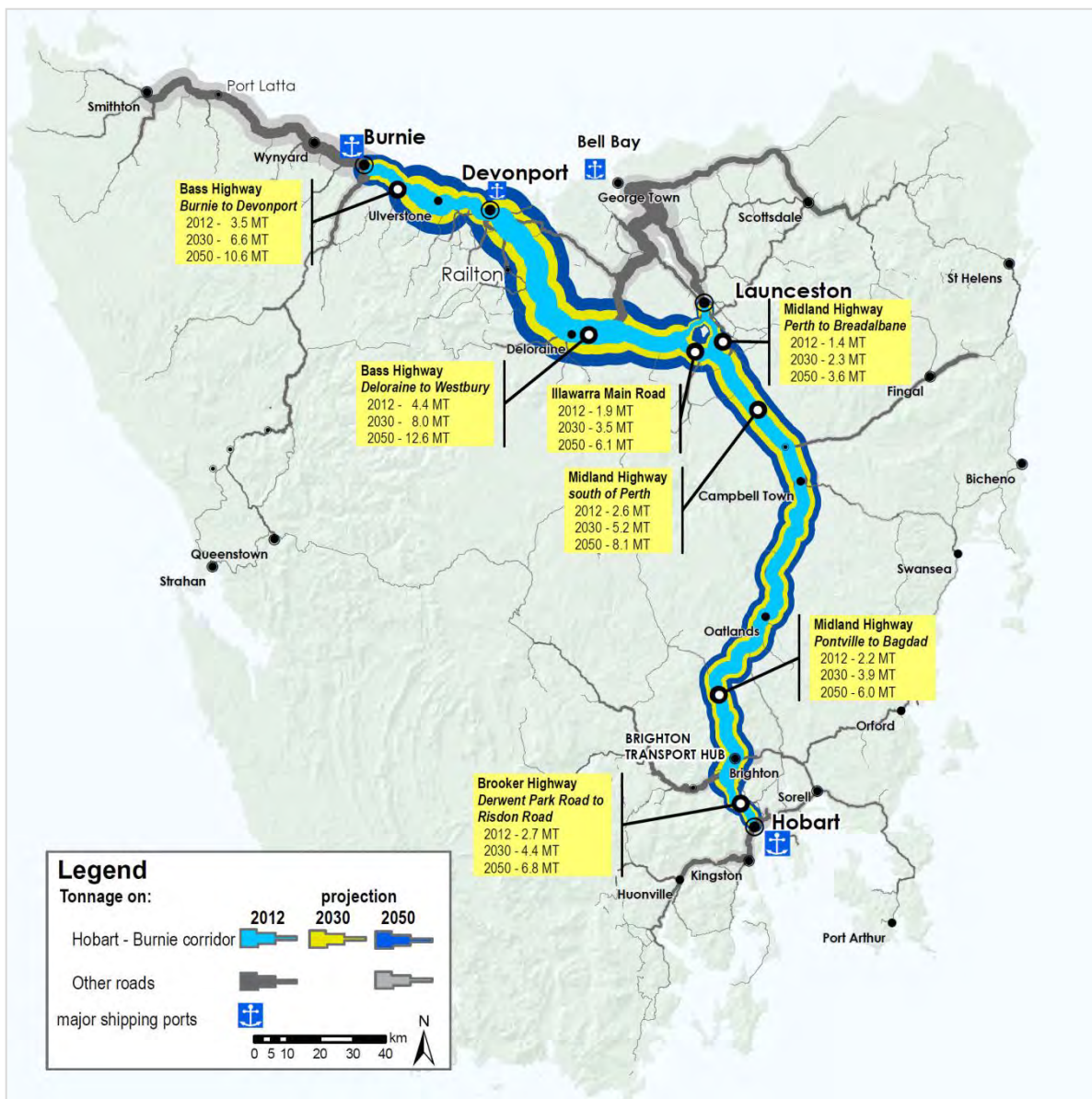
- Bass Highway (east of Devonport);
- Illawarra Main Road (eastern approach into Perth);
- Midland Highway: through Perth and Campbell Town; Pontville to Bagdad; and
- Brooker Highway (Berriedale Road to Domain Highway).

While the capacity of the road infrastructure to support overall volumes is generally fair, the infrastructure standards required to support current higher productivity vehicles, future productivity improvements and to deliver continuous safety improvements remain key issues. Deficient sections include the Bass Highway (Latrobe to Deloraine), sections of Illawarra Main Road and the Midland

Highway (Pontville to Bagdad).

Similar to road, the capacity of rail infrastructure to support volumes is generally fair. In place of creating additional capacity, the holistic Rail Revitalisation Program (including capital investment in rail infrastructure and locomotives and wagons) targets liberating existing network usable capacity through the improvement of overall network reliability. Linked investment in the Brighton Transport Hub, Burnie Port and at Bell Bay Port will provide efficient road-rail-ship interfaces. The design of the new southern rail terminal within the Brighton Transport Hub will facilitate longer trains with reduced shunting. Modern terminal arrangements at Burnie Port will capitalise on these operational efficiencies at the Brighton Transport Hub.

Map 2: Road and rail tonnage by corridor



## Key projects: Tasmanian Government, Nation Building 2

1. Bass Highway – Latrobe to Deloraine (\$5 million)
2. Midland Highway – Duplication, Perth to Breadalbane (\$72 million)
3. Illawarra Main Road Upgrades / South Perth Bypass (\$142 million)
4. Midland Highway – Mangalore to Bagdad Upgrades and future Bagdad Bypass (\$35 million)
5. New Bridgewater Bridge (\$15 million)
6. Brooker Highway Upgrade Package (\$37 million)
7. Tasmanian Rail Revitalisation Program (\$240 million)

### Nation Building 2 submission: Bass Highway - Latrobe to Deloraine (\$5 million)

The Bass Highway, east of Burnie, carries the highest freight volumes on Tasmania’s land transport network. The Highway is part of the National Network, and has seen significant investment over the past two decades. Most adjacent towns have now been bypassed, with extensive sections of high standard dual carriageway and grade-separated interchanges. High volumes through Burnie and Devonport ports; reliance by the southern region on the northern ports for export/import; and the significant agricultural, manufacturing and industrial activity on the north-west coast, contribute to this high freight activity.

The section of the Highway directly adjacent to Burnie Port carried 4.4 million tonnes in 2008/09, with volumes along the Highway remaining consistently high (see Table 5). The estimated value of this freight was over \$3.8 billion, highlighting the Highway’s economic importance.

Freight tonnages are forecast to double on the Highway to between 6.6 and 8.6 million tonnes by 2029. The number of heavy vehicles is also forecast to double over the long-term.

The majority of the Bass Highway is at National Network standard, however the section between Latrobe and Deloraine (east of Devonport) requires major upgrade and is the key remaining section requiring investment. This section is a single carriageway rural highway, compared to adjacent dual carriageway sections. It is deficient in terms of alignment, lane and shoulder widths for both existing and future heavy vehicle configurations. Other issues include a low level of service (Level of Service D to E on sections east of Devonport); high crash risk and density; and multiple direct property accesses.

The Tasmanian Government has started preliminary work to examine design options through Latrobe, an area of significant constraint from a freight productivity and safety perspective. The appropriateness of a bypass through this section, design standards for future heavy vehicle configurations and resolution of safety issues are areas to be considered in this initial consultancy work.

**Table 5: Bass Highway tonnage by access point**

Road Link	2008/09 tonnage (millions tonnes per annum)
Bass Highway, Edward Street	4.39
Bass Highway, Ulverstone	2.88
Bass Highway, Victoria Bridge	3.45
Bass Highway, Elizabeth Town	3.31
Bass Highway, at Birralee Road junction	3.56
Bass Highway, at Illawarra Road junction	2.70

Source: DIER Tasmanian Freight Survey 2008/09

The Government is seeking **\$5 million** in planning funding now to analyse problems and options on this section of the Bass Highway.

**Nation Building 2 submission: Midland Highway – Duplication, Perth to Breadalbane (\$72 million)**

Perth to Breadalbane is a key section of the Midland Highway, Tasmania major north-south transport corridor, and a key link in Tasmania’s National Network. The Highway is both a critical freight connection facilitating access from the southern region to the State’s northern ports, including Bell Bay; and to/between major industrial centres in Launceston, Breadalbane (adjacent to Launceston Airport), and Greater Hobart (Brighton Transport Hub, Glenorchy industrial area). For passengers travelling between Hobart and Launceston, it is the key transport link.

The Midland Highway between Perth and Breadalbane has been identified as a priority section for upgrade in the *Tasmanian AusLink Corridor Strategy 2007*. Upgrading the Midland Highway is also identified as a key short to medium-term transport infrastructure priority under the *Tasmanian Infrastructure Strategy* and in the *Midland Highway Partnership Agreement*, a joint agreement between State and Local government.

In 2012, this section of the Highway carried around 1.4 million tonnes of freight, providing a key link into Launceston and through to Bell Bay, as well as connecting to industrial development adjacent to Launceston Airport, including a major new statewide grocery distribution centre.

The existing road network is single carriageway with no formal overtaking opportunities and a number of direct accesses. While other sections of the Midland Highway have been significantly upgraded to a standard consistent with the National Network, there has been limited investment in this section despite its strategic function and higher traffic volumes compared to other parts of the Highway.

The proposed project will see duplication of the Highway from Youl Main Road junction north of Perth to the existing roundabout at Breadalbane.

The Tasmanian Government is seeking **\$72 million** to deliver this upgrade.

**Nation Building 2 submission: Illawarra Main Road Upgrades / South Perth Bypass (\$84 million) and Pateena Road to Bass Highway Upgrades (\$58 million)**

Illawarra Main Road is a key link between the North West (Bass Highway) and Southern (Midland Highway) regions, providing a more direct, shorter route between these two regions compared to the alternative route through Launceston.

Although only sixteen kilometres in length, the Road serves as a vital link in Tasmania’s road network carrying around 1.5 million tonnes of freight at an estimated value of \$2.2 billion (2008/09). The freight mix on the Road is diverse (Table 6), with over one million tonnes of freight destined for Hobart, highlighting the importance of this road in the Hobart-northern ports supply chain.

**Table 6: Freight tonnages, commodity type and value, Illawarra Main Road**

Commodities	Tonnage	Value
Agriculture & agricultural products	730,419	\$858M
Consumer goods	378,309	\$1.168B
Cement	166,200	\$14.8M



Construction inputs	83,528	\$11.6M
Forestry	62,852	\$4.6M
Manufacturing goods (inputs & outputs)	47,281	\$90.7M
Wood products	42,722	\$41.7M
Empty Containers	16,105	0
Basic metal products	9,130	\$22.7M
Mining ores	600	\$18.4M
<b>Total</b>	<b>1,537,146</b>	<b>\$2.231B</b>

Source: DIER's Tasmanian Freight Survey, 2008/09

The existing road is deficient in terms of current and future vehicle productivity needs. The Road is single carriageway, with deficiencies along the length of the corridor. The eastern section connecting to the Midland Highway through the centre of Perth is the most constrained section, however targeted upgrades are also required on sections west toward the Bass Highway. Issues include:

- Posted speed limit of 70 km/h;
- At-level rail crossing;
- Narrow lane and shoulder widths;
- Proximity to residential houses in Perth; and
- Deficient and constrained intersection at the Midland Highway in the centre of Perth (currently at Level of Service E).

Arguably it is the weakest link in the Burnie to Hobart Freight Corridor.

The Tasmanian Government has identified a package of projects to address existing deficiencies and maximise efficiency and safety on Illawarra Main Road. The priority is a South Perth Bypass, which will provide improved travel times for vehicles; significantly reduce the volume of heavy vehicle travelling through Perth; and provide grade-separation of the rail crossing (\$84 million). The Bypass will accommodate current and future heavy vehicle productivity improvements. A series of projects have also been identified on the western section from Pateena Road to the Bass Highway to address safety and efficiency (\$58 million).

The package represents an appropriate balance between new infrastructure and targeted upgrades of the existing road.

The Tasmanian Government is seeking **\$142 million** under Nation Building 2 while noting that the South Perth Bypass is the priority.

**Nation Building 2 submission: Midland Highway – Mangalore to Bagdad Upgrades (\$24 million) and future Bagdad Bypass (planning - \$11 million)**

The section of the Midland Highway north of Brighton is a highly constrained section of the National Network. Adjacent land uses, including schools, local shops and residences, are incompatible with location adjacent to a national highway. There is significant conflict between interstate traffic characterised by significantly higher speeds and a higher proportion of heavy vehicles; and local traffic characterised by slower speeds, increased turning movements and shorter travel distances.

The Highway through Bagdad-Mangalore has a level of service D, with unpredictable travel times, a high rate and severity of crashes and multiple direct access and uncontrolled intersections. Any significant upgrade of the existing highway through this section is constrained by a high number of adjacent properties and property accesses and the general incompatibility of adjacent land uses. The current highway will not support any future increases to heavy vehicle productivity.

Under Nation Building 1, the Tasmanian Government received \$6 million to undertake planning for both a future Bagdad Bypass and new Bridgewater Bridge. The Bagdad Bypass is a significant piece of new infrastructure, requiring detailed investigation and design. Initial funding has supported preliminary design work, confirmation of corridor, review of required regulatory assessments and approvals and initial stakeholder consultation. The Government is now seeking to finalise all necessary assessments and approvals required to deliver this essential road link, as well as land acquisition to secure the road corridor.

Over the Midland Highway at Bagdad, the Tasmanian Government is seeking funding under Nation Building 2 to support two proposals – addressing the immediate, short-term priority issues on the Highway while planning strategically for longer-term efficiency and capacity improvements through the Bagdad Bypass:

- 1) **Project Development for the Bagdad Bypass project** - The Bagdad Bypass would see the construction of 17km of limited access highway to bypass the small rural townships of Mangalore, Bagdad and Dysart north of Brighton, connecting to the Brighton Bypass (opening 2012). Funding is requested for the Project Development phase, which includes refinement of concept design, land acquisition, geotechnical, environmental and heritage investigations, and preparation of a project proposal report for the Delivery Phase - \$11 million; and
- 2) **Interim Safety Improvements, Bagdad to Mangalore** – In the interim, funding is requested to undertake targeted improvements to the existing Midland Highway between Bagdad and Mangalore to address key safety issues on this section of the Highway. Improvements include shoulder widening, crest and grade improvements and the provision of dedicated turning lanes at key intersections/junctions - **\$24 million**.

#### Nation Building 2 submission: New Bridgewater Bridge (\$15 million)

The Bridgewater Bridge is the gateway to Hobart. It is the key northern transport link across the Derwent River, connecting Hobart to the northern region and to the Brighton area (Brighton Transport Hub and industrial estate). The Bridge is part of the National Network and a key link in Tasmania's north-south supply chain.

The existing Bridgewater Bridge was built in the 1940s and does not meet contemporary loading and design standards. It is not able to reliably perform its functions as part of the National Network due to dimensional limitations, ongoing repairs and maintenance (the existing bridge lift span is frequently closed), and the increasing likelihood of periods of closure from climate change-related events (e.g. inundation).

A new Bridgewater Bridge has been a key element of the State's strategic transport planning for over 15 years and planning to support a new bridge has been ongoing for a number of years. Replacement of the Bridge is part of broader improvements to the Midland Highway north of Hobart, which also includes the Brighton Transport Hub and Brighton Bypass (both shortly to open),

and a future bypass at Bagdad/Mangalore. Together these projects will deliver significant efficiency and safety benefits.

The Tasmanian Government received \$6 million from the Australian Government under Nation Building 1 to progress planning for both the Bridgewater Bridge and a future Bagdad Bypass. This funding supported the development of a preliminary design, site investigations, traffic modelling, review of environmental and planning approvals, targeted stakeholder consultation, and identification of land acquisition.

The Government is now seeking **\$15 million** under Nation Building 2 to progress the New Bridgewater Bridge project to final design, including land acquisition (\$6 million) and field and baseline surveys (\$9 million).

**Nation Building 2 submission: Brooker Highway Upgrade Package - Elwick Road to Howard Road (\$32 million); Domain Highway Interchange Forward Planning (\$5 million)**

The Brooker Highway is a critical link in Tasmania's key north-south freight and passenger corridor. The Highway facilitates access to the State's northern ports (Burnie, Bell Bay and Devonport), through which 86 per cent of the exports and 99 per cent of imports from the Southern Region are moved.

The Highway is one of the highest tonnage roads on the Tasmanian road network, carrying around 2.3 million tonnes in 2008/09 at a value of \$2.6 billion. It is also one of the highest passenger and freight volume roads on the State Road network, and is forecast to remain so. Recent travel time analysis undertaken by the Department of Infrastructure, Energy and Resources (DIER) indicated the Highway is consistently busy throughout the day, compared to the more distinct peak periods experience on other arterial roads.

The Highway passes through the Glenorchy industrial area, the Southern region's largest and most significant industrial centre, with around 455 hectares of industrial-zoned land. The importance of the Glenorchy area for industry is expected to continue over the long-term reflecting the locational advantages of the area relative to transport networks and consumers, as well as the significant shortfall in available industrial land within the Greater Hobart region. As remaining available land continues to be developed at Brighton (north) and Cambridge (east), the Highway will become the key freight link connecting all three industrial centres.

The Brooker Highway has two distinct sections:

- the highest volume *southern section* between Macquarie Street and Berriedale Road has lower speed limits (60-80km/h); with most major intersections generally at-grade and signalised. This section of the Highway has numerous direct private accesses and on-street parking. It is the key section providing access to industrial areas via major local government freight; and
- the *northern section* running northwards from Berridale Road has a higher speed limit (100km/h), generally grade-separated interchanges connecting to residential areas, and very few direct property accesses.

Traffic modeling has identified the operation of major intersections on the southern section as the main constraint on the Highway. The key locations where future capacity issues are most

pronounced are the Elwick Road-Goodwood to Howard Roads and Risdon Road to Domain Highway sections.

Goodwood, Elwick and Howard Roads are urban arterial and collector roads providing access to commercial, residential and industrial areas of Glenorchy, which have junctions with the Brooker Highway in very close proximity. The proximity and layout of these junctions impose capacity and efficiency constraints on the Highway. To address these issues, it is proposed to consolidate the existing staggered T-intersections at Goodwood and Elwick Roads, and to replace the existing Howard Road roundabout with a signalised intersection.

The Government is seeking **\$32 million** to upgrade these critical intersections.

Risdon Road and the Domain Highway interchange are high volume intersections, providing access to adjacent industrial areas and providing the key connection to the Domain Highway and eastern Hobart. There is insufficient capacity at the Domain Interchange, with significant traffic queuing and delays on approaches to and from the Interchange. The Interchange itself has significant constraints.

The Government is seeking **\$5 million** to undertake scoping and planning, which will include a detailed review of issues and options along this section.

**Nation Building 2 submission: Tasmanian Rail Revitalisation Program – Rail Infrastructure Capital Initiative \$240 million (includes Burnie Port to Brighton Transport Hub rail upgrades (\$197.3 million) )**

TasRail, supported by the Tasmanian Government, is focused on rejuvenating rail so that it can be an important and integral component of an effective, efficient and sustainable transport system for Tasmania. Ultimately, the Tasmanian Government's transport priority is for rail to attract a greater share of the contestable freight market (intermodal goods) and to continue to develop new business opportunities in those markets where it has a natural advantage (i.e. bulk goods).

The Tasmanian rail network and train service operations are undertaken through a vertically integrated business – TasRail. As such there is a strong synergy between the above and below rail businesses and investment strategies to support market growth that will underpin long-term sustainability. Investment in the rail network, above that to address safety issues, is based on forecast market demand. This approach results in different strategies across segments of the rail network.

The Tasmanian Rail Revitalisation Program – Rail Infrastructure Capital Initiative identifies the total rail infrastructure work program assessed by TasRail as necessary to underpin the viability of rail as an efficient transport option in Tasmania. The estimated total cost of this Initiative is \$325 million. The entire program of works has been prioritised with an amount of \$240 million being sought under the National Building 2 Program. The priority projects identified are:

- Replacement of life-expired rail across the network (excepting the Bell Bay Line which is comparatively new construction) is a priority project. In total \$46.8 million is allocated to rail replacement in this submission.
- Where rail replacement coincides with the requirement for concrete or steel sleepers and associated formation works, those works would also be undertaken concurrently. In total \$141 million is allocated to the concrete resleeper program between Burnie and the

Brighton Transport Hub. A further \$13 million is allocated to steel sleeper replacement on the Melba Line (steel sleeper replacement on other lines will utilise reclaimed sleepers under the concrete resleepering program).

- On lines where rail replacement is required, but concrete sleepers are not programmed then only rail replacement will be undertaken (for example the Fingal and Derwent Valley lines). The exception to this is the Melba Line where the full program of works has been prioritised as these works are of a safety-critical nature.
- \$22.3 million is allocated to bridge replacement on between Burnie Port and the Brighton Transport Hub and on the Melba Line.

Based on the existing freight task, additional work programs on the Bell Bay, Fingal and Derwent Valley Lines have been deferred.

# NATION BUILDING 2 (2014/15 - 2018/19) PROJECT SCHEDULE

## NB2 THEMES

- 'Moving Freight'
- 'Connecting People'
- 'Safety'
- 'Innovation'

## Notes



Project submitted to Infrastructure Australia and Department of Infrastructure and Transport



Project submitted to Department of Infrastructure and Transport

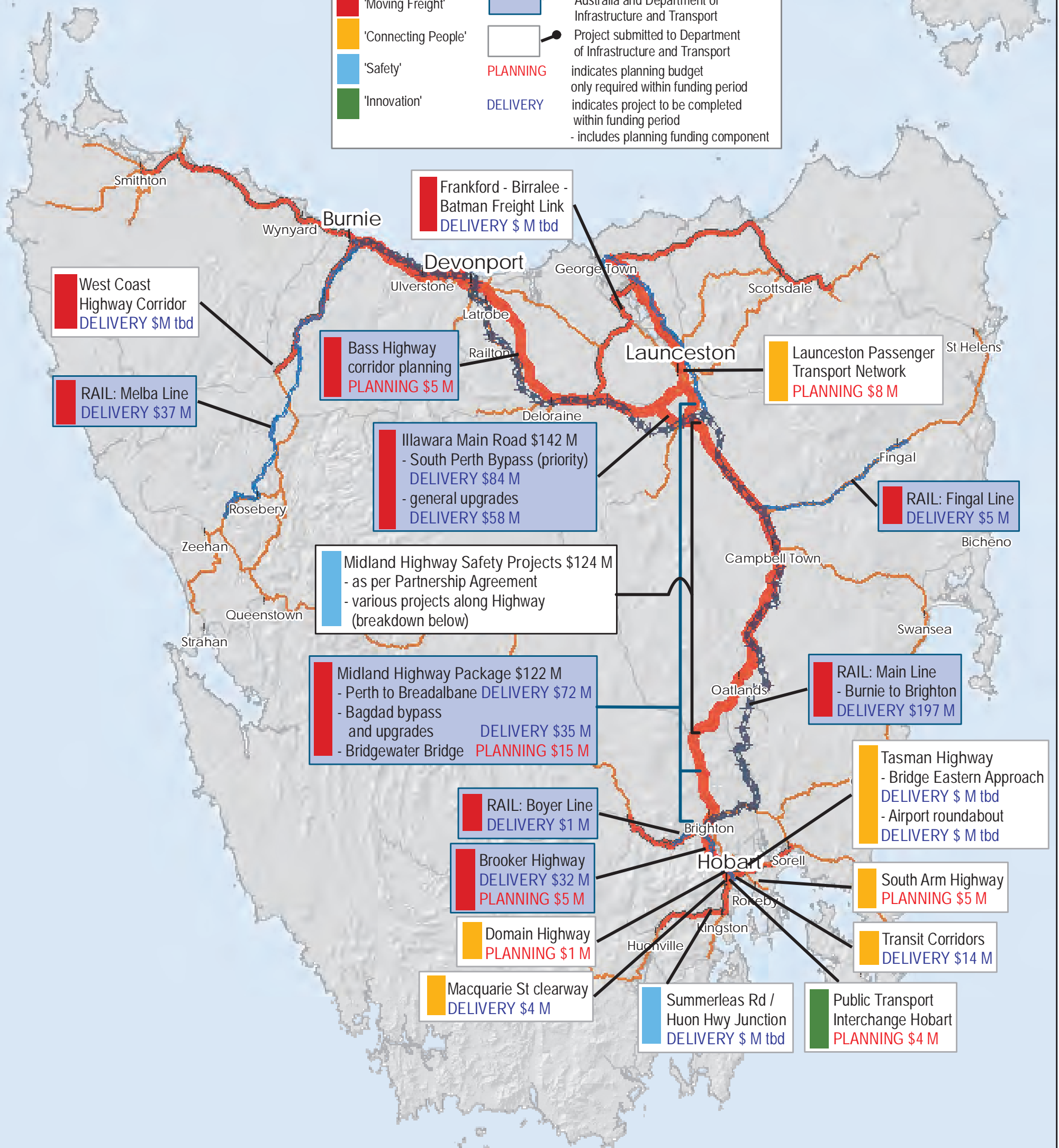
■ **PLANNING**

indicates planning budget only required within funding period

■ **DELIVERY**

indicates project to be completed within funding period

- includes planning funding component



## OTHER PROJECTS - Department of Infrastructure and Transport

- Innovation - Smart Infrastructure**
  - Real-time public transport information
  - Intelligent transport systems
- Innovation - Planning and Research**
  - Performance Based Systems upgrade
  - Household Travel Survey
  - Statewide Freight Model

- Connecting People - Urban Living**
  - University City Walking and Cycling Linkages \$14 M

- Safety - Midland Highway Safety Projects**
  - Esk Main Road Junction and Conara Rail Crossing \$49 M
  - Campbell Town and Perth \$9 M
  - Mona Vale \$19 M
  - St Peters Pass \$3 M
  - White Lagoon \$15 M
  - South of Tunbridge \$2 M
  - Mood Food \$6 M
  - Specific junction upgrades \$21 M

- Safety - Roads to Recovery**
  - Direct to local government
- Safety - Network Regeneration**
  - Bass, Midland, East Derwent, Brooker Highways \$20 M

### Legend

- |   |  |
|---|--|
| <span style="color: red;">■</span> Key inter-regional | <span style="color: blue;">■</span> Key inter-regional |
| <span style="color: orange;">■</span> Regional        | <span style="color: blue;">■</span> Regional           |
| <span style="color: grey;">■</span> Sub-regional      | <span style="color: grey;">■</span> Other State Roads  |





**TASMANIAN RAIL REVITALISATION PROGRAM  
RAIL INFRASTRUCTURE CAPITAL INITIATIVE**

**SUBMISSION TO INFRASTRUCTURE AUSTRALIA**  
August 2012

Tasmanian Railway Pty Ltd

## 1. Proposal Summary

Initiative Name:	Tasmanian Rail Revitalisation Program – Rail Infrastructure Capital Initiative
Location (State/Region(or City)/ Locality):	Tasmanian Rail Network (State-wide) as defined in Schedule 1 Part 1 of the <i>Rail Infrastructure Act 2007</i> (refer Annexure 1 – The Tasmanian Rail Network)
Name of Proponent Entity:	Tasmanian Government and Tasmanian Railway Pty Ltd (TasRail)
Contact (Name, Position, phone/e-mail):	Damien White Chief Executive Officer – TasRail 11 Techno Park Drive Kings Meadows, Tasmania 7249  <a href="http://www.tasrail.com.au">www.tasrail.com.au</a>
Executive summary	<p>TasRail, supported by the Tasmanian Government, is focused on rejuvenating rail so that it can be an important and integral component of an effective, efficient and sustainable transport system for Tasmania. Ultimately, the Tasmanian Government’s transport priority is for rail to attract a greater share of the contestable freight market (intermodal goods) and to continue to develop new business opportunities in those markets where it has a natural advantage (bulk goods).</p> <p>The Tasmanian Rail Revitalisation Program integrates securing both the safety and reliability of the rail network and the efficiency and competitiveness of rail freight operations. A detailed overview of the Rail Revitalisation Program is included at Annexure 2. The Rail Infrastructure Capital Initiative is a key component of the Rail Revitalisation Program. Combined with the Tasmanian Government’s investment in the Brighton Transport Hub, and the planned investments at the Burnie and Bell Bay Ports specifically targeted at streamlining the interface between road and rail and rail and shipping at these locations, there is now a sound foundation for an efficient integrated freight network for the State.</p> <p>Recent investment in rail infrastructure by the Australian Government has arrested the decline in both network condition and modal shift to road. However, following detailed engineering assessments, TasRail has identified the full scope and cost of remediation works that will revitalise the Tasmanian Rail Network to a modern and efficient operational standard – consistent with its regional counterparts forming part of the National Network. The total cost of network wide remediation works is estimated to be \$325 million. A summary of projects by network segment is included in table 2 of section 4.1. Based on the existing asset condition, lifecycle maintenance costs and the current and forecast freight task, these projects have been prioritised and an amount of \$240 million is sought under the Nation Building 2 Program. The balance of the capital cost will be sought through other relevant Australian Government funding processes, for example the Regional Infrastructure Fund, Infrastructure Australia’s Priority List or future Nation Building programs.</p> <p>TasRail has previously made a funding submission to Infrastructure Australia of \$240 million to upgrade the Tasmanian Rail Network to service the freight market in Tasmania. This current submission allocates this funding across the network on the following basis:</p> <ul style="list-style-type: none"> <li>▪ Relaying approximately 290 track kilometres of life-expired rail track.</li> <li>▪ Selective insertion of steel sleepers (primarily on the Fingal, Bell Bay, Derwent Valley and Melba lines).</li> </ul>



- Completing 73 per cent of the concrete re-sleeping program between Burnie Port and the Brighton Transport Hub.
- All identified works on the Melba Line.

A summary of prioritised projects by network segment is included in table 3 of section 4.2.

The lack of investment in the rail infrastructure, and the impact of the deteriorated asset condition on safety, reliability and consequently market share, has been broadly observed and well documented over a lengthy period of time. Due to the nature of the problem being asset condition, options other than asset renewal have not been considered (noting that the associated renewal of above rail assets and investment in improved intermodal connections that forms the Rail Revitalisation Program have been funded by the Tasmanian Government).

This submission demonstrates that the investment previously provided by the Australian and Tasmanian Governments is delivering an initial improvement in safety and reliability outcomes, and have been undertaken with a view to 'future proofing' the network. Improvements in the rail network, in association with the TasRail business model and investment in locomotive and wagon renewal have led to significant new market opportunities for rail.

In place of creating additional capacity, the Rail Revitalisation Program targets liberating the existing network usable capacity through the improvement of overall network reliability. Due to the high fixed cost nature of rail, this increase in volume capability and improved asset utilisation translates to improvements in productivity. Productivity is measured by three key metrics – increased market share, reduced life-cycle costs operating costs and improved asset utilisation.

- *[Reference to forecast market share has been removed for commercial in confidence reasons.]*
- Currently the annual average dollar per track kilometre recurrent maintenance cost is \$*[removed]* per annum. TasRail is targeting a reduction to \$*[removed]*/track kilometre per annum between Burnie Port and the Brighton Transport Hub based on a completely concrete re-sleepered track. The reduced maintenance cost will improve rail's competitive position vis road transport and will support increased intermodal market share.
- Planned improvements in transit time in conjunction with the introduction of operations at the Brighton Transport Hub, along with the investment in new locomotives and wagons, will deliver an increased asset utilisation of around 45 per cent.

The Rail Infrastructure Capital Initiative is essential to delivering an efficient and sustainable transport system for Tasmania.

Is this a new submission?	No, an initial submission formed part of the Tasmanian Government's November 2011 submission to Infrastructure Australia. This submission is extended in scope.
Estimated cost of problems?	The estimated cost of the Rail Infrastructure Capital Initiative is \$325 million.
Estimated Capital Cost of Initiative by Proponent (\$M, nominal, undiscounted):	The estimated total capital cost of the Initiative is \$325 million.

Commonwealth contribution sought by Proponent (\$M, nominal, undiscounted):	The total cost of the Initiative has been prioritised. An amount of \$240 million is sought under the Nation Building 2 Program.
Other funding (source/amount/cash flow) (\$M, nominal, undiscounted):	<p>The Rail Infrastructure Capital Initiative is key component of the holistic Rail Revitalisation Program – a broad investment framework to secure a viable rail network as part of an efficient land transport system. It is also linked to intermodal and port infrastructure investment. Associated funding components include:</p> <ul style="list-style-type: none"> <li>▪ \$130 million for above rail capital renewal (locomotives and wagons), train control system and track maintenance equipment funded by the Tasmanian Government.</li> <li>▪ \$78 million to plan and construct the Brighton Transport Hub (including southern rail terminal) funded by the Tasmanian Government.</li> <li>▪ \$16.3 million per annum (reducing to less than \$12 million per annum by 2015-16) for ongoing network maintenance funded by the Tasmanian Government.</li> <li>▪ \$8 million for the Burnie Port reconfiguration including improved rail logistics, with joint funding by Toll Tasmania. The Australian Government has committed \$4 million to this project.</li> <li>▪ \$9.6 million for Bell Bay Port rail and intermodal improvements (joint Australian and Tasmanian government funding).</li> <li>▪ The Tasmanian Government’s purchase of the rail assets.</li> </ul>
BCR by Proponent excluding Wider Economic Benefits	The BCR is 1.4 based on a discount rate of 4 per cent.
Estimated program	Funding for the current program of works will be completely expended by 30 June 2014. It would be advantageous for there to be continuity with currently mobilised staff and contractors in order to reduce exposure to re-mobilisation costs (notwithstanding that a competitive tendering regime currently exists and is expected to continue). The prioritised program funded under this submission is planned to commence 1 July 2014, and operate for a period of five years.

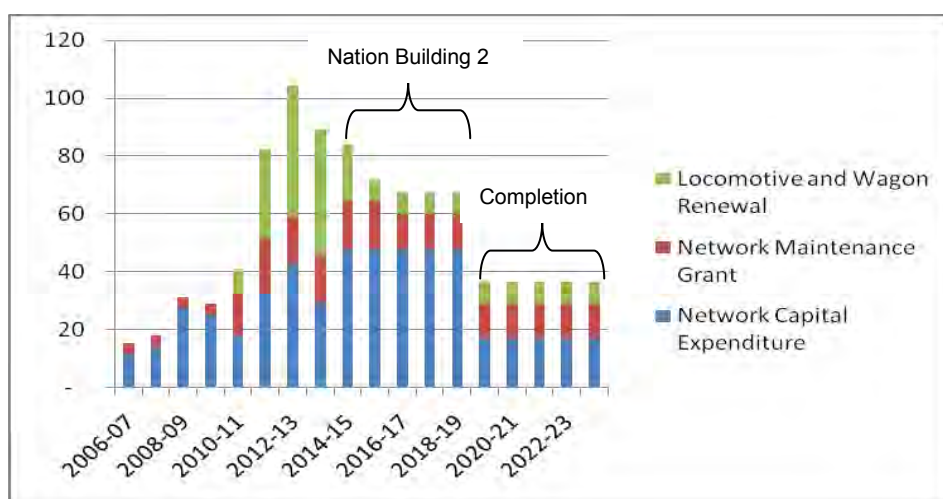
## 2. Goal Definition

TasRail, with support from the Tasmanian Government, is focused on rejuvenating rail so that it can be an important and integral component of an effective, efficient and sustainable transport system for Tasmania. Ultimately, the Tasmanian Government’s transport priority is for rail to attract a greater share of the contestable freight market (intermodal goods) and to continue to develop new business opportunities in those markets where it has a natural advantage (bulk goods).

Since TasRail’s inception in 2009, the Tasmanian Rail Network<sup>1</sup> and train service operations have been operated as a vertically integrated business. This affords a unique opportunity to undertake a holistic approach to planning and delivering efficient infrastructure and train services. TasRail has made valuable progress towards securing the safety and reliability of the Tasmanian Rail Network and is well down the path to acquiring contemporary and standardised locomotives and renew its wagon fleet. TasRail also places a high priority on developing its internal capability to improve safety processes and outcomes, undertake investment in the rail track infrastructure and to develop customer relationships and new business opportunities.

Chart 1 shows the Tasmanian Rail Revitalisation Program investment profile, including rail network capital expenditure and the Tasmanian Government’s network maintenance operating grant and locomotive and wagon renewal investment program. The network capital expenditure profile includes the Australian Government’s Rail Rescue Package, funding provided under the Nation Building 1 Program, funding requested under the Nation Building 2 Program and funding for completion identified in this submission. Following the completion of the Rail Revitalisation Program, all network expenditure is expected to be funded from a combination of TasRail’s operating surpluses and the Tasmanian Government’s ongoing network maintenance grant. This extensive ‘Rail Revitalisation Program’ is set out in detail in Annexure 2.

**Chart 1: Tasmanian Rail Revitalisation Program Investment (\$ Million)<sup>2</sup>**



<sup>1</sup> A description and map of the Tasmanian Rail Network is included in Annexure 1.

<sup>2</sup> Chart 1 illustrates the Commonwealth contribution sought through the Nation Building 2 Program representing \$48 million per annum between 2014-15 and 2018-19, with the balance of funding to be sought through other potential sources of funding (refer section 4.5.5).

„Fit for purpose’ rail infrastructure, which forms the basis of this submission, is a key component to the overall Rail Revitalisation Program and to an efficient and sustainable freight transport system for Tasmania. As discussed in section 2.4, rail is an integral component of intermodal (road-rail-ship) integration across the transport system.

## **2.1 Positive Contribution to Infrastructure Australia’s Strategic Priorities**

Infrastructure Australia has previously confirmed that the Rail Revitalisation Program aligns well with a number of its strategic objectives, including: maximising the productivity and capacity of the key northern ports (Burnie and Bell Bay), improving the efficiency of their connections to major road and rail freight corridors to facilitate domestic trade and international exports, and achieving better utilisation of existing infrastructure. In addition, Infrastructure Australia has noted that TasRail’s initial funding submission is clearly aligned with the Draft National Land Freight Strategy as it is designed to deliver a competitive and sustainable rail freight network. This will be achieved by improving rail freight capacity and reliability in Tasmania.<sup>3</sup>

The Rail Revitalisation Program is designed to unlock the existing network usable capacity and to facilitate improved capital productivity through better utilisation of assets. This proposal aligns with Infrastructure Australia’s Strategic Priorities – SP1: Expand Australia’s Productive Capacity and SP2: Increase Australia’s Productivity.

## **2.2 Alignment with State/Regional Strategic Plans**

This proposal aligns with key Tasmanian Government strategic plans.

### **2.2.1 Tasmanian Infrastructure Strategy ([www.infrastructure.tas.gov.au](http://www.infrastructure.tas.gov.au))**

Released in 2010, the *Tasmanian Infrastructure Strategy* (TIS) is the State’s integrated long-term strategy to guide future infrastructure projects and decision making. The TIS identifies the State’s heavy economic reliance on its transport system to move freight from producers to processors and on to markets – within Tasmania, nationally and internationally.

The TIS recognises the role of rail in meeting the State’s freight transport task with rail positioned as being both complementary and a viable competitor to road transport delivering the freight task and facilitating economic growth. In addition to the ongoing maintenance and capital upgrades of rail infrastructure, the TIS identified the development of a Rail Strategy as a key activity to complete.

### **2.2.2 Tasmanian Rail Network – Objectives and Priorities for Action**

([www.dier.tas.gov.au/plans\\_and\\_strategy/tasmanian\\_rail\\_network\\_objectives\\_and\\_priorities\\_for\\_action](http://www.dier.tas.gov.au/plans_and_strategy/tasmanian_rail_network_objectives_and_priorities_for_action))

In March 2011, the Tasmanian Government released the *„Tasmanian Rail Network – Objectives and Priorities for Action’* (Rail Strategy) which sets out its vision for the rail network and the objectives it has identified as being important to freight transport and to the Tasmanian community. These objectives are:

- The safe operation and use of the rail network, including interaction with the broader community.

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<sup>3</sup> 2011-12 Infrastructure Australia Assessment Brief, page 20.

- A greater proportion of Tasmania's growing freight task is transported by rail.
- A viable rail network for the long term.
- A cost effective and efficient transport system.

With Australian Government support, the Tasmanian Government has prioritised investment in the operational network, with investment funding previously allocated to the non-operational sections of the Derwent Valley and Wiltshire Lines reallocated in order to keep the core of the network operational (refer Annexure 2 – The Tasmanian Rail Revitalisation Program).

To maximise the utility of the rail network, the Tasmanian Government's *„Rail Access Framework'* gives priority access to freight, followed by works and then other users (refer section 4.5.1 – Direct User Charges).

### **2.2.3 Tasmanian Framework for Action on Climate Change**

Tasmania has committed to reduce greenhouse gas emissions to at least 60 per cent below 1990 levels by 2050. This target is enshrined in legislation through the *Climate Change (State Action) Act 2008*. Transport is one of the eight priority action areas to reduce emissions.

According to the Bureau of Infrastructure, Transport and Regional Economics, heavy vehicles produce 11,382g of carbon dioxide per tonne for every 100 kilometres travelled, compared with 1,661g for rail.<sup>4</sup> TasRail has conservatively estimated that in 2011-12, rail freight was responsible for net environmental savings of 45,800 tonnes of CO<sup>2</sup> equivalent emissions compared to the same volume of freight moved by road.

As Australia places greater value on reducing carbon emissions, rail will become increasingly relevant as a sustainable transport solution for the future. A key challenge for TasRail is to translate rail's environmental benefit over road transport into increased freight volumes. This is likely to be difficult in the short term as rail is adversely impacted by changes to fuel tax arrangements from 2012, while road transport benefits with an exemption from carbon tax measures until 2014. Passing on this additional cost to customers in the interim will reduce the competitiveness of rail in the transport market in the short term. Nonetheless, TasRail expects that the considerable environmental benefits of rail will ultimately translate into a significant modal shift from road transport, assuming satisfactory service levels can also be provided by rail.<sup>5</sup>

### **2.3 Economic, Social and Environmental Goals Quantified**

TasRail has identified four key 'fit for purpose' outcomes for the Tasmanian Rail Network, based on the current and forecast freight demand. These outcomes are [safety](#), [transit time](#), [productivity](#) and [reliability](#). All four goals underpin the growth in rail's share of the Tasmanian freight task – which will ultimately also deliver broader safety and environmental outcomes (refer section 4.3).

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<sup>4</sup> May not represent TasRail's actual performance.

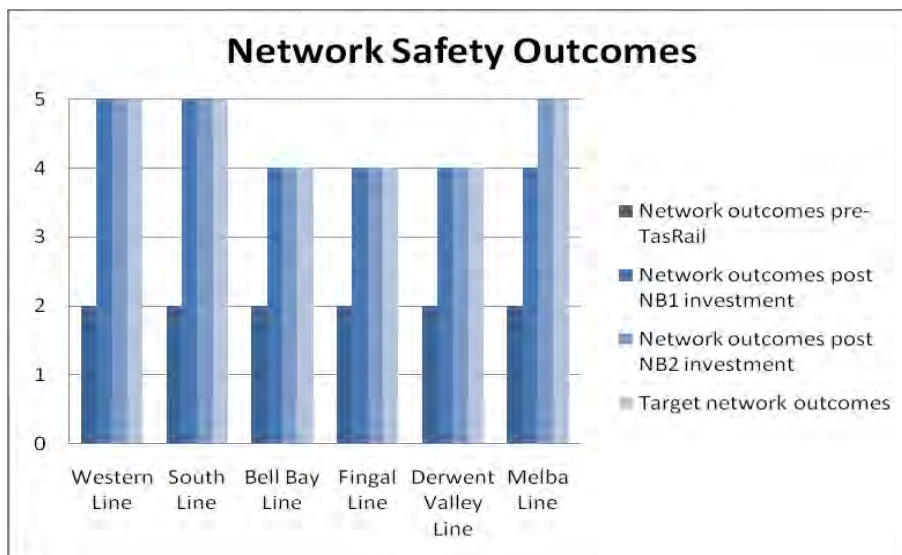
<sup>5</sup> The Cost Benefit Analysis Project Case assumes an increase in market share from year 11 based on anticipated increases in fuel, labour and carbon costs impacting less heavily on rail than on road.

In broad terms, operational lines are to be maintained or upgraded in accordance with engineering specifications and parameters to ensure the effective operation of the network, and, in particular, to prevent mainline derailments and to improve operating times and reliability on key routes through the reduction of temporary speed restrictions. Effective operation of the network is measured in an out of five score as discussed below. The targeted network goal is considered in terms of length of rail track that meets a higher outcome target (for example the Western, South and Melba lines). Across the network, targets vary in accordance with factors such as the predominant nature and requirements of the freight task being carried on a particular line. The scoring out of 5 represents the desired standard for the network to be „fit for purpose’ relative to the Tasmanian freight market requirements.

### 2.3.1 Improved safety of the rail network

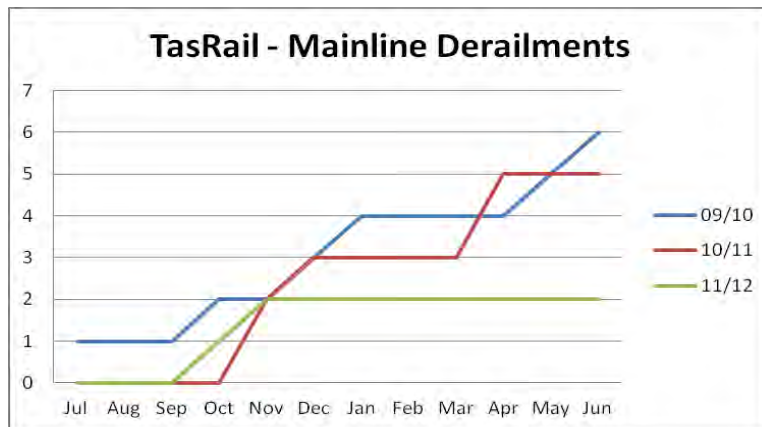
On a target scale of 5, the targeted rail network safety goal is 5 as network safety also delivers benefits in the way of service reliability and reduced operating cost outcomes – both measures being beneficial to end customers. A score of 5 means that the risk of derailments due to track condition are minimized to levels at least equal to „best practice’ for a regional rail network.

**Chart 2: Network Safety Outcomes Quantified**



Safety is a priority for TasRail and its customers. Reducing the number and severity of mainline derailments is a key performance indicator as they have the potential to undermine customer and industry confidence. The condition of the rail track, combined with the age and design of the current fleet of locomotives and wagons, are consistently identified as contributing factors to mainline derailments. Investment in the rail network to date, combined with improved operational practices, has already demonstrated a significant improvement in the safety of the rail network; however, much work still remains to be undertaken. Chart 3 shows the improved network performance measured by mainline derailments since TasRail’s inception in 2009 as a result of the existing capital and maintenance program, and improved business practices. Further investment in the rail network will be complimented by the replacement of the life-expired rolling-stock fleet funded by the Tasmanian Government.

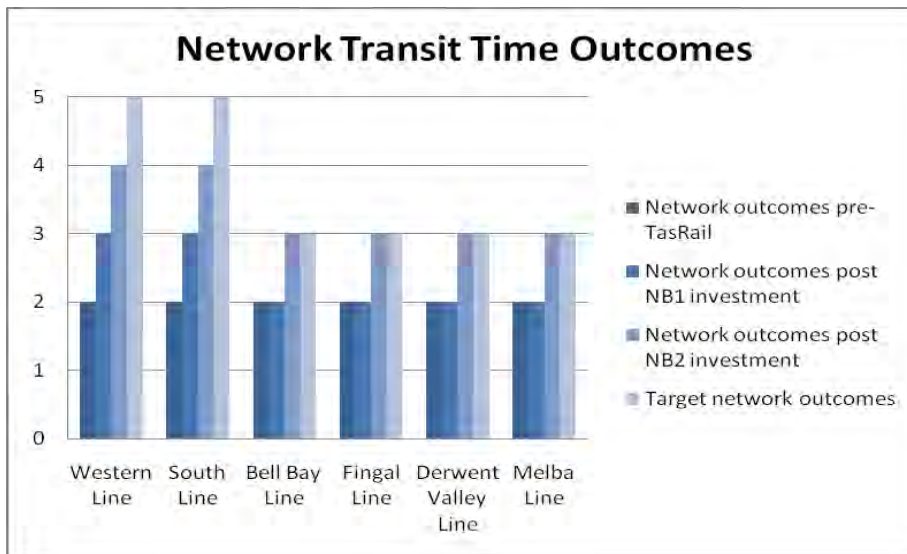
**Chart 3: Mainline Derailments 2009 to 2012**



**2.3.2 Improved transit time of train services**

On a target scale of 5, the targeted network transit time goal is 4. A score of 5 means that transit times are sufficient to capture the target market (i.e a score of 4 would not capture „express’ freight, but would be acceptable for all other freight requirements).

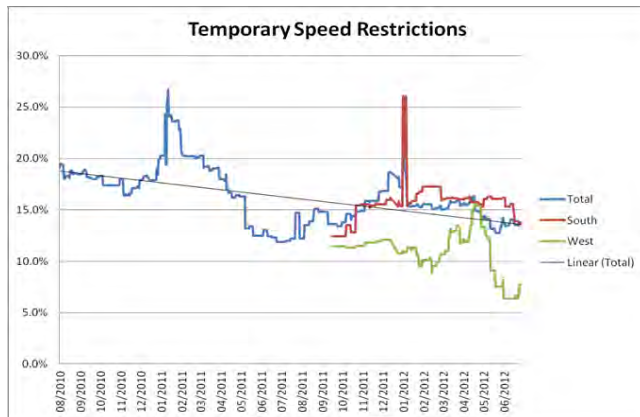
**Chart 4: Network Transit Time Outcomes Quantified**



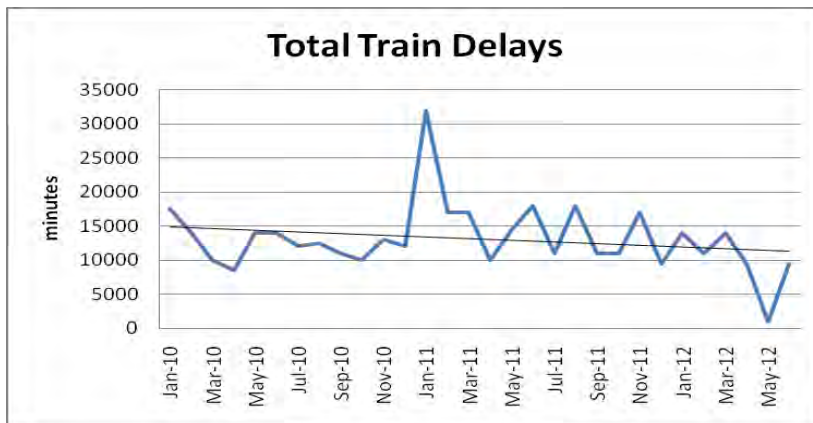
There is a relatively small proportion of „express’ freight requirements within Tasmania and TasRail does not intend to compete with road transport operators for that market segment. Instead, for the majority of TasRail’s customers, on time reliability is the key train service outcome. However; incremental improvements in transit times are certainly an objective of this funding submission to facilitate entry into new market segments (i.e. same day transit for shipping) and to deliver improved rail asset productivity.

Transit times are currently constrained by network speed restrictions. Chart 5 shows the improvement in temporary speed restrictions since August 2010 and chart 6 shows total train delays since January 2010.

**Chart 5: Temporary Speed Restrictions August 2010 to June 2012**



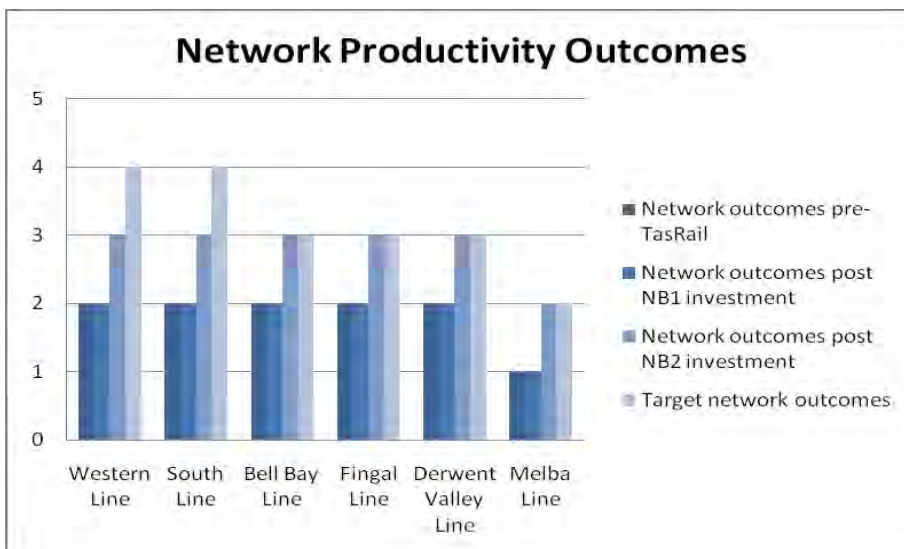
**Chart 6: Total Train Delays January 2010 to May 2012**



**2.3.3 Improved productivity**

On a target scale of 5, the targeted rail network productivity goal is 4. A score of 5 means that high levels of productivity are achieved by way of axle loads, asset utilisation, asset maintenance costs etc. (i.e. a score of 4 would not include increased axle loads).

**Chart 7: Network Productivity Outcomes Quantified**





For rail to be in a position to provide a cost-competitive service offering, freight volumes need to increase to leverage rail's inherent economy of scale advantage compared to road transport. The recent substantial improvements in service reliability, combined with the ability to improve cost-competitiveness through more efficient track and above rail assets<sup>6</sup> means that rail is well positioned to build future freight volumes in a sustainable manner.

Productivity is measured by three key metrics – increased market share, reduced life-cycle operating costs and improved asset utilisation.

#### *2.3.3.1 Increased market share*

TasRail is committed to offering flexible and responsive rail freight services to the market in order to underpin future increased market share opportunities.

As a result of the Rail Revitalisation Program, the decline in patronage of rail services has already been halted and turned around.

*[Reference to forecast market share has been removed for commercial in confidence reasons].*

#### *2.3.3.2 Reduced life-cycle operating costs*

TasRail measures rail infrastructure lifecycle costs on an annual dollar per track kilometre recurrent maintenance cost. Currently this is on average \$[removed]/track kilometre per annum; however, TasRail is targeting a reduction to \$[removed]/track kilometre per annum between Burnie and the Brighton Hub based on a completely concrete sleepere track. The motivation to reduce maintenance costs is twofold; firstly to develop and maintain an improved competitive position vis road transport; and secondly to continuously reduce the annual operating subsidy from the Tasmanian Government.

#### *2.3.3.3 Improved asset utilisation*

Due to TasRail being a short-haul railway, even incremental improvements in transit times will have a significant and positive impact on asset utilisation. Such improvements are fundamental to improving TasRail's pricing position vis road transport and will enable it to grow rail volumes by providing improved yet sustainable pricing outcomes for customers. Planned improvements in transit time in conjunction with the introduction of operations at the Brighton Transport Hub, along with the investment in new locomotives and wagons will deliver an increase in asset utilisation of around 45 per cent.

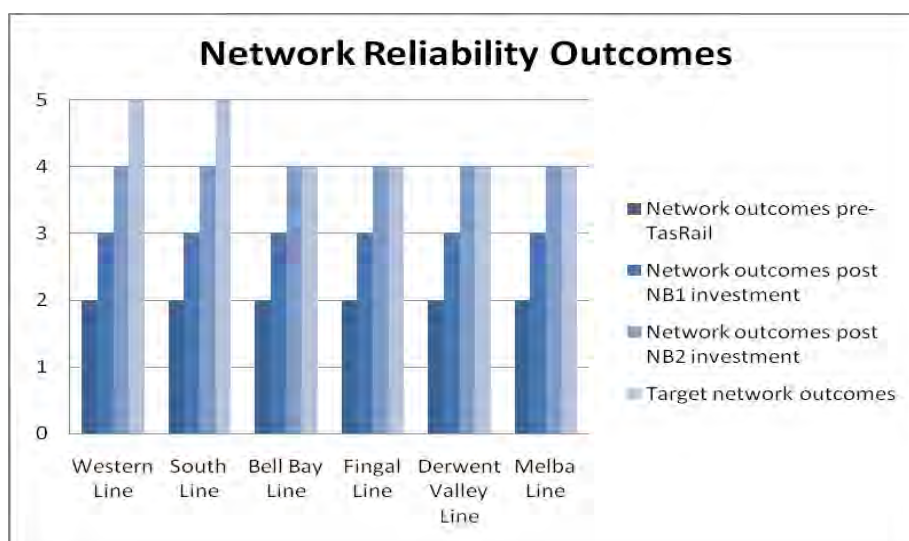
### **2.3.4 Improved [reliability](#) of train services**

On a target scale of 5, the targeted rail network reliability goal is 5. A score of 5 means that high levels of reliability are achieved that satisfy the target market's needs.

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<sup>6</sup> An identified benefit of the new locomotive fleet is increasing maximum haulage capacity from 450 tonnes to 750 tonnes (refer Annexure 2).

**Chart 8: Network Reliability Outcomes Quantified**



TasRail's ability to improve its competitive position compared to road transport is predicated, on substantially improving service levels by improving service reliability. This is achieved by consistently delivering scheduled transit services and by substantially reducing the incidence of major disruptions – historically caused by major derailments. In recent years, customer supply chains have become increasingly sophisticated with ability to compete effectively relying on reducing whole of supply chain costs (i.e. inventory, warehousing, sub-supplier, labor, equipment etc). An unreliable freight transport solution means that additional contingency costs are built into each stage of the freight task. Alternatively, a highly reliable, but not necessarily rapid, transport solution can bring about significant cost savings to market participants.

## 2.4 Demonstrated Integration across Stakeholders/Infrastructure Sectors

A safe, reliable and efficient rail freight network that is able to integrate its operations with ports, road transport terminals and large industries is a critical part of an integrated supply chain which is vital to improving the overall efficiency and productivity of freight transport in Tasmania.

The Rail Revitalisation Program aligns with associated intermodal and port infrastructure investment, specifically the Brighton Transport Hub and the Burnie and Bell Bay Port Reconfiguration projects.

### 2.4.1 The Brighton Transport Hub

The Tasmanian Government has funded and constructed the \$78 million intermodal transport and freight distribution hub at Brighton, north of Hobart. Once fully operational, TasRail's existing southern rail terminal will be relocated from Macquarie Port. The currently constrained operating environment at Macquarie Point means that volume growth is problematic and the road-rail interface is much less efficient than that which has been established at the Brighton Transport Hub.

In June 2011, TasRail was appointed the Operator of the Hub. This provides an opportunity for TasRail to become much more active in the transport logistics market by developing stronger associations with transport logistics service providers and to directly interface with customers' warehouse facilities. The Hub will also presents the opportunity to provide freight services to smaller transport operators who have previously not used rail.

The design of the new rail terminal will facilitate longer trains with reduced shunting and a more efficient interface with customers. This is consistent with TasRail's objective to increase intermodal volumes and achieve a reliable 24 hour service turnaround between the Brighton Transport Hub and the northern ports. This reduced transit time will make northbound rail freight available to service more frequent shipping schedules, particularly same day sailings across Bass Strait. The resultant reduced transit times, combined with reduced transaction times at Brighton and Burnie, will also provide substantially improved utilisation of locomotives and wagons, thereby reducing costs and enabling rail freight rates to be more competitive as compared to road transport. Importantly, the direct customer-rail interface at Brighton removes a traditional disadvantage for intermodal rail operations (i.e. the double-handling between road and rail).

#### **2.4.2 Burnie Port Reconfiguration**

TasRail is working actively with TasPorts and Toll Tasmania to develop modern terminal arrangements at Burnie Port to complement the terminal arrangements at the Brighton Transport Hub. In addition to port precinct efficiencies (improved road and rail logistics and eased congestion), this will capitalise on operational efficiencies that will flow from the Brighton Transport Hub – specifically a 24 hour operational turn-around time for train services. The ability for rail to enter new intermodal market segments is predicated on efficient interfaces. TasRail has already recommenced rail operations between Burnie and Launceston (after an absence of more than a decade) and the planned improvements at Burnie will also facilitate an expansion of the Burnie-Launceston services.

The Australian Government has recently committed \$4 million to fund Stage 1.2 and 1.3 of the planned reconfiguration of Burnie Port, which includes the redevelopment of the southern railyard and the creation of a high productivity transport link from the southern railyard to the existing shipping terminal. Negotiations are currently well advanced to secure a private sector commitment of \$2 million.

#### **2.4.3 Bell Bay Port Reconfiguration**

Similarly, TasRail is working actively with TasPorts to improve the road-rail-port interface at Bell Bay. This project will facilitate improved transport interfaces between producers, direct road connections, port facilities and rail to enable a far more responsive approach to the changing international shipping arrangements at Bell Bay. A direct rail connection onto the wharf at Bell Bay will remain; however, this will also be augmented by a multi-purpose freight loading terminal at George Town, connected by a direct B-double capable road link. The George Town terminal will be designed to undertake the loading and unloading of both container and forestry products. The main objective for this project is to provide an efficient, rail-based 'land bridging' operation to better link Bell Bay's heavy industrial producers with their markets in the absence of a direct international container shipping service to Bell Bay. This project is fully funded by a combination of Australian and Tasmanian Government funding and the Project Proposal Report to be submitted for final approval is currently being finalised.

### 3. Problem Identification – Tasmanian Rail Network Infrastructure

Tasmania has a long history of rail transport as part of its land freight system (refer Annexure 4 – Historical Overview of the Tasmanian Rail System). From an infrastructure perspective, the relative contribution of the rail system to the State's freight task has been impeded by significant investment by all three levels of government in the road network (delivering successive higher productivity outcomes) while at the same time exacerbated by continued under-investment in the rail network by consecutive owners.

The deteriorated condition of the Tasmanian Rail Network infrastructure and more generally the unique operational challenges of the network (short haul distances, tight curves, steep gradients) have been well documented over a long period of time. Addressing these issues is complicated by the synergy required between the rail network infrastructure, above rail infrastructure (wagons and locomotives) and the business strategy aimed at attracting freight customers to rail transport. However, a fully integrated rail business model such as the one that TasRail operates within provides the ideal opportunity to address the shortcomings of the past.

TasRail was established in 2009 following the acquisition of Pacific National Tasmania's assets by the Tasmanian Government. For the first time in the State's history, all of the rail infrastructure assets and train services operations were brought together under common ownership. This has provided a unique opportunity for the revitalisation of rail transport as part of an efficient and integrated land transport system in Tasmania (refer Annexure 2 - Tasmanian Rail Revitalisation Program).

Upon TasRail's establishment and following review of the existing service operation and infrastructure, the most fundamental issues identified to be addressed related to network (and also to a large extent operational) safety and service reliability. Poor performance in these key outcomes is evidenced by the number and nature of derailment events and the resulting reaction from the market with the transfer of the freight task to road.

The high costs associated with maintaining the rail infrastructure to mitigate the risk of derailment events were not being met through historical investment, nor through recurrent maintenance spend – creating a circular and deteriorating cycle. Reduced operational revenue through the loss of custom added to this spiral. The historical lack of maintenance investment is the fundamental underlying cause of the current network related issues. It should be noted that Tasmania is not alone in this regard and that the same issues were faced by the ARTC prior to developing a single consistent national network.

Contrary to the gloomy history described above, an excellent early sign of the positive effects that the improvements in infrastructure condition and other operating parameters are delivering is that of TasRail's insurance arrangements.<sup>7</sup>

*[Reference to insurance arrangements has been removed for commercial in confidence reasons. However Tasrail has achieved a 36 per cent reduction in insurance charges].*

This example is provided not so much to present the quantum of the very modest savings, but to demonstrate the very real improvements to the network condition that are being delivered, and the consequential confidence in the work that is being undertaken.

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<sup>7</sup> A comprehensive analysis of the outcomes of the current infrastructure investment is included at section 2.3.

Based on the current and future freight task, transit time requirements are not necessarily the primary issue for customer attraction and retention, however even incremental transit time improvements have a positive effect on TasRail's asset utilisation/productivity and hence commercial viability and cost competitiveness. Ultimately, this will enable TasRail to reduce the Tasmanian Government's ongoing network maintenance grant.

### **3.1 Underlying Causes Primary Issue 1. Rail Safety and Reliability**

Primary causes of poor safety and reliability outcomes are:

- Poor formation due to lack of ballast depth, poor drainage and poor geometry (especially insufficient cant - the „slope' of rail inward on curves) and difficult alignment (the Tasmanian Rail Network is characterised by many tight curves and steep grades).
- Excessive track buckling in hot weather. There were 108 track buckles in the summer of 2009-10, largely due to:
  - poor stress management – all rail, with the exception of the Melba Line, is continuously welded which is rare for a narrow gauge railway with very tight curves; and
  - poor maintenance techniques – previous rail network operators had no recognised track standards applied to the network and had inadequate engineering support.
- Excessive broken rails due to:
  - poor rail welds causing numerous rail breaks. TasRail has identified the primary cause as being a lack of standards and training by former rail network operators; and
  - near life-expired rail.
- Poor defect inspection and response regime – largely resulting from inadequate standards coupled with historical poor management and cultural practices.

### **3.2 Underlying Causes Primary Issue 2. Costs Associated with Rail Maintenance**

Current estimates of rail maintenance costs per track kilometre are approximately \$27,000/track kilometres per annum. This is primarily due to the above issues driving poor safety and reliability outcomes, and hence additional costs to mitigate those outcomes.

A priority activity undertaken by TasRail on establishment was a detailed engineering assessment of the rail infrastructure to identify track deficiencies. Prior to the establishment of TasRail, a „metre by metre' inspection of the entire network was previously undertaken by Tasmanian Rail Management Branch of the Department of Infrastructure, Energy and Resources to fully establish the extent of the problem. This condition assessment was undertaken by specialist rail consultants Coffey Rail. Following this, a comprehensive database and associated system to capture track condition and works undertaken was also established by Coffey Rail. This was subsequently reviewed by the Australian Rail Track Corporation (ARTC) at the request of the Australian Government on the basis of expenditure requirements versus business opportunities, particularly with respect to the AusLink Rail Network. This review recommended that funding for planned works on the non-operational Wiltshire and Karanja Lines be instead diverted to the main Hobart to Burnie Line (the Western and South lines combined), consistent with the major freight activity opportunities on that corridor. The ARTC's recommendations were subsequently developed into an integrated works program by AECOM which has been the basis of the previous Rail Rescue Package and current Nation Building 1 Program. The results of these assessments show

that a broader rectification program is required than that which is possible under the current funding arrangements. The works undertaken since TasRail's establishment have been programmed in the context of available funds at the time, the ability to undertake 'future proofing' works wherever possible, whilst at the same time combining the most critical needs with a longer-term view of the business and therefore the network.

Following the excessive heat buckles in 2009-10, an early decision made by the TasRail Board was to install concrete sleepers on the tightest curves of the network. The initial focus for concrete sleeper insertion has been to eliminate the inherent derailment risk caused by heat buckles on tight curves – albeit there are insufficient funds in the current program to fully complete this work. There is also a consequential ongoing productivity benefit as a properly constructed concrete sleeper track inherently enjoys a significantly lower maintenance cost.

This submission is for rail infrastructure capital funding beyond the term of the existing Nation Building 1 Program that expires on 30 June 2014. Ongoing funding is required to ensure that the Tasmanian Rail Network is positioned in the long term to deliver benefits for Tasmanian industry and freight users by building on the work undertaken so far. The infrastructure funding provided to date, combined with the Tasmanian Government funding commitments, has stimulated the freight industry to again view rail as a key freight transport provider in the State. The long-term objective is to make rail freight operations in Tasmania sustainable by:

- Raising the average condition of the track network so that the recurrent costs of managing the asset are substantially less than the current cost.

Works to reduce recurrent maintenance costs include relaying approximately 290 kilometres of near life-expired track (anticipated cost \$46.8 million) and a comprehensive concrete re-sleeper program between Burnie Port and the Brighton Hub (Western and South lines), a total line length of 360 kilometres.

The current works program includes concrete sleeper replacement of 70 kilometres of rail track (100,000 concrete sleepers) at a total cost \$47 million. This will address around 20 per cent of the total line length between Burnie Port and the Brighton Transport Hub.

The full concrete sleeper replacement will comprise replacing a further 409,000 sleepers, relaying 290 kilometres of rail track. The estimated cost of this program is \$192.2 million. Following the completion of the concrete sleeper replacement program the expected future maintenance cost will be on average \$10,000/track kilometre per annum.

In addition to the concrete re-sleeper program, a steel re-sleeper program is scheduled for the Melba, Bell Bay and Fingal lines. In total 225,740 steel sleepers will be inserted at an estimated cost of \$34.2 million. It is planned for steel sleepers recovered from the Burnie Port to Brighton corridor to be reused on these lines.

- Improving the efficiency and capability of the network.

This submission seeks to capitalise on the sound investments made by both the Australian and Tasmanian Governments on both Below Rail and Above Rail improvement activities. In the context of the Tasmanian freight environment, it has been recognised that efficient rail freight outcomes can only be possible with a very integrated Above Rail and Below Rail investment program, designed to enable the rail system to achieve its natural advantages by substantially increasing freight volumes.

Further, it has been recognised that for a short-haul railway to be efficient and responsive to customer needs, there needs to be efficient interfaces with the road and shipping modes. These important interfaces have been addressed through targeted investments at the ports of Burnie and Bell Bay and the Brighton Transport Hub. Interestingly, road transport suffers the same modal transfer issues with ports in Tasmania as does rail (and in some cases more so). The modal interface improvements at Brighton, Burnie and Bell Bay will effectively place rail in a more advantageous position compared to road with respect to providing a streamlined transport solution for customers.

- Increasing revenues through higher freight patronage arising from improved reliability, improved competitive position and improved consistency of service.

Nationally, operation and maintenance of rail infrastructure on the Defined Inter-state Network (DIN) is predominantly under the ARTC. ARTC is responsible for, amongst other things, capital investment and infrastructure maintenance. The Tasmanian Rail Network does not form part of ARTC's operational responsibilities, and should therefore be considered for Australian Government funding on a separate, but consistent basis.

## 4. Solution Selection

For the rail infrastructure component of the Rail Revitalisation Program, the nature of the problem identified relates to the condition of the rail network (i.e. asset based).<sup>8</sup> As such options other than asset renewal have not been considered in the submission. The submission does; however, address likely implications of funding not being secured in terms of network deterioration on the key attributes of safety, transit time, productivity and reliability. The submission also identifies the safety and environmental costs of transferring the existing rail task to road.

The identified works program has been developed on the basis of demonstrated outcomes from the current works program. It is therefore expected that the works program identified in this submission will result in continued improvements in safety and reliability, with associated transit time/productivity outcomes and be able to deliver these improved outcomes in the context of the growing rail freight market. These are illustrated in charts 9 to 13 in section 4.1.

TasRail has also projected a significant reduction in the rail maintenance cost based on the proposed concrete sleeper replacement and re-railing programs. The target maintenance cost of \$10,000/track kilometre per annum is based on the use of concrete sleepers.

In place of creating additional capacity, the Rail Revitalisation Program targets liberating the existing network usable capacity through the improvement of overall network reliability. However, works being currently being undertaken, and those proposed, on the rail network are being done so with a view for the future. Works such as concrete resleepering, replacing life expired rail and bridge refurbishments/replacements will be capable of increased axle loads (up to 25 tonnes). However, there will remain a number of bridge structures that will be limited to current axle load constraints as these assets are not included within the proposed program of works. A discussion on improving network capacity utilisation versus increasing network capacity is included in Annexure 3.

### 4.1 Preferred Option: Rail Infrastructure Capital Initiative

Completion of the Rail Infrastructure Capital Initiative component of the Rail Revitalisation Program will include the following key works:

- Concrete re-sleepering of the network between Burnie Port and the Brighton Transport Hub (the Western and South lines).
- Selective insertion of steel sleepers on the Melba, Bell Bay and Fingal lines (in total 225,740 steel sleepers will be inserted, many of which will be reused from the Western and South lines).
- Relaying approximately 290 track kilometres of life-expired rail track across the entire network, excluding the Bell Bay Line (the rail on this line is in sound condition).
- Strengthening of bridges, removal of lead paint and culvert/bridge replacements, predominantly on the Western, South and Melba lines.
- Major formation and drainage rectification across the entire network.

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<sup>8</sup> Other components of the Rail Revitalisation Program and the issues they address are discussed in Annexure 2 – Tasmanian Rail Revitalisation Program.



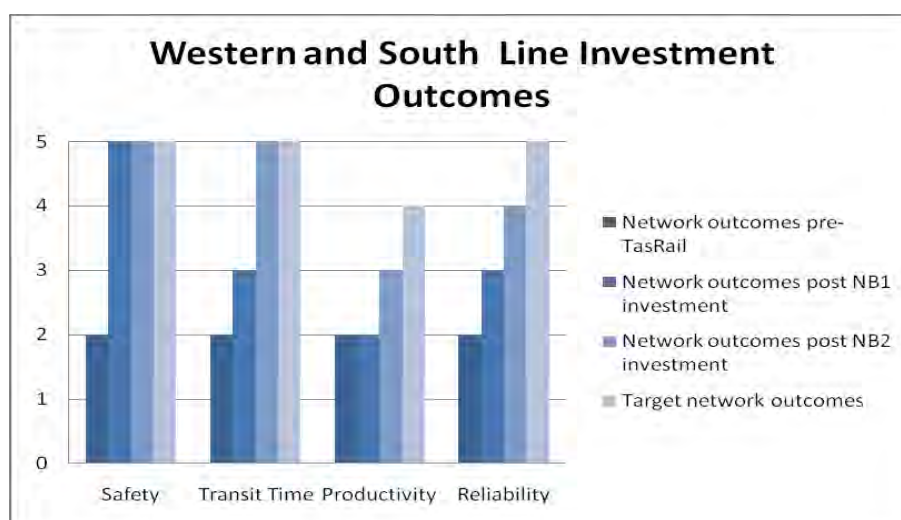
TasRail has prepared a detailed works and expenditure schedule on a line segment basis. Table 2 sets out in summary the allocation of funding across line segments by works.

**Table 2: Rail Infrastructure Capital Initiative Completion Program**

Rail Infrastructure Capital Initiative Completion Program (\$325 million)							
Line Segment	Concrete Sleeper Program	Steel Sleeper Program	Relay Life-expired Rail	Drainage, Tamping and Formation Works	Bridges	Rail Joint/Defect Removal	Rail/Road Crossings
Western Line	\$95.6 million	Nil	\$14.1 million	\$5.1 million	\$7.7 million	Nil	Nil
South Line	\$96.6 million	Nil	\$15.4 million	\$5.6 million	\$8.4 million	Nil	Nil
Bell Bay Line	Nil	\$11.2 million	Nil	\$2.2 million	\$3.4 million	Nil	Nil
Fingal Line	Nil	\$10.0 million	\$4.7 million	\$1.7 million	\$2.6 million	Nil	Nil
Derwent Valley Line	Nil	Nil	\$1.2 million	\$0.5 million	\$0.7 million	Nil	Nil
Melba Line	Nil	\$13.0 million	\$11.4 million	\$4.1 million	\$6.2 million	\$1.6 million	\$0.4 million
Total	\$192.2 million	\$34.2 million	\$46.8 million	\$19.2 million	\$29.0 million	\$1.6 million	\$0.4 million

On a per line basis, these outcomes are illustrated in the following charts.

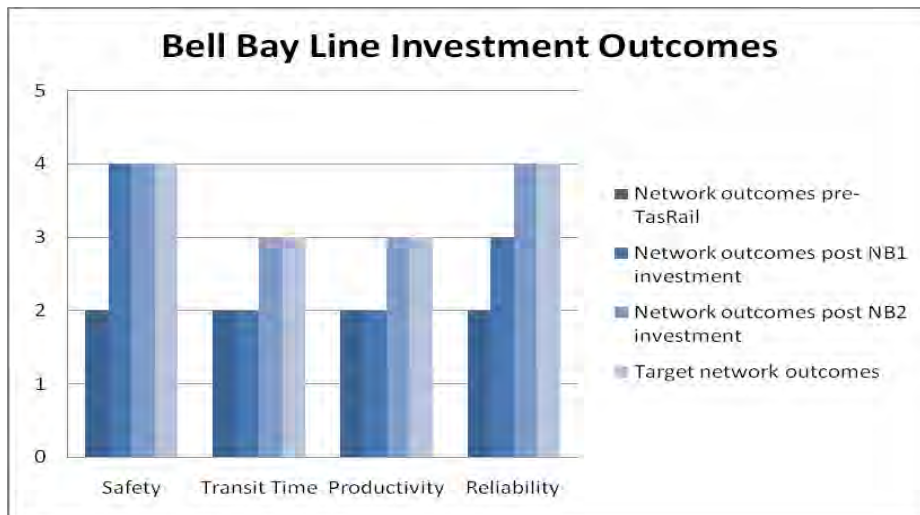
**Chart 9: Western and South Line Investment Outcomes**



At the end of the current investment on the Western Line (\$89.2 million) and South Line (\$83 million), on a 'fit for purpose' scale the lines will be safe, have marginal (around ten per cent) transit time improvement and significant productivity and reliability improvements. Although the transit time improvements are marginal in real time improvements, they are significant in effect through much improved asset utilisation and the ability to service new markets. After the proposed works have been undertaken (\$122.5 million and \$126.0 million for the Western and South lines respectively), existing safety levels will be retained and there

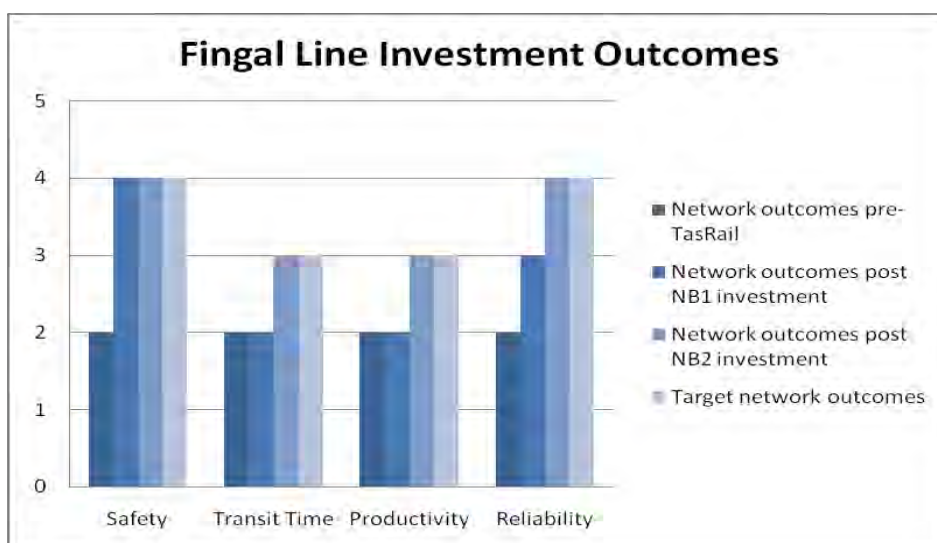
will be some further transit time improvement. Improvements in productivity are largely based on reduced track maintenance costs associated with concrete sleepers and due to increased overall freight volumes delivering improved economies of scale. An incremental improvement in reliability is largely due to track buckles being eliminated by concrete sleepers.

**Chart 10: Bell Bay Line Investment Outcomes**



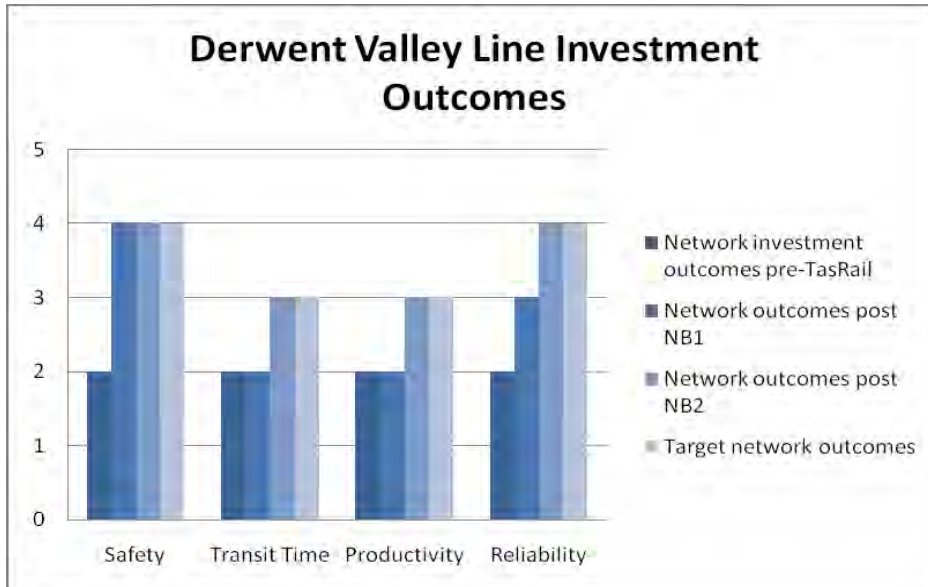
The Bell Bay line was constructed during the early 1970's and, unlike the other network lines, does not contain large sections of near life-expired rail. At the end of the current investment on the Bell Bay Line (\$2.5 million), on a 'fit for purpose' scale it will be safe (recognising low projected traffic levels), but will not deliver transit time or productivity improvements, and will be only marginally more reliable than was previously the case. On this basis it is recommended to defer additional funding for this line until significant additional volumes eventuate (i.e. HardRock Coal), at which time the proposed program for an additional \$16.8 million would be necessary.

**Chart 11: Fingal Line Investment Outcomes**



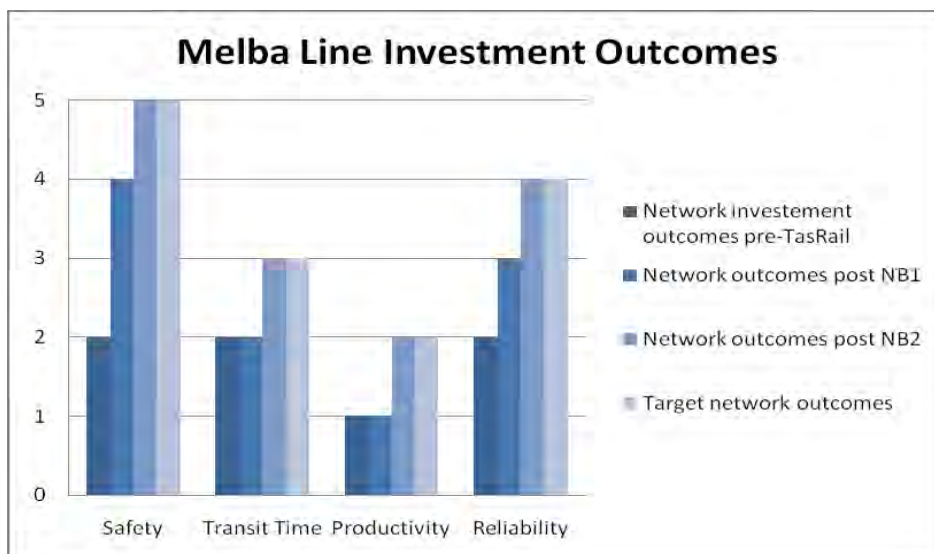
Works on the Fingal Line have been limited to re-sleepering, welding and formation works, and some bridge works. At the end of the current program (\$5.7 million), the line will be 'fit for purpose' based on current traffic levels but will continue to require ongoing high maintenance costs. This line segment contains a significant portion of near life-expired rail (around 74 per cent of the total line). Therefore, as a minimum, works associated with rail replacement (\$4.7 million) will be undertaken as a priority. Consistent with the Bell Bay Line, It is recommended to defer additional funding on this line until significant additional volumes eventuate (i.e. HardRock Coal), at which time the proposed program for an additional \$14.3 million would be necessary.

**Chart 12: Derwent Valley Line Investment Outcomes**



Works on the Derwent Valley Line to be completed under the current program will total \$1.1 million, consisting mainly of re-sleepering works. However, much of the rail, 98 per cent on this line, is near life-expired. As a consequence it is recommended that as a minimum works associated with rail replacement (\$1.2 million) be undertaken as a priority on this line, with additional works (\$1.1 million) able to be deferred for future programs.

**Chart 13: Melba Line Investment Outcomes**



Works on the Melba Line have been extensive and have included re-sleepering, significant drainage works and the removal of mechanical joints by welding. At the end of the current program (\$15.7 million) the safety and reliability of the line will have been incrementally improved. Similar to the Fingal Line, much of the rail on the Melba Line is near life-expired (around 46 per cent). It is on this basis that the forward program of works (\$36.7 million) continues in an effort to optimise costs associated with rail replacement in conjunction with re-sleepering, rail welding and drainage works.

## 4.2 Prioritisation of Proposed Funding

This submission identifies the total rail infrastructure work program assessed by TasRail as necessary to underpin the viability of rail as an efficient transport option in Tasmania.

A key challenge is to be able to program the works in a manner that balances the critical timing needs for asset replacement in many cases (i.e. those works that are of a safety nature), against those that will deliver operating improvements by way of network reliability, transit time improvement and/or improved productivity. A further complexity is introduced when one considers the optimum delivery method for rail replacement, concrete re-sleepering and major formation works is to undertake all of these works packages in an integrated manner. Finally, consideration needs to be given to TasRail and its contractors' capacity to deliver the works over the Nation Building 2 Program timeframe. In consideration of the above, it is proposed to deliver the entire program of works in the following manner.

**Table 3: Prioritisation of Rail Infrastructure Capital Initiative Works Program**

Nation Building 2 Program (\$240 million)							
Line Segment	Concrete Sleeper Program	Steel Sleeper Program	Relay Life-expired Rail	Drainage, Tamping and Formation Works	Bridges	Rail Joint/Defect Removal	Rail/Road Crossings
Western Line	\$68.8 million	Nil	\$14.1 million	\$5.1 million	\$7.7 million	Nil	Nil
South Line	\$72.2 million	Nil	\$15.4 million	\$5.6 million	\$8.4 million	Nil	Nil
Bell Bay Line	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Fingal Line	Nil	Nil	\$4.7 million	Nil	Nil	Nil	Nil
Derwent Valley Line	Nil	Nil	\$1.2 million	Nil	Nil	Nil	Nil
Melba Line	Nil	\$13.0 million	\$11.4 million	\$4.1 million	\$6.2 million	\$1.6 million	\$0.4 million
Total	\$141.0 million	\$13.0 million	\$46.8 million	\$14.8 million	\$22.3 million	\$1.6 million	\$0.4 million

Replacement of near life-expired rail across the network (excepting the Bell Bay Line which is comparatively new construction) is a priority project. In total \$46.8 million is allocated to rail replacement in this submission.

Where rail replacement coincides with the requirement for concrete or steel sleepers and associated formation works, those works would also be undertaken concurrently.

On lines where rail replacement is required, but concrete sleepers are not programmed then generally only rail replacement will be undertaken (for example the Fingal and Derwent Valley lines). The exception to this is the Melba Line where the full program of works has been prioritised as these works are of a safety-critical nature. Valuable gains in improving the quality of the track on this line have been made in recent years.

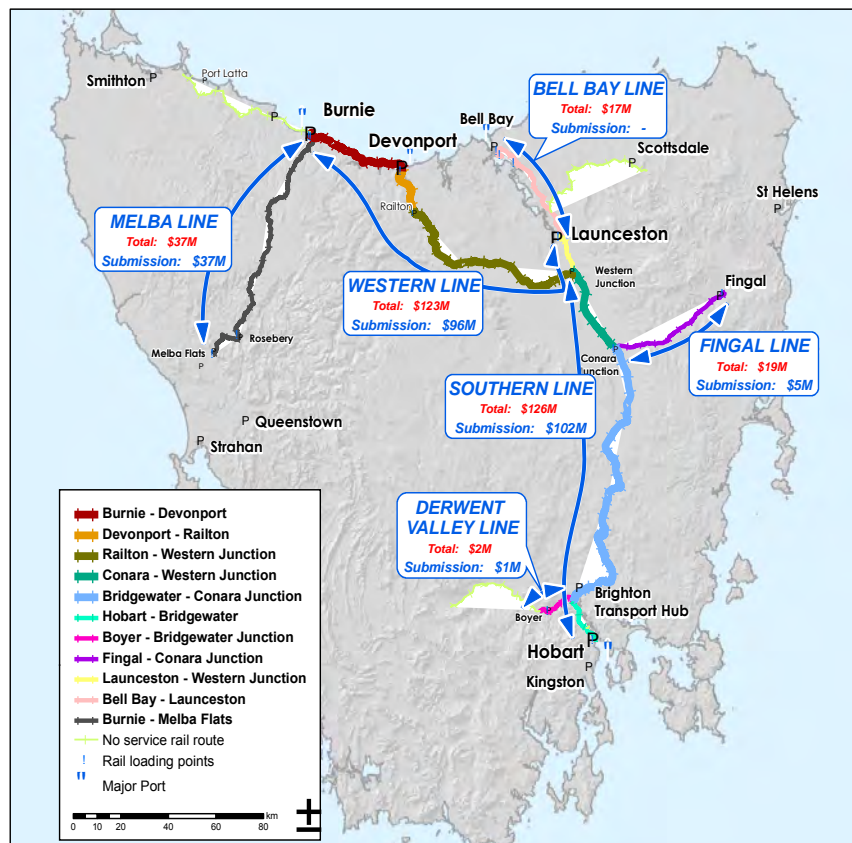
Current demand for rail services at Bell Bay for shipping is limited. The expected rail freight volumes for the short to medium term will be limited to product moving to and from the major industrial producers at Bell Bay to the ports of Burnie and Devonport for subsequent export, and the potential Hardrock Mine coal transport from Fingal to Bell Bay Port. On this basis, an internally-funded general maintenance and renewals program will continue, commensurate with the freight task. Only a relatively minor portion of the Bell Bay Line contains near life-expired rail. This approach will need to be reviewed in the event that the HardRock Coal freight task materialises.

With the exception of rail replacement, works on the Fingal Line have been deferred at least to the point that the proposed HardRock Mine commences in full production. Even at one million tonnes per annum it is envisaged that only internally-funded general maintenance and renewals are required in the short to medium term. Therefore, any capital works on this line will be programmed towards the end of the overall program.

Similar to the Fingal Line, with the exception of the replacement of near life-expired rail, works on the Derwent Valley Line have been deferred and will be programmed towards the end of the overall capital program.

Chart 14 shows the identified and prioritised Rail Infrastructure Capital Initiative by line segment.

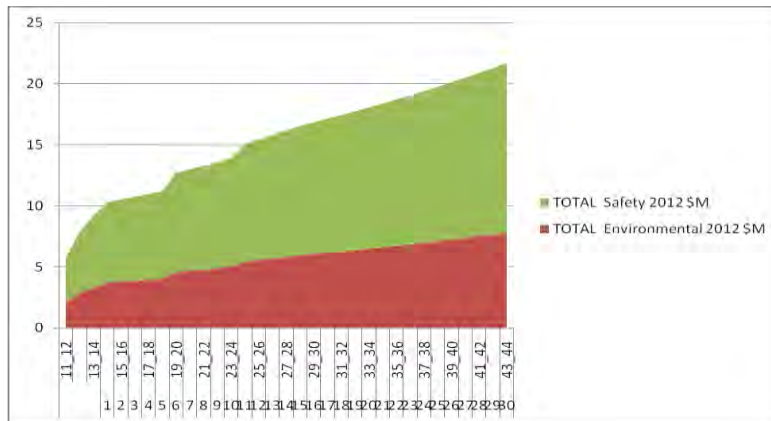
**Chart 14: Identified and Prioritised Rail Infrastructure Capital Initiative**



### 4.3 Safety and Environmental Benefits of the Projected Rail Freight Task

The Benefit Cost Analysis set out in section 4.4 identifies the significant social and environmental benefits of the current and projected rail freight task (or the cost of that task transferring to road). These benefits are quantified in Chart 15 below.

**Chart 15: Estimated Safety and Environmental Benefits (\$ Million)**



### 4.4 Solution Evaluation

TasRail engaged consultants Pitt&Sherry to undertake an independent benefit cost analysis of the \$325 million Rail Infrastructure Capital Initiative. This analysis confirms that the investment program is robustly cost effective under a range of scenarios, with Benefit Cost Ratios (BCRs) ranging between 2.0 and 1.4 at 4 per cent real discount rate. Internal rates of return vary between 6.6 per cent (Scenario 1) and 9.6 per cent (Scenario 3).

When the overall investment is broken down by line, project cost-effectiveness varies as described below. In all cases, the main North-South line renewal (Burnie Port to the Brighton Transport Hub and extending along the Derwent Valley Line) remains very cost effective (BCR 2.0 – 2.2) at 4 per cent real discount rate. Internal rates of return also vary, reaching 18 per cent on some line segments in Scenario 3.

Three scenarios have been prepared to „stress test’ the benefit cost analysis:

Scenario 1: A conservative freight outlook (no new major mining projects or forestry activity) and high rail freight retention in the base case through the entire period of analysis.

Scenario 2: The same conservative freight outlook as Scenario 1, but applying TasRail’s commercial judgment regarding line closures in the base case (due to poor commercial viability).

Scenario 3: A more optimistic freight outlook, involving two prospective minerals projects proceeding, plus a modest recovery in the forestry freight task.

A discussion on the projected rail freight market share is included in Annexure 3.

The conservative freight outlook on the road/rail corridors served by TasRail (described as the 'foundation' freight task in Scenario 1 and Scenario 2) has been sourced from the Department of Infrastructure, Energy and Resources, in consultation with TasRail.<sup>9</sup> The 'base case' for each scenario assumes completion of the current program of capital works, including above rail investments, by the end of 2013-14, and describes the expected evolution of each line/corridor without further rail renewal (but assuming ongoing contributions from the Tasmanian Government towards rail maintenance). The 'project case' describes the impact of the planned 'rail renewal' investments for the network as a whole and by line, with capital works completed during the five years from 2014-15 onwards.

Generally, benefits from the project case arise in proportion to the share (and absolute size) of the contestable freight task that is carried by rail in each scenario, including capture of new freight tasks and retention of existing tasks. This is because there is a clear reduction in freight operating costs and associated externalities per ntkm in operating rail when compared to road freight operations in Tasmania. Therefore, the benefit cost analysis improves both as a function of growth in the freight task but also when risks of line closure due to inadequate commercial performance are included in the analysis.

#### 4.4.1 Benefit Cost Analysis – Detail Scenario 1

Scenario 1 is a 'whole of network' analysis. This analysis compares the investment cost (\$325 million in total) of completing the renewal of the Tasmanian Rail Network with the economic benefit of performing a given freight task on rail rather than road. For example the quantity of freight carried on rail under the project case in 2019-20 is 671 million ntkm, while the quantity under the base case is 470 million ntkm. The benefit in that year is the lower cost of carrying the 201 million ntkm difference on rail rather than road. *[Reference to carrying costs on road and rail have been removed due to commercial in confidence reasons]*. A small additional benefit is the reduced network maintenance per kilometre cost that results from the renewal works (although these benefits only apply in the years where the line is open in the base case).

The foundation, project and base cases under Scenario 1 are outlined below.

**Foundation freight task scenario:** This scenario projects an increase in rail's market share of the contestable freight task over the years 2012-13 to 2014-15 based on network and above rail performance improvements resulting from current investments under the holistic Rail Revitalisation Program. Thereafter, market share remains steady, however total freight task steadily increases as projected rates of growth, by commodity/freight type are applied. The average growth rates are 2.3 per cent until 2030 and 1.9 per cent thereafter. There are no 'new tasks' under this scenario, rather gradual increases in the existing freight tasks. The foundation task is considered conservative.

**Base case:** The freight task under the base case mirrors the foundation task for 2014-15 and 2015-16 (project years 1 and 2). TasRail expect the network to recommence deterioration in 2016-17 in the absence of the project investment. The accompanying drop in network performance sees a gradual, but increasing loss of freight custom under the base case. The exclusions to this are the Melba and Derwent Valley Lines; and the section of the Western Line between Railton and Devonport, where current freight tasks are retained through the entire period; and retaining 50 per cent of the Burnie to Brighton intermodal task.

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<sup>9</sup> Note that the full analysis of road/rail competition is contained in Scenario 3, with a simplified 'rail only' task described in Scenarios 1 and 2.

**Project case:** The project case mirrors the foundation case over the first five years as the renewal takes place. On completion of the project, as a result of improved network performance, market share is increased on corridors with large and mixed freight tasks, and retained on lines with less likelihood of market share growth. In Year 11, further increase in market share is applied as it is anticipated that rail's competitiveness will have increased relative to road on a ntkm basis with likely increases in fuel, labour (driver) and carbon costs impacting less heavily on rail than road. The project case freight task is considered conservative, and therefore is plausible, for two key reasons. Firstly, it is based on a foundation scenario that does not introduce any new tasks (although new mining tasks for instance are quite likely). Secondly, although there is some gain of freight custom by rail at the expense of road, the rate of gain is modest. TasRail management is confident that the actual share of the freight task will be larger than projected under Scenario 1.

The foundation, project and base cases under Scenario 1 are shown in the chart below:

*[Reference to scenario analysis has been removed for commercial in confidence reasons].*

## **4.5 Claim for Australian Government Funding**

Ultimately, there are only three sources of funding for rail infrastructure – direct user charges, borrowings by TasRail or government investment. This section of the submission considers each of these funding sources in turn; and, makes the claim for the full cost of the proposed projects in funding from the Australian Government.

### **4.5.1 Direct User Charges**

The Tasmanian Rail Network (excluding the Melba Line which was then privately owned by Pacific National) was declared Open Access by the Tasmanian Government on 2 October 2007. The access arrangements for a ten year period were set out in the Rail Maintenance and Management Deed (RMMD) as part of the Rail Rescue Package negotiated between the Australian and Tasmanian governments and Pacific National Tasmania. Within these access arrangements, funding contributed by both the Australian and Tasmanian governments through the Rail Rescue Package was excluded from network cost recovery charges levied on users. Specifically, the then rail network manager<sup>10</sup>, Pacific National Tasmania, was not permitted to recover the costs from any third party to the extent that those costs were met by government contributions. That is, government funding of the rail infrastructure rehabilitation does not form part of the „cost base’ to be recovered from the market through direct user charges.

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<sup>10</sup> The duties and obligations of the rail network manager are set out in the *Rail Infrastructure Act 2007*.



When the Tasmanian Government acquired Pacific National's Tasmanian operations in 2009, the rail network access arrangements, including charges to be applied to users contained within the Rail Maintenance and Management Deed were rolled-forward by the Tasmanian Government in a 'transitional access framework'. At that time a review of the access framework was identified as a future action to be undertaken – the Tasmanian Government and TasRail's immediate priority being the safe operation and use of the network and rebuilding capability within the business to maintain market share.

There is no capacity within TasRail's existing market arrangements (some of which, in particular relating to the bulk market, are under long-term contract) to increase user charges. Intermodal rates, which face strong competition from road transport are constrained by road pricing in order to remain competitive. However, there is an expectation that access charges for any new bulk segment customers will recoup additional infrastructure investment required to meet their freight task. There is no investment of this nature included in this funding submission.

In a similar manner, there is no capacity to gain better utilisation of the existing assets beyond an increase in the freight market share through the operation of regular passenger services. Passenger rail services between Hobart and Launceston were terminated in the late 1970s based on low patronage and competition from road services. The cost of upgrading the existing rail line to a standard capable of supporting fast passenger rail is now significant and would include both line upgrades and the reinstatement of facilities required to support a modern and attractive passenger rail service, including stations and rolling stock. It is unlikely there is sufficient passenger demand to support this level of investment as the Midland Highway carries relatively low volumes of passengers compared to urban areas, or other parts of the AusLink Network, and these volumes are forecast to remain comparatively low. In any case this type of investment is outside the scope of this funding submission.

#### **4.5.2 TasRail's Capacity to Internally Fund Proposed Projects**

Since it was established in 2009, TasRail has operated in two distinct business segments, Below Rail and Above Rail. The Below Rail segment relates to the management and operation of the Tasmanian Rail Network and related infrastructure, including all maintenance and capital programs. The Above Rail segment relates to the provision of rail freight services in Tasmania, including the operation of container terminals. In addition, TasRail owns and operates the Burnie Port bulk storage and shiploader facility.

The Above Rail segment earns revenue from rail customers which is applied to paying the Rail Network Access Charge (or internal arm's length transfer price) and Above Rail operating costs. While the Tasmanian Government has made a \$130 million equity commitment to locomotive and wagon replacement and renewal, TasRail has identified ongoing sustaining capital requirement of \$7.5 million per annum beyond the current major replacement program. TasRail estimates that revenue from rail customers will be sufficient to meet this sustaining capital requirement within five years; however, this will mean that this operating surplus is not available to reduce the rail maintenance operating grant through an increase in access charges, or be applied to Below Rail capital renewal. At this time, the position of the Tasmanian Government is that operating surpluses will be used to progressively reduce the operating subsidy (provided for recurrent track maintenance and renewals), and any requirement for Above Rail sustaining capital will be considered on a case by case basis by Treasury.

On the basis of this operating structure, TasRail's commercial goal is to operate the Above Rail segment on a commercial (self-renewing) basis and contain the level of the Below Rail maintenance loss within the Tasmanian Government operating grant of \$16.3 million per annum based on the current freight task and existing per kilometre maintenance costs. TasRail will continue to monitor efficiencies to work within this target, and wherever possible increase revenues to reduce the target by attracting new freight business on a commercial basis and by improving the cost recovery of the existing freight task.

At this time, TasRail does not have the borrowing capacity to contribute to the identified projects.<sup>11</sup>

#### **4.5.3 Tasmanian Government Investment in Rail Infrastructure**

TasRail's Below Rail segment provides rail network infrastructure on behalf of the Tasmanian Government on an open access basis. Consistent with the Tasmanian Government's objective for rail to be a viable part of the Tasmanian efficient land transport system, the network must be maintained at a sufficient standard to meet the current and future rail task in a safe and reliable manner. To support this objective the Tasmanian Government has provided substantial funding to TasRail and for the construction of associated infrastructure. Specifically, the Tasmanian Government has:

- Under the Rail Rescue Package, committed \$44.8 million over ten years toward rail track maintenance. This has increased to \$16.3 million per annum ongoing.
- Funded the purchase of Pacific National's Tasmanian operations.
- Provided \$11 million on TasRail's establishment as working capital to enable it to commence the rebuilding process.
- Provided \$130 million for capital funding for, amongst other things, locomotive, wagon and train control system replacement.
- Funded and constructed the \$78 million intermodal and freight distribution hub at Brighton, north of Hobart.
- Provided contributions towards rail-port interface enhancements at Burnie and Bell Bay.

#### **4.5.4 Australian Government Investment in Rail Infrastructure**

The Rail Infrastructure Capital Initiative component of the Rail Revitalisation Program identified in this submission is based on renewal or replacement of existing network assets – a consequence of a long period of underinvestment while the rail network was outside the ownership and/or control of the Tasmanian Government.<sup>12</sup> Similar to the anticipated ongoing subsidy for below rail operations, long periods of underinvestment in the rail network is not unique to Tasmania.<sup>13</sup>

As shown in chart 18, the main North-South and Western Lines of the Tasmanian Rail Network, linking Hobart and the three northern ports, forms part of the National Land Transport Network (formerly AusLink Network).

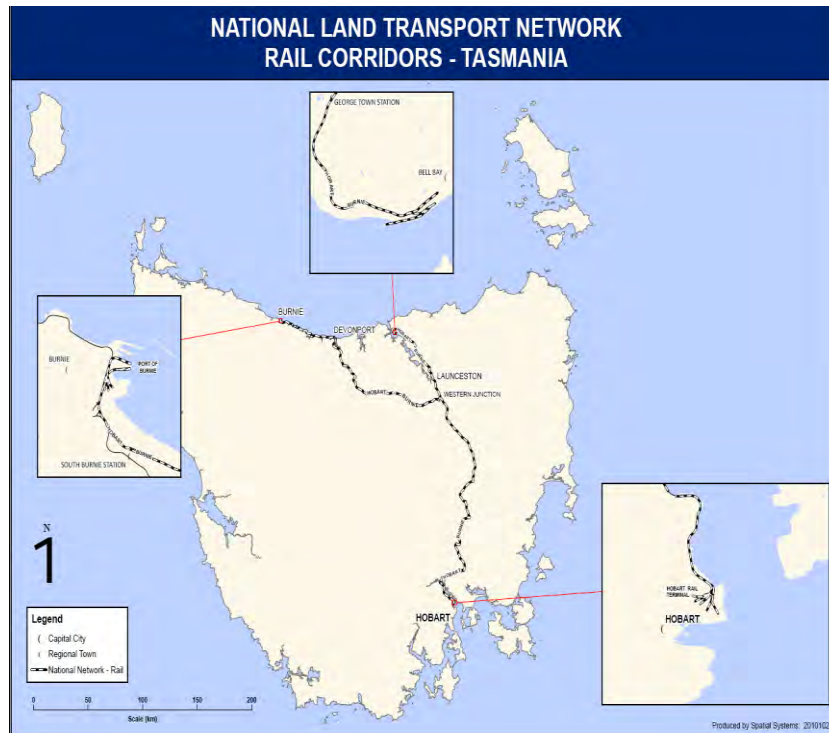
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<sup>11</sup> Based on estimated future cash flows, below rail assets were impaired in FY2011 by \$30.3 million.

<sup>12</sup> Including a lengthy period of ownership by the Australian Government as part of the Australian National Railways Commission (ANRC) between 1975 and 1997.

<sup>13</sup> A similar situation was faced by the ARTC in developing the National Network on mainland Australia.

**Chart 18: National Land Transport Network Rail Corridors - Tasmania**



Source: [www.nationbuildingprogram.gov.au/whatis/network](http://www.nationbuildingprogram.gov.au/whatis/network)

The National Network identifies transport and intermodal connections that are of critical importance to national and regional economic growth, development and connectivity. The National Network also identifies the road corridor that complements these rail lines.

Similar to the provision of capital funding to ARTC for other parts of the National Network, the Australian Government has previously provided funding for capital infrastructure renewal to enable the Tasmanian Rail Network to be open to rail users in a safe and reliable manner.

The Australian Government has previously committed \$78 million under the Rail Rescue Package and a further \$127.3 million in 2007 through election commitments to the Tasmanian Rail Network – of which \$106 million was allocated to projects on the National Network.

#### **4.5.5 Other Potential Sources of Funding**

Projects on the Melba, Fingal and Bell Bay lines may be eligible for funding under the Regional Infrastructure Fund (RIF) recently established by the Australian Government. The broad objectives of the RIF are to:

- Promote development and job creation in mining communities, and in communities which support the mining sector;
- Provide a clear benefit to Australia's economic development, and to investment in Australia's resource or export capacity; and
- Address potential capacity constraints arising from export production and resource costs.

Specifically, Stream 2 of the RIF funding provides for Economic Infrastructure Projects which includes critical rail infrastructure. Where the market is not able to fully support additional capital investment (substantial axle load improvements on the Melba Line may be one example), then TasRail will seek Stream 2 RIF funding for projects associated with the mining sector.

#### **4.6 TasRail's Capability and Capacity to Undertake the Identified Investment**

TasRail's investment program has been developed to strike a balance between preparing for future opportunities and maintaining a realistic assessment of current circumstances, both within the context of a limited budget.

Over the past two years, TasRail has developed internal project development and management capability and has proven that it is able to undertake detailed engineering analysis, project scoping and project delivery. It has done so in a difficult environment (i.e. delivering the rehabilitation program) requiring prioritisation of pressing infrastructure needs against a restricted funding framework.

TasRail has also developed internal rail infrastructure engineering expertise and has developed new track Construction and Maintenance Standards by developing a thorough understanding of the unique operating environment in Tasmania and integrating those needs within a standard engineering framework established by the Rail Industry Safety and Standards Board.

Since the establishment of the Tasmanian Government's Rail Infrastructure Branch in 2007, and subsequently the founding of TasRail in December 2009, more than \$200 million of rail infrastructure projects have been planned and almost \$150 million of those projects have now been delivered.

This engineering, project management and procurement capability has been developed from a 'zero base' as the previous owner's well established engineering expertise was based out of Melbourne and was removed from the business upon TasRail's establishment. With such a sound foundation in engineering know-how, project management expertise and contractor capacity and capability, TasRail is well positioned to successfully deliver the proposed program of works.

TasRail has also established a stringent procurement process to deliver the lowest cost for the solutions identified in section 4.1. The two largest components of the Rail Revitalisation Program are the concrete sleeper replacement and rail replacement projects (intended to be delivered concurrently to minimise cost and impact on operation of the network).

For the concrete re-sleeping program (which has commenced under the Nation Building 1 Program), TasRail initiated an international request-for-tender process to source concrete sleepers and has established a cost effective production and transport solution. TasRail has established a sleeper supply contract at prices comparable to steel sleepers which covers the capital investment program through until 2013-14 and is extendable into the future. These sleepers have a design rating of 25 tonne axle load.

Whilst the initial order of 100,000 sleepers failed to identify a suitable local (Tasmanian) production option, any subsequent tender process will again seek to explore whether the local production of concrete sleepers is possible.

Similarly, TasRail has sourced sound, second-hand 47 kilogram rail from ARTC which has been found to adequately satisfy TasRail's long term needs at around one third of the cost of new rail – including transport to Tasmania. The rail has been visually inspected, and rail profile and ultrasonic testing records have been provided by ARTC to attest to its condition. An efficient transport plan has been developed to enable TasRail to relocate rail to Tasmania at the lowest possible cost. To illustrate the detail considered in the initial procurement of this rail, individual rail lengths were maximised in order to optimise shipping and welding costs. The lengths of new rail are about half the length of that currently being procured from ARTC, meaning that welding costs of around \$200 per weld will be minimised. Reduced welds also translate into a reduction in potential failure points in continuously welded rail. It should also be noted that this rail is likely to have been otherwise uneconomic to even convert to scrap by ARTC due to the remote locations where it is currently situated and the cost of transporting it to a location for scrapping (based on current scrap steel prices). Effectively, the procurement strategy developed by TasRail as described above will save the Australian Government more than \$20 million by re-using assets that would otherwise have been scrapped.

With reference to Infrastructure Australia's recent report 'Improving Efficiency in Major Infrastructure Procurement', it is interesting to note that even recognising TasRail's relative 'immaturity' with respect to the development of its project planning and delivery resources, the approaches being undertaken are not inconsistent with those being recommended within the report. This no doubt reflects close engagement with the Australian Government, and TasRail's need to establish its capability from scratch, thereby developing and implementing contemporary procurement approaches (instead of being constrained by the inertia of past internal practices).

#### **4.7 Tasmanian Rail Network outcomes without proposed funding**

TasRail's expected network and customer outcomes without the proposed Rail Infrastructure Capital Initiative is captured in the Benefit Cost Analysis Base Case (refer section 4.4.1). In the absence of project investment (and without additional maintenance expenditure), TasRail projects that reliability, transit time and productivity will begin to decline, progressively shrinking the freight task. The key drivers are insufficient reliability (due to a high risk of derailments caused by sleeper failures and fatigued rail) and inadequate transit time on the Western and South lines to synchronise with shipping schedules. This scenario is included in the Benefit Cost Analysis as the Base Case.

## Annexure 1 - The Tasmanian Rail Network

The Tasmanian Rail Network consists of the railways defined in Schedule 1 Part 1 of the *Rail Infrastructure Act 2007*, being:

- Bell Bay Line (approximately 57 km running from the East Tamar Junction to Bell Bay);
- Derwent Valley line (approximately 71 km running from the Bridgewater junction to the railyard west of Maydena known as the „Florentine Rail Yard’). That part of the Derwent Valley Line running from Boyer to Maydena is currently non-operational.
- Fingal Line (approximately 55 km running from Conara Junction to Fingal);
- North-East Line (approximately 73 km running from Coldwater Creek junction to Tonganah). The North-East Line is currently non-operational.
- South Line (approximately 199 km running from the Hobart Rail Yard to Western junction).
- Western Line (approximately 259 km commencing at the Inveresk Railyard (the 2 km at the western end of the rail bridge on the North Esk River is non-operational) and running to Wiltshire via East Tamar and Western Junction). That part of the Western Line running from Burnie to Wiltshire (often described as the Wiltshire Line) is currently non-operational.
- Risdon Line (approximately 3 km running from Derwent Park to the former siding at the Risdon Smelter). The Risdon line is currently non-operational.
- The Melba Line (approximately 130 km running from the port at the City of Burnie to Melba Flats).
- The Hellyer Line (being the railway running from the Hellyer Mine site to the eastern boundary of the Melba Line at Moorey Junction). The Hellyer Line is currently non-operational.

This network is illustrated the map below.

The rail network dates from the late 1800’s and its alignment has changed little since. The network is a single rail line, narrow gauge (1067 mm) transport system and consists of a total of 632 route kilometres of operational lines and a further 213 kilometres of non-operational lines. The operational network extends from Hobart to Western Junction and then to Bell Bay Port in the north-east and to Burnie in the north-west. Connections are also provided to Fingal in the east and Boyer in the Derwent Valley. The Melba Line connects the west coast to Burnie. Across the operational track there are 355 bridges, 360 level crossings, 122 active road crossings, 2 tunnels and approximately 948 000 sleepers.

## **The Land Corridor**

The land corridor sits under the rail freight network and varies in width. As a general rule, the corridor is about one chain in width (1 chain = 66 ft or 20.12 metres). This adds a further complexity for the Tasmanian Rail Network as it means almost all rail maintenance vehicles need to travel on rail to work sites because of the lack of trackside access roadways (due to the narrow land corridor reducing the productivity of maintenance forces. The inherent low-maintenance characteristics of concrete sleepers means that this efficiency impairment can be negated). The land corridor is retained as Crown Land and leased to TasRail.

In addition, the land corridor under the former rail line between Melba Flats and Zeehan has been identified as having potential future significance for the transport of mineral ore concentrates from the west coast. This land corridor has been preserved for consideration of future rail requirements in addition to the currently non-operational lines.

## **Track Capacity – Speed and Load Capacity**

Track capacity (the length and weight carrying capacity of trains) is influenced by a number of factors. Significantly, Tasmania's difficult topography confines the speed and load capacity of the rail freight network, particularly creating the need for steep gradients (up to 1:40) and tight curves.

The single line rail network means that trains running in opposite directions are limited by passing loops. Passing loops on the rail freight network are typically 850 metres to 900 metres in length. Maximum train lengths, and hence the capacity of the rail freight network, is partially controlled by the length of the passing loops. The size of arrival/departure sidings, the number of crossing loops along the track, and the relative location of the passing loops also impact on the track capacity.

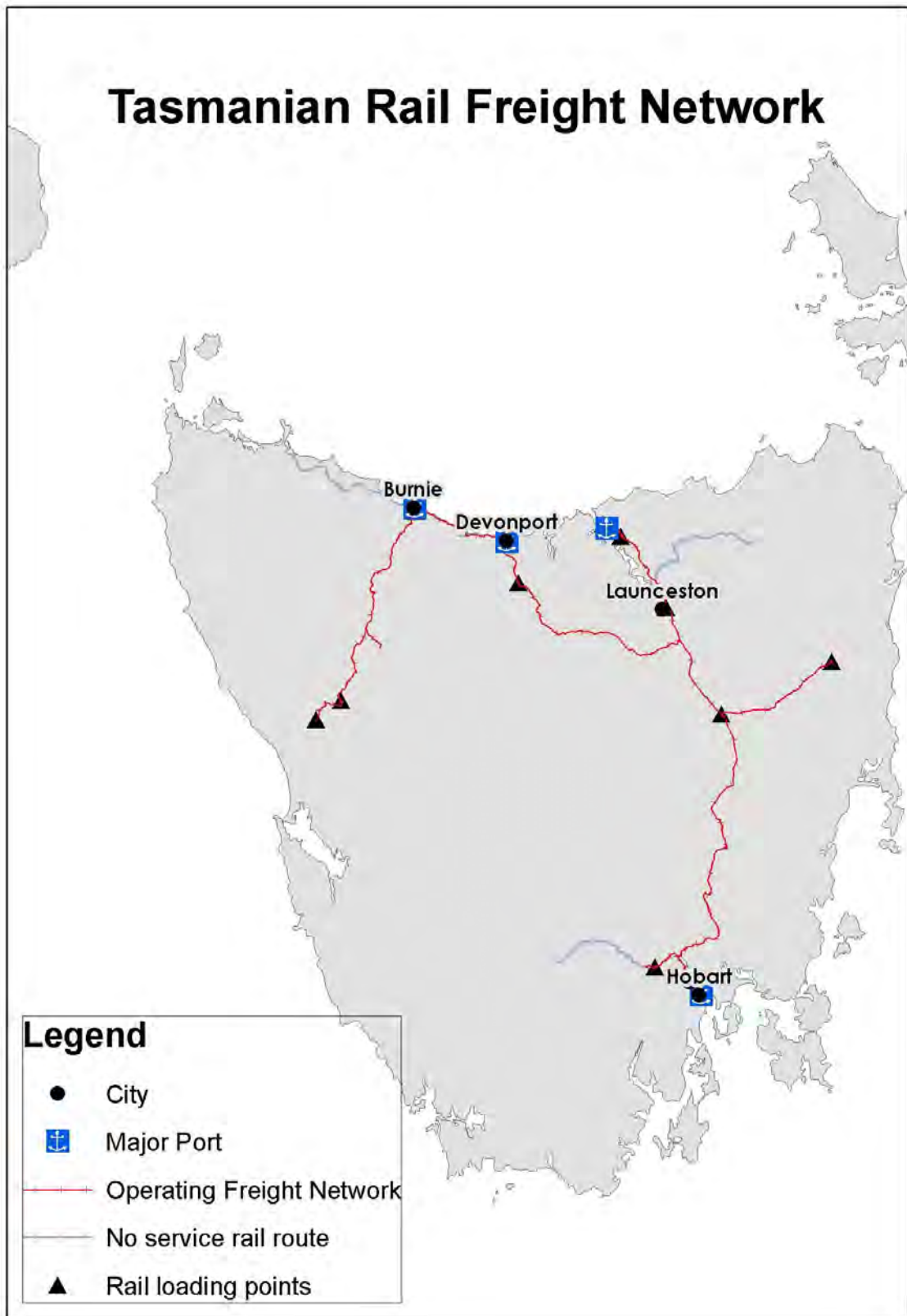
There are around 240 active and passive level crossings on the rail network (of which 37 cross State roads) that impact on the travel speed of trains, particularly in urban areas. There is also a significant number of pedestrian and private crossings (both formal and informal) used to access private land.

The design speeds of the rail network are very low compared to the road speed limits on the corresponding road network, particularly where the rail network mirrors the National Network (where speeds are typically 100km per hour for heavy vehicles). Rail speed limits are nominally 70km per hour; however, there are sections of the network that are much lower than this due to track condition (temporary restrictions) and/or track alignment (permanent restrictions).

There are two key freight business segments for rail within Tasmania – 'bulk' and 'intermodal'; both of which have vastly different characteristics. The needs of bulk customers are continuity of supply and low cost. Therefore, the service needs are based on reliability rather than transit times, although equipment cycle times are important in order to reduce operating costs. For intermodal customers, again reliability is key, and whilst there is some express freight within Tasmania, much of the freight arriving into the state is for 'next day' transit. It is on this basis that TasRail is confident of significantly increasing modal share for this market segment.

Ultimately, it is the axle load restrictions that determine the carrying capacity of wagons. The axle load limit for the rail network is 18 tonnes, except for the Melba Line which is 16 tonnes.

# Tasmanian Rail Freight Network





## **Annexure 2 – Tasmanian Rail Revitalisation Program**

The Tasmanian rail network and train service operations are undertaken through a vertically integrated business – TasRail. As such, there is a strong synergy between the above and below rail business and investment strategies to support market growth that will underpin long-term sustainability. Investment in the rail network, over and above that to address safety issues, is based on forecast market demand. This approach results in different strategies across segments of the rail network.

TasRail, supported by the Tasmanian Government, is committed to improving the long-term competitiveness of rail transport such that rail is able to offer a viable alternative to road (for the contestable portion of the freight market) as part of an efficient land transport system. Improved rail infrastructure is also able to support projected growth in the freight task and to enable rail to improve its market share through new business opportunities. Ultimately, the Tasmanian Government's strategic objective is for rail to capture a greater share of the contestable land freight market.

The historical investment shortfall in the Tasmanian rail network has been acknowledged by both the Tasmanian and Australian Governments, which have supported the revitalisation of rail in the Tasmanian freight market through funding commitments.

Since its inception, TasRail has embarked on an extensive Rail Revitalisation Program to secure both the safety and reliability of the rail network and the efficiency and competitiveness of train service operations.

### **Securing the Safety and Reliability of the Tasmanian Rail Network**

The need for investment in the rail network has been recognised by both the Tasmanian and Australian Governments; and the then rail operator Pacific National Tasmania in 2006, resulting in the development and funding of the Rail Rescue Package. Under this package, the Australian Government committed \$78 million towards capital upgrades and the Tasmanian Government committed \$44.8 million over ten years toward rail track maintenance. This funding has enabled TasRail (and formerly Pacific National Tasmania) to maintain parts of the network as operational, particularly the north-south line, retaining intermodal freight task on rail.

In the 2010 State Budget the Tasmanian Government increased its commitment to below rail maintenance to around \$16.5 million per annum. TasRail has forecast that with the infrastructure works currently in progress and the projects that are the subject of this submission, the Tasmanian Government's grant will reduce to around \$11.5 million on an ongoing basis.

The Australian Government's Rail Rescue Package funding has been delivered through the completion of a series of projects, including: re-sleeping 190,000 sleepers, re-railing in excess of 30km of rail, drainage works, formations works, crossings upgrades and bridge replacement.

In 2007, as part of its infrastructure election commitments, the Australian Government committed a further \$127.3 million to Tasmania's rail network. This funding was dedicated to specific parts of the network, including the non-operational sections of the Derwent Valley and Wiltshire Lines. In 2009, this funding was subsequently reprioritised in order to keep the core of the network, including the Melba Line, operational. Projects on the non-operational line have been deferred until after the existing operational network is strengthened.

Australian Government's election commitment funding included the following:

- Rail capacity improvements at Rhyndaston \$24 million
- Upgrade of the Burnie to Western Junction line \$28.9 million
- Upgrade for the Hobart to Western Junction line \$20.3 million
- Main north-south line rail capacity improvements \$31.6 million
- Upgrade of the Fingal line \$5.7 million
- Upgrade of the Boyer line \$1.1 million
- Upgrade of the Melba Flats to Burnie Line \$15.7 million

**Table 7: Delivery of the Australian Government's Rail Rescue and Nation Building 1 Packages**

<b>Rail Rescue Package (\$78 million) and Nation Building 1 Funding (\$128.6 million)</b>							
Line Segment	Concrete Sleeper Program	Steel Sleeper Program	Relay Life-expired Rail	Drainage, Tamping and Formation Works	Bridges	Rail Joint/Defect Removal	Rail/Road Crossings
Western Line	\$21.0 million	\$22.8 million	\$6.8 million	\$5.6 million	\$28.2 million	\$0.5 million	\$4.3 million
South Line	\$26.0 million	\$28.3 million	\$8.4 million	\$7.0 million	\$7.5 million	\$0.6 million	\$5.3 million
Bell Bay Line	Nil	Nil	Nil	\$2.3 million	Nil	\$0.2 million	Nil
Fingal Line	Nil	\$4.3 million	\$0.5 million	\$0.6 million	\$0.1 million	Nil	\$0.2 million
Derwent Valley Line	Nil	\$1.1 million	Nil	Nil	Nil	Nil	Nil
Melba Line	Nil	\$10.0 million	Nil	\$3.1 million	\$0.8 million	\$0.9 million	\$0.8 million
<b>Total</b>	<b>\$47.0 million</b>	<b>\$66.5 million</b>	<b>\$15.7 million</b>	<b>\$18.6 million</b>	<b>\$36.6 million</b>	<b>\$2.2 million</b>	<b>\$10.6 million</b>

Note: Some funding relating to scoping minor works and Rhyndaston tunnel have not been allocated in the above table

### **Contemporary and Standardised Locomotives and a Renewed Wagon Fleet**

In conjunction with the below rail revitalisation program, TasRail has also embarked on an extensive program to secure contemporary and standardised locomotives and renew its wagon fleet. In 2010, the Tasmanian Government committed \$130 million to fund his renewal program. TasRail has recently awarded a \$60 million+ supply contract for seventeen new, purpose built locomotives which are scheduled to start arriving mid-2013 with delivery complete by mid to late 2014. The new locomotive fleet will come in convertible 16 tonne and 18 tonne axle loads – providing interoperability between the Melba Line and the rest of the network. The new fleet of locomotives is designed to deliver substantial savings in fuel and maintenance costs; and to provide improved levels of reliability and hauling capacity. The photo below is a representation of the new locomotives.



The expected benefits of the new locomotive fleet are set out in table 8, below:

**Table 8: Expected benefits of the new locomotive fleet**

The current TasRail fleet	The new locomotive fleet
Life-expired condition and beyond end of useful operating life (30+ years old).	New build to TasRail specification and design.
Characterised by three compatibility types, four engine types, five generator types. Limited inter-operability – system is capacity constrained.	Single locomotive design able to convert between configurations for operation of axle load (16 tonne Melba Line and 18 tonne Mainline).
Train consist requires 3 to 4 locomotives to haul.	2 locomotives per consist.
Maximum hauling capacity 450 tonnes.	Maximum hauling capacity of 750 tonnes.
Unreliable with frequent breakdowns and very high level of intervention and unplanned maintenance.	High level of reliability.
Spare parts no longer available.	Readily available parts, service and warranty support.
Planned scheduled maintenance cycle of a maximum of 90 days.	Planned schedule of maintenance cycle of 180 days.
Fuel inefficient.	Significant fuel and emission saving.
Tunnel operations present significant risk of breakdown and related OH&S issues.	Improved performance through tunnel operations.
Safety features progressively retrofitted by TasRail.	Superior driver safety including improved collision protection in design.
Diesel only operation.	Capable of Bio Diesel (B40 fuel) should technology advance/fuel become available.

In the interim, to boost freight capacity, TasRail has purchased four second hand locomotives ex QR National and is refurbishing seven locomotives from the existing fleet to cover additional freight needs.

The second key above rail project is the substantial replacement and/or upgrading of much of the wagon fleet (coal, cement and containers) due to the life-expired condition and restrictive operation of existing assets. The existing aged design of much of the wagon fleet causes operational inefficiencies and can contribute to an increased risk of derailments.

The Tasmanian Government has also provided funding for the investment in hi-rail vehicles, a modern train control system and investment in new rail maintenance equipment. When completed, these initiatives will deliver significant recurrent funding savings, particularly in relation to maintenance costs, as well as customer service improvements through reduced running times and increased reliability. Better asset utilisation relating to interoperability will lead to productivity achievements.

In addition, the Tasmanian Government committed \$11 million on TasRail's establishment to enable it to rebuild the business that had been under-resourced for decades. This has included developing internal capability to improve safety processes and outcomes, undertake the investment in rail track infrastructure and to develop customer relationships and business opportunities. Specific actions include:

- Establishing an Infrastructure Division responsible for delivering the maintenance and infrastructure across the network for all assets. An Asset Management Team supports the Infrastructure Division through activities such as planning and scheduling maintenance and capital works, project management and legal support.
- TasRail has recently employed a Business Development Manager with more than 20 years experience working with local, interstate and overseas freight logistics companies; and has undertaken a comprehensive review of all freight activities and opportunities within Tasmania. This position will work with existing rail customers and potential rail clients to explore new and additional business opportunities.

## Annexure 3 – Rail Freight Market Share

The Department of Infrastructure Energy and Resources (DIER) undertakes a comprehensive Freight Demand Survey once every three years. This data is used to support strategic infrastructure planning and investment decisions on the State's transport network. The most recent was undertaken in 2009<sup>14</sup>, approximately 2.3 million tonnes of freight per year was carried on the rail freight network which represented 5.1 per cent of the total State freight task.<sup>15</sup> On a net tonnes kilometres basis, approximately 308 million tonne kilometres was transported by rail, representing 8.7 per cent of the total State-wide freight task.

Rail freight operations are split into two broad markets: 'bulk' and 'intermodal'.

Bulk freight consists of cement (transported from Railton to Devonport), mineral ore concentrates (transported on the Melba Line from the West Coast to Burnie Port) and coal (transported from Fingal to Railton). In 2009 bulk freight constituted approximately 1.6 million tonnes with represented 3.5 per cent of the total State freight task in terms of gross tonnages or 2.5 per cent in terms of net tonnes kilometres.

Intermodal freight consists of containerised goods – for example paper products, zinc ingots and retail products, primarily on the main north-south line between Hobart and Burnie Port. In 2009, intermodal freight constituted approximately 0.7 million tonnes which represented 1.6 per cent of the total State freight task in terms of gross tonnage, or 6.3 per cent in terms of tonnes kilometres.

Typically, in Tasmania bulk freight is moved over shorter distances as in the case of cement from Railton to Devonport Port (21 km) and mineral ore from the West Coast to Burnie Port (average distance 112 km). In contrast intermodal freight is moved over longer distances from Hobart and Boyer to the Burnie Port. The average distance such freight moves has been calculated at approximately 335 km.

### Freight Growth Assumptions – Benefit Cost Analysis

The Benefit Cost Analysis utilises a foundation freight task scenario. The foundation freight task for Scenario 1 and Scenario 2 has been established by applying growth rates for the existing freight task (bulk and intermodal) based on the commodity type. The average growth rates are 2.3 per cent until 2030 and 1.9 per cent thereafter. The foundation freight task also projects a contestable market share of intermodal task – this is estimated to be an additional 800,000 tonnes of which a modal shift to rail is assumed over the years 2012-13 to 2014-15 based on network and above rail performance improvements resulting from current investments.

There are no new bulk freight tasks included in the foundation freight task scenario. However, the potential new tasks outlined below have been included in the foundation freight task for Scenario 3.

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<sup>14</sup> An update of the Freight Demander Survey will be undertaken in the second half of 2012.

<sup>15</sup> Total heavy freight task for road sourced from Survey of Motor Vehicle Use 2010, Australian Bureau of Statistics.

## Potential New Large Freight Tasks

During 2010-11 TasRail commenced the development of a marketing strategy that included initiatives for growing market share and identifying opportunities for increased, consistent volumes across the network.

TasRail is working closely with the Tasmanian minerals sector to determine how mining freight that is currently being carried by road can be transferred to rail. TasRail is also working closely with the proponents of two projects in particular to undertake the primary transport task for the new mining activity (discussed below).

In addition, TasRail has engaged with the forestry sector, identifying a number of potential opportunities. Trial transportation of logs between the north and south of the State have been undertaken during the last six months using refurbished rolling stock. This is a sector that has not used rail for many years due to numerous derailments over time. However, TasRail is now confident that the track is now in a much better condition, forestry product is now of a much more consistent nature (i.e. regrowth product) allowing improved load distribution. Load securing and wagon dynamic issues have been identified and resolved. New rolling stock options which enable back-loading of containers would also benefit over road haulage when there is not a log backhaul task. This sector has very real potential to transfer significant volumes from road to rail, particularly if the current reduced number of processing or export locations remains resulting in longer distance haulage.

TasRail seeks to be innovative about the types of services it offers and to step more broadly into total transport logistics by becoming more involved in loading and unloading and other activities of the supply chain where this would add to customer value.

In planning to meet Tasmania's projected freight growth, the road and rail networks should not be considered in isolation of or in opposition to each other. Any land freight network must be thought of in holistic terms with freight being transported by either rail, road or in combination.

Further, co-ordinated intermodal investment is fundamental to improving the efficiency of freight transport in Tasmania. The proposed road-rail-port interface at Bell Bay is an excellent case in point. When completed, the project will facilitate improved transport interfaces between producers and rail. An efficient, direct road connection will link producers with both rail and port facilities to enable a far more responsive approach to the changing international shipping arrangements. A direct and more streamlined rail connection directly onto the wharf at Bell Bay will remain; however, this will also be augmented by a multi-purpose freight loading terminal at George Town, connected by a direct B-double capable road link. The George Town terminal will be designed to undertake the loading and unloading of both container and forestry products. This project is fully funded by a combination of Australian and Tasmanian Government funding and the Project Proposal Report to be submitted for final approach is currently being finalised.

Similarly, further development works are planned at the Port of Burnie to provide for expanded rail capacity to satisfy the growing intermodal task at that location. Initial works have been funded by TasRail and further, more substantial works are expected to commence this financial year. These works will be funded by a combination of Australian and Tasmanian Government funding, combined with a not insignificant contribution from the private sector.

Whilst TasRail is projecting that the main growth in rail utilisation will be through an increasing intermodal task. There are also the aforementioned bulk mining projects that have a very real likelihood of realisation. The contributing factor in both these cases is the

opportunities presented by the introduction of new rolling stock, particularly as a result of providing additional capacity and improved service levels; and a growing level of confidence in the market place of the improving condition of the track network; and hence improved reliability outcomes.

TasRail is currently in active discussion with three new potential customers for the following significant freight tasks:

*[Reference to new potential customers has been removed for commercial in confidence reasons].*

## Annexure 4 – Historical Overview of the Tasmanian Rail System

Similar to the interstate rail networks, the Tasmanian rail network has evolved over time. Ownership of the rail network and the operation of train services, have, at various times, passed between government and the private sector; and the rail network has operated structurally as both vertically separated and vertically integrated.

Tasmania has a long history of rail transport as part of its land freight system.

Between 1885 and 1938 the rail network (excluding the Melba Line) was owned by the State and operated as the Tasmanian Government Railways (TGR). Ownership transferred to the Tasmanian Transport Commission between 1938 and 1975 when, as part of a Commonwealth initiative to amalgamate Australia's railways into one entity, the Tasmanian Government sold the railway to the Australian Government. The Transport Commission operated the network between 1975 and 1978 on behalf of the Australian Government, who owned and operated it as part of the Australian National Railways Commission (ANRC) until 1997. In 1997 the Tasmanian Government resumed ownership of the rail land asset as a strategic corridor. Ownership of the fixed assets (rail track infrastructure) was severed from the land itself and sold by ANRC along with the business to the Australian Transport Network Consortium, led by Wisconsin Central and Tranzrail, (ATN). The Tasmanian Government leased the land corridor to ATN. ATN continued to operate the business as ATN Tasrail, annexing the Melba Line through the purchase of the Emu Bay Railway Company (giving it access to Melba Flats on the west coast and the mineral concentrates traffic) and merged the two businesses.

In early 2004 ATN sold Tasrail to Pacific National (a subsidiary company of Asciano Limited), who in 2006 approached the Tasmanian Government for funding to continue operations. In June 2006, the Tasmanian and Australian Governments announced a joint "Rail Rescue Package" of funding over 10 years towards capital upgrades and track maintenance. In conjunction with the Rail Rescue Package, the rail network infrastructure (excluding the Melba Line) was transferred to the Tasmanian Government from Pacific National Tasmania (PNT) on 1 January 2007 for \$1 and declared Open Access under the Trade Practices Act 1976 (Cth), making it available to third party rail operators. Under the terms of the Rail Maintenance and Management Deed (RMMD), PNT continued to have responsibility for managing and maintaining the asset for the term of the RMMD. PNT continued to privately own and operate the Melba Line without government assistance.

In 2008 Asciano Limited announced its intention to cease business operations in Tasmania and following a failed market sale process entered into formal negotiations with the Tasmanian Government to acquire PNT. In November 2009, the Tasmanian Parliament approved the *Rail Company Act 2009*, establishing a new State-owned Company, TasRail to own and operate the rail network and to undertake train services. TasRail began operation on 1 December 2009.



## Annexure 5 - Improving Network Capacity Utilisation v Increasing Network Capacity

The rail infrastructure component of the Rail Revitalisation Program addresses the underlying cause of the issues identified, being the lack of investment in the rail track infrastructure by successive owners of the network over a lengthy period. Infrastructure Australia has previously noted<sup>16</sup> that the works identified are to upgrade or replace existing assets, and therefore would generally not be classed as capital but as renewals or refurbishment. Capital would normally be classified as increasing the network capacity beyond its original design.

In place of creating additional capacity, the Rail Revitalisation Program targets liberating the existing network usable capacity through the improvement of overall network reliability. This forecast increase in volume capability and utilisation translates to improvements in productivity (due to the very high fixed cost nature of rail). Rail infrastructure investment is complimented by investment in the new locomotive fleet which is anticipated to increase maximum hauling capacity from 450 tonnes to 750 tonnes (refer Annexure 2 – Tasmanian Rail Revitalisation Program).

Increasing the productivity of the Tasmanian Rail Network through increases in network capacity beyond the current design has recently been raised in the context of Infrastructure Australia's Tasmania's Ports and Freight Strategy report. Specifically, the report indicates a possible task of the „Freight and Logistics Co-ordination Team'<sup>17</sup> could be to progress strategic work with long term planning to lift the rail track infrastructure standards to a carrying capacity of 25 tonne axle loads consistent with the national rail system.

The current standard of the Tasmanian Rail Network is an allowable maximum axle load of 18 tonnes on all lines except the Melba Line, where the maximum axle load is 16 tonnes. A targeted axle load capacity of 25 tonnes, consistent with the national rail system should be considered in the context of the geographical and infrastructure constraints of the Tasmanian Rail Network and the projected freight task.

TasRail has estimated more than one billion dollars would need to be invested to achieve 25 tonne axle loads across the entire Tasmanian Rail Network, with limited productivity benefits in the context of the current Tasmanian freight market. For example, for the intermodal freight task (for which rail and road compete) 25 tonne axle loads would enable three containers per wagon in lieu of the planned two containers per wagon with the proposed investment under the Rail Revitalisation Program. The only real benefit is a slight saving in the tare weight of wagons and a small reduction in train length. Other marginal benefits would be realised by way of more standardised future rolling-stock purchases; however, TasRail's current rolling-stock procurement process has realised efficient outcomes for the purchase of non-standard equipment. Due to the need for TasRail to replace rolling stock now, these new rolling stock purchases will, by necessity, be designed around the 18 tonne axle load constraint. However, if key portions of the network were to be ultimately upgraded to a higher axle load capacity, this new rolling stock would still be suitable for use.

Due to the short-haul and lower volume nature of much of the Tasmanian land freight task, modal shift between road and rail is predicated on improved service offering rather than by productivity improvements such as increasing axle loads. In the Tasmanian context, rail's

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<sup>16</sup> 2011-12 Infrastructure Australia Assessment Brief page 2.

<sup>17</sup> The 'Freight and Logistics Co-ordination Team' is an initiative of the Australian Government funded under the \$20 million funding package to assist Tasmanian exporters.

ability to be responsive to customer service demands, and be able to deliver more rapid cycle times along with improved transit schedules will provide far greater productivity benefits by way of increased asset utilisation (i.e. locomotives, wagons and customers equipment) as compared to simply increasing axle loads.

Similarly, operational modeling undertaken to determine the benefits of increased axle loads (25 tonne v 18 tonne) for a bulk traffic task (1 million tonnes per annum export coal from Fingal to Bell Bay) resulted in annual operating cost savings in the order of \$400,000 per annum on a cost base of around \$4.2 million per annum. Whilst in percentage terms these benefits are not insignificant, the expected cost to construct a track suitable for 25 tonne axle loads would be expected to be in excess of \$100 million for the task in question. Based on this scenario (the most optimistic one in the Tasmanian context), such an investment would not be considered viable.

However, as previously noted, works being undertaken now under the current investment program are being done so with a view for the future. For a relatively low additional incremental cost TasRail has been able to undertake works such as concrete re-sleepering, re-railing and bridge refurbishment/replacement that will be capable of increased axle loads. However, there will still remain a number of bridge structures that will be limited to current axle load constraints as these assets are not included in the proposed program. Nonetheless, at the completion of this program, the line between Burnie and the Brighton Transport Hub will be ready to complete a substantial axle-load increase project should the need arise.

Inter-operability with the National Rail system is not a specific goal under the Rail Revitalisation Program. Tasmania is an isolated regional network and network performance characteristics are focused on meeting local environment and projected freight demand rather than national consistency aspirations. Key inter-operability issues are centered on rail terminals and ports, rather than attempting to improve the connectivity of freight volumes that are sourced/destined for the mainland rail network.



**Tasmania**  
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