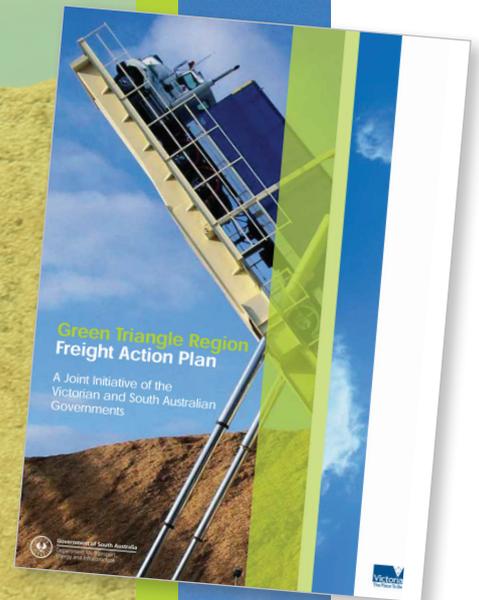


Green Triangle region Freight Action Plan Update

Driving investment and managing growth to
global markets from south east South Australia
and south west Victoria

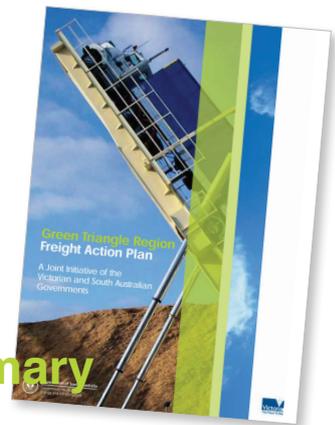


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Executive Summary

Why the Green Triangle region Freight Action Plan has been updated?

The Green Triangle region Freight Action Plan was written in 2009 by the Victorian and South Australian Governments, in partnership with local government and industry stakeholders.

The purpose of the plan was to develop a transport infrastructure investment and regulatory framework to manage the significant increases in freight traffic that would occur in the region once newly-established hardwood plantations came to harvest. It did this by quantifying the dimensions of the freight task and forecasting the likely patterns of timber flows from plantations to chipping mills and the Port of Portland for export.

The Plan established harmonised cross-border regulations for freight movements across the region – a unique achievement in Australia – and has helped secure tens of millions of dollars of infrastructure investment from Commonwealth, State and Local Governments and the private sector.

Over the last three to four years, as plantations have come to harvest, timber production and exports have grown rapidly in the Green Triangle region. Its forestry and transport sectors now employ more than 18,000 people, and generate a conservative figure of \$790 million in economic activity. As well, it is estimated an additional 550 jobs will be created by the end of 2016.

However, during this period, structural changes in the timber industry have resulted in new freight patterns emerging – different in part to those forecast in 2009. This has resulted in a greater concentration of the freight task on certain corridors – placing these roads under extreme pressure, with forecasts suggesting these volumes will be sustained to 2025 and beyond.

It has also become evident that the hardwood plantation industry is not a one-off industry – and that global demand will be sustained and ongoing for a range of reasons, including the rapid urbanisation and growth of the middle class in China.

Targeted investment of \$180-\$200 million is needed now to ensure key road corridors in the region are fit for purpose over the next decade with the capacity, safety and efficiency needed to perform this unique freight task. Without this targeted investment occurring, the region – and Australia – will be at risk of losing a valuable export industry that generates thousands of jobs and economic prosperity.



Updating the evidence base for transport investment

Based on these challenges and opportunities, councils in the region decided in 2015 to update the plan and its evidence base, via the Green Triangle region Freight Action Plan Implementation Monitoring Group.

- New plantation timber harvesting data was commissioned, to show contemporary timber flows across South Australia and Victoria.
- Detailed consultation occurred with the Port of Portland and timber plantation companies to understand the dimensions of the region's freight task.
- Road pavement and network supply chain specialists were engaged to provide updated freight movement forecasts, and analyse current and future road conditions - including analysing the link between road conditions and freight vehicle operating cost on the road network linking to the Port of Portland.
- Updated freight data and economic analysis shows the significant and sustained increase in timber volumes is driven by the region's maturing timber plantations and high export demand to Asia, and the growth in the movement of grain and mineral sands will steadily increase.

New investment for priority freight corridors

This update has identified four priority freight routes needing infrastructure upgrades over the next 10 years. Economic analysis shows that the required investment of \$179 million over 10 years will provide a benefit cost ratio (BCR) of 1.74. These priority freight routes are;

1. **Princes Highway**
 - a) **Warrnambool to Heywood**
 - b) **Heywood to South Australia Border**
2. **Portland-Casterton Road**
3. **Portland-Nelson Road**
4. **Henty Highway**
 - a) **Ring Road to Port**
 - b) **Condah to Portland**

The investments and reforms to date have been fundamental to the overall economic development of the region. But more needs to be done.

In addition to strengthening the Freight Action Plan's factual evidence base, the involvement of experienced local industry and State and local government stakeholders in the development of the Plan's recommendations has guaranteed timely outcomes for key decision makers, industry and communities.

A new user-pays framework for the region's road network

Finally, new transport and industry data has enabled the development of a proposed user-pays framework for industry contribution towards the cost of road investment in the region.

The framework has been developed at the request of the Green Triangle region Implementation Monitoring Group, and demonstrates direct productivity gains for industry by electing to contribute toward the costs of road strengthening and resurfacing.

The framework takes account of the growing national trends towards governments and industry embracing user-pays and co-contribution models to unlock industry innovation, supply chain efficiencies and higher levels of investment in infrastructure critical to Australia maintaining its competitive strength in a global economy.

As well, the update identifies, innovative solutions to increase the capacity and performance of the transport network in the Green Triangle region, including an improved operating environment on the road network to allow for a greater deployment of higher productivity freight vehicles and other technologies.

Next steps and key actions

1. Seek funding contributions from the Commonwealth, Victorian and South Australian Governments for this purpose, with a particular focus on upgrading key corridors identified in this update.
2. Consider funding options with users towards the \$179m investment task for the road network in the Green Triangle region as outlined in the update.
3. Ensure Local Government contributes to this investment task, commensurate with its capacity and responsibilities.
4. Engage with key stakeholders about the strategic importance of this update via Regional Development Associations and the newly created Great South Coast Regional Partnership which commences on 1 July 2016.
5. Work with the National Heavy Vehicle Regulator and State authorities to open up more of the network to provide access for higher-productivity freight vehicles.
6. Lobby the Commonwealth Government to include the Princes Highway West between Colac, in Victoria, and Mount Gambier, in South Australia, on the National Land Transport Network.
7. Continue to work with communities, industry and government to manage the impacts of the freight task.



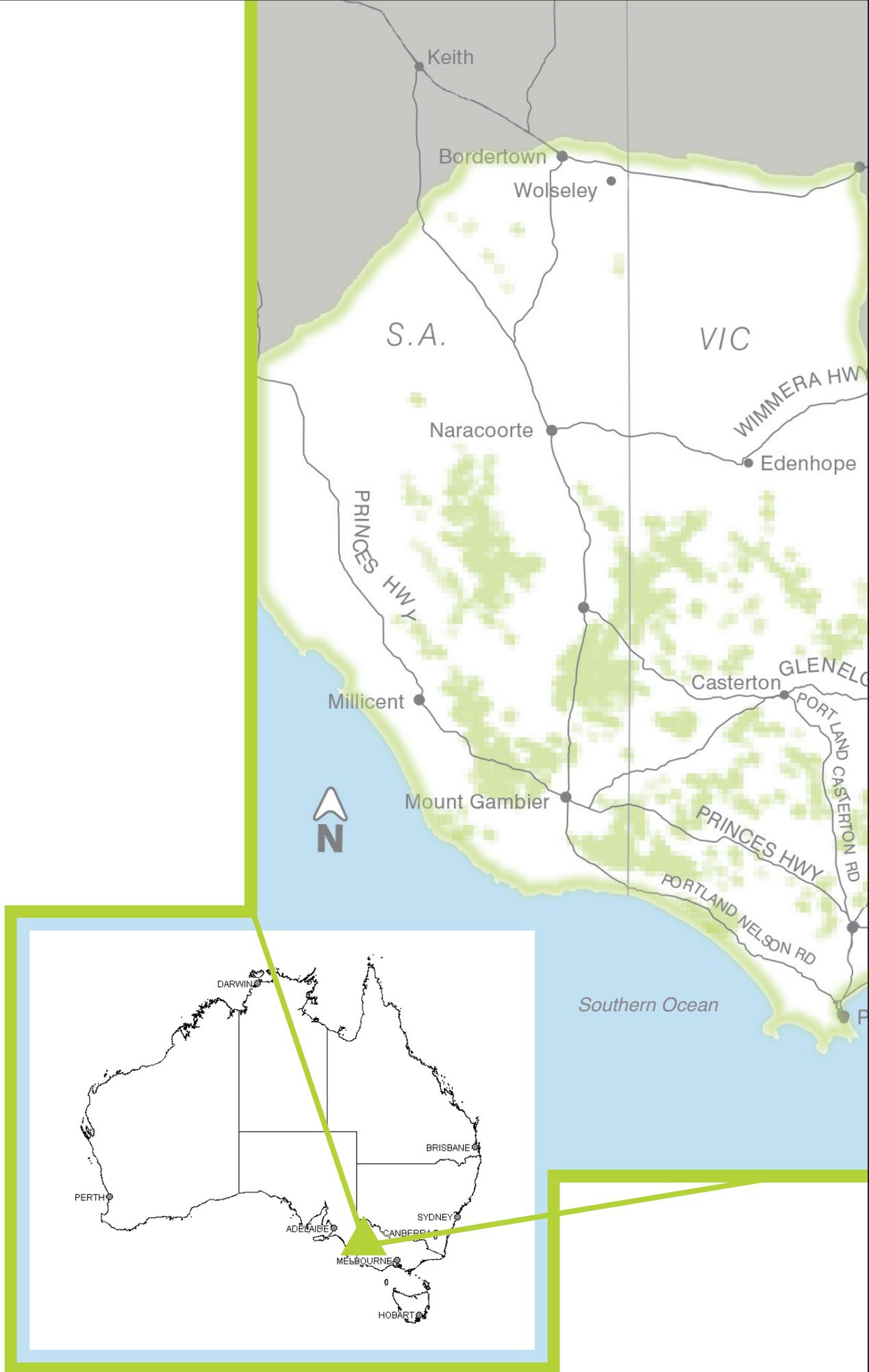




Figure 1: The Green Triangle region

The Green Triangle region

Green Triangle region – Economic Facts

- Largest plantation forestry area in Australia (355,000 hectares and 18 per cent of the national plantation estate)
- More than 150 separate businesses in the region rely on the forest industry
- More than 3,400 direct forest industry jobs with more than 550 additional jobs expected by end of 2016
- Over 18,000 jobs created by the region's forestry and transport sectors
- Six globally significant plantation companies operating
- More than 145,000 truck trips annually to the Port of Portland (2015)
- Forestry and transport combined output exceeding \$790m per annum
- Combined value added exceeding \$397m per annum
- Exports in raw timber and timber products, mineral sands, and grains, expected to grow over next five to 10 years
- Port of Portland is currently the largest hardwood chip export in the world

Local Government Areas

Victoria

Glenelg, West Wimmera, Moyne, Southern Grampians and Warrnambool

South Australia

Grant, Naracoorte Lucindale, Wattle Range and Mount Gambier

Transport Challenges and Solutions

Challenges

- Higher than normal levels of road surface distress due to high intensity of freight
- Speed reductions likely based on current levels of road strengthening and resurfacing funding
- Road condition increasing transport costs

Solutions

- Modelling demonstrates an economic basis for a new user pays framework to help fund road investment

The timber freight task in the Green Triangle region has grown rapidly since 2009 with the Port of Portland now the largest hardwood chip export port in the world

The Green Triangle region is Australia's most intensive and productive timber plantation area. International demand for timber products and the joint Federal and State Government 2020 Vision to treble the size of the national timber plantation has resulted in a massive and rapid increase in the harvesting and transport of timber products in the region.

Forestry is the main export commodity from the Port of Portland, accounting for 4.5 million tonnes of the 6.5 million tonnes processed by the port today.

The Green Triangle is home to the largest plantation-based wood fibre producing region in Australia. About half the productive forests are softwood plantations (*Pinus radiata*), with the remainder being hardwood plantations (*Eucalyptus globulus*). The total plantation area exceeds 355,000 hectares, with most of the hardwood plantations located in Victoria and softwood located in South Australia. All these plantations are managed by the private sector, with a diverse ownership. There are six globally significant plantation companies operating in the region.

It is now clear that the hardwood industry in the Green Triangle region is not a one-off industry. Macro-economic changes largely driven by urbanisation and growth in the middle class population of Asia - as well as the Free Trade Agreement between Australia and China - means there will be strong and ongoing demand for tissue paper and other timber products.

Unless Australia has the transport infrastructure needed to support this freight task over the short, medium and long term, it risks losing the opportunity to leverage significant jobs and prosperity for current and future generations.

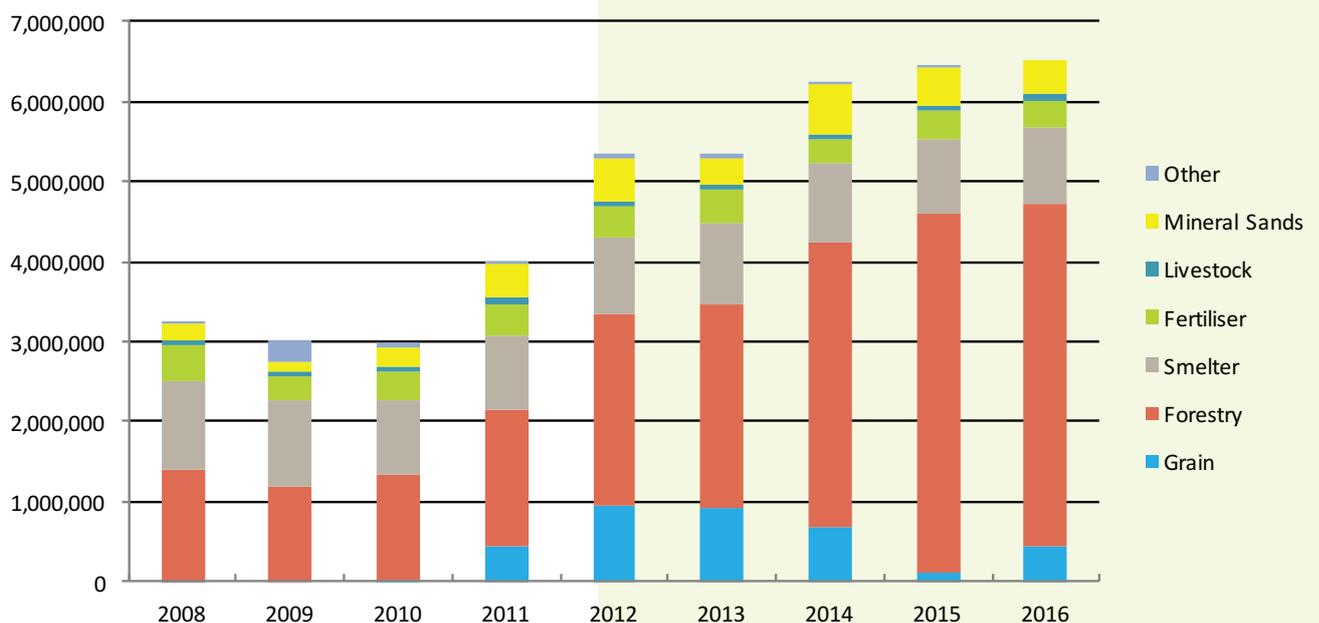


Figure 2: Port of Portland 2015, Commodity Exports including 2016 forecast (tonnes per annum)

In addition to timber, other commodity-based industries are growing strongly in the Green Triangle region...adding pressure on the transport network

As well as the burgeoning plantation timber commodity movements across the Green Triangle region, the dairy, grain and mineral sands industries are expanding. This includes new and existing businesses taking advantage of favourable land use conditions. Opportunities include integrating some timber plantations into dairy and feedlot operations to take advantage of the boom in demand for milk products in the Asian market.

A new dairy processing plant in Warrnambool, south west Victoria will be built adjacent to the Midfield abattoir. The milk facility will operate 24 hours a day, seven days a week with six staff on shift. The plant will comprise a dryer, boiler house, laboratory, storage areas and loading areas. This is expected to create 250 construction jobs and 17 permanent jobs.

Approximately \$60 million of private investment is also occurring to transform the former McCain potato factory at Penola in south-eastern South Australia into a dairy processing plant. It is expected milk processing will begin in 2016, producing 160 million litres per year. It is believed the transformation of the former potato factory will create 80 construction jobs and, when processing begins in 2016, will employ 50 full-time staff.

In late 2014 a new 'Port Zone' was applied to land and water at three major Victorian ports, at Geelong, Hastings and Portland. The new Port Zone streamlines approvals for industry, warehouse and wharf uses making it easier for port operations to expand.

	2012	2021	2031	2046
Raw Milk	2,247	2,267	2,290	2,325
Fertiliser	1,760	1,466	1,811	1,858
Mineral Sands	990	1,805	3,480	3,716
Cement	650	827	1,120	1,776
Other*	3,871	4,928	6,670	10,574
Total	13,518	14,677	19,226	24,871

** Estimates of other commodities and products based on Victorian GSP projections sourced from Deloitte Access Economics Business Outlook Report*

Table 1: Barwon South West, forecast freight movements (1000's tonnes per annum), Deloitte 2012

Tourism

Tourism presents exciting opportunities for local regions to grow and prosper. It supports thousands of jobs and direct purchases from intrastate, interstate and international visitors. The Green Triangle region intersects with the Great South Coast's Shipwreck Coast and the world renowned Great Ocean Road. There were an estimated 5.7 million domestic day trip visitors alone to the Great Ocean Road region in the year ending December 2014. In 2013-14, the tourism industry contributed an estimated \$1.9 billion to the Great Ocean Road economy (10.8 per cent of gross regional product) and employed approximately 20,700 people (12 per cent of regional employment). The cruise shipping industry in Australia is also experiencing strong growth with the Port of Portland anchoring three cruise ship visits in 2016 – with more cruise ships scheduled to dock throughout 2017 and beyond. The development of supporting infrastructure such as roads and port facilities at the Port of Portland enables more visitors to access the region and help grow the local and state economy.



Figure 3: P&O Pacific Jewel berthed at the Port of Portland





New data shows economic activity and new jobs generated by growth in the timber industry is significant

The Green Triangle region Freight Action Plan Implementation Monitoring Group commissioned independent research in late 2015 to quantify the economic benefits of the forestry sector to the Green Triangle region. The analysis by SED Advisory, which can be read in full in the background report, found that the forestry and transport sectors generate in excess of 18,000 full-time jobs. Many of the firms working in the forestry and timber sectors are headquartered in the Green Triangle region and service national and international markets. Estimates conducted in 2015 by the Green Triangle Forestry and Plantation Committee indicate that over 3,400 direct forest industry related jobs are located in the region with more than 550 additional jobs expected by the end of 2016.

A significant change in forestry-related direct employment has occurred since 2011. This has been as a result of the maturing of regional hardwood plantations, almost doubling harvesting requirements. This has led to a massive increase in employment in the harvesting and haulage sector. About 154 businesses in the Green Triangle region rely directly on the forestry industry.

Almost 2.5 million Green Metric Tonnes of softwood logs are processed locally at 15 mills across various locations. Sales of more than \$5 billion per year are generated from 355,000 ha of plantations - including woodchip exports, log exports, products used in the domestic market from local softwood processors and the Kimberly Clark paper mill.

Economic analysis by SED Advisory in 2015 found that the total output value of forestry in the Green Triangle region was more than \$790 million.

18,000 Full time jobs

550 Additional jobs by the end of 2016

\$5 Billion Value of export sales per year

\$790 Million Value of economic output by forestry industry in 2015



The Green Triangle Plantation Woodflow

Total Volumes 2015–2024



Figure 4: Green Triangle Wood Flow Projections 2015 – 2024, Flying Ant GIS

Updated timber flow information shows the freight task in 2016 is particularly concentrated on four corridors

New patterns of timber freight volumes have emerged across the Green Triangle region – with strong growth in total truck volumes observed at the Port of Portland – the region’s key freight destination.

Updated wood flow data compiled in 2015 by Flying Ant GIS indicates new and emerging patterns of timber flows across the Green Triangle region. Provided directly by the timber industry, the underlying data behind this map represents the most up-to-date and accurate forecast for timber volumes that will be traversing the region’s road network over the next 10 years. The wood flow data has been used as the basis for detailed economic analysis of investment required to maintain a fit-for-purpose network within 100 km of the port.

The wood flow map reveals, for example, the Portland-Nelson Road emerging as a preferred (route) by industry wishing to use the shortest route to the Port of Portland from some of South Australia’s timber plantations. A key factor facilitating this is that a proposed pulp mill, earmarked for Penola in South Australia and captured in the *2009 Freight Action Plan*, did not eventuate, and has therefore directed additional volumes onto the road network through to the Port of Portland for export.

Other factors influencing changing freight flows in the region include:

- closure of the timber processing centre at Tantanoola, South Australia (the KCA Pulp Plant)
- closure of the Carter Holt Harvey Sawmills at Nangwarry and Lakeside, South Australia; and
- changes in expected Blue Gum rotation length as a consequence of the Global Financial Crisis.

This has therefore altered the patterns - and in some cases increased the volumes - of plantation timber flows onto the network for export in contrast to what was initially predicted.

In essence, four key road corridors within 100km of the Port of Portland have taken the brunt of the increased freight task. These priority freight routes are:

1. **Princes Highway**
 - a) **Warrnambool to Heywood**
 - b) **Heywood to South Australia Border**
2. **Portland-Casterton Road**
3. **Portland-Nelson Road**
4. **Henty Highway**
 - a) **Ring Road to Port**
 - b) **Condah to Portland**

	Truck Numbers	Truck Movements
FY10	71,746	143,492
FY15	145,395	290,790
FY17	158,294	316,588

Table 2: Growth of truck volumes to the Port of Portland



Edge Break



Shoving



Road Surface Failure

Figure 5: Different types of road pavement failures resulting from increasing freight vehicle volumes, VicRoads

Between 2010 and 2015, a 100 per cent increase in truck movements through the Port of Portland has occurred, with new modelling predicting at least a 30 per cent increase per annum on the current truck movements with much of that increase represented by timber products.

Over the next 10 years the Portland Ring Road (Henty Highway) is expected to carry over 80 million tonnes of timber products to the Port of Portland which equates to approximately 190,000 trucks per year for 10 years.

Analysis commissioned by the Green Triangle region Freight Action Plan Implementation Monitoring group and undertaken by independent consultants from SED Advisory and VicRoads – Technical Consulting Group (see background report), indicates an optimal level of investment which provides a positive return and ensures the roads servicing the Port of Portland are able to carry the predicted freight task without adversely impacting transport costs and thereby the competitiveness of the region on the international export market. Approximately \$179 million over 10 years is required to protect the competitiveness of the timber export industry in the region.

Priority Arterial Road Corridors

Victoria – Great South Coast Region

Princes Highway West (Heywood to the Border)

One of the objectives of the original Plan was to deliver upgrades such as shoulder widening, overtaking lanes and rest areas on Princes Highway between Heywood and the border (which has seen a threefold increase in freight over the last 10 years) and a lot of these have been completed. A key driver for this was limiting the growth of heavy vehicles on other parallel routes such as the Portland Nelson Road, which is a 13km shorter trip between Mt Gambier and Portland, and is also a key tourist route.

Henty Highway (Portland Ring Road)

The last 10 years has seen a sixfold increase in freight on this road. There are a number of projects including key intersection improvements on this priority access route to the port which have not been delivered. This section of Henty Highway provides the last mile access to the port and is starting to show distress due to the very large volumes of freight moving to the port. The structural design of this section is not suitable to the current volumes of freight vehicles it caters for and will require progressive road strengthening upgrades starting at the port entrance.

Henty Highway (North of Heywood)

The Henty Highway continues to be a priority freight route for both logs, woodchips and mineral sands for inbound freight to the Port of Portland – this section has seen a sixfold increase in freight over the last 10 years. This route has been improved since 2009 with road and bridge strengthening to cater for high mass vehicles carrying mineral sands from the Iluka Hamilton Mineral Separation Plant.

Portland Nelson Road

Despite significant investment into the Princes Highway West, volumes of heavy vehicles have been increasing significantly on Portland Nelson Road which has resulted in deterioration in the road condition. The last 10 years has seen a doubling of freight on this road. It is being used in lieu of the Princes Highway as it provides a shorter route by 13 km and travel time saving of 10 minutes.



Figure 6: Failure of the road surface on Portland Nelson Road due to increasing truck volumes

Portland Casterton Road

This priority route continues to play a key role in the timber supply chain providing connectivity to timber coups located in the northern reaches of the region, as well as South Australia via the Casterton – Penola Road. The last 10 years has seen a fourfold increase of freight on this road.

South Australia – South East/ Limestone Coast Region

Analysis by the South Australian Department of Planning, Transport and Infrastructure has shown that upgrades to the existing arterial road network, especially road widening and overtaking lanes, will be justified on major roads (particularly the Riddoch Highway and Princes Highway) over a 20 year period. The potential interventions that appear to have the greatest justification for implementation in the shorter term (1 – 5 years) are:

- Penola Bypass (southern section);
- Overtaking Lanes on Riddoch Highway;
- Rest Area upgrades on Riddoch Highway;
- Road widening and shoulder sealing on the Riddoch Highway between Padthaway and Naracoorte.



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Potential interventions required on the South Australian Road Network

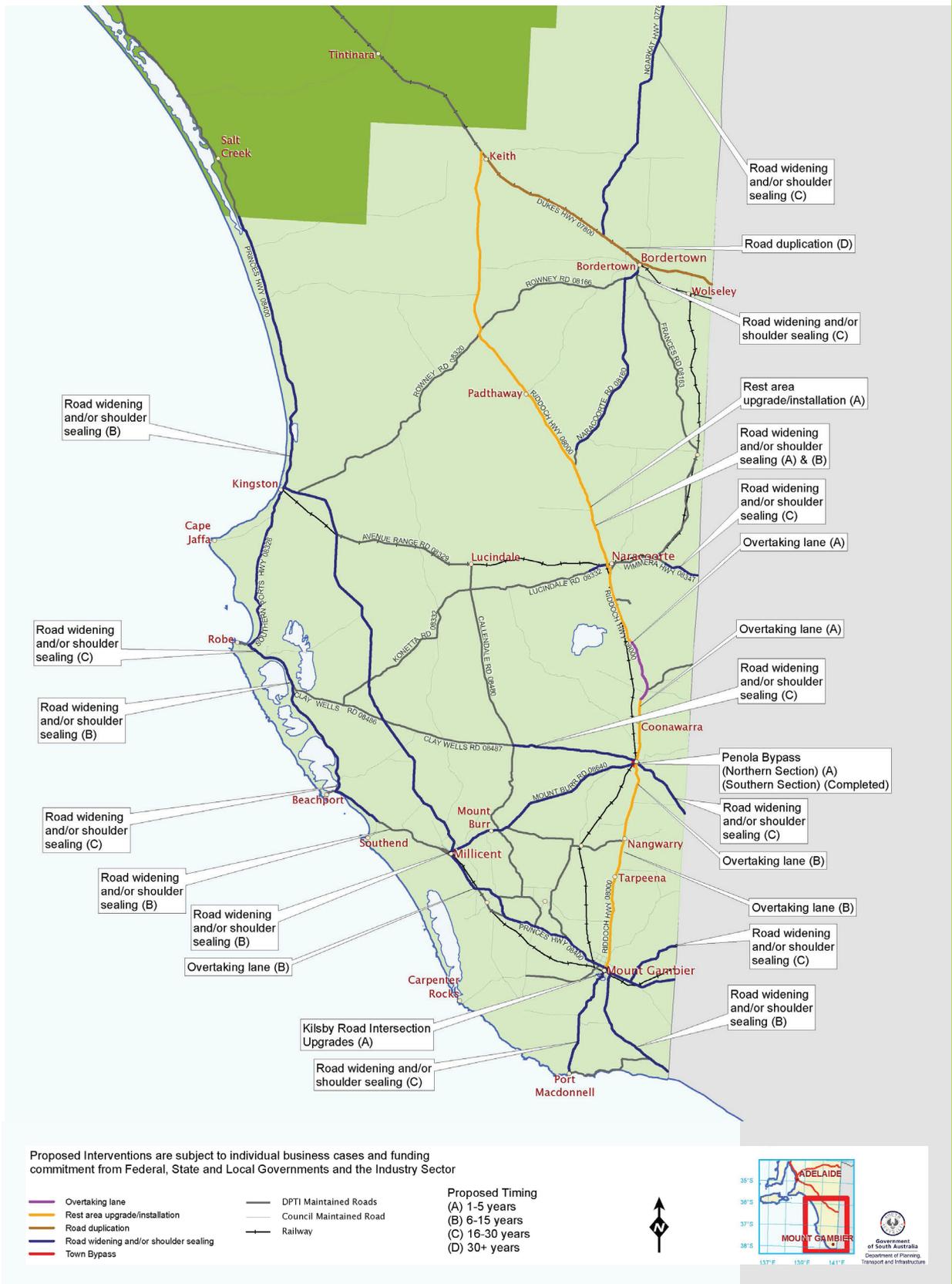


Figure 7: Potential interventions required on the South Australian Road Network, South Australian Government

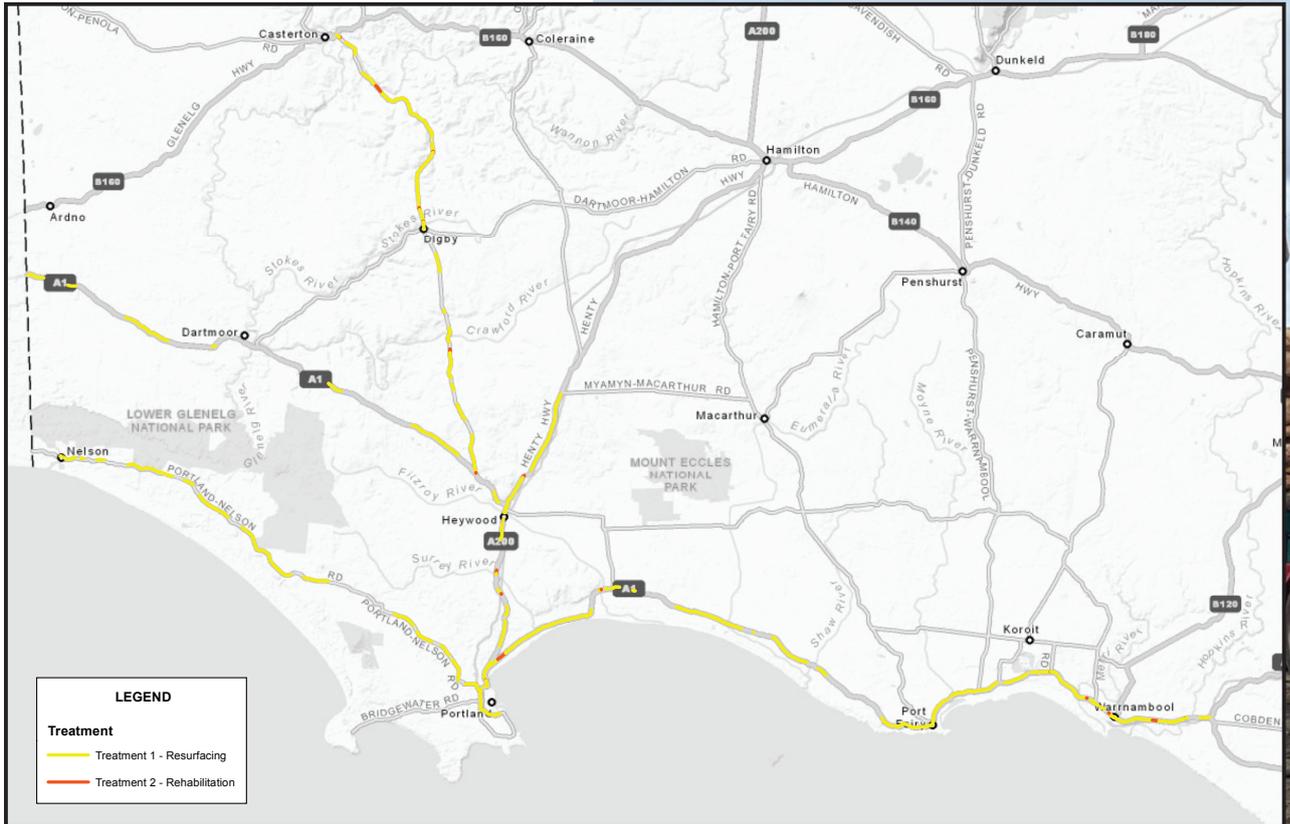


Figure 8: Resurfacing and rehabilitation treatments required under current conditions, VicRoads

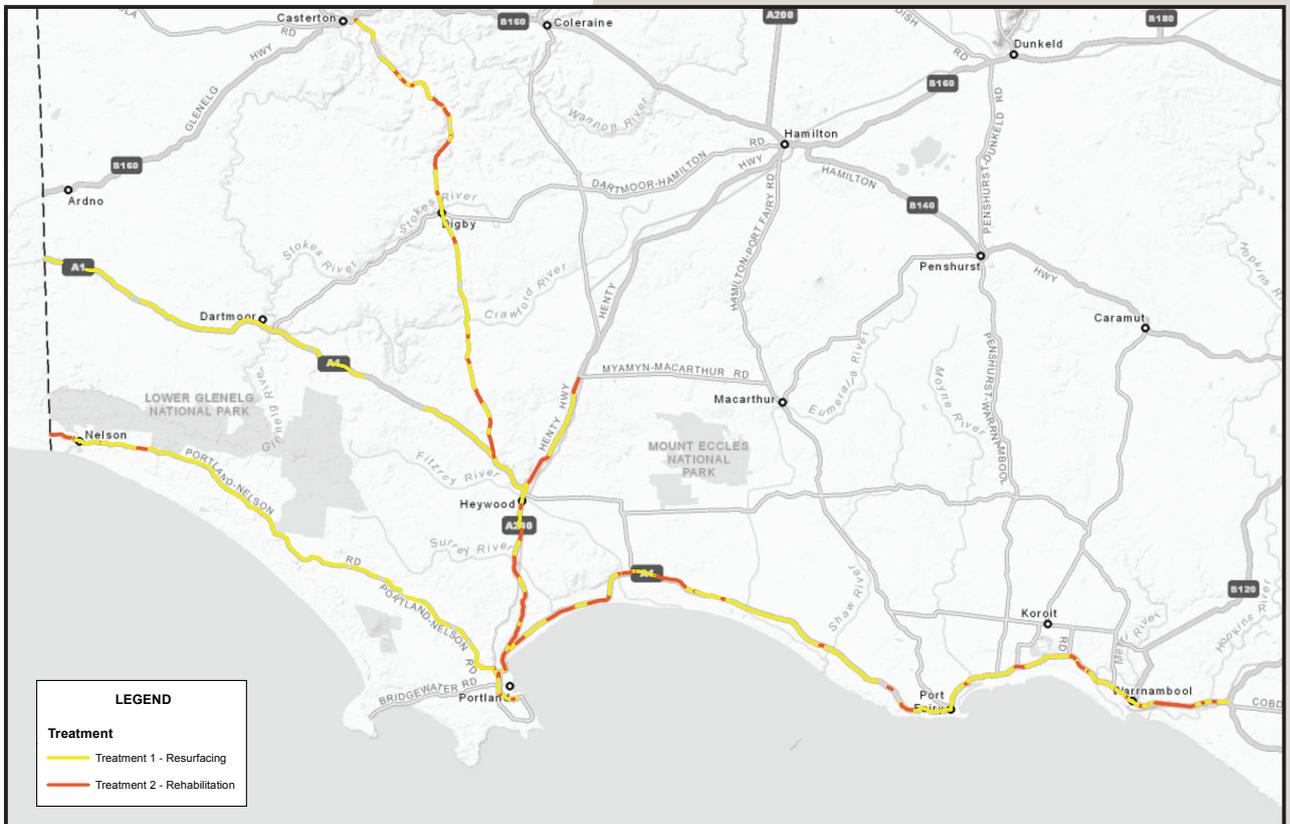


Figure 9: Resurfacing and rehabilitation treatments required under predicted conditions (by 2024), VicRoads



Figure 10: Resurfacing and rehabilitation treatments required under predicted conditions (by 2034), VicRoads

The deterioration of the road network in the Green Triangle region is increasing operating costs for the timber industry

Extensive consultation with industry as well as detailed economic analysis undertaken by SED Advisory (see background report) for the Green Triangle region Freight Action Plan Implementation Monitoring Group has identified and quantified direct impacts on transport operating costs arising from existing and predicted road conditions in the Green Triangle region. Transport operators have indicated that over the past four years repair and maintenance costs have risen from 5 to 10 per cent. Capital costs have also increased by up to 5 per cent with vehicles being fitted out to specifications similar to that required on unmade roads in central Australia.

Based on observed road deterioration trends across the road network, it is evident the volumes and loads being imposed by the current freight task are causing extensive damage. Industry advises that the condition on the Henty Highway between Hamilton and Portland is adding approximately 12 to 15 minutes each way which represents a productivity loss of 25 per cent. Lower order roads, such as the Portland Nelson Road, are also being used in lieu of the Princes Highway as it provides a travel time saving of 10 minutes. Existing road conditions are considered unsafe in places with increasing patterns of unsafe driver behaviour resulting in commuter and freight vehicles lane shifting to avoid rough sections of the road.

Road roughness is an important factor influencing Vehicle Operating Costs (VOC). The relationship between VOC and the measure of roughness, the International Roughness Index (IRI), has been well documented in a number of studies. Road roughness can be directly linked to fuel consumption, repairs and maintenance, tyre wear and lubricating oils both empirically and anecdotally.

A productivity analysis of the road network and forecast freight task has identified the average transport cost per tonne is \$5.85. This weighted average represents the average cost per tonne distributed across all vehicle sizes (Semi trailer, B double and A double) for a 100km trip with an operating speed of 80 kmph. As discussed above road roughness acts to influence both VOC and travel time. When modelled the average gain by improving road roughness within 100km of the Port of Portland represents a 6.35 per cent reduction in cost per tonne reducing the average cost per tonne to \$5.47.

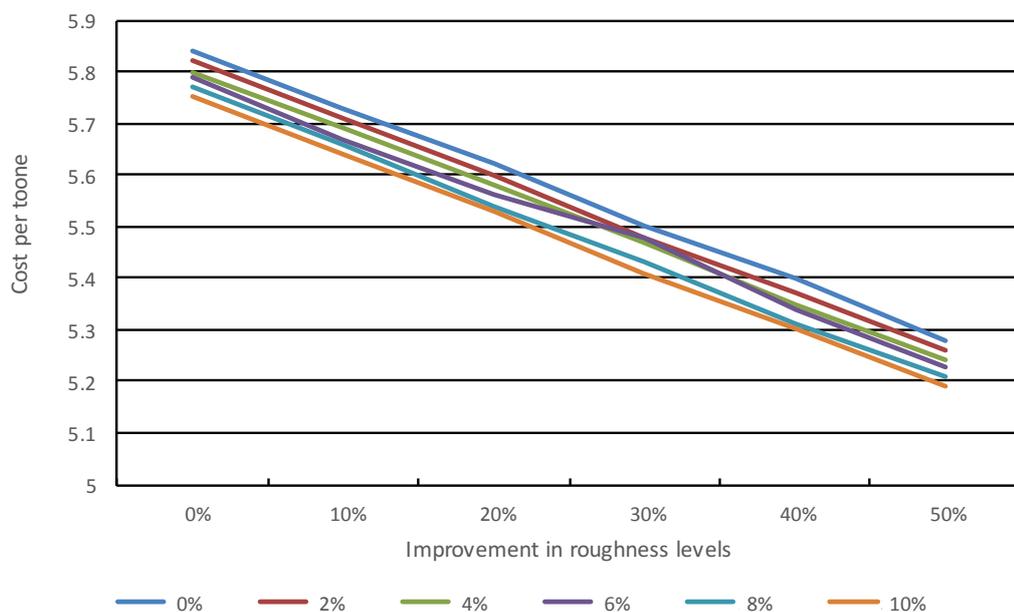


Figure 11: Relationship between vehicle operating costs and road condition and travel time, SED Advisory



Economic analysis shows there are benefits to the timber industry if it co-contributes to road infrastructure upgrades in the Green Triangle region

In its recently released National Infrastructure Audit, Infrastructure Australia is predicting heavy vehicle traffic to increase by about 50 per cent to 2030 Australia-wide. The audit – along with the Harper Competition Policy Review - recommended a shift to cost-reflective road pricing. Any change in road charging in Australia would need to take account of the current charges the road freight sector pays through the annual heavy vehicle determination.

Austrads – Improving Access Through Direct Private Investment in Public Road Infrastructure

In November 2015, the Commonwealth, State and Territory transport ministers endorsed a framework for the private sector to directly invest in public road infrastructure. This decision recognised the significant benefits that flow directly to industry when it co-contributes with governments to improving road infrastructure. The framework provides guidance to industry and government in cases where companies wish to invest in specific projects that would improve productivity for their operations. The framework provides important guidance for regions, such as the Green Triangle where councils, communities and industry are grappling with the challenge of constrained government budgets and rapidly growing freight tasks.

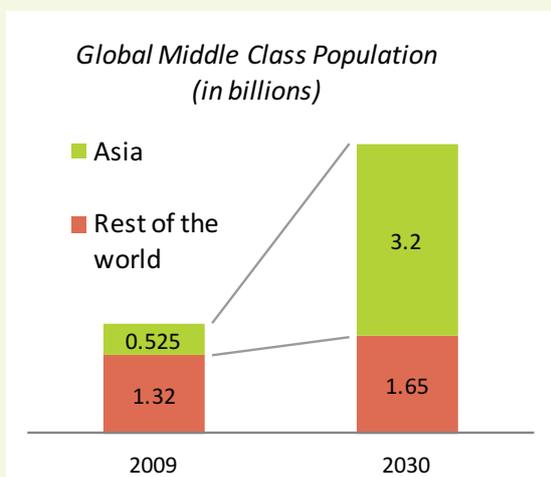


Figure 12: Growth in global middle class population, Food to Asia Action Plan, Victorian Government, March 2014



There is a direct link between transport operating costs and gains to industry from directly investing in road strengthening, resurfacing and upgrades in the Green Triangle region

Based on current funding levels for road strengthening, resurfacing and upgrades, significant lengths of the road network may require speed reductions as a means of managing safety issues associated with road roughness levels. Modelling undertaken by VicRoads (see background report for full description) indicates that by 2035, 209.5 km of roads out of a total 355km modelled would require speed reductions due to road roughness levels in accordance with VicRoads' management of roads in poor condition. This will have a broader financial impact of delays in getting a product from the paddock to the Port of Portland.

Key freight routes are also deteriorating quicker, increasing costs to industry, impacting on safety and constraining economic growth. In order to maximise the economic potential of the region, investment commensurate with the predicted freight task and economic output of the region is required to stabilise the network.

The model used to determine this has also been used to develop a program of road re-surfacing and rehabilitation which will significantly improve the average roughness as well as the structural strength of the road network leading to the port.

As a component of this modelling, the added costs to the timber industry and freight carriers in general resulting from damaged roads have now been quantified. It is evident that vehicle operating costs such as fuel costs, vehicle maintenance and potential indirect costs such as loss of export trade to competing bulk ports in other states are impacted by road conditions. Without direct investment in key freight routes in the region the \$/tonne cost of transporting goods will adversely rise over time; reducing the competitiveness

of the timber industry in export markets.

VicRoads and SED Advisory identified that if no additional investment occurs by 2025 the road roughness increases to around 5.56 IRI (International Roughness Index). The IRI is a measurement of road roughness with an upper acceptable limit of 5.8. This represents an operating cost increase from \$5.49/tonne to \$6.31/tonne, an increase of 14.9 per cent.

Year	Road Length (km)
2016	2.8
2017	5.3
2018	5.7
2019	9.0
2020	10.2
2021	11.2
2022	17.7
2023	21.0
2024	23.4
2025	27.8
2026	33.1
2027	40.4
2028	79.4
2029	93.7
2030	108.6
2031	134.0
2032	151.0
2033	169.5
2034	192.5
2035	209.5

Table 3: Cumulative road length likely to require speed reductions due to roughness, VicRoads

Transport costs represent approximately 40 per cent of the final export sale price of timber products and therefore a 14.9 per cent increase represents a 6 per cent increase in the final export sale price potentially jeopardising market position.

The broader financial impacts of delays in getting a product from the paddock to the Port have not been quantified, such as increased shipping (berthing and loading) costs due to extra loading times and potential failure to meet major export contracts and commitments.

The above factors provide a compelling case for direct private sector investment in to public assets such as roads which play a key role in the export supply chain. The Commonwealth Government, through the release of the Harper Review as well as the Australian Infrastructure Plan, has strongly supported the review of mechanisms to fund infrastructure including the introduction of road user pricing regimes. The Austroads framework for improving access through direct private investment in public road infrastructure, aims to provide industry and government certainty of process where industry can invest in specific projects that would improve productivity for their operators.

Economic Analysis of Industry Co-contributions

The maps shown on pages 18 and 19 indicate locations of road resurfacing and rehabilitation required on key freight routes within 100 km of the Port of Portland.

The 2024 and 2034 programs represent a total capital investment over 10 years of \$179 million or over 20 years of \$343 million respectively. The average BCR (Benefit Cost Ratio) calculated for these investments are 1.74 for the 10 year option and 1.04 for the 20 years.

In order to demonstrate a link between road investment and productivity improvements, analysis has been undertaken on the two investment scenarios to assist in determining whether a road pricing model is feasible. The capital costs were determined by VicRoads by reference to their Pavement Modelling System dTIMS. Results from the analysis are tabulated below.

Based on this analysis, a 10-year program of investment, totalling \$179 million was found to represent a more efficient use of economic resources, resulting in a higher Net Present Value (NPV) and BCR. While both scenarios provide the basis for increased industry profitability, industry will benefit at a rate of \$0.39/tonne of freight moved under the 10 year scenario as compared to \$0.05/t under for scenario 2.

The analysis concluded that an investment of \$179 million, over a 10 year period would be close to the optimal level of investment. Importantly, the analysis demonstrated there is an element of diminishing returns on the investment and making larger investments does not result in commensurate economic returns. This is because of factors that limit economic returns from investment in roads such as speed limits, minimum wage rates and maximum payloads. Higher amounts can be recovered, but carry increased levels of investment risk, over the life of analysis as they rely on a sustained freight task and require a longer term funding commitment.

	10 Years \$179m	20 Years \$343m
Economic returns (25 years, 7.5 per cent discount)		
Net Present Value (\$ million)	\$33.9	\$27.7m
Net Present Value of residual (\$ million)	\$22.1	\$55.5m
NPV less residual	\$11.8	(\$27.8m)
Breakeven analysis		
Benefit Cost Ratio	1.74	1.04
Breakeven (years)	22	25
Tonnes to breakeven (million tonnes)	343	>403
Km to breakeven (million km's)	1,564	>1,835
Productivity measures		
\$/t improvement in profitability / benefit	\$0.91	\$1.19
\$/t for investment recovery	\$0.52	\$1.14
\$/t net benefit (↑ profitability - ↑ investment recovery)	\$0.39	\$0.05
<hr/>		
\$/km improvement in profitability / benefit	\$0.20	\$0.26
\$/km for investment recovery	\$0.11	\$0.25
\$/km net benefit (↑ profitability - ↑ investment recovery)	\$0.09	\$0.01

Table 4: Economic analysis of 10 and 20 year investment options, SED Advisory

The economic analysis was undertaken on the presumption that the Green Triangle region was one spatial area and this model does not distinguish between South Australia and Victoria. This provides some degree of flexibility attempting to determine funding allocation. Provided transport activities are carried out in the region and its roads then the economic benefits will accrue to whoever is operating on the roads as long as equivalent road roughness improvements are achieved.

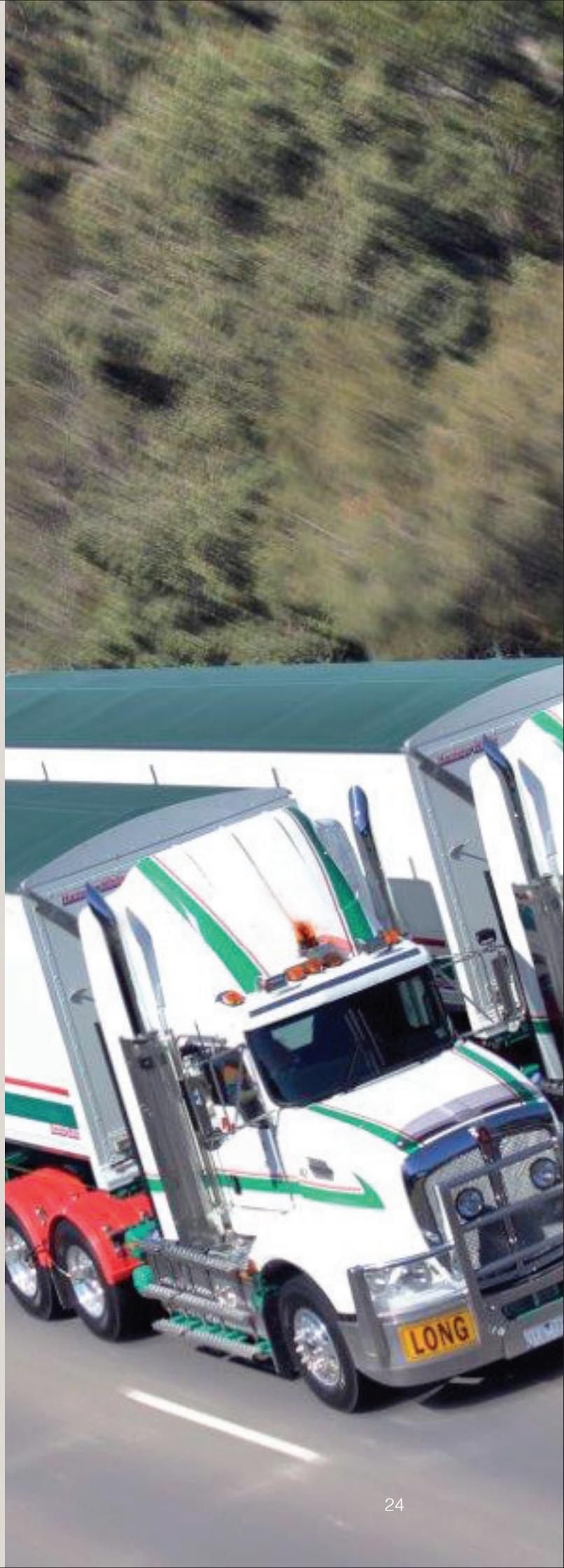
Therefore, the economic analysis was designed to determine the level of investment which would produce a return to the industry given a certain level of roads investment – regardless of whether the roads are situated in South Australia or Victoria.

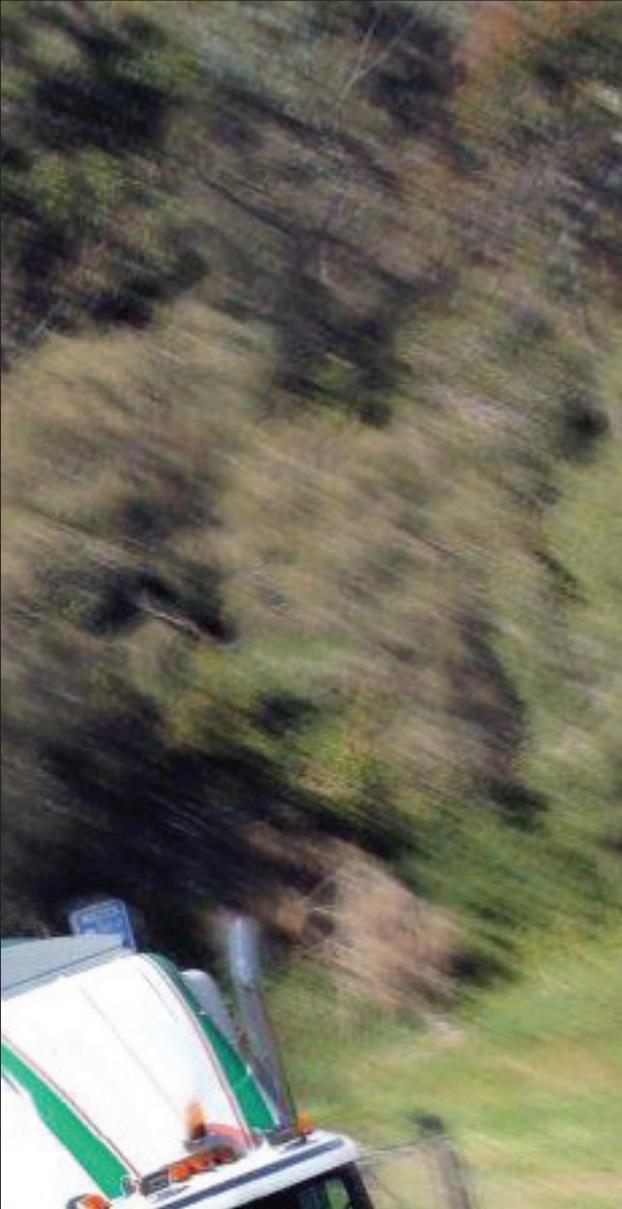
Further analysis could be undertaken to optimise the allocation of where the \$179m is invested across the South Australian and Victorian networks within the Green Triangle region. This could be achieved through the use of the Pavement Management System to allocate the \$179m over the combined road networks to achieve the greatest impact on time savings and cost of vehicle operations. Another approach could be used to look at the proportion of the freight task arriving at the port that is sourced west of the South Australian border or proportion of road lengths servicing the region. Using these as indicative measures, the South Australian component of the investment is likely to be in the range \$17.9m – \$32.2m, with a figure at the higher end of the cost estimate more likely than that at the lower end.

It is also important to note that under a model of \$179m investment, where industry is being charged at \$0.52/t, the entire amount of the investment is recovered over a 25 year period. The \$179m therefore represents more in the nature of a long term loan to industry than an investment. If State Government wished to recover funding costs then an interest factor could be applied, increasing the recovery rate marginally (for example, an average funding cost of five per cent would increase the funding recovery rate to \$0.546/t).

This being the case, provided the cost recovery was undertaken on the same basis as the original allocation then over the period under review, both agencies would fully recover their investments.

One of the current limiting factors for industry in the Green Triangle region investing to switching to higher productivity vehicles and new technology to improve fuel efficiency is the condition of the network. The current and predicted roughness of the network is likely to discourage private investment into new and improved fleets. Industry contribution into the rehabilitation of the network it uses would open up the added opportunity for a more efficient fleet of freight vehicles.





Switching to High Productivity Freight Vehicles

Following the release of the Plan in 2009 the Green Triangle region hosted the first Victorian High Productivity Freight Vehicle Trial which resulted in high productivity freight vehicles being permitted to travel between Hamilton and the Port of Portland.

After some initial Victorian Government road and bridge upgrades this became a permanent arrangement on the Henty Highway and Princes Highway.

This has reduced the number of freight vehicles required to meet the region's freight task, leading to less impact on communities, the environment and better safety outcomes. Road safety was also improved by vehicles having to pass 16 rigorous road safety standards, including ABS brakes requirements and front, side and rear under-run protection, as part of the national Performance-Based Standards process.

Monitoring of vehicle operations occurred as an important part of the trial through the Intelligent Access Program which uses innovative GPS technology to ensure the longer B-doubles stay on pre-approved routes.

Further investment in the upgrading of the Green Triangle road network will enable more routes to be considered for HPFV operation – thereby increasing efficiencies and reducing costs for the timber industry and other commodity sectors.

Inclusion of Princes Highway West on the National Land Transport Network

The Princes Highway West is the key supply chain for south-west Victoria and south-east South Australia and plays a critical role in the national economy. The highway traverses one of the most highly productive agricultural regions in Australia, including significant dairy and agri-business production. These commodity flows generate high volumes of road-based freight activity destined for national and international markets. In recognition of the significant road-based freight task in this region, this update calls on the Commonwealth Government to include the Princes Highway West, between Colac in Victoria and Mount Gambier in South Australia, on the National Land Transport Network.

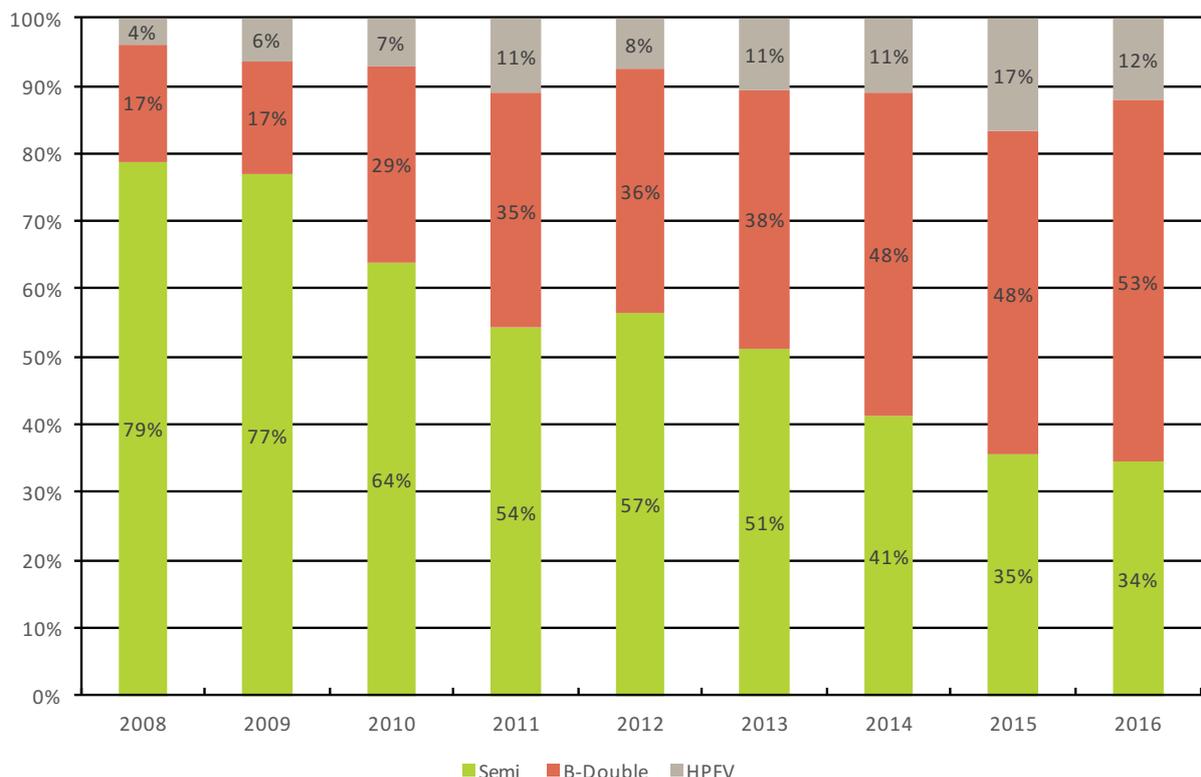


Figure 13: Percentage split of port bound freight by vehicle type

Regulatory Changes - National Heavy Vehicle Regulator

The National Heavy Vehicle Regulator (NHVR) now administers one set of laws for heavy vehicles under the Heavy Vehicle National Law (HVNL), delivering a comprehensive range of services under one regulator and one rulebook.

The national law commenced on 10 February 2014 and applies in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria. The NHVR is responsible for delivering a comprehensive range of heavy vehicle road transport services on a national level.

Since its implementation, road freight operators in south west Victoria have been able to:

- apply online for access permits
- request an internal review of access decision-making, as part of a more informal and responsive process
- deliver freight tasks under standardised regulation for mass, dimension and loading
- operate heavy vehicles under harmonised, national standards for heavy vehicle inspections and have confidence that these will be applied uniformly across the country
- take advantage of mutual interstate recognition of inspections and defect clearances, reducing vehicle downtime
- align business practices with nationally consistent fatigue management laws and benefit from nationally consistent penalties and enforcement outcomes at the roadside.

These changes – combined with VicRoads online maps of pre-approved routes for heavy vehicles – are adding to efficiencies for the road freight sector in the Green Triangle region.



Proactive Porthaul

Portland based transport company *Porthaul* has employed more than 30 full time ongoing drivers in 2015–2016 and is seeking to employ a further 20 full time ongoing drivers in 2016–2017 to man its growing fleet and meet the increasing transportation demands of the timber sector in the Green Triangle region. These driver positions are expected to continue to grow for at least another decade to meet the growing freight task.

In 2015–2016, a local skills shortage triggered *Porthaul* to offer a temporary 'Fly-In Fly-Out' program to attract drivers from Melbourne and Geelong to Portland for work. The program ceased in 2016 as a result of un-sustainable costs incurred by *Porthaul*. However, the program provided a catalyst for about 50 per cent of these employees to take up residence in Portland.

Additionally, the *Porthaul* led Freightmate program, launched in 2015, offers traineeships to youth, the unemployed and those looking to transition from the auto sector – as well as other eligible candidates. The program, with the support of South West TAFE, accredits trainees to drive for *Porthaul* over a 3-4 month period, whilst being paid and involved in the *Porthaul* business from day one.

Acknowledging the pro-active approach taken by *Porthaul*, the current skills shortage in the region and the vacant positions needing to be filled, the Victorian Government is currently working in partnership with *Porthaul* to assist the company in meeting its training and employment needs and in maximising its jobs and growth potential.



