

Rethinking Victoria's approach to forestry

June 2016

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Rethinking Victoria's approach to forestry

Native forestry in Victoria is at a crossroads: It has been in decline for more than 10 years and there is no evidence to suggest this trend will change ...

In contrast, the wider Victorian forestry sector, specifically hardwood plantation, has grown and provides proportionally greater value and economic contribution to the State.

Despite this growth in plantation forestry, the sector as a whole (native and plantation forestry) contributes a relatively small share of Victoria's gross state product (GSP) and employment.

Other sectors, such as non-forestry manufacturing and the services sectors, provide a materially greater economic contribution to GSP and employment in both regional and urban areas across the State. Encouraging these sectors could unlock greater economic returns and opportunities for sustained employment in regional Victoria.

... and VicForests' financial performance has been poor, especially when compared against organisations undertaking similar activities in Australia and elsewhere.

The Victorian native forestry sector generates poor commercial returns relative to the national forestry sector as a whole. Poor returns are even more pronounced when compared to international forestry industries.

In contrast to returns in other jurisdictions and overseas, VicForests is not generating an appropriate return in line with its stated objectives of:

- 'operating its business or pursuing its undertaking as efficiently as possible, consistent with prudent commercial practice
- maximising its contribution to the economy and wellbeing of Victoria.'

A strategic rethink is required to deliver a more appropriate return on Victoria's native forests. Several options present themselves ...

Don't give away the farm – Improve VicForests' commercial return through charging appropriate commercial rates. However, this will be challenging and could potentially result in adverse downstream impacts to timber processing facilities that are unlikely to absorb price changes.

Re-direct VicForests' activities – Encourage VicForests to diversify away from traditional native forest activities towards forestry that will generate higher returns, such as supporting on-farm hardwood forestry, focusing on plantation forestry to take advantage of funding under the Emissions Reduction Fund, or investments into forest-based eco-tourism to optimise economic outcomes.

Champion growth industries – Government should only focus support on industries that provide the best economic development opportunities in the State's regions. These growth industries include non-forestry manufacturing, accommodation and food services and other services.

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Executive summary

Native forests are important resources in Victoria that provide widespread benefits to the community, particularly in the State's regions. In addition to producing timber, native forests protect water catchments and water supply, conserve flora and fauna, prevent land erosion, and provide access to eco-tourism and recreation, including educational opportunities. Timber harvesting remains an important State resource. However, the forestry sector in Victoria (as defined by the cultivation of trees, forestry support services and the processing of the timber) has gone through structural changes with declining value observed in production from public native forests. This report does not consider the structure of the forestry industry *per se* but rather it investigates the granular economic contribution of the sector to both regional and urban areas across the State, which is a unique undertaking.

Opportunities have been identified to deliver improved outcomes for Victoria that are:

- in line with the Government's regional development objectives
- consistent with its obligations with respect to administration of the State's natural resource assets.

Options for the future – VicForests

VicForests is at a crossroads. Poor returns coupled with a challenging future outlook mean that a strategic re-think is required.

1 Improve VicForests' commercial return through charging appropriate commercial rates

Moving to increase prices or restructure VicForests' cost base would have flow-on impacts for downstream operators. Some timber processing businesses that are unlikely to absorb price changes and this in turn might lead to closures and job losses. This report has not considered the flow-on implications of increased prices for VicForests' products.

At the same time, not achieving an appropriate return for the State means that prices do not reflect true market considerations, investments in the sector will not be efficient, and limited segments of the forestry sector will enjoy a cross-subsidy. The question to be considered is whether that cross-subsidy is the best way to support forestry or regional areas of Victoria.

2 Allow a mechanism for VicForests to diversify away from traditional native forest activities

Allowing VicForests the ability to diversify its activities enables future growth. Encouraging VicForests to diversify away from traditional native forest activities towards activities that will generate higher returns, such as supporting on-farm hardwood forestry, focusing on plantation forestry to take advantage of funding under the Emissions Reduction Fund (ERF), or investments into forest-based eco-tourism. Allowing VicForests to access the ERF directly or indirectly would improve VicForests' profitability. Should a mechanism be created such that VicForests could directly access the ERF through avoiding logging native forests, VicForests would gain revenue from the ERF without the need to fell trees, which would translate to reduced operational and administrative costs thereby improving profitability. Research suggests these earning opportunities are significant. Additionally, VicForests could be positioned to facilitate development of new areas of native forest by supporting Victorian farmers in accessing the ERF, conditional on future revenue sharing arrangements. This may involve providing guidance to farmers in managing or inducing regrowth of native forest on farmlands, thereby providing a mechanism for Victorian farmers to access carbon credits under the ERF. Forest-based recreation activities, such as eco-tourism, can provide economic returns whilst maintaining native forested areas. The Otway Fly treetop walk is an example of a successful forest-based eco-tourism venture, attracting domestic and international tourists.

3 Support should be directed towards alternative industries that provide better opportunities for sustainable employment and economic development.

As part of its commitment to regional development, the State aims to deliver jobs and investment by supporting competitive, productive and sustainable regional economies. In line with these objectives, government should only champion growth industries by focusing support on those industries that provide the best opportunities for economic development in the State's regions. These include non-forestry manufacturing, accommodation and food services and other services.

Changes in forestry's contribution to Victoria through time

Victoria's (native and plantation) forestry contribution to gross state product (GSP) has contracted by 18 per cent over the last 14 years, and there is no evidence to suggest that this trend will change:

- the value and volume of production from native hardwood forests in Victoria have declined by 26 per cent and 32 per cent respectively over the last 10 years. Nationally, harvest volumes are projected to contract further in the medium term
- in contrast, the production of forestry products through hardwood plantations has grown 8 times in value and 7 times in volume over the last 10 years.

Profitability of native forestry in Victoria

Although the Australian forestry sector has the potential for commercial success, VicForests' returns to the State (and hence the citizens of Victoria) are relatively low. VicForests' net profit margins are:

- 31 per cent lower than the Australian forestry sector
- 24 per cent lower than the Australian all industries' average
- 84 per cent lower than the forestry sector in Sweden
- 67 per cent lower than the forestry sector in Ireland
- 16 per cent lower than the forestry sector in Canada.

This performance conflicts with community expectations. Requiring a reasonable rate of return of an asset is no different to industries that pay royalties or excises, such as mining, or those that use Crown land. Charges are also paid for granting exclusive rights to conduct business in some industries, such as a fishing licences or a casino.

When taking into account all timber sources in Victoria (native and plantation forestry), the processing capacity of the Victorian forestry industry is smaller than more successful international examples. Victorian forestry's limited scale is reflected in its contribution to the State economy, which was just over USD \$1.7 billion in 2014. This compares with USD \$3 billion in Ireland, USD \$4 billion in British Columbia and over USD \$11 billion in Sweden in the same year.

Comparison against other sectors – economic analysis

The native forestry sector and the forestry sector as a whole do not provide large economic returns on investment in comparison to alternative industries. The analysis has investigated the level of capital expenditure required to support a single additional full time employee in each industry. Table 1 illustrates creating an employee in the native forestry industry costs 12 times more than the State average across other industries. This result is driven by three main factors:

- the native forestry sector only accounts for the activities associated with the cultivation of trees and forestry support services and does not include the labour associated with the processing of that timber
- the forestry industry more generally is capital intensive requiring a greater share of machinery and equipment as opposed to labour needs
- native forestry is less productive and timber is harvested less frequently than plantation timber, therefore requiring less labour.

Table 1 Estimated capital investment funds required to obtain one full time equivalent job (FTE)

Industry	Level of investment required for one FTE
Native forestry	\$5,041,000
Forestry	\$574,000
Average of all non-forestry industries	\$416,000
Non-forestry manufacturing	\$272,000
Accommodation and food services	\$222,000
Other services	\$139,000

Source: PwC analysis

From a regional development or employment perspective, the higher level of investment required to create one FTE, suggests that supporting native forestry would be less beneficial than supporting other industries, as it generates lower employment per dollar spent.

The finding in Table 2 suggests that economic growth can be unlocked through investing into industries other than forestry. In 2014, Victoria's forestry sector as a whole (native and plantation forestry) made a relatively small contribution to the State. The sector comprised 0.6 per cent of Victoria's GSP and 0.8 per cent of its employment. Table 2 details Victorian GSP and employment impacts flowing from capital investment by industry. This highlights the native forestry sector operates in relative isolation such that if there was increased investment, the benefits would be largely contained within the sector. In other words, the native forestry sector does not contribute widespread economic returns:

- every dollar of capital investment in the forestry sector results in a total multiplier effect of 0.14 to GSP, the lowest of the industries considered
- only 76 per cent of these total GSP impacts flow-on to other industries, which is also lower than any other considered sector.

Table 2 GSP and employment impacts resulting from capital investment, 2014

Industry	GSP impacts (per \$ capital investment)					Employment impacts (FTE per \$m capital investment)			
	Direct	Flow-on	Total State	% flow-on impacts to total	Net effect (shift from native forestry)	Direct	Flow-on	Total State	Net effect (shift from native forestry)
Native forestry	0.03	0.11	0.14	76%	-	0.20	0.63	0.82	-
Forestry	0.37	1.26	1.63	77%	+1.49	1.74	7.29	9.03	+6.66
Non-forestry manufacturing	0.45	2.2	2.65	83%	+2.50	3.67	13.23	16.90	+16.07
Accommodation and food services	0.14	1.78	1.92	93%	+1.78	4.50	11.35	15.85	+15.03
Other services	0.16	1.56	1.72	91%	+1.58	7.19	9.91	17.10	+16.28
Average of all non-forestry industries	0.32	1.28	1.60	80%	+1.46	2.40	7.98	10.38	+9.55

Source: PwC analysis

In examining the net effects of directing investment from the forestry sector across other industries, results show net positive GSP and employment effects in all scenarios above.

Non-forestry manufacturing

The non-forestry manufacturing industry contributed more substantively to the State economy. Its share was 7.4 per cent of Victoria's GSP and 9.8 per cent of Victoria's employment in 2014. A dollar of manufacturing investment goes a lot further than a dollar of native forestry investment.

- every dollar of capital investment in the non-forestry manufacturing industry results in a total multiplier effect of 2.65 to GSP, which is much larger than the 0.14 observed in the native forestry sector
- 83 per cent of these total GSP impacts flow-on to other industries, generating widespread economic returns on investment.

Accommodation and food services

The accommodation and food services industry represented 2.3 per cent of Victoria's GSP and 5.7 per cent of its employment in 2014. Furthermore, a dollar invested in accommodation and food services goes a lot further than a dollar of native forestry investment.

- every dollar of capital investment in the accommodation and food services industry results in a total multiplier effect of 1.92 to GSP, which is much larger than the 0.14 observed in the native forestry sector
- 93 per cent of these total GSP impacts flow to other industries, generating widespread economic returns on investment.

Other services

The other services industry, which encompasses repair and maintenance and personal services such as beauty services, contributed 1.8 per cent to Victoria's GSP and 3.3 per cent to State employment in 2014, and generates larger and more widespread economic returns on investment:

- every dollar of capital investment in the other services industry results in a total multiplier effect of 1.72 to GSP, which is much larger than the 0.14 observed in the native forestry sector
- 91 per cent of these total GSP impacts flow-on to other industries, generating widespread economic returns on investment.

Challenges for native forestry

The native forestry sector in Victoria will continue to face challenges.

- Recent changes to building codes in Australia may see an increase in domestic demand for forest and wood products. Exports of forestry products are largely dependent on the Chinese market, which make up the majority of export demand. Despite these opportunities, the native forestry sector in Victoria is not expected to capture these gains as opportunity to support this demand is largely attached to the forestry sector's ability to transition into high-productivity plantation-based products
- New supply of timber will need to come from plantation forestry as the native forestry sector has undergone structural changes in recent years. In particular, reduced native harvest volumes of nearly 60 per cent in a traditionally strong producing region in Eastern Victoria
- The market size for native forests has gradually shrunk over the past 10 years, as both industry operators and downstream markets have gradually shifted to timber plantations in an effort to develop sustainable sources of timber.

1 The forestry sector in Victoria

Native forests are important resources in Victoria providing widespread benefits to the community, particularly in the State's regions. In addition to producing timber, native forests protect water catchments and water supply, conserve flora and fauna, prevent land erosion, and provide access to eco-tourism and recreation, including educational opportunities.

Timber harvesting remains an important State resource. However, the forestry sector in Victoria (as defined by the cultivation of trees, forestry support services and the processing of the timber) has gone through structural changes with declining value observed in production from public native forests.

This report does not consider the structure of the forestry industry per se but rather it investigates the economic contribution of the sector to both regional and urban areas across the State.

The purpose of this report is to provide an evidence base to inform current discussions surrounding the forestry sector in the State. In particular this analysis considers the native forestry component of the broader forestry sector and the challenges and opportunities it faces.

1.1 The native forestry sector in Victoria has gone through structural changes

The Victorian forestry sector (native and plantation forestry) has been in decline over the last 14 years, largely due to a shrinking contribution from the native forestry sector. This is driven in part by a 31 per cent reduction in the harvest of public forest sawlogs, following a Victorian review which in 2001-02 found unsustainable harvesting levels on public land in a traditionally strong producing region, Eastern Victoria. ¹ Native harvest volumes reduced by a further 60 per cent over the 2008 to 2013 period.

Using PwC's Geospatial Economic Model (GEM), ² the analysis has examined industry gross state product (GSP) and employment for the forestry industry in Victoria.

The overall Victorian forestry sector is estimated to have employed significantly fewer people in 2014 than in 2001. The contraction in employment across the period is estimated to be close to 30 per cent. The forestry sector's contribution to GSP declined significantly by 18 per cent across the same period 2001-14. ³ This finding is supported by other research prepared for the Australian forestry industry. ⁴

The overall forestry sector has been in decline over the last 14 years and there is no evidence to suggest this trend will change. Figure 1 depicts the ongoing decline in overall forestry employment and GSP.

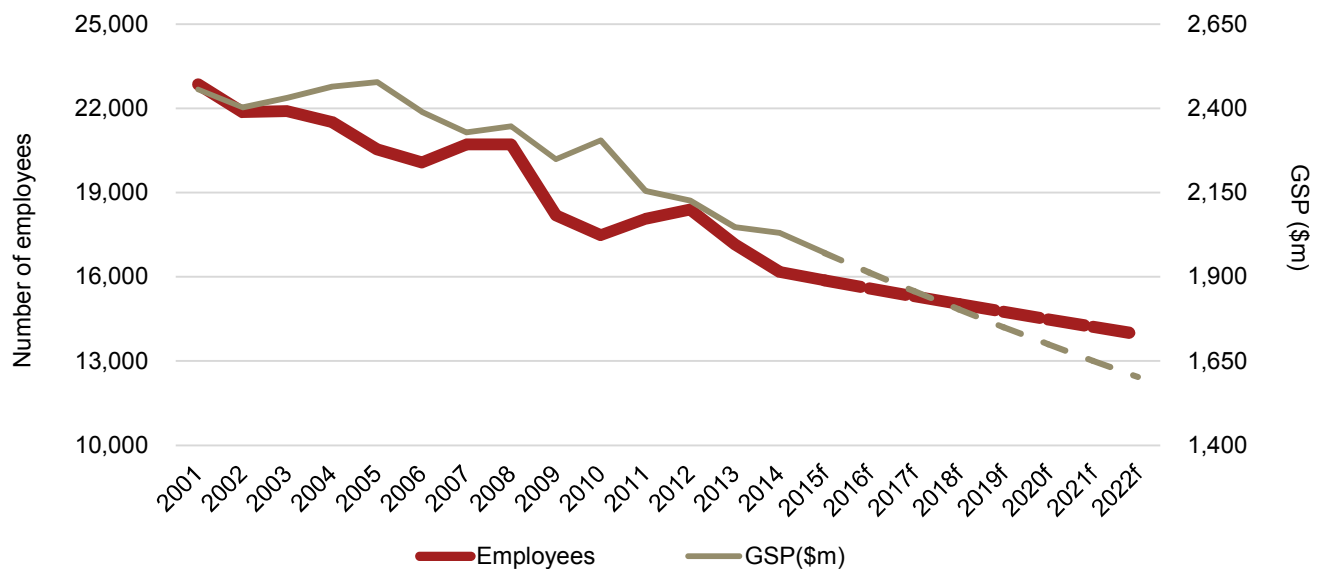
¹ Mark Parsons and Phillip Pritchard for Rural Industries Research & Development Corporation with Forest & Wood Products Research & Development Corporation and Land & Water Australia (2009) *The Role, Values and Potential of Australia's Private Native Forests*, RIRDC Publication No. 09/049.

² PwC developed a new analytical tool, PwC's GEM containing unique granular data that is consistent and reconcilable with Australian Bureau of Statistics (ABS) estimates of Gross State Product (GSP), Gross Domestic Product (GDP) and employment at a state and national level. For more information on PwC's GEM, please visit: <http://www.pwc.com.au/analytics/gem.html>

³ PwC GEM analysis

⁴ IBISWorld Industry Report A0301:Forestry in Australia, April 2015

Figure 1 – Forestry GSP and employees in Victoria (native and plantation forestry), 2001-2022

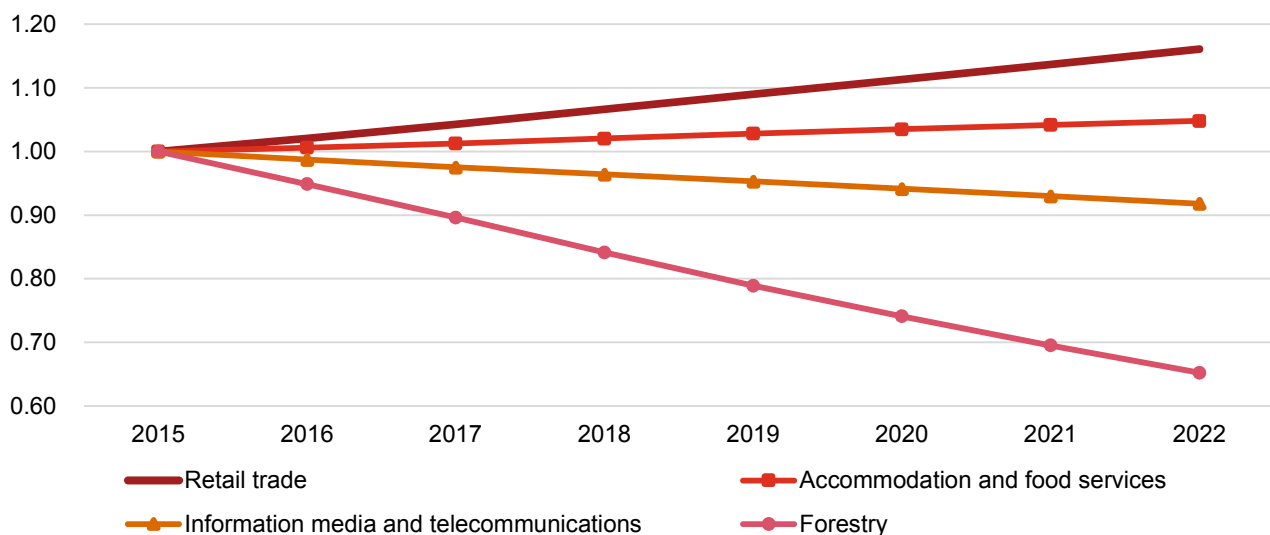


Source: PwC GEM analysis and trend projection

The native forestry sector is expected to contribute a decreasing share to Victoria's economic future

Volumes of native forest harvest are projected to continue their decline in line with the long term decline seen in the overall forestry sector in the last 14 years.⁵ Figure 2 shows the contribution of selected Victorian industries to overall Victorian forecast GSP from 2015-22. Indexed at 2015, upward sloping lines represent industries with a growing share, while downward sloping lines represent industries contributing a decreasing share of Victorian GSP.

Figure 2 – Forestry sector relative contribution, 2015 – 2022 (index 2015 = 1)



Source: PwC GEM analysis and trend forecast analysis

⁵ ABARES (2015) Australian forest and wood products statistics: March and June quarters 2015

Figure 2 demonstrates the forestry sector as a whole is expected to contribute a decreasing share to Victorian GSP into the near future. **This decreasing share is driven by forecast declines in the native forestry sector, which emerge due to lowered availability to harvest native forests.** These findings are further evidenced by the contraction in both the value and volume of native forestry production (these findings are discussed further Section 1.2).

In contrast, other sectors are forecast to contribute an increasing share to Victorian GSP, including retail trade and accommodation and food services. This suggests that native forestry's importance to the Victorian economy is expected to reduce, with other industries taking up the slack.⁶

1.2 Victoria's native forestry sector is underperforming

The native forestry sector in Victoria is underperforming: both the value and volume of native hardwood production has declined over the last 10 years. Additionally, VicForests' (a state-owned enterprise responsible for the harvest of native forests) has demonstrated lower net profit margins than the Australian forestry sector and industry average, and considerably lower profit margins than select forestry sectors internationally.

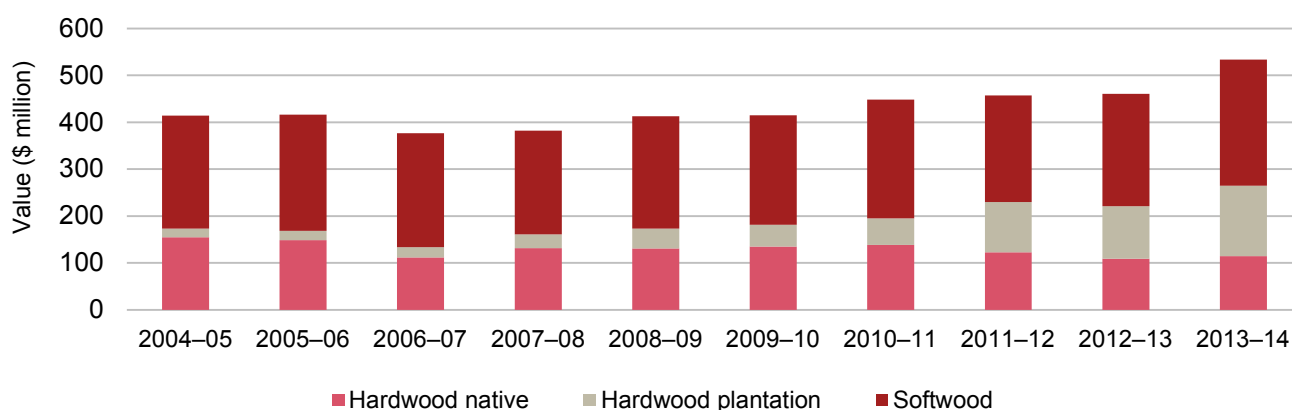
The forestry plantation sector has grown over the last 10 years, while the native forestry sector has contracted

Figure 3 and Figure 4 show that recent growth in both the value and volume of production of forestry products has been garnered through plantations: the value and volume of production of forestry products through hardwood plantations has grown 8 times in value and 7 times in volume over the last 10 years.⁷

In contrast, the value and volume of production from native hardwood forests in Victoria have declined by 26 per cent and 32 per cent respectively over the last 10 years. This suggests the 18 per cent contraction observed in the forestry sector over the last 10 years has been driven by declining production in the native forestry sector.

Plantations make up just 5 per cent of total forest cover in Victoria, but represent over 80 per cent of production. This highlights the disparity between the potential productive capacity of native and plantation forests.⁸ Nationally, plantation forests accounted for approximately 80 per cent of annual harvest volume in 2013-14. Victorian plantations comprised 30 percent of total national value and volume in 2013-14.⁹

Figure 3 – Victorian value of production of forestry products, 2004 – 2014



Source: ABARES (2015) Australian forest and wood products statistics: March and June quarters 2015

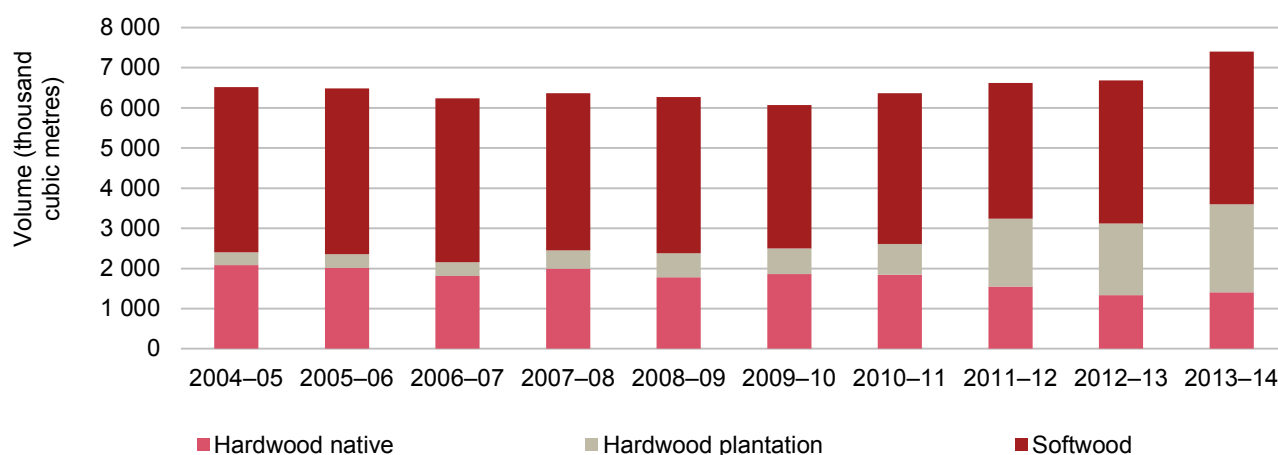
⁶ This forecast does not capture opportunities for the plantations component of the forestry sector, which are discussed later on in this report.

⁷ ABARES (2015) Australia's Forests at a Glance 2015

⁸ ABARES (2014) Australia's Forests at a Glance 2015 and Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee (2013) Australia's State of the Forests Report 2013, ABARES referencing National Forest Inventory data.

⁹ ABARES (2015) Australian forest and wood products statistics: March and June quarters 2015

Figure 4 – Victoria volume of production of forestry products, 2004 – 2014



Source: ABARES (2015) Australian forest and wood products statistics: March and June quarters 2015

New plantation growth across Australia has been subdued over the past five years, following the collapse of many forestry managed investment schemes (MIS) related to timber plantations.¹⁰ Despite this, Victoria has produced increasing volumes from plantations, as illustrated by the upward trend shown in Figure 4.

While the volume of production is trending upwards, almost all this growth over the last five years can be attributed to an increase of hardwood plantations, with softwood plantations remaining steady and hardwood native production (that proportion predominantly managed by VicForests) declining. Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) forecasts of national volume of harvests estimate that native harvesting will contract 13 per cent by 2050.¹¹

Historically, when regulation has restricted native forest logging (via a reduction of over 30 per cent from a Victorian forestry review), plantation hardwood has stepped in to fill the gap. This has been observed both in Victoria and nationally.

Plantation forestry internationally

Industry commentary indicates that the trend towards increasing production from plantations and away from native forest timber is being experienced in other forestry industries globally.

Plantations dominate over native forests in most international locations, with wood sourced from industrial plantations gaining a 27 per cent market share over wood sourced from natural or semi-natural forests over the past four decades.¹² This change is seen to be occurring for several reasons, including:

- plantations are better able to manage key environmental challenges, including watershed management, climate change mitigation and maintaining biodiversity
- plantations are better suited to achieve high levels of productivity, as increases in the scale of output are not achievable from sustainable harvest of native forests.

These features of plantations are expected to further speed the transition toward consistently higher quality plantation products, with steady supply outpacing lower quality natural forest products from a diminishing resource base.¹³

¹⁰ IBISWorld Industry Report Ao301:Forestry in Australia, April 2015

¹¹ ABARES (2015) Australian forest and wood products statistics: March and June quarters 2015

¹² Poyry (2014) Poyry Point of View: Reinventing plantation forestry

¹³ New Forests: Timberland investment outlook 2015-19

Overview of VicForests

VicForests is the Victorian state-owned enterprise responsible for the sustainable harvest, regrowing and commercial sale of Victoria's native timber in all Victorian State forests. VicForests was established on 28 October 2003 to separate the commercial and regulatory functions of forest management and commenced operations on 1 August 2004. The Treasurer is the sole shareholder and the Minister for Agriculture and Food Security is the responsible Minister.¹⁴

As a state-owned enterprise, VicForests' principle objectives are to harvest, regrow and sell timber for public benefit by:

- operating its business or pursuing its undertaking as efficiently as possible, consistent with prudent commercial practice
- maximising its contribution to the economy and wellbeing of Victoria.¹⁵

VicForests generates revenue from the sale of the native forest timber it harvests. Its main expenses are fees paid to harvest and haulage contractors who carry out these activities.

Since 2004, native forest timber harvesting has generated around \$1 billion in revenue for VicForests, with over \$600 million paid to contractors to harvest and transport these products.

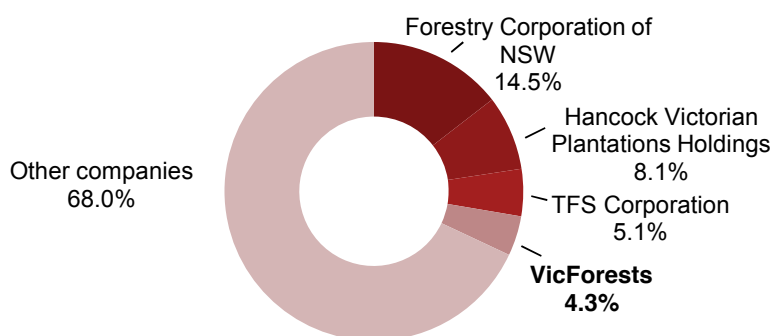
Across this period, VicForests has made \$13.5 million net profit after tax, returning a profit in all but three years. Dividends totalling \$5.1 million were paid in 2005–06 and 2006–07; in 2013–14 \$250,000 in dividends was paid.¹⁶

VicForests directly employed 107 full time equivalent employees in 2014,¹⁷ a contribution of approximately 0.006 per cent to Victoria's total employment.¹⁸ In 2013 the harvest and haulage sector directly employed 405 people,¹⁹ thus illustrating **a minimal direct contribution to the State's total employment.**

In 2014–15, IBISWorld estimates that VicForests' market share was 4.3 per cent nationally, which remained flat from the previous year. It is worth noting that this market share only reflects the portion of the forestry sector in which VicForests is directly involved (division A forestry and logging, using ANZSIC definitions).

VicForests' market share across the whole forestry sector, which includes manufacturing activities such as sawmilling and paper production, would be much smaller than this amount.

Figure 5 – VicForests market share, 2014–15



Source: IBISWorld Industry Report AO301: Forestry in Australia, April 2015

¹⁴ VicForests (2014) Annual Report 2013–14

¹⁵ State Owned Enterprise Act 1992 (Vic)

¹⁶ Victorian Auditor-General's Office (2013) Managing Victoria's Native Forest Timber Resources

¹⁷ VicForests (2015) Annual Report 2014–15

¹⁸ Estimated ratio of 0.8 FTE to 1 job using ABS Labour Force data – Victoria Detailed, Quarterly (full time and part-time total)

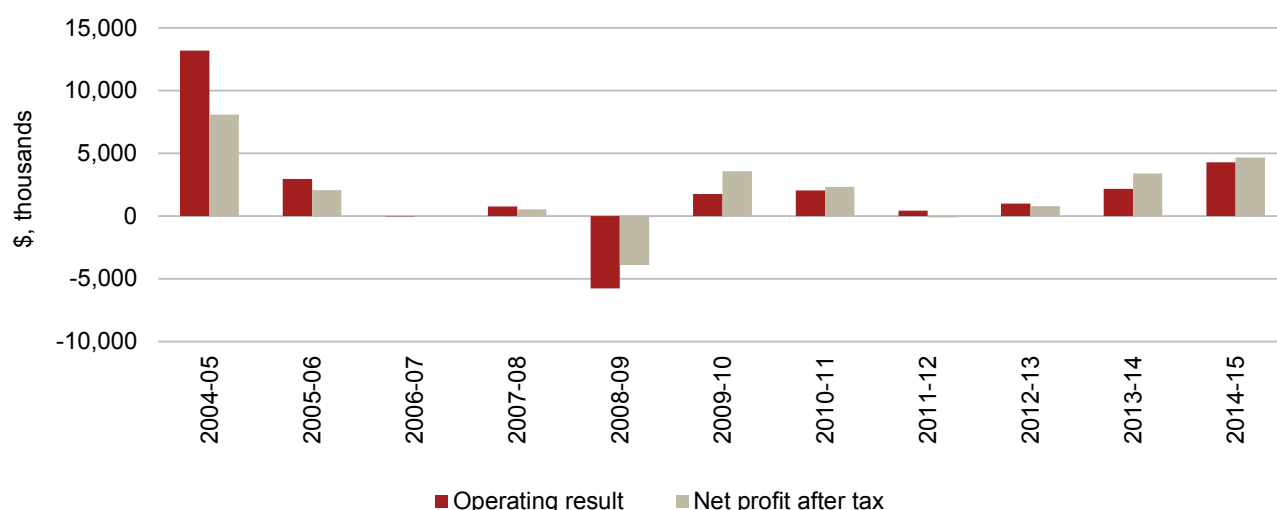
¹⁹ Victorian Auditor-General's Office (2013) Managing Victoria's Native Forest Timber Resources

Figure 6 shows the financial results of VicForests over its lifetime. There are three operating years where VicForests posted a net loss after tax. These include:

- 2006-07, which followed the introduction of the Open and Competitive Timber Sales Model in July 2006 and also included the Great Divide fires over December 2006 and January 2007
- 2008-09 (which included the Black Saturday fires in February 2009).²⁰

Whilst fires do impose a large cost, the salvage of the wood from those fires increases revenue above that expected for that year. For example, salvage from the 2006-07 fires resulted in \$99 million in mill door sales.²¹

Figure 6 – VicForests financial results, 2004-05 to 2014-15



Source: VicForests Annual Reports and Victorian Auditor-General's Office (2013) *Managing Victoria's Native Forest Timber Resources*

This shows that VicForests' financial position has been unsteady and sensitive to bushfires and other external factors, such as the volume of domestic housing construction. Housing is a major user of wood products and, in turn, is sensitive to the economic environment which took a downturn during the global financial crisis. Another element of VicForests' financial results is increased legal expenses from litigation against VicForests by environmental groups, for example \$3.1 million in 2011-2012.²²

The large drop from 2004-05 to 2005-06 was due to two items on VicForests' operating statement: a \$4 million decrease in the net biological asset value of the standing timber and a \$6 million increase in operating expenditure due to the Department of Sustainability and Environment's commencement of charging for services. These services were previously provided at no cost to VicForests. The increase in operating expenditure also covers the implementation of strategic initiatives including hiring 25 new staff to roll out the mill door sales business model.²³

The net profit after tax figure, though demonstrating successful operations, is not necessarily indicative of an economic profit. This is because the cost associated with the loss of economic value of the environmental asset is not accounted for (e.g. only the market value of standing timber is shown on the operating statement). Furthermore a positive net profit is not necessarily indicative of a benefit to the State, as dividends paid back to the Treasurer (VicForests' only shareholder) are much less than the net profit after tax amount. This is illustrated in Table 3.

²⁰ Ibid

²¹ VicForests (2006) Annual Report 2006-07

²² Victorian Auditor-General's Office (2013) *Managing Victoria's Native Forest Timber Resources*

²³ VicForests (2015) Annual Report 2005-06

Table 3 – VicForests financial performance at a glance

	2012-13	2013-14	2014-15
Revenue from sales of forest product	104,474,000	104,258,000	107,771,000
Net profit after tax	802,000	3,411,000	4,677,000
Dividends paid back to the Treasurer	250,000	765,000	1,500,000
% Dividends paid to net profit after tax	32%	22%	32%

Source: VicForests (2015) *Annual Report 2014-15*

Over the last three years, dividends paid back to the Treasurer only represent an average 28 per cent (or less than one-third) of net profits. Additionally, up to 2013, VicForests had received a boost to its financial position provided by a total of \$24.6 million in government reimbursements for the additional costs of its fire salvage efforts. ²⁴ **Government Reimbursements for Additional Native Timber Salvage = Grants!**

Forestry and native forestry from a commercial viewpoint

Australian Bureau of Statistics (ABS) data on average industry performance in 2013-14 have been used in conjunction with the results of desktop research to understand the relative performance of Australian and Victorian industries in recent years. Our analysis has additionally considered several international case studies to understand how VicForests and the Victorian forestry sector more broadly compare to forestry industries internationally.

Domestic benchmarks

Assuming that the estimated net profit margin of the Australian forestry sector is representative of the forestry sector as a whole (native and plantations forestry) in Victoria, Table 4 illustrates the Victorian native forestry sector is underperforming relative to the plantations forestry sector. The Australian forestry sector more broadly recorded an estimated net profit margin of 6.2 per cent in 2014-15, illustrating that the sector nationally is more profitable compared to the Victorian native forestry sector, which registered a net profit margin of 4.3 per cent. ²⁵ Over the last 10 years the Victorian Auditor-General's Office (VAGO) reported key financial metrics for VicForests. An average net profit margin of 1.4 per cent is observed over the last 10 years. ²⁶ **This expected as VicForests does not charge appropriate commercial harvest and haulage rates, which represents the largest cost item on their financial statements.** ²⁷ **i.e. VicForests is subsidising H & H!**

Across Australia more broadly, there is considerable variation in the estimated net profits achieved in different industries, as shown in Table 4.

²⁴ Victorian Auditor-General's Office (2013) *Managing Victoria's Native Forest Timber Resources*

²⁵ VicForests (2015) *Annual Report 2014-15*.

²⁶ Victorian Auditor-General's Office (2013) *Managing Victoria's Native Forest Timber Resources*

²⁷ According to VicForests' 2014-15 annual report, harvest and haulage accounted for 68 per cent (or \$73 million) of their total financial costs in 2014-15.

Table 4 – Estimated net profit margins for Australian industries, 2014-15 ²⁸

Industry	Estimated net profit margin (%)
Rental, hiring and real estate	13.49
Mining	12.95
Information media and telecommunications	10.33
Electricity, gas, water and waste services	9.26
Transport, postal and warehousing	6.76
Health care and social assistance (private)	6.28
Forestry	6.18
Australia – All industry average	5.64
Accommodation and food services	4.47
Arts and recreation services	4.34
Native forestry (VicForests)	4.30
Education and training (private)	4.00
Public administration and safety (private)	3.92
Construction	3.88
Professional, scientific and technical services	3.87
Manufacturing	3.03
Administrative and support services	2.88
Retail trade	2.34
Other services	2.21
Wholesale trade	1.91

Source: ABS Australian Industry 2013-14, Stern University, Margins by Sector, 2015

The estimated average net margins achieved in other Australian industries range from 1.91 per cent for wholesale trade up to 13.5 per cent for rental, hiring and real estate services.

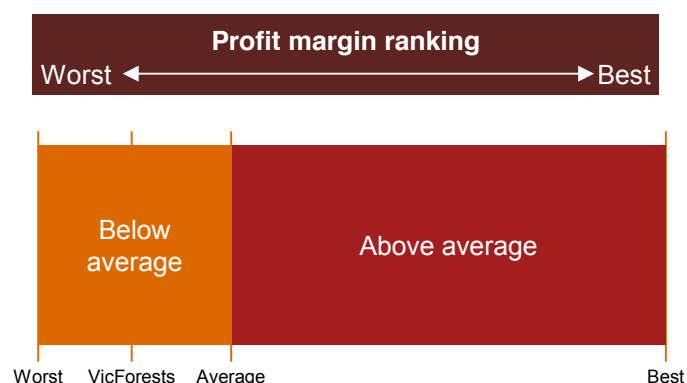
Research prepared on Victorian dairy farming provides a State level benchmark against which the Victorian native forestry industry may be compared. The Dairy Farm Monitor Project has provided farm level data relating to profitability and production for nine years in Victoria. The most recent annual report for the project suggests that net profit margins in the dairy industry are approximately 9.7 per cent, on average. ²⁹

As shown in Figure 7, VicForests recorded a lower than average net profit margin compared to Australian and Victorian industry benchmarks.

²⁸ The average Earnings Before Interest and Tax (EBIT)/Sales to net margin ratio calculated across US industries was applied to ABS data to estimate Australian net profit margins by industry as available information on Australian firm's financial performances were not available. In applying this methodology, the average profit margins for firms in the US were assumed to be broadly comparable to those for Australian firms. The average ratio across all US industries was applied, rather than individual industry values, as this was assumed to account for the potential for differing industry policies between the two countries which could otherwise cause profit margins to differ at the individual industry level.

²⁹ Dairy Farm Monitor Project, Victoria, *Annual Report 2014-15*

Figure 7 – Domestic benchmarking summary



Source: ABS Australian Industry 2013-14, Stern University, Margins by Sector, 2015

International benchmarks

Similar to domestic benchmarks, VicForests ranks below the considered international benchmarks in terms of commerciality (see Table 5).

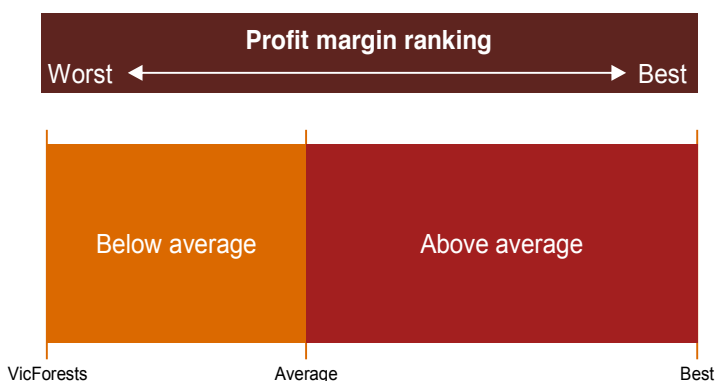
Table 5 – Summary of net profit margins for the forestry sector, by country, 2014-15

Country	Estimated net profit margin (%)
Sweden – Forestry	27.13
Ireland – Forestry	12.85
Canada – Forestry	5.10
Australia – Native forestry (VicForests)	4.30

Source: Sveaskog (2014) Year-End Report 2014, Coillte (2014) Annual Report 2014, Statistics Canada, Financial and Taxation Statistics for Enterprises (61-219-X), all of Canada, 2013, VicForests Annual Report, 2014-15

Figure 8 illustrates the average net profit margin across the group was 12.3 per cent and the next-lowest considered jurisdiction was Canada, which registered a net profit margin of 5.1 per cent. Coillte, an Irish entity with a similar role and corporate structure to VicForests, registered a net margin of 13 per cent in 2014 and an average of 10 per cent across the five years to 2014. Swedish company Sveaskog, which commercially manages the country's State forests, returned a net margin of 27 per cent in 2014 and an average net profit margin of 26 per cent for the five years up to 2014.

Figure 8 –International benchmarking summary



Source: ABS Australian Industry 2013-14, Stern University, Margins by Sector, 2015

The scale of timber processing capacity should be considered in interpreting the international benchmarking summary. The scale of processing capacity in Victoria is relatively small by international standards, meaning large increases in production for export could be somewhat limited. In fact, mills of close to five times the size of the average capacity of a Victorian woodchip mill are in operation internationally.³⁰ Total timber production in Canada is more than twice that amount of Australia and New Zealand combined.³¹

Reflecting its limited scale, the forestry sector in Victoria contributed just 0.6 per cent of the State's GSP in 2014. This is small when compared to other considered jurisdictions, which ranged from 1.3 per cent (Ireland)³² to 2.5 per cent (British Columbia, Canada).³³ Expressed as values, the Victorian forestry industry contributed just over USD \$1.7 billion to the State's economy compared to USD \$3 billion in Ireland, USD \$4 billion in British Columbia and over USD \$11 billion in Sweden in 2014.³⁴

Our analysis of jurisdictions with higher commercial returns exhibit larger processing capacity, suggesting that the potential for the VicForests to increase its returns could be limited. Despite this limited capacity, there is evidence to suggest that Victoria's smaller scale mills could possess other advantages. Research into the relationship between mill capacity and productivity in British Columbia, Canada indicates that smaller mills could be more resilient to economic shocks.³⁵ Within the study, specialty mills exhibited greater resilience through generating more jobs per volume of wood consumed, were more able to operate below capacity for extended periods, and produced a greater variety of products utilising a broader range of species.

This suggests that Victoria's relatively small mills could be advantageous over larger commodity-scale mills, which may be less able to respond to volatile market conditions. It is unclear, however, whether these findings can be translated to the Australian context. Moreover, if these advantages are present in Victoria, it remains that the scale of processing facilities in the State may not be suited to large expansions in production volumes.

As illustrated above, VicForests returns to the State (and hence its returns for all Victorians) are low. This performance conflicts with community expectations. Requiring a reasonable rate of return of an asset is no different to industries that pay royalties or excises, such as mining, or those that use Crown land. Charges are also paid for granting exclusive rights to conduct business in some industries, such as a fishing licences or a casino.

In some cases, 'in kind' benefits are provided to the community in return for the use of State assets. This can include parks, golf courses or other recreational facilities that use Crown land, as they are deemed to provide some non-financial usage benefits to the community. Such benefits would not be expected to be substantial in the case of VicForests', as the community use of VicForests' managed areas is limited relative to recreational facilities such as sporting fields or clubs. This suggests that a commercial return should ideally be achieved on VicForests' activities.

³⁰ The Sawmill Database, 2007

³¹ NewForests Timberland investment outlook: 2015-2019

³² Enterprise Canada Network, *Forestry and forest products: Ireland*, March 2014

³³ MNP, BC Forest Industry: Economic Impact Study, January 2015

³⁴ Swedish Forestry Agency, 'Did you know that the forestry sector contributes 100 billion to the Swedish net exports?', 2011, Available from <http://www.skogsstyrelsen.se/en/Common/News/Did-you-know-that-the-forestry-sector-contributes-100-billion-to-the-Swedish-net-exports/>
Currency conversions rely on prevailing exchange rates available at March 2016 from www.xe.com,

³⁵ Pinkerton and Benner, 'Small Sawmills Persevere While the Majors Close: Evaluating Resilience and Desirable Timber Allocation in British Columbia, Canada', *Ecology and Society* 18(2), 2013

Current policies, including a mill door sales business model, further constrain VicForests' commercial performance

In 2005-06 VicForests moved towards mill door sales, assuming responsibility for harvest and haulage costs. In 2014-15 these costs accounted for 68 per cent (or \$73 million) of VicForests' total financial costs.³⁶ Examining average costs over the past five years puts harvest and haulage costs at an even higher proportion of total sales, at 72 per cent, meaning that stumpage (sales revenue after harvest and haulage) was on average only \$32 million a year.³⁷

Details of the contracts that make up these costs are not publically available as they are exempt from freedom of information, although it is known that five harvest and haulage contracts over \$10 million were signed in 2014-15.

In contrast, commercially successful international jurisdictions have leveraged different points of sale (rather than a mill door sales model), including:

- selling the timber standing where the buyer is responsible for harvest and haulage
- felling the timber themselves when it is more profitable
- in some cases, starting their own manufacturing processes rather than selling the harvest when it is transformed in to a value added product.

The geographical harvest profile of Victoria also constrains VicForests. East Gippsland (a traditionally strong producing forest product region in Victoria) has reduced the annual quantity of harvest by nearly 60 per cent³⁸ from 2008 to 2013 as timber becomes less economically viable to harvest there. Coupled with the fact that **more than 70 per cent of VicForests' timber sold is harvested from the Central Highlands region**, VicForests' commitments in the East Gippsland area mean it bears the costs of transporting saw logs from the Central Highlands to mills in East Gippsland.³⁹

The following section explores the economy-wide contributions made by the broader forestry sector and the native forestry sector in Victoria, including how these are distributed spatially within the State.

³⁶ VicForests (2015) 2014-15 Annual Report

³⁷ Ibid

³⁸ Harvest decreased from 170,000 m3 in 2008 to around 70,000 m3 per year for the next 20 years as of 2013.

³⁹ Victorian Auditor-General's Office (2013) Managing Victoria's Native Forest Timber Resources

1.3 The forestry sector does not provide large contributions to the State

The overall forestry (native and plantation) sector's contribution to Victorian GSP and employment in 2014 is relatively low compared to other industries, as illustrated by Table 6.

Table 6 – GSP and employment comparison of Victorian industries, 2014

Industry	GSP (\$m)	GSP Share of State Total (%)	Employment (jobs)	Employment Share of State Total (%)
Native Forestry	-	-	128*	0.006%
Forestry	2,031	0.6%	16,175	0.8%
Non-forestry manufacturing	23,499	7.4%	196,824	9.8%
Accommodation and food services	7,477	2.3%	114,723	5.7%
Other services**	5,700	1.8%	65,784	3.3%
Victoria Total	318,345	100%	2,008,462***	100%

*Estimated ratio of 0.8 FTE to 1 job using ABS Labour Force data – Victoria Detailed, Quarterly (full time and part-time)

**Other services encompass repair and maintenance services and personal services such as beauty services.

***Note this employment count does not include contributing family workers which represent, on average, 1% of all Victorian employment. A contributing family worker is a person who works without pay in an economic enterprise operated by a relative. This State employment count is built from the 2011 Census and accounts for varied industry employment levels through time.

Source: PwC GEM analysis

The native forestry component of the forestry sector will be a small component of the broader forestry contribution to GSP and employment value shown in Table 6, however, due to data limitations the native forestry sector's direct contribution to GSP is not available.

Economy-wide modelling

Overview

Table 6 provides only part of the picture, as it shows only the direct contribution of each considered industry. A more comprehensive analysis considering the links between industries and associated flow-on impacts has been considered to provide a more holistic view.

To demonstrate the economy-wide contribution of the overall forestry sector (native and plantations) we used a computable general equilibrium (CGE) model. CGE modelling enables us to examine both direct and total impacts of a change in the economy. Direct impacts are the changes to employment and contribution to GSP in the forestry sector in Victoria. Flow-on impacts arise from changes in activity for supplier industries through the various industry's supply chain.

Examining the direct, flow-on and total impacts of a change in the forestry sector shows how reliant the rest of the State economy is on the forestry sector and how a reduction (or growth) in the sector will contribute to a reduction (or growth) across the State. To demonstrate this contribution from the forestry sector to the total Victorian economy we modelled the effects of a removal of capital investment from the sector. In a forestry context, removing capital investment is analogous to closing mills or losing the infrastructure of forestry roads. This reduction in investment will therefore reduce production capability in the forestry sector and will flow through to the broader Victorian economy.

The ‘shock’ to capital investment used in the CGE model was applied across all components of the forestry sector (both ANZSIC division A forestry, logging and support services, and division C forestry manufacturing, as defined earlier in this report). A reduction in capital investment means that the investment used to maintain or produce that capital is no longer needed in the targeted industry.

This report additionally considers the net effects of placing the foregone investment from native forestry into another industry. We examined how a reduction in capital investment impacted jobs and GSP across both the impacted industry (direct effect) and all of Victoria (total effect). This allows comparison of the contribution of the native forestry sector to other industries in Victoria, including whether a larger contribution could be made with the same investment dollars in a different sector. By examining the total impact results of the forestry sector together with alternative industry scenarios, the indicative size of the net impact of moving this investment can be considered.

In determining net impacts such as this, it is important to understand whether the two industries are substitutes or complements, both in terms of their place in the supply chain and their requirement for raw inputs (land, capital and labour). The question is often posed as ‘is the first industry required to suffer for the second to benefit?’ At first glance, in a native forestry context, it would seem obvious to look for substitutes for the main input into native forestry – the land required. This is essentially asking the question ‘are there more productive uses of this land?’

Our analysis of the native forestry sector has found that the operations currently using that land are not competitive or financially viable. However, policy governing uses of native forests means that current harvestable native forest land would not be clear and available for other industries if native forestry activities were no longer undertaken there. Instead, the analysis presented in this report assumes that all native forest is held as it currently stands and the investment in the capital to process that forest becomes available for other industries. Employment from this sector will therefore need to shift from one industry to another and will move according to market dynamics.

In this regard, the alternative industries considered in this study are direct substitutes for one another in terms of representing alternatives to invest capital. No industries have been considered that would require large additional amounts of land.

In examining alternative industries, we modelled the forestry sector against:

1. a state-wide industry average (excluding forestry)
2. the non-forestry manufacturing goods producing industry
3. select service industries (accommodation and food services and other services).

Results

The native forestry sector and the forestry sector as a whole do not provide large economic returns on investment in comparison to alternative industries. Table 7 illustrates the economic returns on investment from the native forestry sector, the broader forestry sector and alternative industries.

Table 7 – GSP and Employment impacts resulting from capital investment, 2014

Industry	GSP impacts (per \$ capital investment)					Employment impacts (FTE per \$m capital investment)			
	Direct	Flow-on	Total State	% flow-on impacts to total	Net effect (shift from native forestry)	Direct	Flow-on	Total State	Net effect (shift from native forestry)
Native forestry	0.03	0.11	0.14	76%	-	0.20	0.63	0.82	-
Forestry	0.37	1.26	1.63	77%	+1.49	1.74	7.29	9.03	+6.66
Non-forestry manufacturing	0.45	2.2	2.65	83%	+2.50	3.67	13.23	16.90	+16.07
Accommodation and food services	0.14	1.78	1.92	93%	+1.78	4.50	11.35	15.85	+15.03
Other services	0.16	1.56	1.72	91%	+1.58	7.19	9.91	17.10	+16.28
Average of all non-forestry industries	0.32	1.28	1.60	80%	+1.46	2.40	7.98	10.38	+9.55

Source: PwC analysis

The total State GSP impact figure for each industry represents the total multiplier effect of investment in the industry. The multiplier shows how much value a single dollar of investment in an industry can generate; a high total multiplier indicates that investment in the industry generates more benefit than an industry with a low total multiplier. In other words, flow-on benefits cascade or ‘multiply’ throughout the economy through the industry supply chain.

The direct GSP impact shows how much of the investment’s impacts remain within the industry receiving the investment, while the flow-on impacts show the value of the benefit that is spread to other connected industries. Flow-on impacts could be expected where other industries form part of the supply chain, for example the accommodation and food services sector purchases inputs from wholesalers and raw agricultural producers, which fall within different industries.

As a whole, the forestry sector appears to have similar impact as the state-wide industry average in terms of how productively it uses capital investment dollars. **The native forestry sector, on the other hand, provides minimal economic and employment returns on investment.**

The findings in Table 7 illustrate that a relatively high proportion of native forestry’s impact to GSP is clustered within the industry, which implies **the native forestry sector is not well connected to the rest of the economy.**

For each dollar of capital investment, \$0.03 out of a total \$0.14 (or nearly a quarter) of the total State impact remains within the industry itself. In comparison, the accommodation and food services industry is much more connected with 93 per cent of total GSP impacts flowing on, and thereby supporting, other industries in the State.

Economy-wide modelling to assess the contributions of investments in alternate industries, as opposed to investments in the native forestry sector, indicate that stronger employment and GSP returns could be expected from investment in non-forestry manufacturing and service industries, as these sectors are more connected with the State economy.

Alternative investment scenarios

In examining the net effect of removing investments from the native forestry sector and redistributing it across other industries, results show a net positive GSP and employment effect in all scenarios. As shown in Table 7, positive net impacts could be achieved by transferring investment from native forestry to other industries. This includes non-forestry manufacturing, accommodation and food services and other services.

Direct support of investment in alternative industries is a valid policy consideration, although the exact dynamics of each change will need to be considered. These are industries that have more supply chain links with the rest of the economy, with the ability to support more employment using the same amount of investment dollars.

Transition policies may be required to manage any short term issues regarding the labour transfers required with this move of capital. Setting these policies for support in other industries may be targeted as the impacts of the removal of capital in forestry are mostly concentrated within the industry and specific geographies, rather than being wide ranging.

When examining potential industries to transfer investments into, the required transition policies to increase labour in that industry also need to be considered. Some industries, such as the technical equipment aspects of non-forestry manufacturing, may require upskilling of labour before entering the workforce, whilst other industries may only require transferrable skills or have the ability to train new employees in the workplace.

In addition to examining the net effects of the transfer of investment dollars between industries, the flow-on impacts to employment numbers are also worth investigating.

The employment results in Table 7 shows fewer than 2 FTE jobs are directly supported by the overall forestry sector for every million dollars of capital investment. This is dramatically lower when examining the native forestry sector with effectively no jobs supported with the same amount of investment. For every direct forestry job, an additional 4 FTE jobs would be supported in other sectors in the State as illustrated in Table 8. Employment effects are slightly less when examining the native forestry sector with an additional 3 FTE jobs supported in other sectors for every direct native forestry job. This is higher than the other industries presented, however, it should be noted that in terms of the total number of employees affected, this figure is significantly lower than non-forestry manufacturing and the accommodation and food services industries as demonstrated in Table 9.

Table 8 – Ratio of flow-on and total Victorian FTE job supported for every direct job, 2014

Industry	Direct impact (FTE)	Flow-on Impact (FTE)	Total State Impact (FTE)
Native forestry	1.0	3.2	4.2
Forestry	1.0	4.2	5.2
Average of all non-forestry industries	1.0	3.3	4.3
Non-forestry manufacturing	1.0	3.6	4.6
Accommodation and food services	1.0	2.5	3.5
Other services	1.0	1.4	2.4

Source: PwC analysis

Applying the flow-on employment impacts to the corresponding industries provide us with an understanding of the number of employees supported by each industry in the Victorian labour market.

Table 9 – Industry employment, direct and flow-on impacts, 2014

Industry	Direct Employment (jobs)	Direct Employment (FTE)*	Flow-on impact (FTE)	Flow-on employment impacts (FTE)	Flow-on share of State total (%)
Native forestry	128*	107	3.2	338	0.02%
Forestry	16,175	13,516	4.2	56,768	3.4%
Non-forestry manufacturing	196,824	164,470	3.6	592,093	35.3%
Accommodation and food services	114,723	95,865	2.5	239,662	14.3%
Other services	65,784	54,970	1.4	76,959	4.6%
Victoria Total	2,008,462**	1,678,313	-	-	-

*Estimated ratio of 0.8 FTE to 1 job using ABS Labour Force data – Victoria Detailed, Quarterly (full time and part-time total)

**Note this employment count does not include contributing family workers which represent, on average, 1% of all Victorian employment. This State employment count is built from the 2011 Census and accounts for varied industry employment levels through time.

Source: VicForests 2014-15 annual report, PwC GEM and PwC economy-wide analysis

As demonstrated above, the contribution of the native forestry sector's flow-on employment shares are the lowest in the State. In estimating the flow-on employment impacts **the native forestry sector demonstrates the sector supports an estimated 338 FTE jobs** (or 0.02 per cent to the overall State total). In contrast to this, the non-forestry manufacturing sector provides the largest flow-on employment returns for every FTE job totalling 592,093 FTE jobs.

Forestry requires a bigger spend than other industries to create the same level of employment

The analysis has investigated the level of capital expenditure required to support a single additional full time employee in each industry. This provides an illustration of the impacts that additional support could produce within these industries, in terms of increasing employment. Those industries where a single additional FTE requires a lower level of investment would be expected to deliver greater employment increases for a given level of support, relative to other industries. This analysis is summarised in Table 10.

Table 10 – Estimated capital investment funds required to obtain one FTE

Industry	Level of investment required for one FTE
Native forestry	\$5,041,000
Forestry	\$574,000
Average of all non-forestry industries	\$416,000
Non-forestry manufacturing	\$272,000
Accommodation and food services	\$222,000
Other services	\$139,000

Source: PwC analysis

The results presented in Table 10 suggest that of all considered sectors, **native forestry provides the lowest employment benefit per dollar of investment expenditure**. Adding an additional employee in the native forestry industry costs 12 times more than the State average across other industries.

This result is driven largely by three factors:

- the native forestry sector, which is managed by VicForests, only accounts for the activities associated with the cultivation of trees and forestry support services (such as harvest and haulage activities) and does not include the labour associated with the processing of that timber
- the forestry industry more generally is a capital intensive industry requiring a greater share of machinery and equipment as opposed to labour needs
- native forestry is less productive and timber is harvested less frequently, using less labour than plantation timber.⁴⁰

The higher level of investment required to add an additional employee suggests that supporting native forestry from a regional development or employment perspective would be less beneficial than supporting other industries, as it generates lower employment per dollar spent.

⁴⁰ Plantations make up just 5 per cent of total forest cover in Victoria, but represent over 80 per cent of production highlighting the disparity between the labour usage and productive capacity of native and plantation forests

Forestry employment and GSP are spatially clustered

In undertaking the analysis of GSP and employment effects, we examined publicly available data sources such as IBISWorld, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) and the Australian Bureau of Statistics (ABS), in addition to other sources.

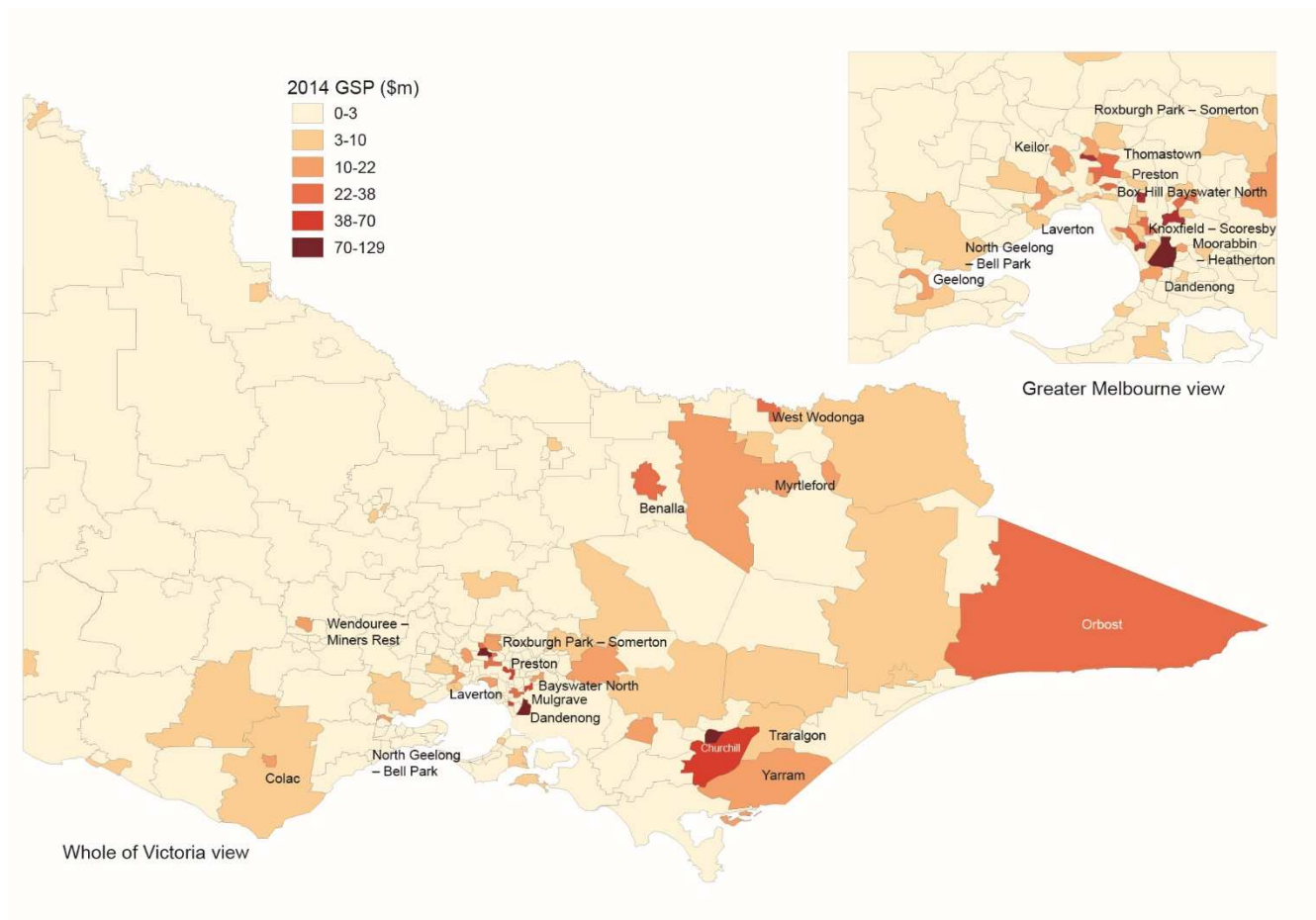
Publicly available data provided an understanding of the forestry industry at a high level (national and sometimes at a State level). This data however did not provide for a more granular understanding of the sector impacts within Victoria's regions. Using CGE modelling coupled with PwC's GEM allowed for examination of the Victorian forestry industry's localised contributions, which has never been explored before. PwC's GEM is an analytical and visualisation tool developed by PwC to equip public policy makers with a fine grained understanding of demographic, industry and economic trends, required as a basis for effective policy and action.

Forestry (native and plantation forestry) sector – GSP impacts

Economy-wide GSP impacts are concentrated in areas where the cultivation of timber is undertaken including regions of La Trobe and Gippsland. Also represented are areas where wood product manufacturing is common, including the industrial areas of South Eastern Melbourne. Figure 9 provides a heat map of the overall forestry sector's contribution to GSP by Victorian location. The spatial impacts to the broader forestry sector and the native forestry sector are not anticipated to be significantly different to one another.

The areas in red are where the greatest relative impacts to GSP are expected from an impact (reduction or expansion) to the industry.

Figure 9 – Forestry (native and plantation forestry) industry impact to GSP by Victorian region, 2014

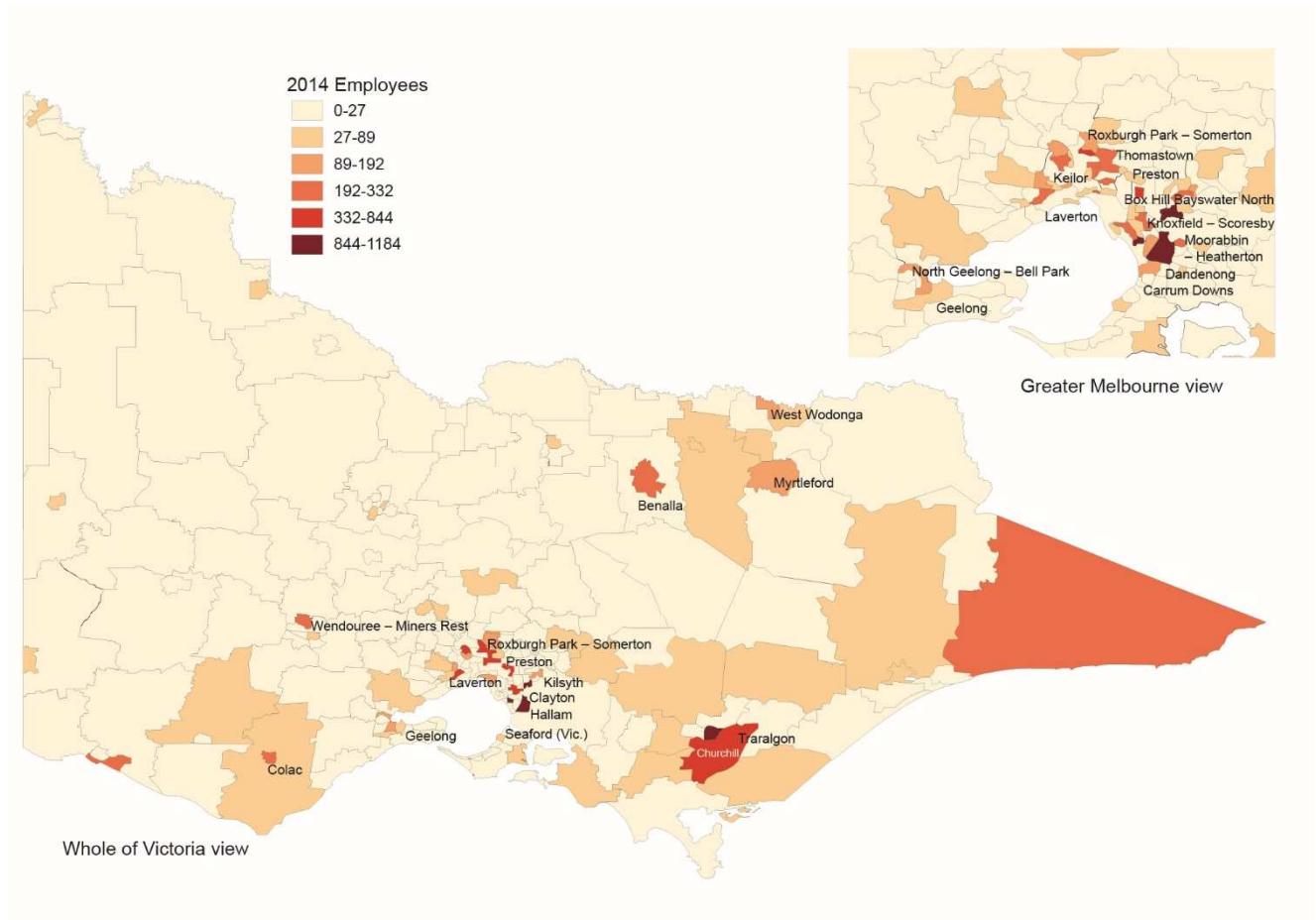


Source: PwC GEM analysis

Forestry (native and plantation forestry) sector – Employment impacts

Similar to the forestry sector's impacts to GSP, employment impacts are greatest in those locations where forestry activity is greatest further illustrating that a relatively high proportion of forestry impacts are clustered within the industry.

Figure 10 – Forestry (native and plantation forestry) industry impact to employment by Victorian region, 2014



Source: PwC GEM analysis

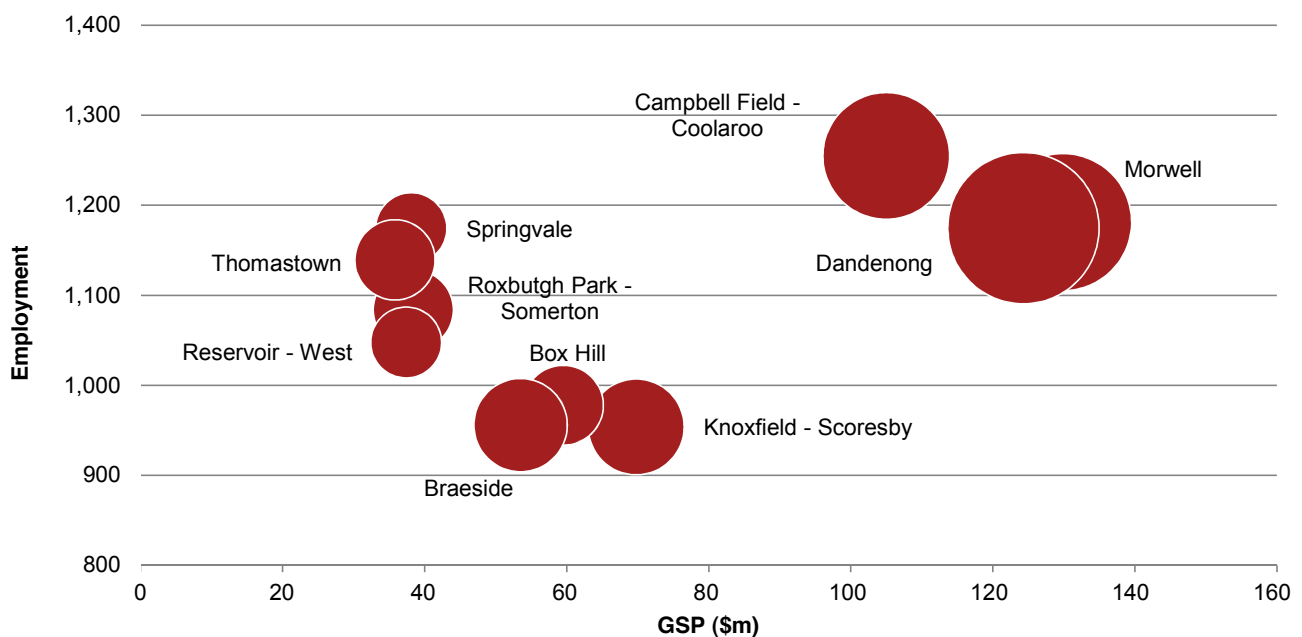
Understanding the demography of the impacted regions

The above findings point to the Victorian regions where the largest impacts are expected to be felt. Additional insight into the potential impacts on those regions can be gained by examining the underlying socio-economic characteristics of each location.

Figure 11 reveals that the largest impacts are expected in those locations with the highest levels of relative socio-economic disadvantage, such as Dandenong and Morwell. This result illustrates that if the native forestry sector were able to capture appropriate commercial returns, these regions could be further supported.

Socio-Economic Indexes for Areas (SEIFA) of relative socio-economic disadvantage produced by the ABS have been integrated into our spatial economic and employment analyses. These indices have been used to understand how the relative impacts could be experienced in each location in more detail.

Figure 11 – Forestry (native and plantation forestry) sector's contribution to GSP, employment and relative socio-economic disadvantage by region, 2014



Source: PwC GEM analysis and SEIFA data

Figure 11 shows the level of forestry (native and plantation forestry) contribution to GSP, forestry employment and adjusted index of relative socio-economic disadvantage (size of the bubbles) for the top ten Victorian locations ranked by the level of contribution to forestry GSP. Bubbles furthest to the top right of the chart represent locations where the greatest impacts are expected from industry investment. Larger bubbles relate to those locations where the level of socio-economic disadvantage is relatively high.

1.4 Investments in other sectors can generate more widespread economic returns to the State

As illustrated above, investments into industries other than forestry provide widespread GSP and employment benefits to the economy. The locational nuances of this analysis are examined below.

The findings presented below through utilising CGE analysis coupled with PwC's GEM suggests that **economic growth can be unlocked through investing into industries other than forestry**. This would provide greater economic and employment benefits both urban and regional Victoria. This warrants further discussion and examination of the potential investment and labour transfers from the forestry sector to these industries.

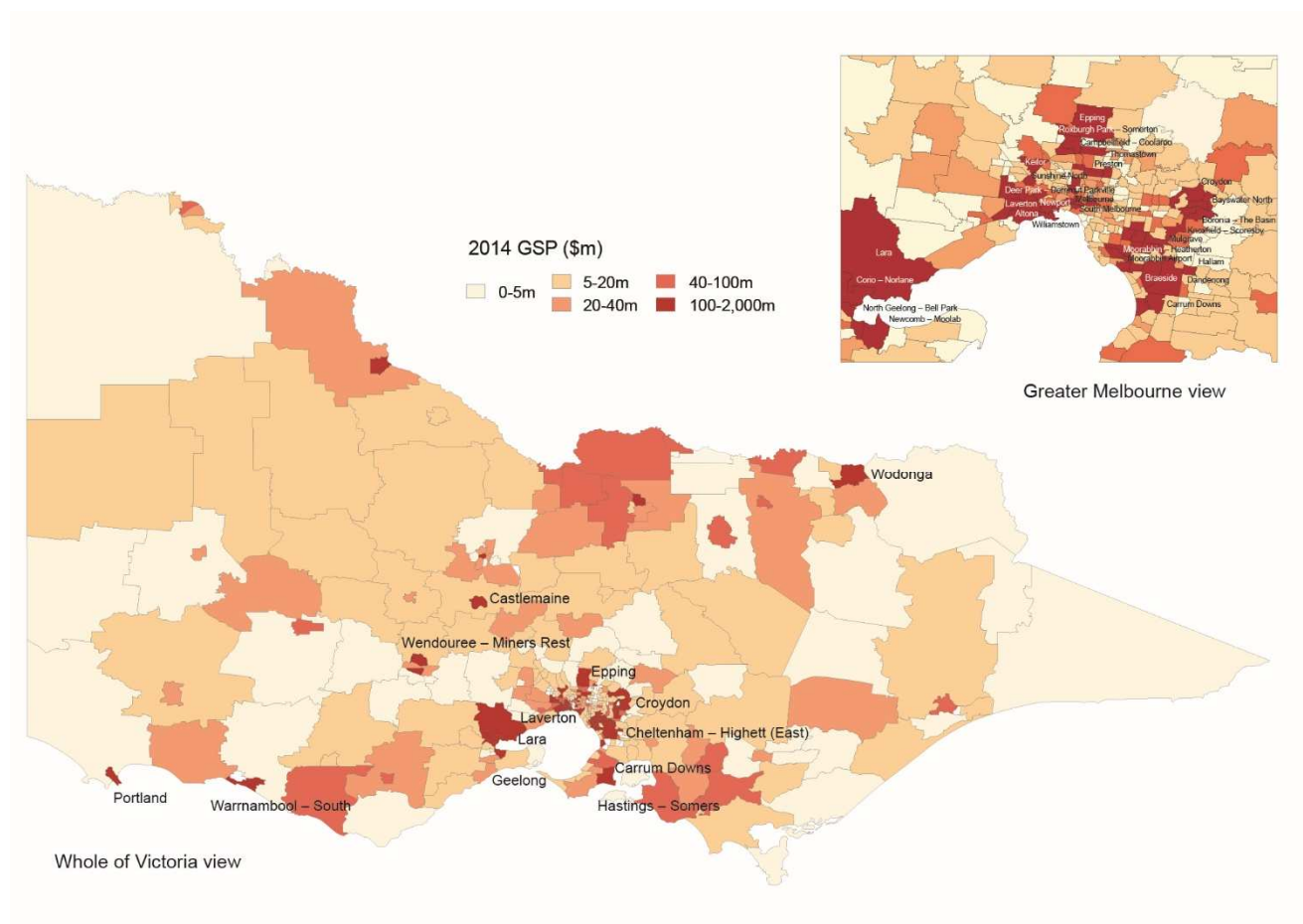
The non-forestry manufacturing sector's spatial impacts to GSP and employment are widespread

Non-forestry manufacturing sector – GSP impacts

The economy-wide impacts of the non-forestry manufacturing sector (comprised of all manufacturing other than forestry-related manufacturing, such as pulp and paper production) generate greater returns for a given level of investment, relative to the forestry sector.

Figure 12 shows a heat map of the non-forestry manufacturing sector's contribution to GSP by location across Victoria.

Figure 12 – Non-forestry manufacturing industry impacts to GSP by Victorian region, 2014

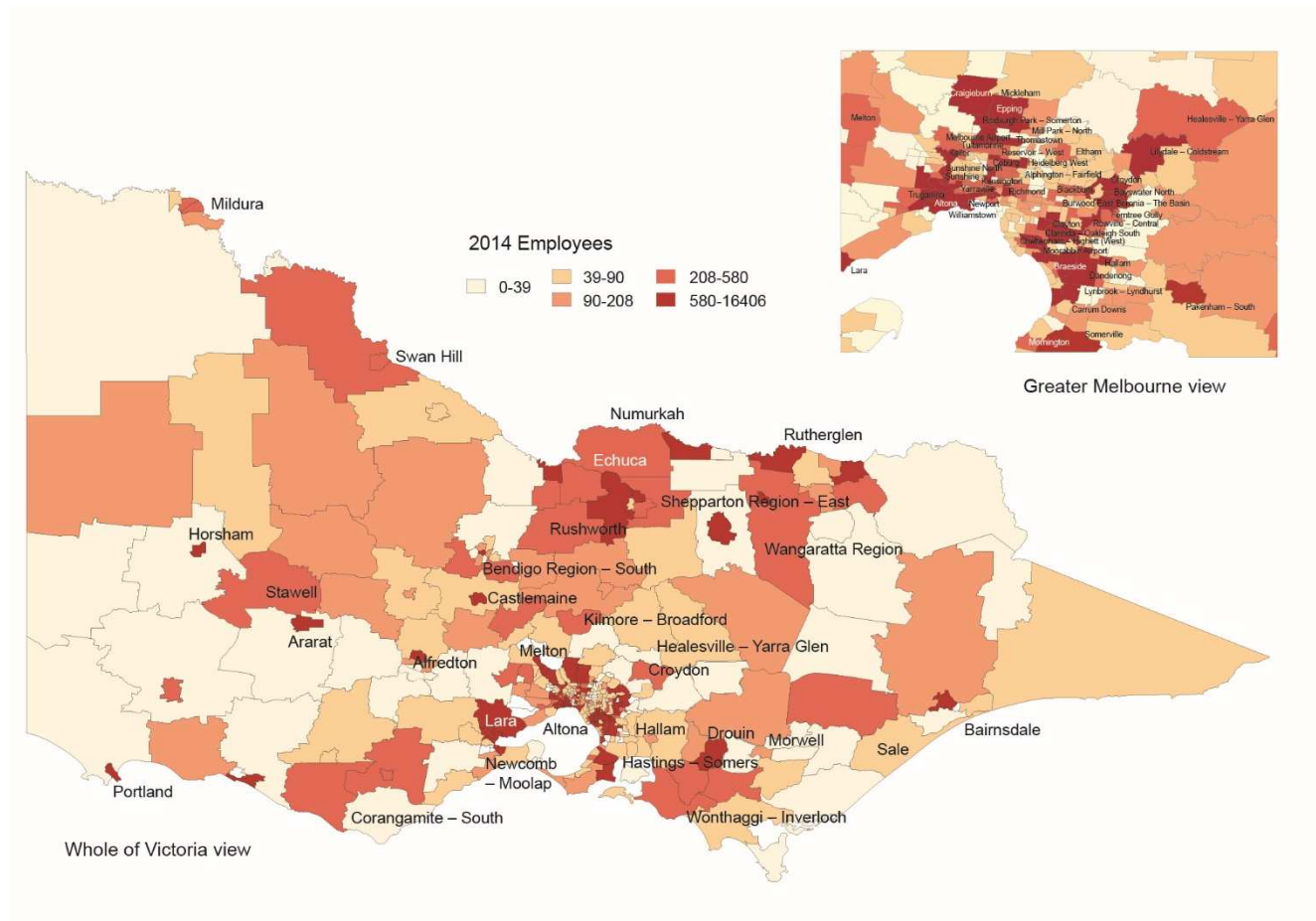


Source: PwC GEM analysis

Non-forestry manufacturing sector – Employment impacts

The locations shown in Figure 13 closely align to those that contribute the greatest amounts to non-forestry manufacturing sector GSP.

Figure 13 – Non-forestry manufacturing industry impact to employment by Victorian region, 2014



Source: PwC GEM analysis

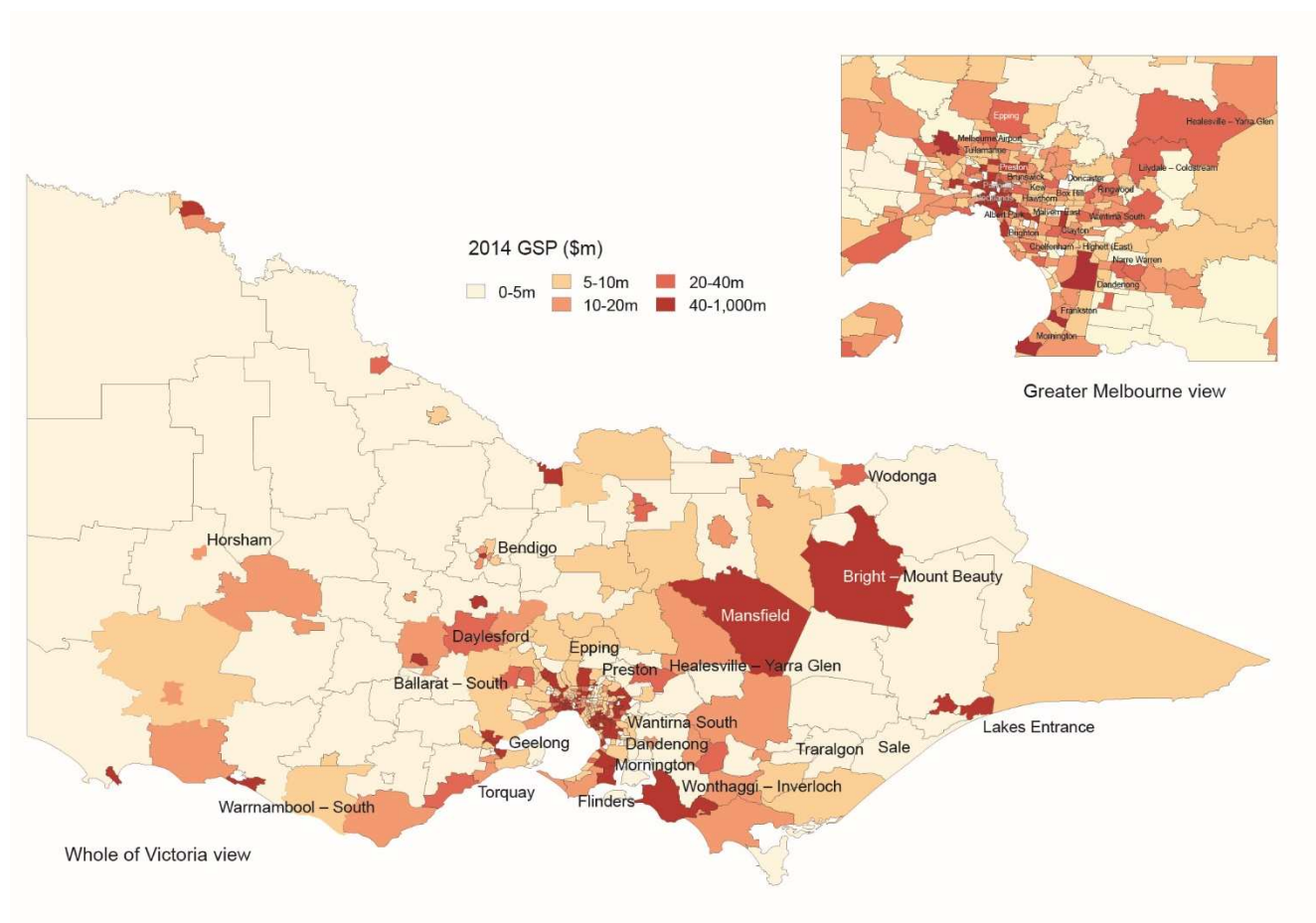
The accommodation and food services sector's spatial impacts to GSP and employment are widespread

Accommodation and food services sector – GSP impacts

The economy-wide impacts for the accommodation and food services industry impact locations that include popular tourist destinations in Victoria such as Mornington, Bright-Mount Beauty – Victoria's largest Alpine resort, Mansfield – located in the Alpine region and the support town for the large ski resort of Mount Buller and the Yarra Valley wine region. Urban areas where high restaurant and accommodation density exists, such as Brunswick and the Melbourne CBD, are also impacted.

Figure 14 shows a heat map of the accommodation and food services industry's contribution to GSP by Victorian location.

Figure 14– Accommodation and food services industry impacts to GSP by Victorian region, 2014

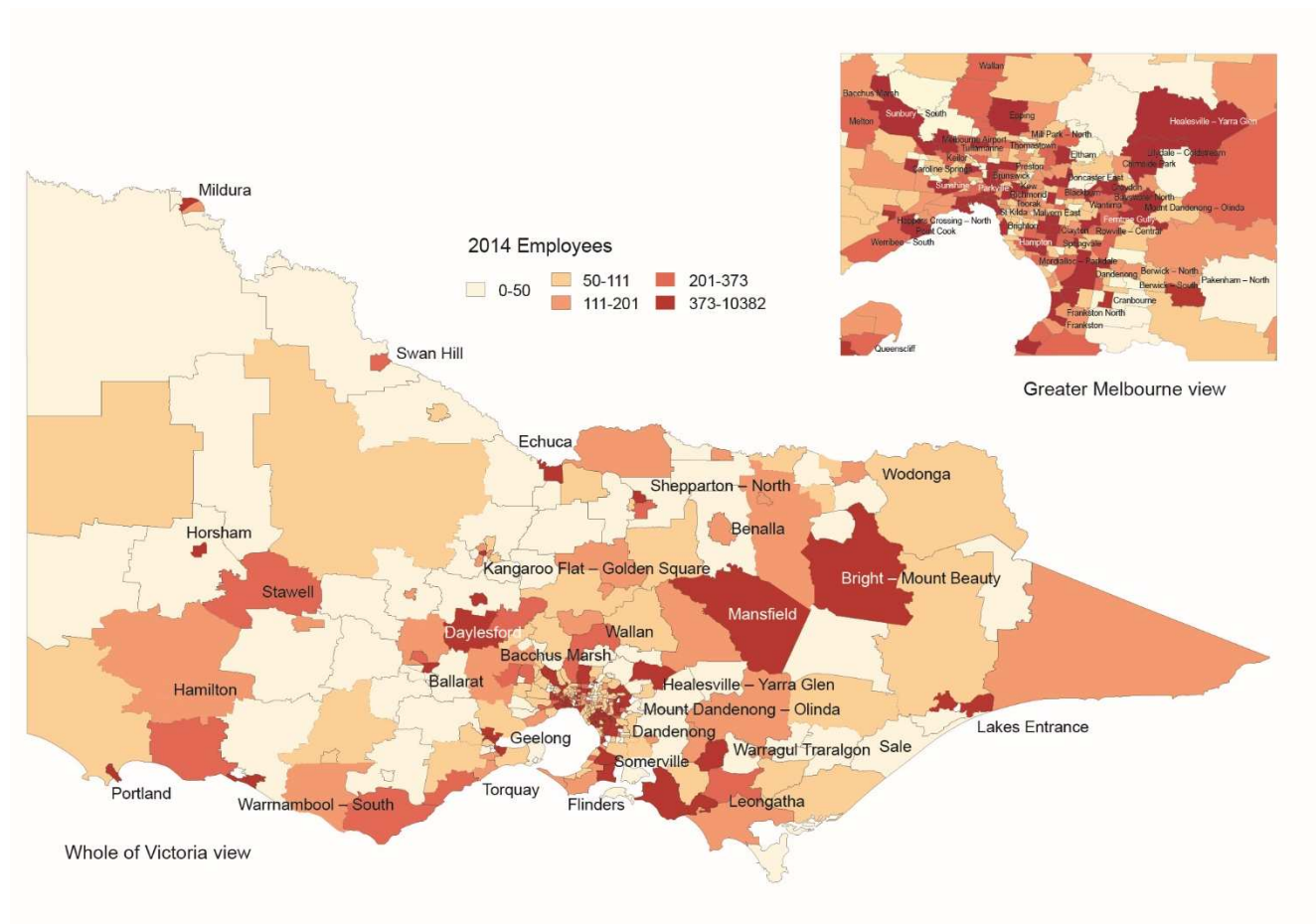


Source: PwC GEM analysis

Accommodation and food services – Employment impacts

Similar to accommodation and food services impacts to GSP, employment impacts are expected to be greatest in areas where there is high restaurant and accommodation density. Figure 15 provides a heat map of accommodation and food service employment across Victorian locations.

Figure 15 – Accommodation and food services industry impact to employment by Victorian region, 2014



Source: PwC GEM analysis

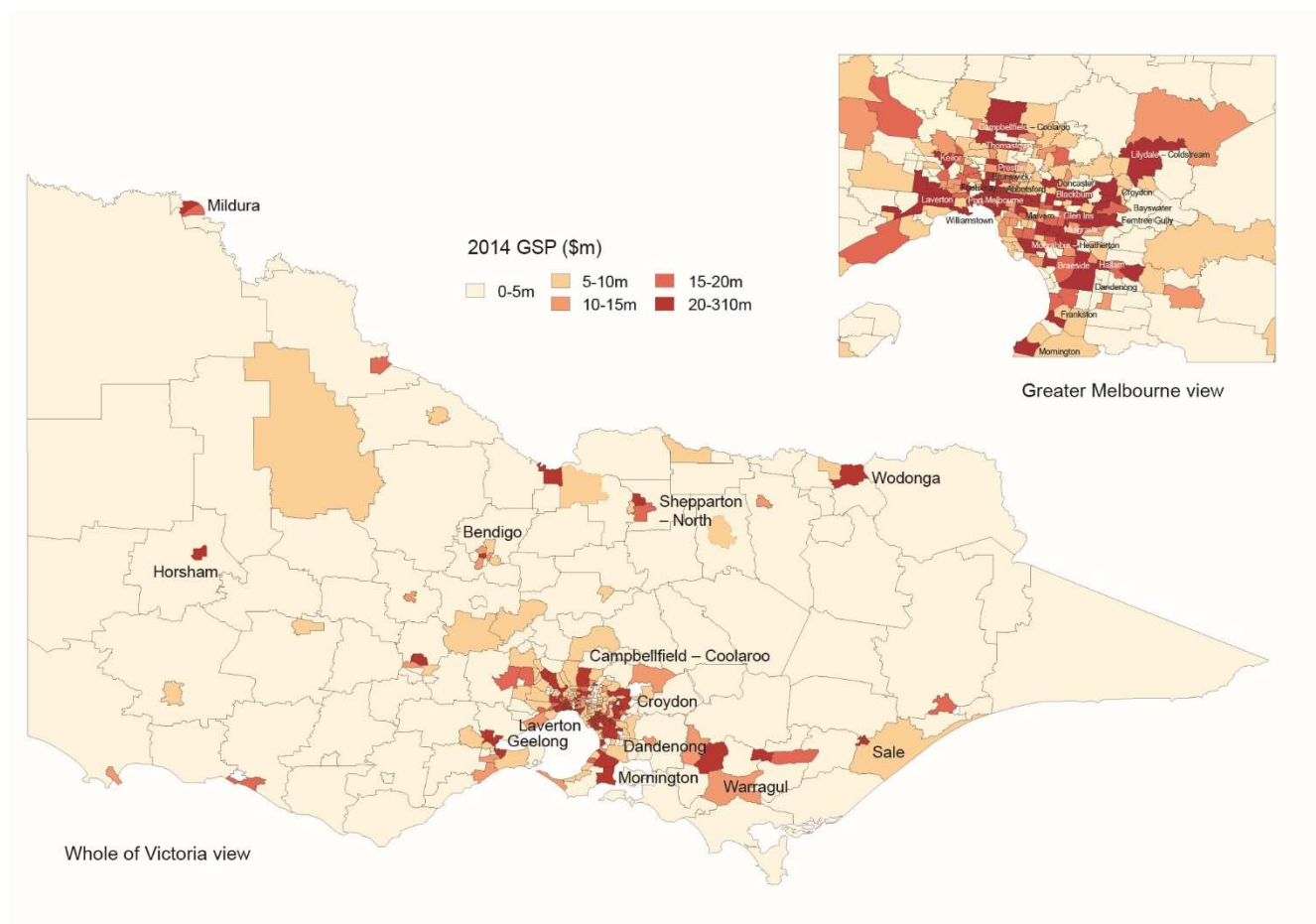
The other services sector's spatial impacts to GSP are concentrated but employment impacts are widespread

Other services sector – GSP impacts

The economy-wide impacts are expected to be felt the most in Victorian locations where the level of demand for services, which encompasses repair and maintenance and personal services such as beauty services, is greatest. Unsurprisingly, the most impacted locations are urban areas within Greater Melbourne and regional urban centres such as Geelong, Bendigo and Wodonga.

Figure 16 provides a heat map of the other services contribution to GSP by Victorian location.

Figure 16 – Other services industry impacts to GSP by Victorian region, 2014



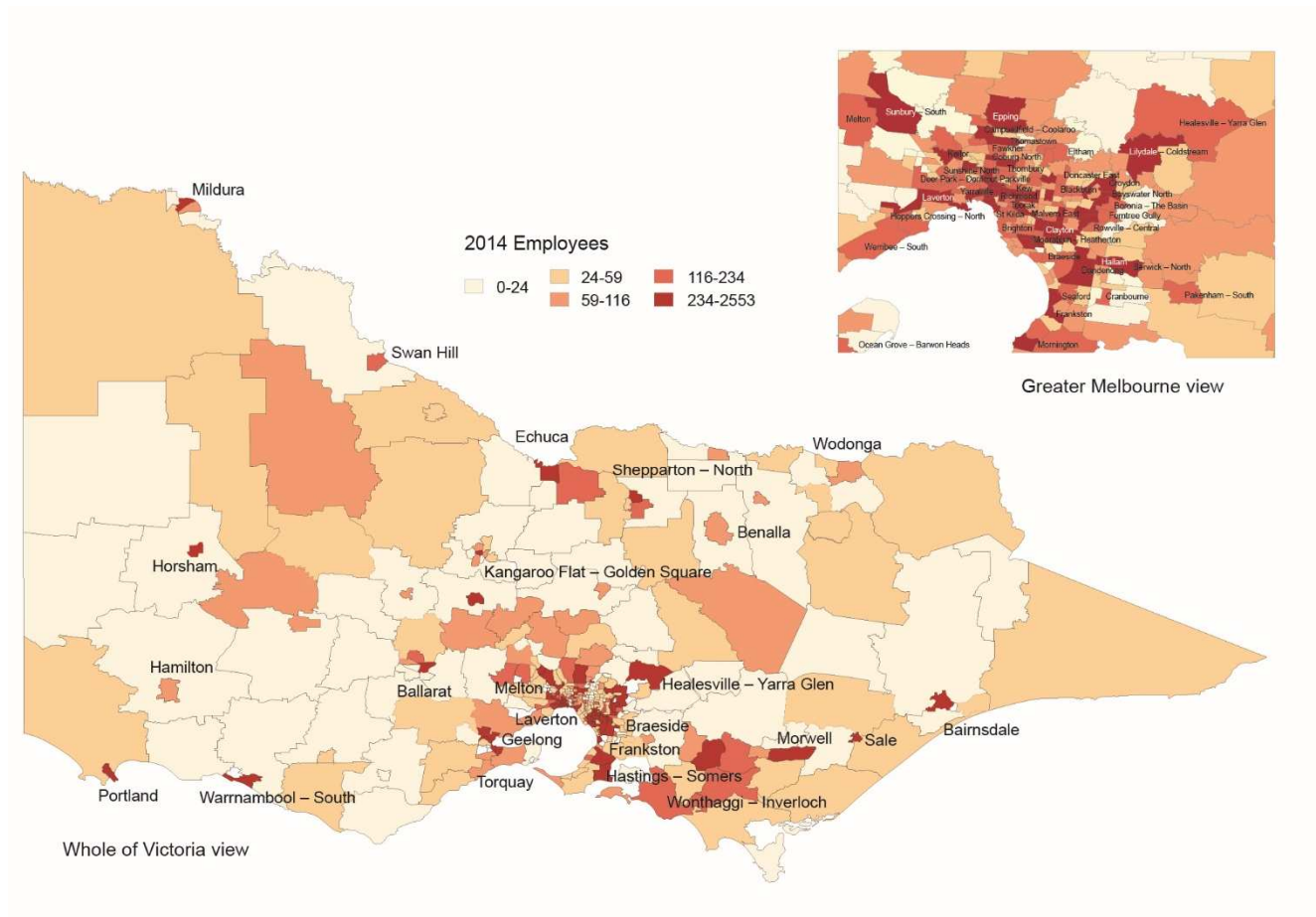
Source: PwC GEM analysis

Other services sector – Employment impacts

Relative to the GSP impacts, which are expected to occur predominantly in urban locations, employment impacts in the other services industry are slightly more widespread across the State. While the greatest value-generating areas for other services are urban locations where demand is strongest, this shows that the industry also employs many Victorians in the regions.

Figure 17 provides a heat map of employment in the other service sector across Victorian locations.

Figure 17 – Other services industry impact to employment by Victorian region, 2014

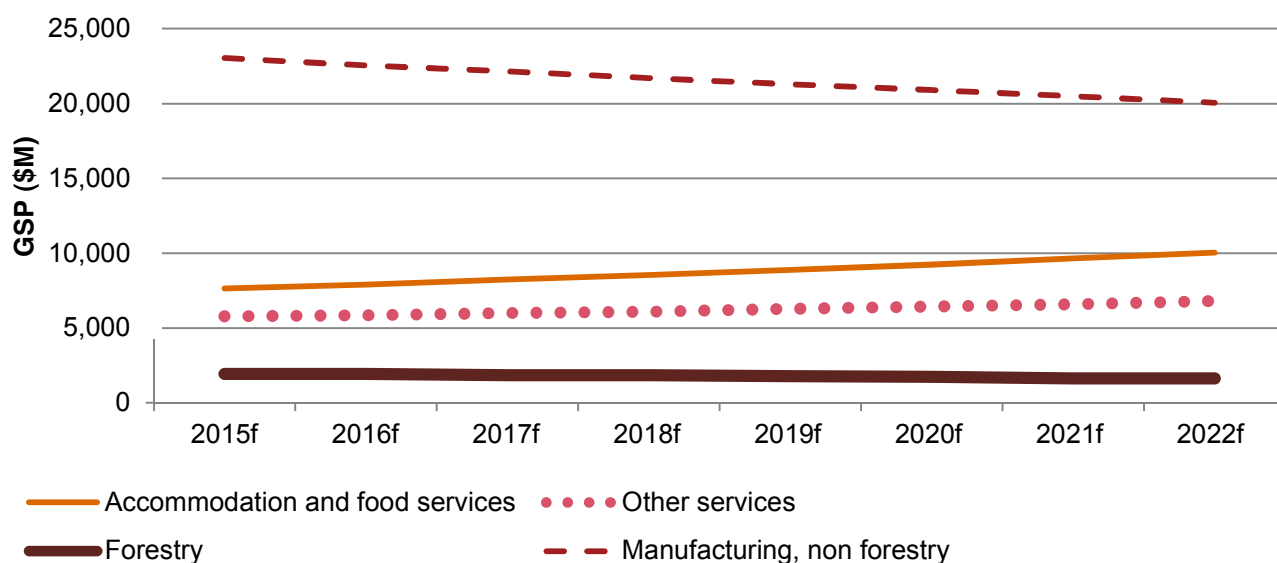


Source: PwC GEM analysis

Projected growth for alternative industries

Alternative industries provide greater economic and employment benefits to urban and regional Victoria. These industries additionally present stronger growth opportunities for the State. The accommodation and food services and other services sectors are expected to grow by 31 per cent and 17 per cent respectively in the medium term, as illustrated by Figure 18. While the non-forestry manufacturing is expected to contract by 13 per cent over the same time period, this is still less than the forecasted contraction of the broader forestry sector, which is expected to shrink by 26 per cent.

Figure 18 – Projected GSP for select Victorian industries, 2015-2022



Source: PwC GEM analysis

Given these findings, a shift in investment from the forestry sector to other sectors may be a viable option in the future.

The above analysis of economy-wide spatial impacts illustrates that the forestry sector, including the native forestry sector, do not contribute substantially to the Victorian economy. However, the Australian Forest Products Association's (AFPA) recent proposal to support the development of new tree planting hubs across Australia is worth noting. This could provide the plantation forestry sector with an opportunity to become more integrated with other sectors in the economy, in particular agriculture and livestock farming, which would provide positive flow-on economic returns. This integration may allow plantation forestry to be more interlinked with other sectors, providing farther reaching economy-wide impacts.

1.5 Exploring carbon sequestration opportunities for the native forestry sector

Given the poor commercial returns of Victoria's native forestry sector, carbon sequestration opportunities were explored.

An alternative to logging available to forestry operators seeking less environmentally invasive means of generating returns relates to carbon sequestration programs. Generally, these programs provide carbon 'credits' or similar instruments to individuals or organisations that undertake activities seen as supporting increases in carbon storage mechanisms, or reducing carbon emissions.

Activities associated with such programs can include:

- capture and destruction of coal mine fugitive emissions
- reductions in emissions-intensity of transport
- capture and combustion of landfill gas and agricultural waste
- methods for the land sector, including increasing soil carbon, reducing livestock emissions and reforestation.⁴¹

In the case of forestry industry participants, activities can include avoided deforestation, which is seen to preserve the carbon storage capacity of trees relative to the alternative of cutting down those trees.

⁴¹ Federal Register of Legislation, Explanatory Statement, Carbon Credits (Carbon Farming Initiative) Act 2011: Carbon Credits (Carbon Farming Initiative – Avoided Deforestation 1.1) Methodology Determination 2015

Other activities would involve reforestation/afforestation, and farm forestry which is the conversion of cleared land to establish a permanent forest or a forest plantation for harvesting through the activity of planting seeds or seedlings.

The Emissions Reduction Fund (ERF)

Overview

The *Carbon Credits Act 2011* (Carbon Farming Initiative) enabled the crediting of greenhouse gas (GHG) abatement from emissions reduction activities across Australia. GHG abatement is essentially achieved by reducing/avoiding emissions or by removing carbon from the atmosphere through storage in soil or trees. The ERF was established in 2014 and is an expansion of the Carbon Farming Initiative through extending the scope and eligible emissions reduction activities.

The ERF is a Federal Government scheme designed to reduce Australia's GHG emissions. It aims to achieve this by offering incentives for a range of organisations and individuals to reduce their emissions.⁴²

The ERF has three key elements:

1. Crediting emissions reductions
2. Purchasing emissions reductions
3. Safeguarding emissions reductions.

A number of activities are eligible under the scheme. Carbon credits are earned for each tonne of carbon dioxide equivalent stored or avoided by a project. The credits may be sold to generate additional income, either to the Government through a Carbon Abatement Contract or on the secondary market where credits are treated as financial products.

ERF projects must be conducted according to a method approved by the Clean Energy Regulator. A list of approved methods is outlined below:⁴³

- Soil Carbon using Modelled Abatement Estimates
- Soil carbon in grazing systems
- Avoided Deforestation
- Avoided Clearing
- Reforestation and Afforestation or Farm forestry
- Reforestation by Environmental or Mallee Plantings
- Human-induced Regeneration
- Managed Regrowth.

VicForests' ability to access carbon credit units within the ERF

Currently, there are no methods that allows for carbon credits to be generated for avoiding or delaying the harvest of public native forests. Therefore, VicForests does not have the ability to access the ERF through avoiding logging of native forests.

While an approved method entitled 'Avoided Deforestation' exists, which relates to protecting native forests from being cleared, this method does not apply to the native forests managed by VicForests. The relevant legislation indicates that:⁴⁴

- There must be an intent to clear the land and convert it into cropland or grassland and this must be maintained in perpetuity
- This 'clearing consent' must have been issued before 1 July 2010

⁴² Ibid

⁴³ Clean Energy Regulator, 2015, available from <http://www.cleanenergyregulator.gov.au/>

⁴⁴ Carbon Credits (Carbon Farming Initiative—Avoided Deforestation 1.1) Methodology Determination 2015

- Eligible native forests must also be on land where the removal of wood for the purposes of creating timber or wood products is not authorised by law.

As there is a fundamental difference between deforestation and forest harvesting, the aforementioned factors eliminate the type of forests managed by VicForests from accessing carbon credits under this method.

Additionally, there are no alternative methods under the Carbon Credits (Carbon Farming Initiative) Act 2011 that would currently allow VicForests to access carbon credits.

This means that there is currently no scope for the Victorian government to consider halting the logging of trees in its managed native forests for the purposes of accessing carbon credits (and associated revenue) via the ERF. Plantation forests, on the other hand, currently have the ability to access economic benefits through the ERF.

Allowing VicForests to access the ERF directly or indirectly would improve VicForests' profitability. Should a mechanism be created such that VicForests could directly access the ERF through avoiding logging native forests, VicForests would gain revenue from the ERF without the need to fell trees, which would translate to reduced operational and administrative costs thereby improving profitability.

Potential outcomes under the ERF if VicForests gained access

Studies indicate that if logging in Victoria was halted, and a method to access the ERF was created for existing forests that would otherwise be felled, significant revenue could potentially be derived from the scheme.

Indeed, Victoria's mountain ash forests, as found in the Central Highlands, appear to be among the best suited globally to carbon storage. Research has found such forests held the highest amount of carbon, at 1,900 tonnes of carbon per hectare, compared to an average of just 200 to 500 tonnes per hectare for tropical forests.⁴⁵

Another study prepared for the Victorian Government in 2015 suggested that \$30 million a year could be derived from accessing the scheme, based on a price of \$10 per tonne of carbon dioxide. As VicForests manages a proportion of the State's natural forest resources, some of that \$30 million could be expected to flow to them.

⁴⁶ These findings suggest that significant carbon credits could be earned from halting forestry in these areas.

Using more recent information of the average carbon price within the scheme suggests these figures could be conservative. The average price per tonne of carbon under the ERF has varied between \$12.25 and \$13.95 for the first and second auctions of abatement contracts which were held in April and November 2015, respectively.

⁴⁷ Using these figures suggests that between **\$39 million and \$45 million a year could be achieved.**

While these potential revenue figures appear significant, it remains that forestry operators, including VicForests, are unable to access the ERF, meaning such revenue is currently unachievable. Therefore, if the native forestry sector ceased to exist and negative economic impacts are felt in rural communities where alternative employment opportunities are generally scarce, currently these areas would not be able to access the ERF to find relief.

On-farm plantation forestry

Other opportunities exist within the ERF for VicForests to support farm forestry activities, which could generate increased production of plantation timber from Victorian farms. Farmers undertaking farm forestry could also earn carbon credits under the ERF, which would be associated with further revenue opportunities beyond those constituted by sale of the timber.

On-farm native forests

As an alternative to accessing the ERF through its managed native forest areas, VicForests could be positioned to facilitate development of new areas of native forest by supporting Victorian farmers in accessing the ERF. This would likely involve providing guidance to farmers in respect of managing or inducing regrowth of native forest on farmlands currently under pastoral use. These areas would provide a mechanism for Victorian farmers to access carbon credits under the ERF, along with associated earnings opportunities.

⁴⁵ Keith, Mackey and Lindenmayer, 'Re-evaluation of forest biomass carbon stocks and lessons from the world's most carbon-dense forests', *PNAS*, 2009

⁴⁶ Arup, 'Highlands logging halt would earn Victoria \$30m a year in emissions reductions: report', *The Age*, January 20 2015.

⁴⁷ Clayton Utz, 'Lower price per tonne, but more projects, in second Emissions Reduction Fund auction', 13 November 2015.

Potential indirect earnings opportunities for VicForests

VicForests' support for on-farm plantations and on-farm native forests could be made conditional on future revenue sharing arrangements with farmers. This could be implemented on the basis that the guidance provided by VicForests in establishing forests on these farms contributes to the economic asset to which the carbon credits are attached.

While the design and operation components have not been considered in detail here, such arrangements could potentially provide a level of economic return to VicForests in future. Furthermore the stock of native forest area in the State could be increased, with potential associated benefits for land owners and the broader community in terms of soil and water conservation, salinity control, biodiversity and agricultural productivity.

1.6 The native forestry sector in Victoria is not expected to capture opportunities for growth

Recent changes to building codes in Australia may see an increase in domestic demand for forest and wood products effective May 1st 2016. This includes the use of timber in buildings up to eight storeys tall. Previously, buildings over three stories required specific design and approval processes to be able to use timber construction, which can be a costly process for smaller developments. Furthermore, exports of forestry products are largely dependent on the Chinese market, which make up the majority of export demand. Global growth is projected to rise with China continuing to lead the emerging markets, reflected by an expected average annual growth of 6.2 per cent over the 2016 to 2020 forecast period.⁴⁸ With continued growth in Australia's top forestry product trading partner, Victoria has an opportunity to leverage this demand for forestry products.

Despite these opportunities, the native forestry sector in Victoria is not expected to capture these gains. Opportunity to support international demand for forestry products is largely attached to the forestry sector's ability to transition into high-productivity plantation-based products. The declining availability of harvested native forests in a traditionally strong producing region in Eastern Victoria, with a reduction of nearly 60 per cent of harvested volumes since 2008, indicates that almost all new supply of timber to support domestic or international growth will need to come from timber plantations. With increased costs for harvesting and haulage in a mill door sales business model, this continues to put upward pressure on the public native forestry sector's largest cost item.

In addition, the market size for native forests has gradually shrunk over the past 10 years, as both industry operators and downstream markets have gradually shifted to timber plantations in an effort to develop sustainable sources of timber. The forestry sector has undergone structural changes in recent years including reduced harvest in native forests. Historically plantations have filled the gap left by reduction of native harvesting; illustrating it is profitable to do so.

In fact, the Australian Forest Products Association (AFPA) recently submitted a proposal to support the development of 300,000 hectares of new tree plantings across Australia, including discussions of new options for plantation investments, involving partnerships with local farms through joint ventures or other leasing arrangements, in support of on-farm plantations. The AFPA's identification of '29 Strategic Plantation Hubs' to integrate plantations with downstream processing is intended to service the increasing demands from domestic and export timber markets.

⁴⁸ International Monetary Fund, WEO report.

2 Policy considerations

2.1 Could we make VicForests more commercially viable?

There will always be certain factors in VicForests that will impact profitability, especially extreme weather events. However, international comparisons highlight that corporate public forest managers can be commercially successful.

It is not that international examples (Canada, Ireland and Sweden) work without restraint, however, they are free to act as any other private company would under the same regulatory environment. For example, public forest managers in international jurisdictions have found more profitable uses of the land they are managing, such as windfarm power generation, or more profitable uses of their harvest such as biomass (rather than being restricted to sell straight to certain mills as is the case for VicForests).⁴⁹

The success of other jurisdictions in the forestry sector indicates VicForests could review its current operating environment to become more commercially successful. However, VicForests may be constrained from doing so. For example:

- International examples have demonstrated the ability to instantaneously sell harvests to capture more competitive pricing with no long term obligations related to future harvests⁵⁰
- VicForests on the contrary, has specified timeframes for vesting and harvesting, and thereby restricted by long term planning, including obligations to deliver future harvests which may not be viable
- Commercially successful international examples tend to hold a larger market share, which provides for a greater influence on the forestry marketplace, including timber supply. Comparatively VicForests has a smaller market share which could limit its market influence⁵¹
- In comparison to international examples, VicForests appears to be much more restrained with only 25 per cent of Victorian public forests available for harvest and less than 1 per cent harvested each year.⁵² The largest cost item on VicForests' financial statement is related to harvest and haulage fees
- International forest managers have also found different points of sale (rather than VicForests who has a policy to sell at mill door), such as selling the timber standing where the buyer must harvest and haul, or still felling the timber themselves when it is more profitable, or in some cases, even starting their own manufacturing processes rather than selling the harvest until it is transformed in to a value added product⁵³
- The forestry sector in Victoria contributes a much smaller share to state GSP, 0.6 per cent of Victorian GSP in 2014, relative to the operators considered in other jurisdictions.

Consideration should be given to encouraging VicForests to improve its commercial return for native timber products and/or restructuring its cost base.

⁴⁹ Coillte (2014) Annual Report 2014

⁵⁰ Forest Policy Review Group (June 2013) *Ireland's forest policy*

⁵¹ Swedish Forest Industries Federation (2014) The Swedish Forest Industries Facts and Figures and 2MNP, BC Forest Industry: Economic Impact Study, January 2015

⁵² Victorian Auditor-General's Office (2013) Managing Victoria's Native Forest Timber Resources based on Department of Environment and Primary Industries and VicForests data

⁵³ Forest Policy Review Group (June 2013) *Ireland's forest policy* and Sveaskog (2014) Year-End Report 2014

Moving to increase prices or restructure VicForests' cost base would have flow-on impacts for downstream operators. Some timber processing businesses are unlikely to absorb price changes and this in turn might lead to closures and job losses. These closures and potential associated job losses could in turn impact the communities of regional Victoria where these businesses are situated. This report has not considered in detail the flow-on implications of increased prices for VicForests' products.

At the same time though, not achieving an appropriate return for the State means that prices don't reflect true market considerations, investments in the sector will not be efficient, and limited segments of the forestry sector will enjoy a cross-subsidy. The question to be considered is whether that cross-subsidy is the best way to support forestry or regional areas of Victoria.

Revenue opportunities under the Emissions Reductions Fund

Studies indicate that if a method to access the Emissions Reduction Fund was created for existing forests that would otherwise be felled then significant revenue could potentially be derived from the scheme.

Farmers undertaking on-farm forestry could potentially earn carbon credits under the ERF. This would provide further revenue opportunities for farmers beyond those constituted by the sale of timber from on-farm plantations.

VicForests could also support Victorian farmers and facilitate these carbon credits. The potential here is for reforestation (through planting) and development of new areas of native forest on farmland (through managing or inducing regrowth of native forest).

VicForests could also potentially access income from its participation in farm forestry, reforestation or reestablishment of native forest areas. This could be implemented on the basis that the guidance and/or investment provided to farmers would contribute to the economic asset to which the carbon credits are attached.

While the design and operation components have not been considered in detail here, such arrangements could potentially provide a higher and potentially more sustainable future economic return for VicForests.

2.2 Could we reduce native logging?

In an Australian and Victorian context, where there have been restrictions on native forest logging, plantation hardwood has filled that gap. It is clearly commercially viable for plantations to fill this gap (notwithstanding quality variations and non-substitutability factors between hardwood and softwood timber) and would likely do so again if native logging reduced.

Recent growth in both the value and volume of production of forestry products have been driven by plantations, whereas the value and volume of production from native hardwood forests in Victoria has declined over the last 10 years.

Given plantations make up only 5 per cent of total forest cover in Victoria, but represent over 80 per cent of production, there may be merit in exploring the reduction of native logging for the further development of plantation forestry.

Plantation forestry provides an alternative investment opportunity for which the future outlook is more positive. Directing investment toward hardwood plantations, through such mechanisms as on-farm plantation forestry, would likely provide positive economic returns.

In addition, forest-based recreation activities, such as eco-tourism, can provide economic returns whilst maintaining native forested areas. VicForests' support for eco-tourism in native forest land could be an opportunity to capture gains seen in the Otway Fly treetop walk, for example. The Otway Fly treetop walk is a forest-based eco-tourism venture that attracted 6 million domestic and international tourists in 2002.⁵⁴ Allowing a mechanism for VicForests to diversify away from traditional native forest activities towards activities in eco-tourism may benefit the State. A similar venture to the Otway Fly treetop walk in native forest land would, however, require investments in state-of-the-art facilities to optimise economic outcomes.

⁵⁴ The Institute of Foresters of Australia (August 2006) *Victoria's Forests: The key issues*

2.3 What could potentially be done to assist a transition away from native forest logging?

Forests are complex to manage and have relatively low timber productivity when compared to plantations in Victoria.

If there was a further shift towards plantations, the State government could adopt an industry transition plan similar to those developed in Tasmania under the *Forests and Forest Industry Strategy* which was extended into the *Regional Forest Agreement*, and explicitly incorporated hardwood plantation production.⁵⁵ As part of its wood production strategy developed following the Regional Forest Agreement, Forestry Tasmania instigated a plan to accelerate transition towards regrowth and hardwood plantation.

Similarly, in Queensland the *South East Queensland Forests Agreement (SEQFA)* led to the creation of the *Statewide Forests Process* in 2000, and through the process, the government developed a plan to gradually transition hardwood production away from native forests including transferring public native forests to reserves over several decades. In preparation for the implementation of the plan, a number of hardwood mills and allocations in the Western Hardwoods region were acquired by the State government in the mid- to late-2000s and approximately 1.25 million hectares was identified for future transfers to reserves.⁵⁶

Policies have been implemented in New South Wales to curb native forest logging. For instance, a number of new national parks were introduced in the State in 1996, along with reductions to hardwood sawlog quotas.

In Western Australia, sustainable yield targets for first- and second-grade sawlogs were reduced across the period 1999-2004. In 2001, a policy was introduced to end harvesting in old-growth forests. Sustainable yield targets were further reduced following these changes.

Across the Australian jurisdictions where changes were introduced to limit logging of native forests, production of logs was seen to decrease.⁵⁷

2.4 Could investment be directed toward alternative industries?

The State's regional development goals as cited by Regional Development Victoria (available at <http://www.rdv.vic.gov.au/about-us>) include delivering jobs and investment by supporting competitive, productive and sustainable regional economies. In line with these objectives, government should focus support on those industries that provide the best opportunities for economic development in the State's regions. The analysis in this report highlights that this includes non-forestry manufacturing, accommodation and food services and other services sectors.

These are long term results, however, and transferring investment from one industry to another would potentially require short- and medium-term transition policies to address labour market movements from one industry to another.

It is expected that the benefits of such a transfer would outweigh these negative impacts. Geospatial analysis using PwC's GEM has shown that forestry's pattern of activity is regionally clustered. Furthermore, its contribution to GSP and employment is small and shrinking. This suggests that transition policies supporting a transfer of investment away from forestry into alternative industry opportunities could be efficient and effective, as the negative impacts would likely be minor relative to the benefits felt across the community.

⁵⁵ Forestry Tasmania (April 2004) *Towards a New Silviculture in Tasmania's Public Oldgrowth Forests*, Paper 3

⁵⁶ The Australian Institute (April 2013) *The Australian native forest sector: causes of the decline and prospects for the future*, Technical Brief No. 21

⁵⁷ Ibid

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