

**The economic impact of the
cancellation of NSW North Coast
Wood Supply Agreements due to
the creation of the Great Koala
National Park**

FINAL REPORT

05 March 2019

Document tendered by

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Resolved to publish

☒ Yes / ☐ No



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Notice

Ernst & Young was engaged on the instructions of the Australian Forest Products Association to provide an assessment of the impact of the proposed Great Koala National Park, assuming it would result in the cancellation of the Wood Supply Agreements on the North Coast of New South Wales. This is in accordance with the contract dated 10 January 2018.

The results of Ernst & Young's work, including the assumptions and qualifications made in preparing the report, are set out in Ernst & Young's final report dated 05 March 2019 (this "Report"). The Report should be read in its entirety including the cover letter, the applicable scope of the work and any limitations. A reference to the Report includes any part of the Report. No further work has been undertaken by Ernst & Young since the date of the Report.

Ernst & Young has prepared the Report for the benefit of AFPA and has considered only the interests of AFPA. Ernst & Young has not been engaged to act, and has not acted, as advisor to any other party. Accordingly, Ernst & Young makes no representations as to the appropriateness, accuracy or completeness of the Report for any other party's purposes.

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Economic impact of the removal of an area of the North Coast Forestry Area

Dear Ross,

In accordance with our Engagement Agreement dated 10 January 2019 ("Agreement"), Ernst & Young ("we" or "EY") has been engaged by the Australian Forest Products Association ("AFPA", "you" or the "Client") to perform certain economic analysis services (the "Services") in relation to the economic impact of the cancellation of the Wood Supply Agreements ("WSA") on the North Coast of New South Wales ("NSW") as a proxy for the impact of the proposed Great Koala National Park. The area considered in this study is referred to as the North Coast Forestry Area ("NCFA") in this report.

The enclosed final report (the "Report") sets out the findings of our work. You should read the Report in its entirety. A reference to the report includes any part of the Report.

Purpose of our Report and restrictions on its use

Please refer to a copy of the Agreement for the restrictions relating to the use of our Report.

This Report was prepared on the specific instructions of AFPA solely for the Purpose and should not be used or relied upon for any other purpose.

We accept no responsibility or liability to any person other than to AFPA or to such party to whom we have agreed in writing to accept a duty of care in respect of this Report, and accordingly if such other persons choose to rely upon any of the contents of this Report they do so at their own risk.

Nature and scope of our work

The scope of our work, including the basis and limitations, are detailed in our Agreement and in this Report. Our work was completed on 27th February 2019. Therefore, our Report does not take account of events or circumstances arising after this date and we have no responsibility to update the Report for such events or circumstances.

In preparing this Report we have considered and relied upon information from a range of sources believed after due enquiry to be reliable and accurate. We have no reason to believe that any information supplied to us, or obtained from public sources, was false or that any material information has been withheld from us.

We do not imply and it should not be construed that we have verified any of the information provided to us, or that our enquiries could have identified any matter that a more extensive examination might disclose. However, we have evaluated the information provided to us by AFPA and other relevant parties through enquiry, analysis and review and nothing has come to our attention to indicate the information provided was materially mis-stated or would not afford reasonable grounds upon which to base our Report.

Mr Ross Hampton
Chief Executive Officer
Australian Forest Products Association
Po Box 239
Deakin West, ACT 2600
Australia

05 March 2019

The work performed as part of our scope considers information provided to us and a combination of input assumptions relating to future conditions, which may not necessarily represent actual or most likely future conditions. Additionally, modelling work performed as part of our scope inherently requires assumptions about future behaviours and market interactions, which may result in forecasts that deviate from future conditions. There will usually be differences between estimated and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material. We take no responsibility that the projected outcomes will be achieved.

We highlight that our analysis and Report do not constitute investment advice or a recommendation to you on a future course of action. We provide no assurance that our analysis and modelling will be accepted by any relevant authority or third party.

Our conclusions are based, in part, on the assumptions stated and on information provided by relevant parties and other information sources used during the course of the engagement. The modelled outcomes are contingent on the collection of assumptions as agreed with AFPA and no consideration of other market events, announcements or other changing circumstances are reflected in this Report. Neither Ernst & Young nor any member or employee thereof undertakes responsibility in any way whatsoever to any person in respect of errors in this Report arising from incorrect information provided or other information sources used.

This letter should be read in conjunction with our Report, which follows.

Thank you for the opportunity to work on this project for you. Should you wish to discuss any aspect of this Report, please do not hesitate to contact myself on 02 9248 5196 or Tamara Wheatley on 02 6267 3804.

Yours sincerely

Craig Mickle
Partner, Infrastructure Advisory



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Purpose of this report

AFPA engaged EY to assess the economic impact of the proposed Great Koala National Park assuming that it would result in the cancellation of Wood Supply Agreements in the NCFA.



AFPA engaged EY to identify the annual economic impact of the cancellation of WSAs between wood manufacturing companies and FCNSW in the NCFA. The cancellation of WSAs will result in the cessation of harvestable hardwood from one of Australia's key sources of hardwood logs. Organisations involved in forestry within NSW's north coast contributed information and data to this assessment.

The hardwood industry has been operating on the North Coast of NSW for over 100 years. The industry relies heavily on native forests. Many large NSW hardwood processors currently source the majority of their hardwood supply from the FCNSW (through WSAs), with smaller volumes sourced from private native forests and hardwood plantations.

Wood Supply Agreements

FCNSW is the major supplier of native timber to sawmills in NSW. This occurs through WSAs which are in place between FCNSW and individual sawmills. The WSAs specify that FCNSW must deliver a fixed volume of wood each year, and the sawmill must pay a price that includes the cost incurred by FCNSW in harvesting and haulage. The North Coast WSAs finish between 2023 and 2028 and each WSA is unique in the volume and type of product to be delivered each year. The majority of WSAs only specify the total quantity of native timber and the product types that FCNSW must supply. All WSAs expire in 2023 with the exception of Boral Timber, whose WSAs expires in 2028 and specifies the quantity of certain species (such as Blackbutt) that FCNSW is to deliver annually, and Weatherlex that has a WSA for pulplog that expires in 2027.

The North Coast is one supply zone in the WSAs with FCNSW, which means sawmills with a WSA can be supplied from anywhere in the North Coast supply zone, with timber often travelling long distances to get to a mill. Industry advises that removing 175,000 hectares from the centre of the supply zone will impact customers across the whole North Coast region.

The Catalyst

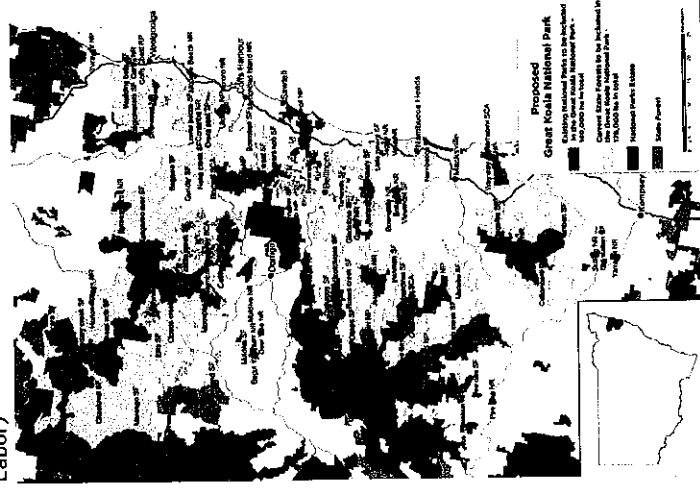
A Great Koala National Park (GKNP) has been proposed as part of the NSW Labor Party's 2019 election commitment. Whilst the Party are yet to define the geographical boundaries of this commitment, this study has used the boundaries proposed by the National Parks Association, which proposes to add 175,000ha of state forests to existing protected areas to form a 315,000ha reserve in the Coffs Harbour. This is shown in Figure 5.²

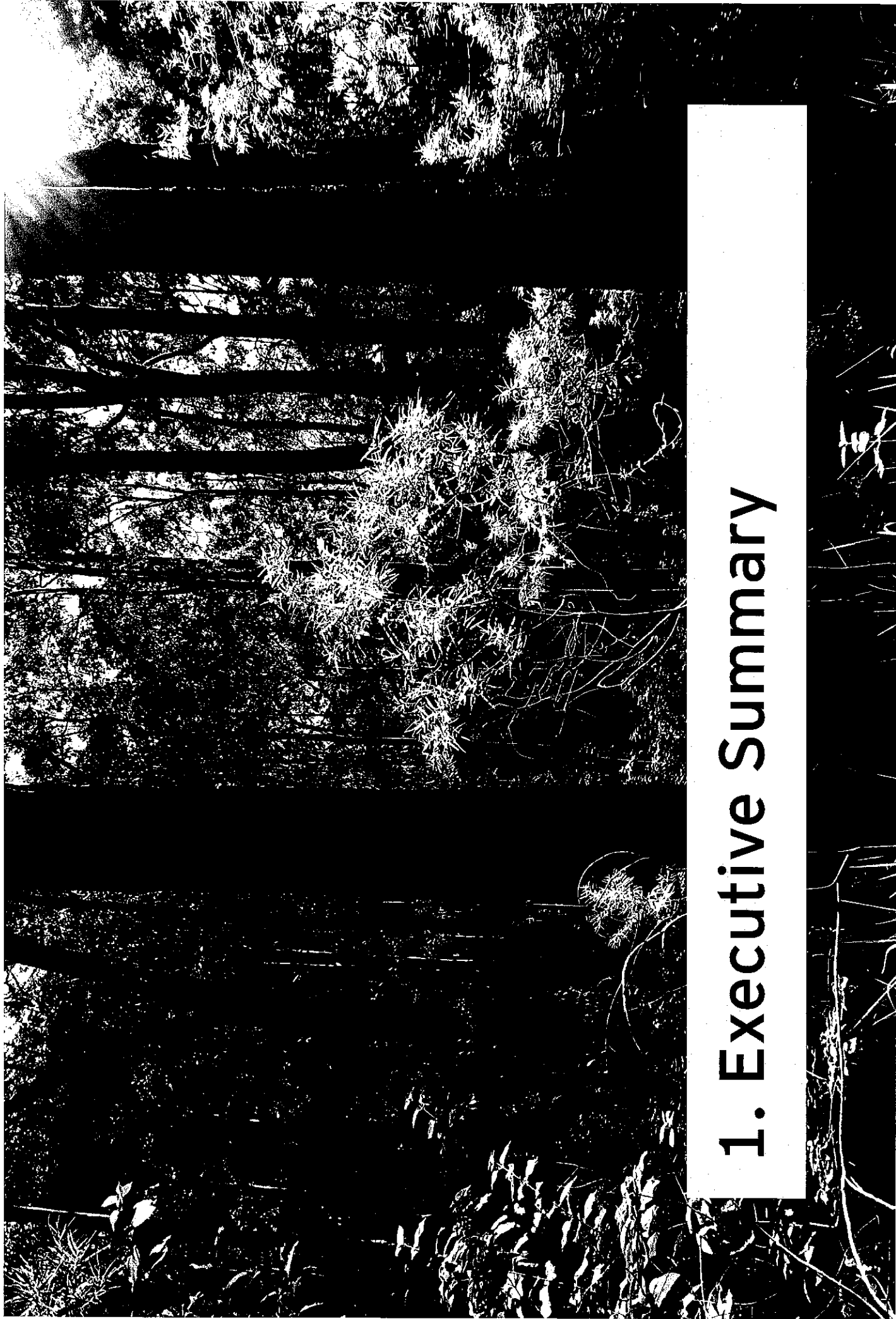
Whilst some of the private forested land and timber plantations around the Park may be unaffected, it will result in the removal of a large portion of hardwood supply in NSW. This will induce the cancellation or amendment of WSAs between the FCNSW and sawmill industries in the NCFA.

Whilst the Park will cover a large portion of the native forest, some WSAs may not be affected, or may be renegotiated. Due to uncertainty around the process and as per information provided through industry consultation, this analysis assumes that all WSAs in the NCFA will be cancelled (i.e. worst case scenario).

This study focusses solely on the cancellation of the WSAs. Any other implications the GKNP might have are not examined as part of this analysis.

Figure 5: State forests marked for conversion to the Great Koala National Park (Source: NSW Labor)





1. Executive Summary

About the study

This study aims to quantify the economic impact of the proposed Great Koala National Park in a worst case scenario which assumes the cancellation of all WSAs in the North Coast Forest Area.

The NSW Labor Party has an election commitment to establish a Great Koala National Park (GKNP).² As the Party has not determined the boundaries or timeframe for the establishment of the GKNP, this study has used the boundaries proposed by the National Parks Association, which will encompass approximately 10% of NSW's managed native forest (the GKNP will add 175,000ha of state forests to existing protected areas to form a 315,000ha reserve in the Coffs Harbour hinterland). It will cover a significant portion of the NCFA, which is expected to result in the cancellation of WSAs in the area.³ This would cause a reduction in the supply of harvestable hardwood in the NCFA.

AFPA engaged EY to identify the economic impact of the cancellation of the WSAs between private wood manufacturing companies and the Forestry Corporation of NSW (FCNSW) in the NCFA of which has specifically been defined for this study. This would result in the cessation of FCNSW's native hardwood harvesting operations on the North Coast. The modelling methodology used for the assessment is detailed in Appendix A1. It does not consider, or include in the analysis, the substitution impacts to other industries or between firms. As such economic impact is a gross measure rather than net.

The defined North Coast Forestry Area

The NCFA term used throughout the report is not an existing term. It is defined by the study as the area shown in the insert in Figure 1 for the purposes of this analysis. The area examined takes in the entirety of the North Eastern Regional Forest Agreement area. This was varied on 28 November 2018 with an extension until 26 August 2039.

The hardwood forestry industry is a major industry in the NCFA region. In NSW, the industry relies almost exclusively on resources from public and private native forests, such as those within the NCFA. Key attributes of the defined region are:

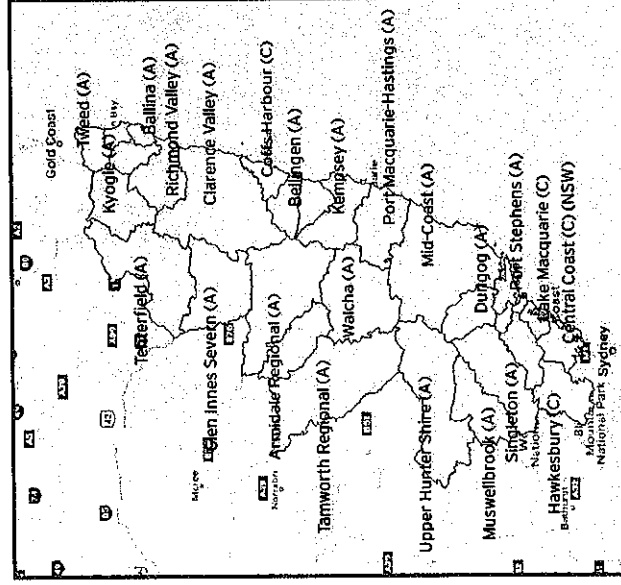
- It is home to over 1.7 million people.

- It supports 700,000 local jobs.

- The hardwood industry has been operating in the region for over 100 years.

- It comprises a significant portion of NSW, and Australia's hardwood supply. From a species perspective, it is responsible for a substantial amount of Australia's Blackbutt/flooded gum timber and Australia's spotted gum timber.

Figure 1: The North Coast Forestry Area (NCFA)*



*It should be noted that the insert refers to the North Coast Forestry Area i.e. the LGAs used for the purposes of this analysis. This does not align to the defined North Coast Forestry Inventory region.

Summary of economic impact

The cancellation of the NCFA WSAs could result in a loss of \$757m in output, \$292m in value add and 1,871 jobs in NSW

The cancellation of WSAs in the NCFA is expected to result in a loss of over 415,000m³ of harvested hardwood timber in the NCFA every year until 2023 when all but two WSAs are set to end (with one WSA continuing to 2027 and another to 2028). This reduction in supply of hardwood logs will see a fall in the level of manufactured timber which will have a negative direct and indirect impact on the NCFA region, with further direct and indirect impacts to NSW and Australia.

This economic impact assessment captures the direct effects of the loss in harvestable hardwood to the industry (i.e. prices paid to FCNSW and manufacturing revenue) and uses Input-Output (IO) modelling to estimate the flow on effects.* Annual impacts have been calculated and would be borne for each year a WSA is cancelled (i.e. impacts would accrue for each year the WSAs are cancelled). They would accrue as per the magnitude stated provided that each year of WSA cancellation mirrors price and volume figures of 2017/18. The modelling does not assume any compensation payable to mills for the cancellation of WSA contracts prior to their expiry. These results do not include the impact on the private native forestry (PNF) industry, who advise that without WSAs, much of the PNF industry would not be commercially viable.

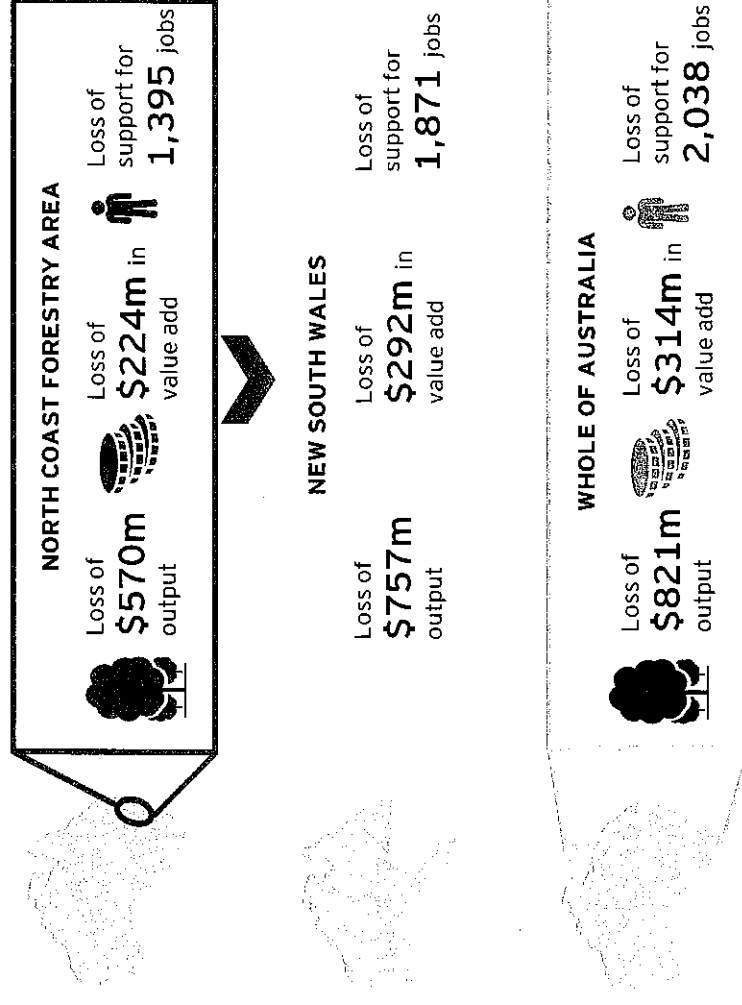
The Impacts

As instructed by industry, the annual direct impact of the cancellation of WSAs is estimated to be a reduction in output of hardwood production of \$57m (i.e. forestry and logging) and a reduction in output of hardwood processing of \$268m (i.e. sawmill and other wood manufacturing). This is made up of \$217m in the NCFA, \$37m in the rest of NSW and \$14m in the rest of Australia).

The flow on impacts are shown in Figure 2 and include:

1. Estimated reduction in total output of:
 - \$570m loss in economic output per annum in the NCFA.
 - A further \$187m loss in output per annum in the rest of NSW.
 - A further \$64m loss in output per annum in the rest of Australia.
2. Estimated reduction in total value add of:
 - \$224m loss in value add per annum in the NCFA.
 - A further \$68m loss in value add per annum in the rest of NSW.
 - A further \$23m loss in value add per annum in the rest of Australia.
3. Estimated reduction in employment* through the loss of support of:
 - 1,395 jobs in the NCFA.
 - A further 476 jobs in the rest of NSW.
 - A further 167 jobs in the rest of Australia.

Figure 2: Impact of the cancellation of WSAs in the NCFA per annum (\$m)



*It should be noted that employment is in terms of headcount, rather than FTE. Additionally, each job represents one job for one year i.e. if 1 job is lost over 2 years, this would appear as a loss of support for 2 jobs.

The relative contribution of the cancellation of WSAs in the NCFA

The hardwood industry plays a significant role in Australia and the cancellation of WSAs in NCFA would have an impact in regional areas

Loss in harvestable hardwood in NSW⁴

The volume of native hardwood forests harvested has been falling over the last decade, dropping by over a half Australia-wide and in NSW as shown in Figure 3. Industry has stated that a significant factor in this trend has been a succession of government decisions over the past 20 years to convert timber production forests across the state into permanent reserves and national parks. The cancellation of WSAs in the NCFA would reduce this further with a loss of:

- Almost 50% of hardwood logs harvested in NSW* (over 400,000m³).
 - 10% of the total native hardwood logs harvested in Australia.
- With the Australian demand for forestry products expected to increase by 43% by 2040, this loss in harvestable hardwood may affect supply chains across Australia.

Local impacts

The NSW North Coast forestry industry is almost entirely reliant on native forest hardwood logs, with negligible softwood plantations and processing present. The cancellation of WSAs will negatively impact the forestry industry in NSW and the NCFA. Almost 30% of the total output, jobs and value add from the forestry and logging industry will be lost in the NCFA. Additionally, approximately 45% of the output and value add of the sawmill manufacturing industry will be lost.

While the forestry industry is not a major generator of output or employer in the NCFA when looking at the whole economy (1% of total output and jobs), the employment loss will be concentrated in smaller areas around sawmills, whose economies may observe significant losses given almost 50% of sawmill manufacturing jobs will be lost. Further, this will reduce the productivity in the area. As Figure 4 shows, the forestry industry is more productive than the rest of the NCFA on average, with forestry production almost twice as productive as the rest of the NCFA economy.

The loss of economies of scale may lead to industry rationalisation that may reduce the size of the industry beyond what was found through this analysis. Boral, the industry participant that would see the greatest loss, has stated that should their WSA be cancelled, their hardwood business across Australia would cease. Further, many sawmills in the area only process hardwood, again indicating the potential shutdown of sawmills in the region.

Figure 3: Harvestable hardwood from native forests (M³)

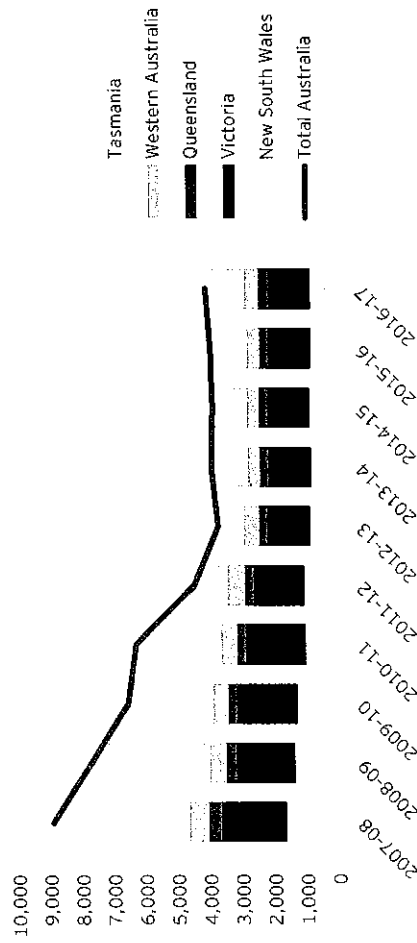
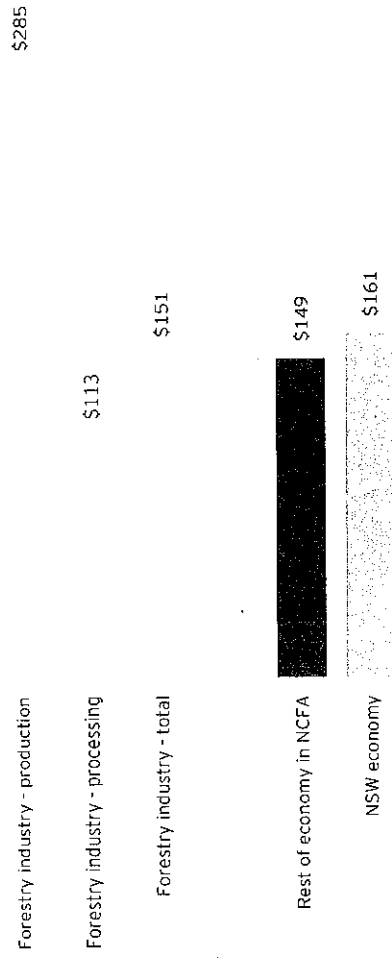


Figure 4: Value add per employee in NCFA (unless otherwise stated) (\$'000)



* Noting a portion of hardwood in the NCFA would continue to be harvested through private forests and plantations.

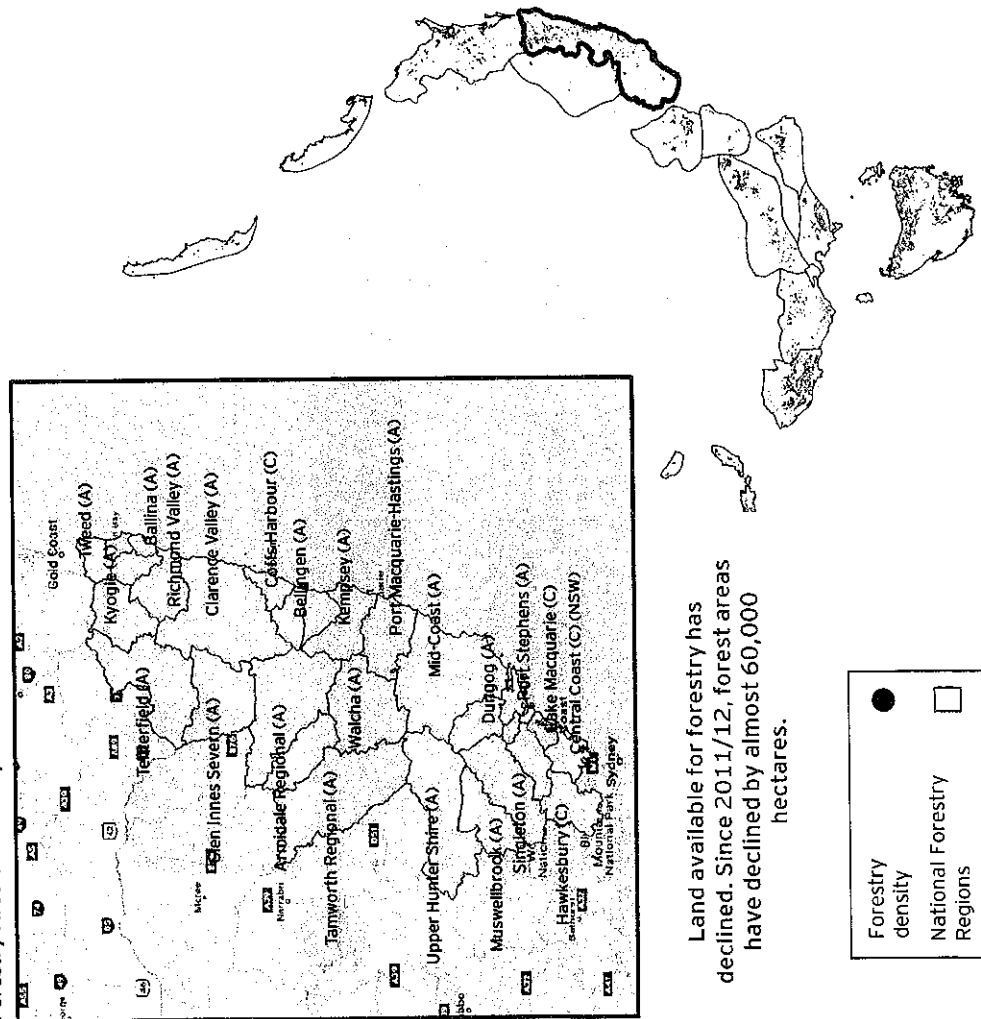


2. Introduction

The hardwood forestry industry in the North Coast of NSW¹

The WSAs in the NCFA are responsible for a significant supply of hardwood timber in Australia

Figure 6: National Forestry Regions, East Coast, 2016 with the North Coast Forestry Area under analysis*



The Area

The NCFA used throughout the report is not an existing term. It is defined by the study as the area shown in the insert in Figure 6 for the purposes of the analysis. The area examined takes in the whole North Eastern Regional Forest Agreement area. This was varied on 28 November 2018 with an extension until 26 August 2039.

The NCFA is home to a diverse variety of hardwood species, used in a multitude of forms and across industries. Given this, the area is responsible for a significant portion of NSW - and Australia's - hardwood supply. From a species perspective, it is responsible for a substantial amount of Australia's Blackbutt/Flooded Gum supply and Australia's Spotted Gum supply.

Processing

There are a number of key sawmill organisations in the NCFA, with Boral playing a significant role in the hardwood industry in the NCFA and across NSW. Boral are FCNSW's largest customer, and use a substantial proportion of valuable Blackbutt timber. They currently use approximately 35% of the total volume of hardwood harvested in the NCFA.

High quality sawlogs are generally used for appearance grade products such as flooring and decking, with the Blackbutt and Spotted Gum species currently providing the highest commercial return. These are predominantly found in the NCFA and may be lost if the WSAs are cancelled.

*It should be noted that the insert refers to the North Coast Forestry Area i.e. the LGAs used for the purposes of this analysis. This does not align exactly to the North Coast forestry region highlighted in the map
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Economic and social profile of the NCFA

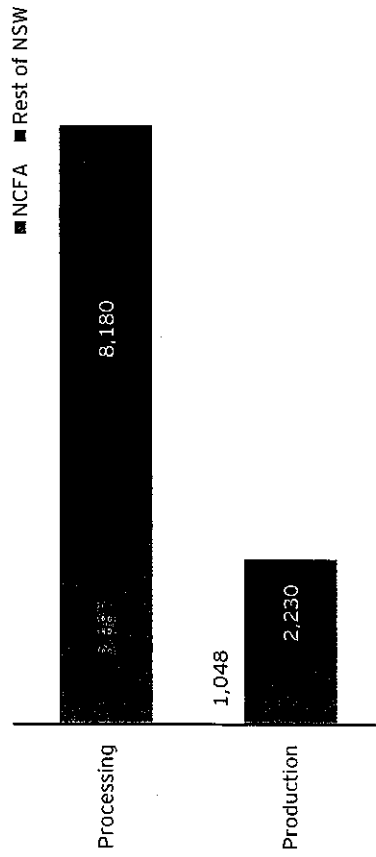
The forestry industry in the NCFA is productive and contributes to a sizeable proportion of NCFA's total employment

Forestry employees in the NCFA comprise a large proportion of NSW's total forestry employment

The forestry industry employs 15,145 people in NSW and 4,735 people in the NCFA. These figures have been determined assuming a particular definition of the forestry industry (refer Appendix for industry definition) and region (refer prior discussion regarding NCFA), and using most recent ABS statistics.

Within NSW and NCFA, approximately 22% of forestry employees are associated with production and 78% are associated with processing. Whilst forestry makes up 0.45% of total employment in NSW, it makes up 0.71% of total employment in the NCFA, reflecting the prominence of forestry within the region.

Figure 7: Employment in the forestry industry, 2017



The Sawmill Product Manufacturing industry is a key component of the forestry industry

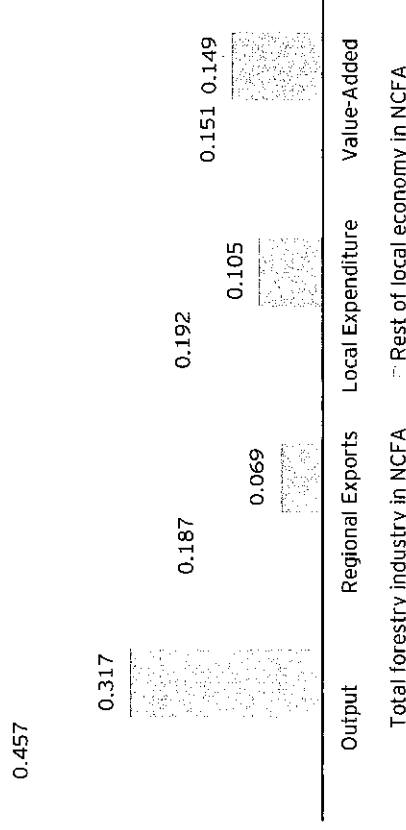
The industry is in the top five of 114 industries which spends the most on locally sourced intermediate goods and services per dollar of output. As a result, whilst the industry sector does not make the largest contributions to the NCFA's economy, due to well developed local supply chains these sectors have a significant capacity to deliver broad based economic benefits for the region given their use of local inputs.

The forestry industry in the NCFA is comparatively more productive than the rest of the economy in the NCFA

The forestry industry in the NCFA generates \$0.5m in output for every employee, \$0.2m in value add and \$0.2m in regional exports for every employee. These indicators are higher than those for the rest of the NCFA economy.

This indicates that the forestry industry in the NCFA is able to utilise its employed resources in a more productive manner when compared to other industries within the region.

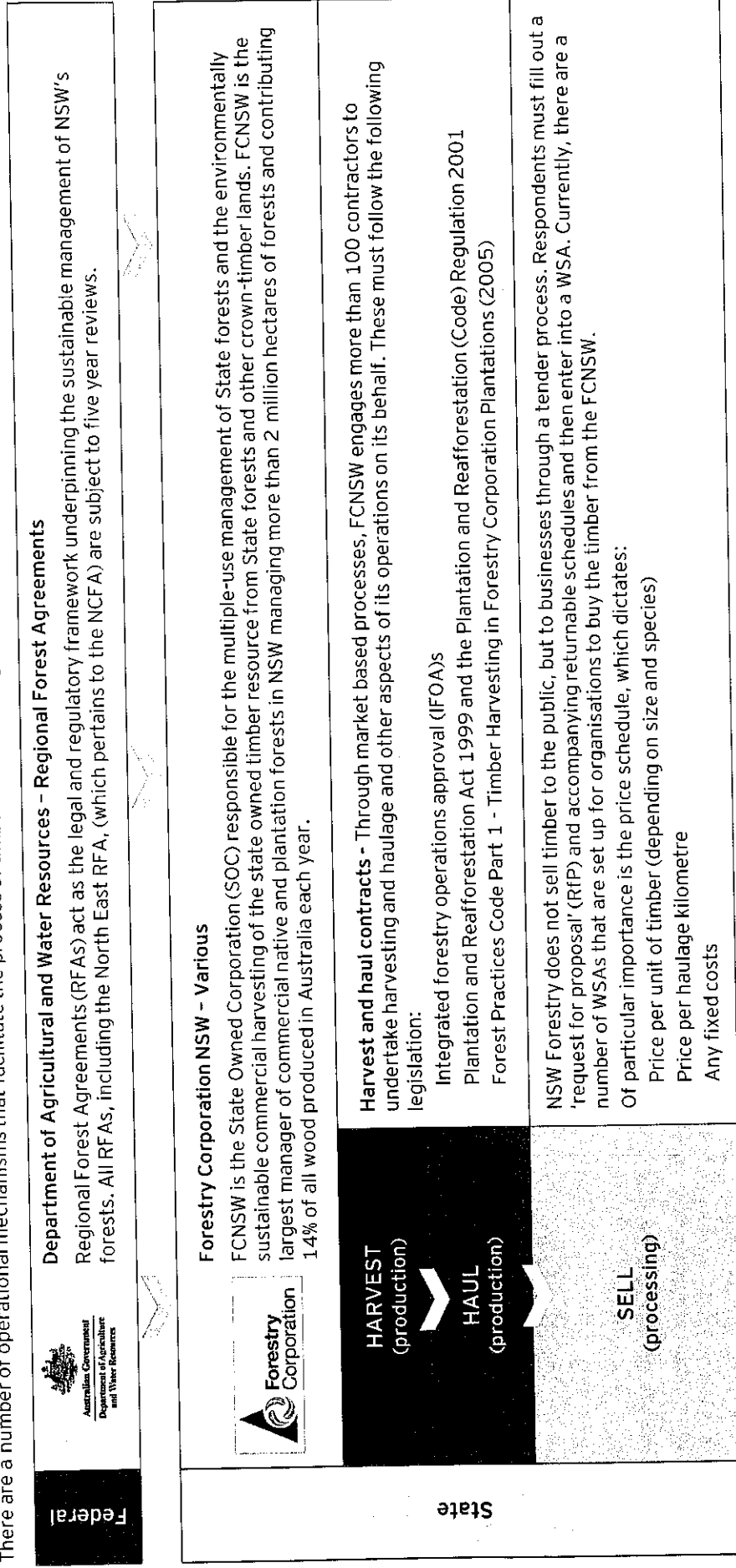
Figure 8: NCFA economy comparison per job (\$m)



NSW hardwood forestry industry process^{1,5}

Legislative, regulatory and contractual instruments are designed to ensure that the industry is commercially and environmentally sustainable

There are a number of operational mechanisms that facilitate the process of timber in NSW throughout the supply chain. The process is shown below.



In the NCFA, FCNSW has contracts (known as Wood Supply Agreements) with around twelve large sawmills for high quality sawlogs. These contracts are set to expire between 2023 and 2028. The continuation of these contracts beyond their expiry dates would be impacted if harvestable area is removed from the NCFA. FCNSW also has other contractual arrangements for low-grade "salvage" wood that would also be impacted.

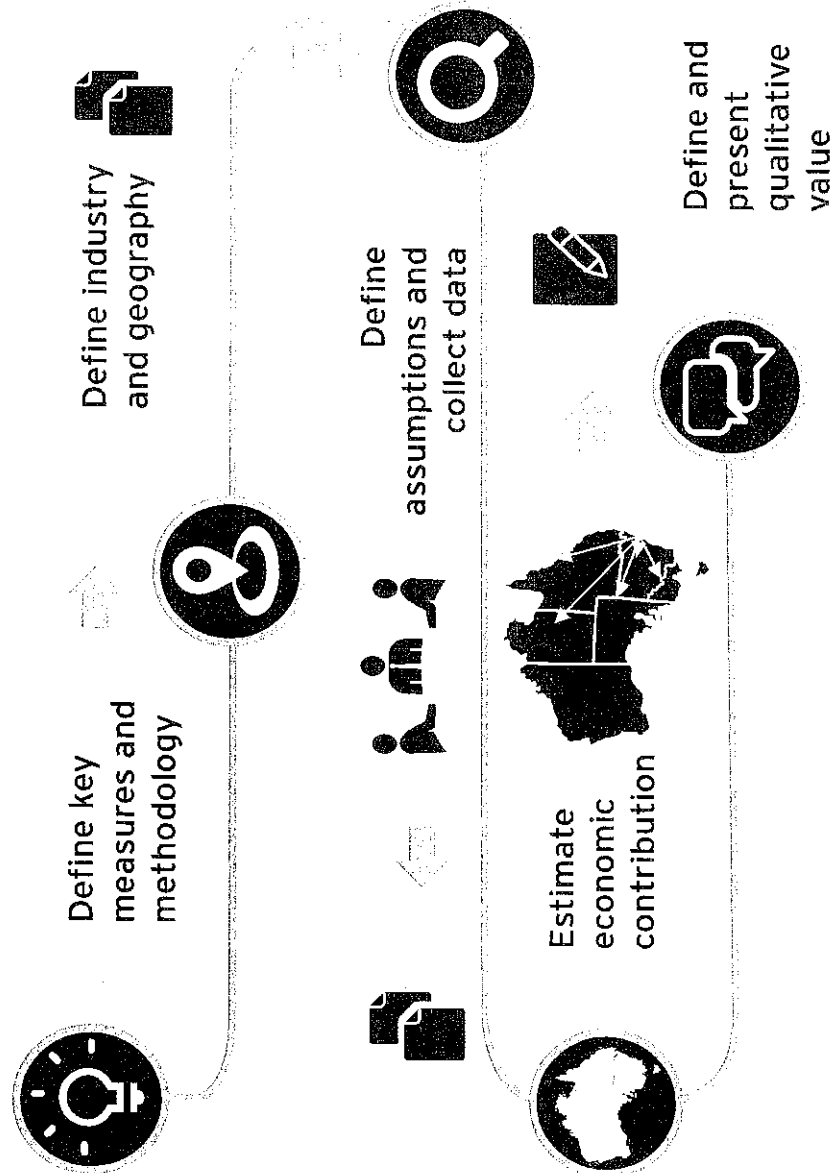


Approach

The impact of the cancellation of WSAs in the NCFA has been estimated through an economic contribution assessment

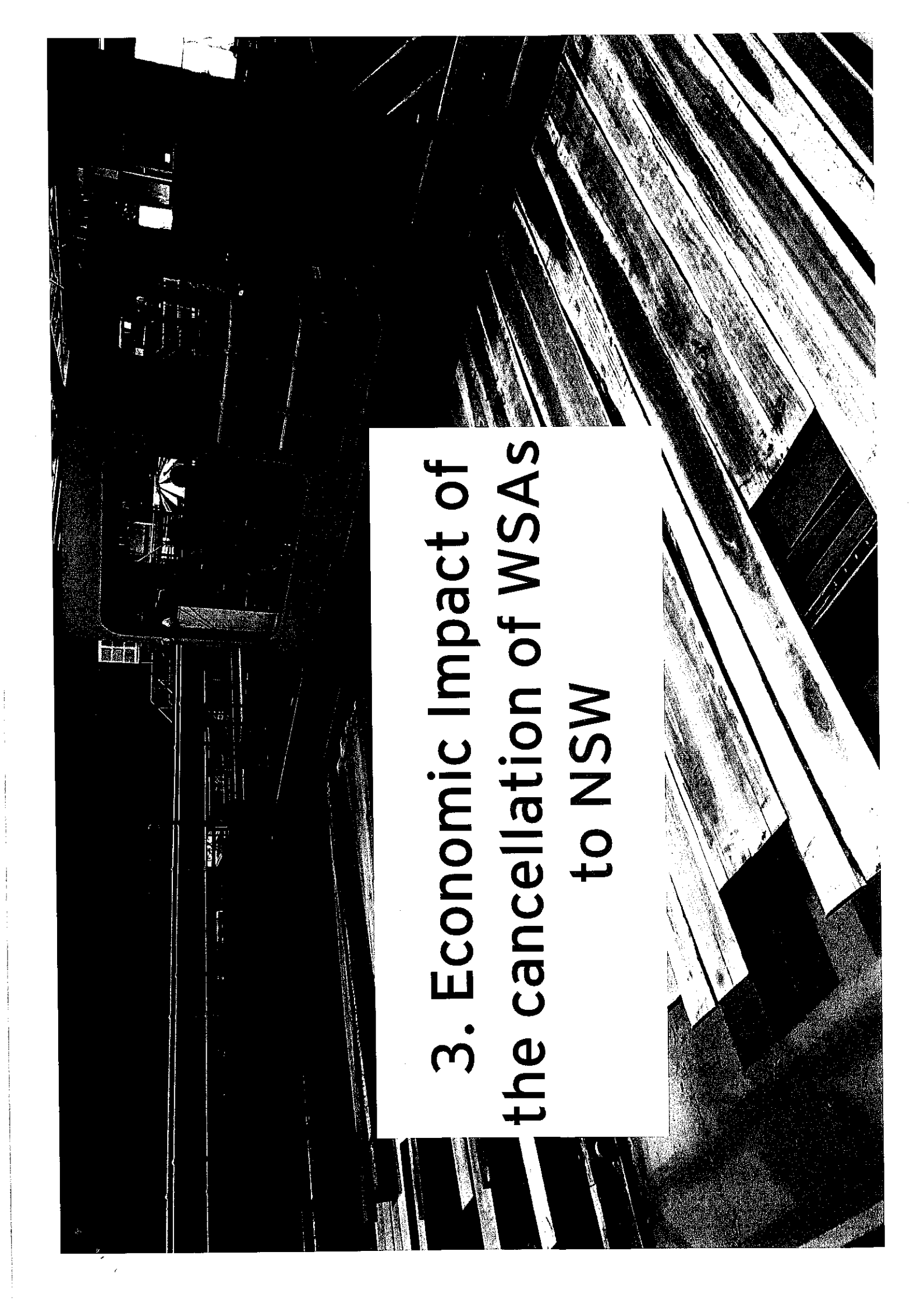
The economic impact of the cancellation of WSAs in the NCFA has been estimated by way of an economic contribution assessment. Economic contribution (or gross contribution) is a measure comprising all market-related expenditure generated by a specified industry. It focuses on capturing the direct effects of an industry (i.e. revenues or output) and applying economic multipliers to these direct effects to estimate the flow on (or 'indirect') effects of industry operations. The indirect effects consist of industrial and consumption flow on effects.

The analysis was prepared using a five step methodology outlined below based on the key assumptions shown. Each step is discussed further in Appendix A1.



Key Assumptions

- ▲ The impact shown is an annual impact whereby the losses would accrue for every year a WSA is cancelled.
- ▲ Each year the WSA is in place is assumed to mirror that of 2017/18. That is, each future year of a WSA will see a similar price level and volume delivered as seen in 2017/18.
- ▲ This analysis only looks at the cancellation of the WSAs. No examination has been conducted regarding the additional externalities or impacts that may flow on from the GKNP.
- ▲ All direct manufacturing impact data were provided by industry. Direct forestry impact data was provided by publicly available information.
- ▲ No validation or verification was completed as part of this engagement and therefore the results of the analysis are dependent on the accuracy of the impact data provided by industry.
- ▲ The analysis does not consider substitution impacts, crowding out removal or uplifts to other industries or organisations within the industry. As such economic impact is a gross measure rather than net.
- ▲ The approach assumes that unlimited supplies of production inputs such as labour are available.



3. Economic Impact of the cancellation of WSAs to NSW

Summary of economic impact

The cancellation of the WSAs is expected to result in a loss of \$757m in output, \$292m in value add and 1,871 jobs in NSW per year

The cancellation of WSAs is expected to result in a loss of over 415,000m³ of hardwood timber harvested by FCNSW in the NCFA. This reduction in supply will have a negative direct and indirect impact to the NCFA region, with further direct and indirect impacts to NSW and Australia which use the manufactured timber in the economy, resulting in a loss of jobs.

This analysis is based on data provided by AFPA and sawmill organisations, who estimate the annual direct reduction in output in the production stage of the hardwood supply chain is \$57m, based on the price paid to FCNSW for the contracted volume of hardwood product as per each WSA every year.

To estimate the direct loss in output in the processing stage of the hardwood supply chain due to the cancellation of WSAs, data was sourced from wood processing organisations (significantly attributable to Boral). Six organisations provided data for the analysis. Based on the data from these organisations and the price level and volumes of product underpinning the WSAs, a total industry output lost was estimated, which was validated with AFPA. The result of this process is an annual direct impact to NCFA of the cancellation of WSAs of \$217m in the processing stage of forestry (i.e. \$217m less in output generated by the forestry processing sector).

Based on the assumption that the cancellation of the WSAs would lead to the closure of Boral's entire hardwood business, Boral provided a further direct loss for areas outside of the NCFA. This included a further direct loss for NSW excluding NCFA of 86 further employees, and 33 further employees in the rest of Australia. Whilst only Boral provided the loss in employment outside of the NCFA due to the cancellation of WSAs within the NCFA, there would likely be additional losses for other organisations outside of the NCFA as a significant portion of harvestable hardwood supply in NSW is lost. Additionally, industry has stated that without the Boral hardwood business, the hardwood industry in the NCFA could not be sustained.

The resulting flow on impacts (i.e. direct plus indirect) estimated are:

Output	Value add	Employment
		
\$570m lost in the NCFA	\$224m lost in the NCFA	1,395 jobs no longer supported in the NCFA
An additional \$187m lost in the rest of NSW	An additional \$68m lost in the rest of NSW	An additional 476 no longer supported in the rest of NSW
An additional \$64m lost in the rest of Australia	An additional \$23m lost in the rest of Australia	An additional 167 no longer supported in the rest of Australia

These are shown on the following slide which shows the direct and indirect impacts of the cancellation of WSAs in the NCFA each year.

An important qualitative impact not captured in the analysis is that the cancellation of the WSA's would significantly extinguish Australian production of Blackbutt and a large proportion of Spotted Gum, species that have superior wear, colour and strength characteristics that make them ideal for high quality flooring. There are limited local substitutes and thus where building specifications call for flooring with high durability and strength parameters, businesses may import replacement timbers.

The results do not include consideration of any impacts outside of the cancellation of the WSAs on the output of the forestry industry. No examination has been conducted regarding the additional externalities or impacts that may flow on from the GKNP.

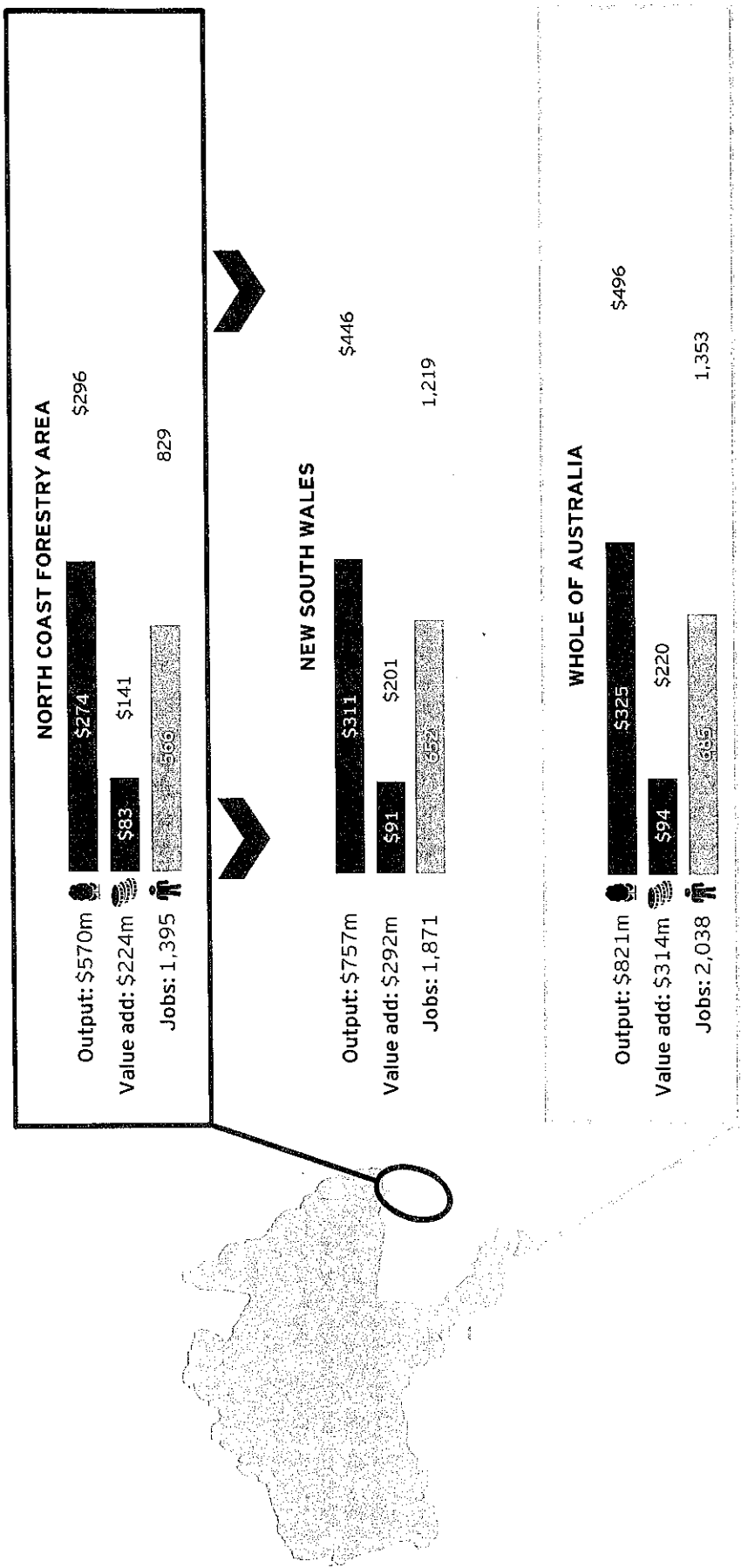
The results do not include the value of timber sources from private native forests that are processed at the sawmills that will close. A survey of 33 hardwood primary processing businesses in the NCFA undertaken between February 2016 and February 2017 on behalf of the NSW Department of Primary Industries found that the volume of private property native timber flowing into larger primary processors amounted to an adjusted 153,512m³ per year.

Summary of economic impact

The cancellation of WSAs is expected to result in a loss of \$325m in direct output and \$496m in indirect output in Australia per annum

Figure 9 below illustrates the flow on impacts of cancelling the NCFA WSAs broken into direct and indirect impacts. The direct impact is the revenue and employment loss through data provided by the hardwood industry, and the indirect impact is the flow on implications through the consumption effect (employees spending wages and salaries for other businesses) and the industrial effect (industry purchasing goods and services from other businesses) observed in the NCFA, NSW and Australia.

Figure 9: Impact of the loss of hardwood hectares to North Coast output (\$m, grey = direct and yellow = indirect)



Flow on impact to New South Wales: Output

The cancellation of the WSAs in the NCFA could result in a loss in output of \$757m to the NSW economy per annum

The cancellation of WSAs in the NCFA and the resulting loss in hardwood supply, could result in a loss in output of \$757m to the NSW economy per annum, of which \$311m is direct and \$446m is indirect.

Direct impact to NSW

Processing activities contribute the majority of the direct output lost in the hardwood industry, at 82%, while production contributes 18% of the loss.

Figure 10: Breakdown of direct output lost by stage in NSW per annum (\$m)

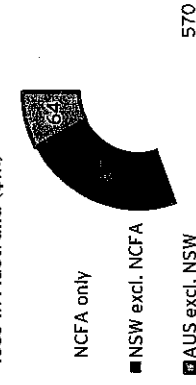


Flow on impact to NSW

The supply chain effect impacts both upstream and downstream industries with the largest flow on impact occurring in Agriculture, Forestry & Fishing (28% of total output loss), due to the intra-industry nature of supply chains (see Figure 13). Other industries that are expected to be impacted are the Manufacturing (\$89m) and Transport, Postal & Warehousing (\$43m) industries. Manufacturing is required to transform hardwood into more refined products and relies on the access to hardwood. The transport industry delivers both unprocessed and processed hardwood products where its required and thus sees both an upstream and downstream impact.

The results also indicate that industries are impacted through consumption effects, such as Rental, Hiring & Real Estate Services and Retail Trade. To adjust for the change, industries downstream may substitute their inputs or source from elsewhere. Upstream industries, however, may be required to lower their prices due to the reduced demand.

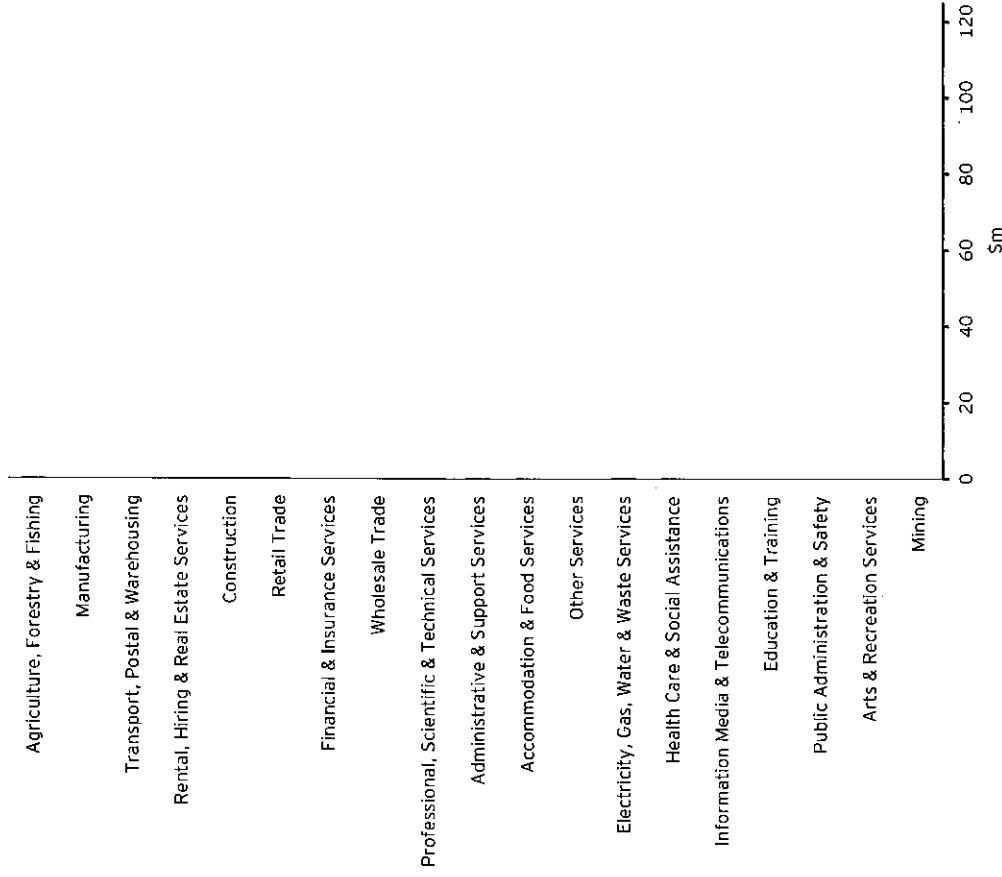
Figure 11: Breakdown of output loss in Australia (\$m)



Impact to the rest of Australia

Figure 11 illustrates that though the majority of loss in output can be attributed to NSW, 8% is attributed to the rest of Australia. This is due to the direct loss of jobs in other parts of the hardwood organisations. For example, job loss in an organisation's headquarters due to the reduction of sawmill employees.

Figure 12: Reduction in output per annum in NSW (\$m)



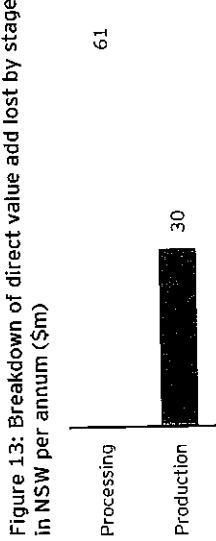
Flow on impact to New South Wales: Value add

The removal of harvestable hardwood in the NCFA could result in the loss in value add of \$292m to the NSW economy per annum

The cancellation of WSAs in the NCFA and the resulting loss in hardwood supply, could result in a loss in value add of \$292m in the NSW economy, of which \$91m is direct and \$201m is indirect.

Direct Output in NSW

Processing activities contribute the majority of the direct loss of value add in the hardwood industry at 66%. Production activities contribute more to direct value add than direct output.

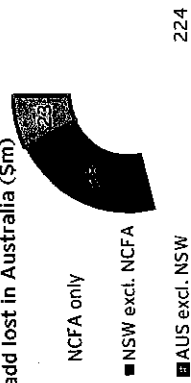


Flow on impact to NSW

The most significant loss in value add is in Agriculture, Forestry & Fishing, due to the intra-industry relationships within the supply chain. This industry accounts for 30% of the indirect loss in value add or \$61m.

The Rental, Hiring & Real Estate Service industry is also expected to experience a large impact, with \$24m in lost value add, approximately 12% of the total loss. Comparing the Rental, Hiring & Real Estate Service industry to the Manufacturing industry, the latter is expected to receive most of its impact outside of the NCFA region (73% in NSW excl. NCFA), and the former is expected to be impacted more within the NCFA (76% in the NCFA).

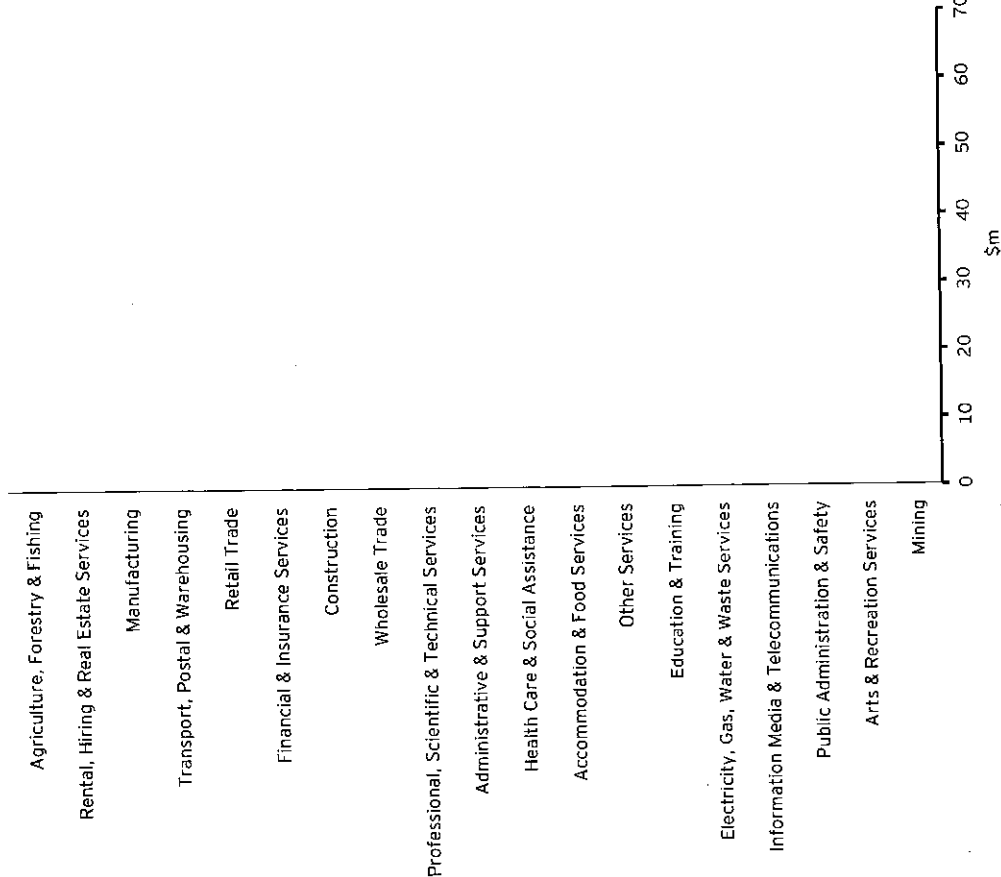
Figure 14: Breakdown of value add lost in Australia (\$m)



Impact to the rest of Australia

Figure 14 illustrates that 93% of expected loss in value add is attributed to NSW and 7% is attributed to the rest of Australia. There is a direct loss of \$3m in value add to the rest of Australia due to the closure of the hardwood business for some organisations with WSAs, causing office jobs to be lost.

Figure 15: Reduction in value add per annum in NSW (\$m)



Flow on impact to New South Wales: Employment

The loss of harvestable hardwood in the NCFA could result in the loss of support for 1,871 jobs to the NSW economy per annum

The cancellation of WSAs in the NCFA and the resulting loss in hardwood supply, could result in a loss of support for 1,871 jobs in the NSW economy, of which 652 are direct and 1,219 are indirect.

Direct Employment

Processing activities contribute the majority of the loss in employment supported, at 88%. This higher proportion of direct impact indicates evidence for a relatively higher level of labour intensity in the Manufacturing industry.

Figure 16: Breakdown of direct employment no longer supporting by stage (jobs)

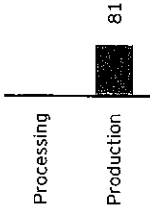
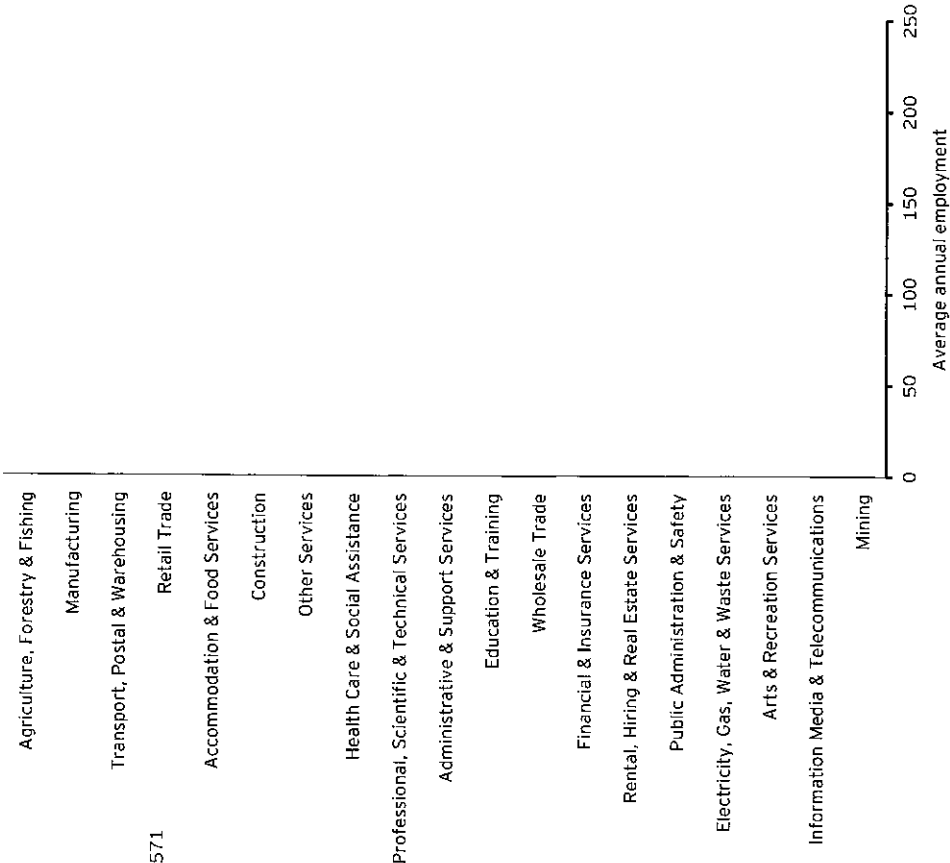


Figure 18: Number of jobs no longer supported in NSW



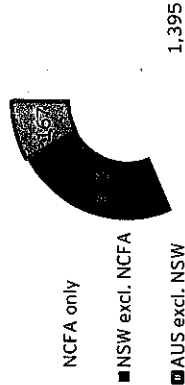
Flow on impact to NSW

Agriculture, Forestry & Fishing will experience the largest flow on impact with 222 jobs no longer supported in NSW.

Other industries that may be impacted are the Manufacturing and Transport, Postal & Warehousing industries, with an expected loss of support for 175 and 155 jobs respectively.

Forestry also supports many jobs in the Retail Trade industry; meaning a loss of support of 137 indirect jobs due to consumption effects (i.e. forestry employees no longer spending in the local economy reducing demand on other industries).

Figure 17: Breakdown of employment no longer supported in Australia

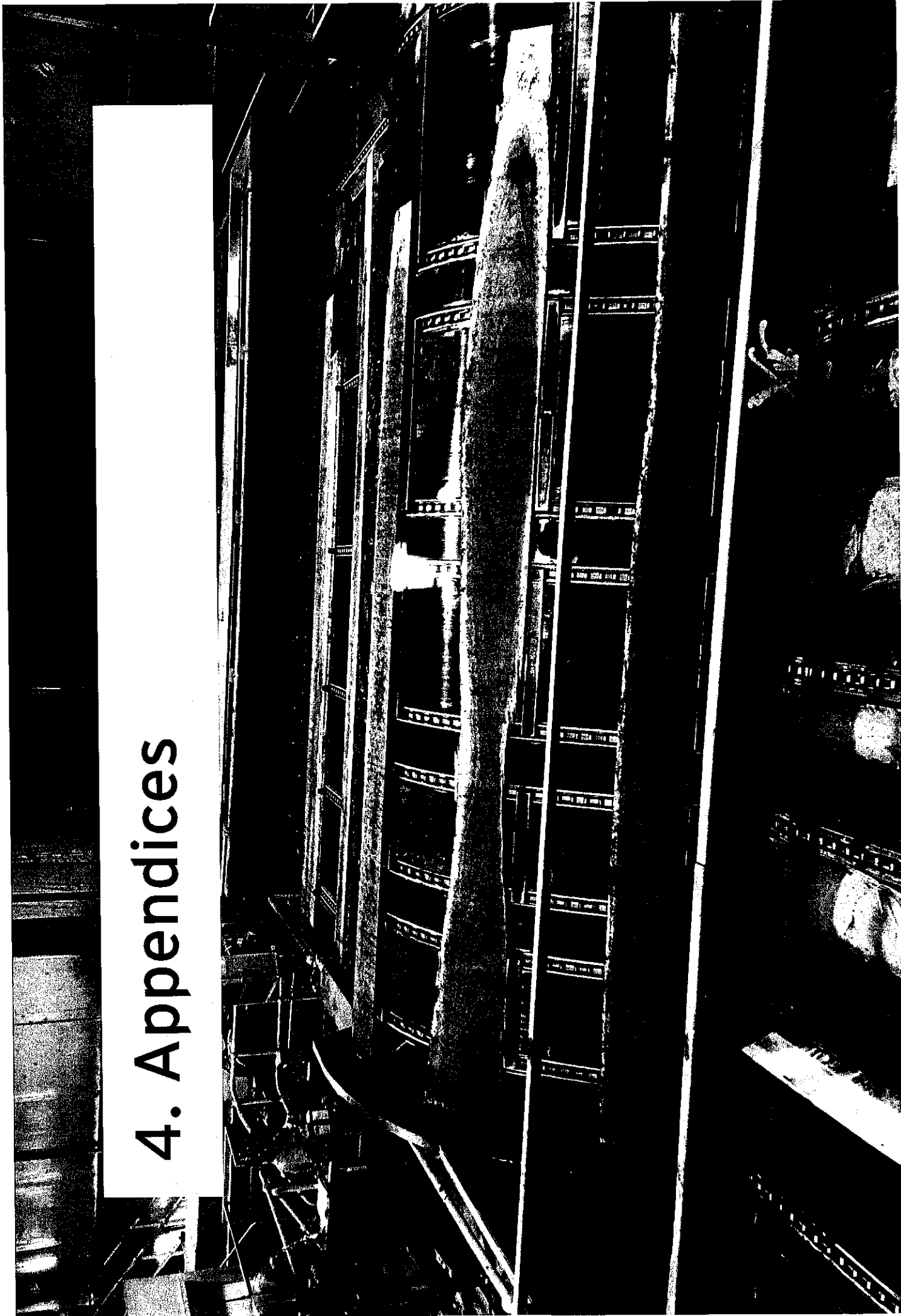


Impact to the rest of Australia

Figure 17 illustrates that 92% of jobs no longer supported is attributed to NSW, and 8% is attributed to the rest of Australia.

There is a direct loss of 33 jobs supported in the rest of Australia due to the closure of full hardwood businesses for some organizations.

4. Appendices



A1. Approach

The impact of the cancellation of WSAs in the NCFA has been estimated through an economic impact assessment

The value generated by the forestry industry in the NCFA has been estimated by way of an economic impact assessment. Economic impact (or gross impact) is a measure comprising all market-related expenditure generated by a specified industry. It focuses on capturing the direct effects of an industry (i.e. revenues or output) and applying economic multipliers to these direct effects to estimate the flow on (or 'indirect') effects of industry operations. The indirect effects consist of industrial and consumption flow on effects.

The analysis was prepared using a five step methodology outlined below. Each step is then further discussed in detail.



1. Define key measures and methodology

Three common indicators of an industry are:

TOTAL OUTPUT	The (final) value of transactions for goods and services generated in the economy
VALUE ADD	The value of outputs produced in a region or industry less the cost of inputs sourced. The sum of value add across all industry sectors in a specific region is a core component of Gross Regional Product (GRP)
EMPLOYMENT	The number of jobs or value of wages generated in the economy to service increased demand

All three measures are valuable in their own right. Industry output is a measure of production, value add is a measure of wealth generation, and employment is a measure of the human capital used in the production process (i.e. its labour intensity).

In comparing the size of an industry against others, it is generally accepted to discuss this in terms of its industry value add. Industry value add isolates the costs of production (that is, inputs sourced from other sectors) from the industry's outputs. This avoids the inclusion of revenues to other industries and associated double counting. In practice, industry value add largely comprises wages, salaries and the operating surplus of an industry (i.e. the industry's income). The value add measure is commonly put forward as the most appropriate measure of an industry's impact to the national economy. As such, this study considers all three measures, with attention placed on industry value add measures when making comparisons to other industries.

Economic impact studies, which typically use IO Modelling (refer next page), do not consider the substitution impacts to other industries (i.e. what might happen to expenditures if the specific industry or activity were lost). As such economic impact is a gross measure rather than a net measure.

A1. Approach

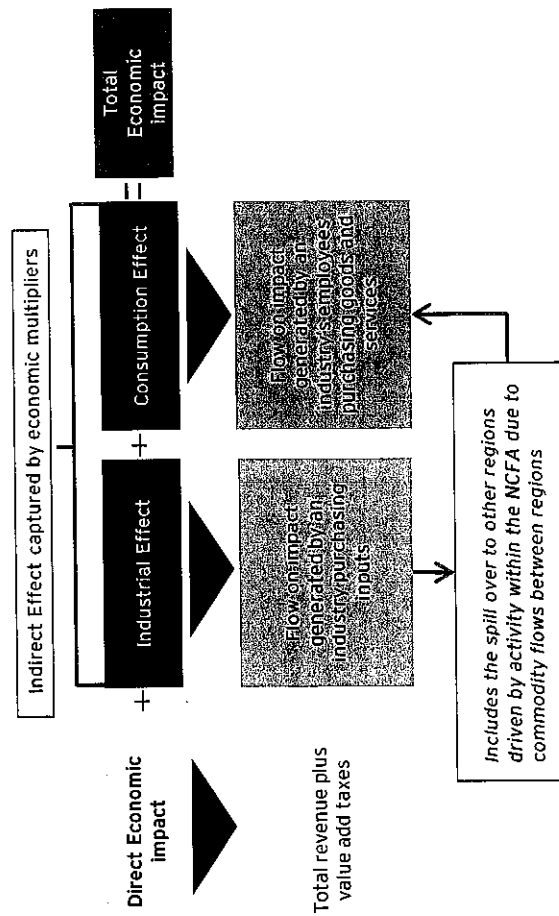
This economic impact assessment uses input-output modelling, which has advantages and limitations

1. Define key measures and methodology (continued)

The modelling methodology used for the assessment was Input-output (IO) modelling. IO modelling calculates how the impacts created by activity in one industry effects the broader economy through established intra and inter-industry relationships.

There are many advantages of using IO modelling as the basis for economic impact studies (refer right), but there are also limitations that result from the use of critical assumptions and these should be well understood when interpreting the results of the analysis.

Figure 19: Introduction into economic impact



NOTE: When interpreting the results of this analysis, it is important to understand that the employment figures are in terms of headcount rather than FTE. That is, the figures include casual, part time and full time jobs each year.

ADVANTAGES

1. The approach produces relatively simple outputs that are easy to understand and communicate.
2. It can be used to estimate the sectorial impact of industry-specific changes in final demand.
3. Best used for retrospective analysis of established industries.
4. Widely used by industries that wish to demonstrate the size and importance of any industry.
5. The process is transparent; not a 'black box' i.e. the methodology is not unknown.

LIMITATIONS

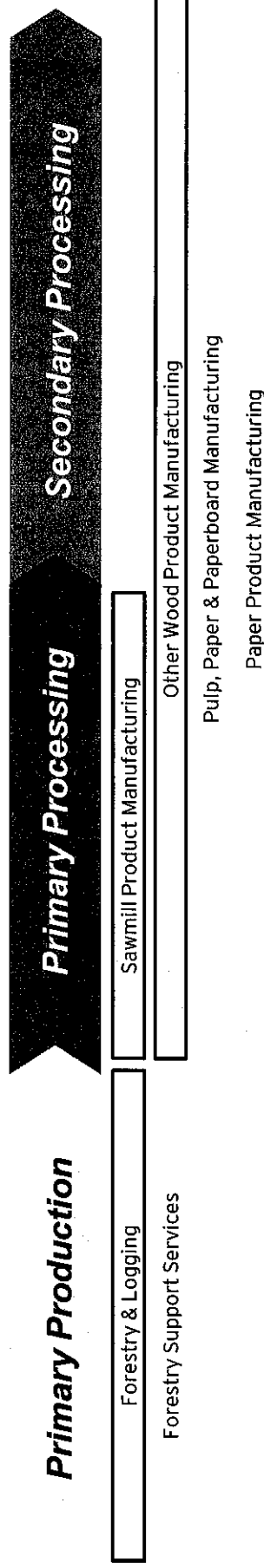
1. The approach assumes fixed production coefficients and subsequently constant returns to scale. This means that no matter how much production occurs the per-unit costs of required inputs remains the same.
2. The approach assumes that unlimited supplies of production inputs such as labour (lack of supply side constraints) are available.
3. It does not account for price changes that may result from increased competition for scarce resources.
4. The analysis is built on a static picture of the economy that does not consider dynamic adjustments that occur from a shock.
5. Regional performance matches national and state average performance.
6. The effect of technology on production efficiency improvements is not considered.
7. Products are only sold in a single industry (Homogeneity of product).
8. It considers the average effects rather than the marginal effects, meaning that IO models do not take into account economies of scale, unused capacity or technological change.
9. Economic impact studies do not consider the substitution impacts to other industries (what might happen to expenditures if the specific industry was lost). As such economic impact is a gross measure rather than net.
10. The IO model accounts for 'leakage' of direct expenditure from the economy. However, it may still be possible for the economic impact presented to be realised in places other than the North Coast Forestry Area.

A1. Approach

The hardwood industry consists of a number of industries, including those associated with production and those associated with processing

2. Define industry and geography

The forestry supply chain consists of three distinct stages, with a number of industries relevant to each stage, shown below. The industries in the purple border above are those that are directly impacted by the cancellation of WSAs.



Consists of delivery, harvesting and haulage fees paid to FCNSW for hardwood logs

Total revenue from hardwood sawmill manufacturing

The geography analysed is shown in Figure 20. This was selected for this study following consultation with AFPA. This study examines the economic impact to the NCFA, as well as NSW and Australia.

3. Define assumptions and collect data

The data used was provided by AFPA, including the expected loss of hardwood in m³, the price paid each year to FCNSW and the direct revenue (or output) which will be lost each year for the hardwood industry affected by the cancellation of WSAs.

It is assumed that all the WSA contracts are cancelled. It does not consider scenarios where the WSA contracts are amended rather than cancelled.

This was supplemented by the latest REPLAN data for Australia, NSW and the NCFA region.

To ensure consistency, data was collected for the 2018/19 financial year, with appropriate escalation applied to historical data.

A comprehensive list of the assumptions used in this study is provided in the Appendix.

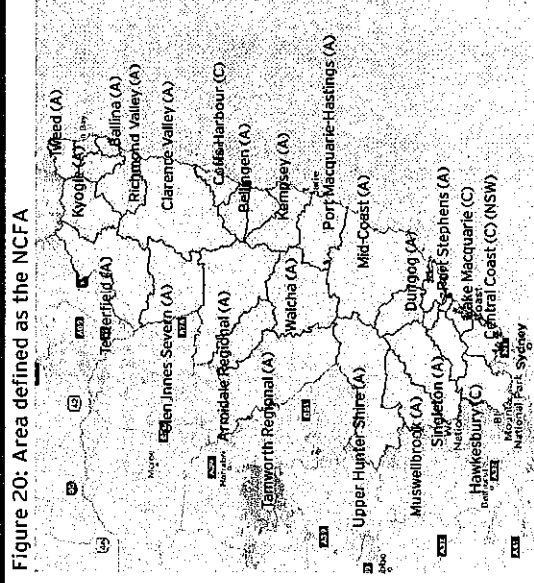


Figure 20: Area defined as the NCFA

A1. Approach

The hardwood industry consists of a number of industries, including those associated with production and those associated with processing

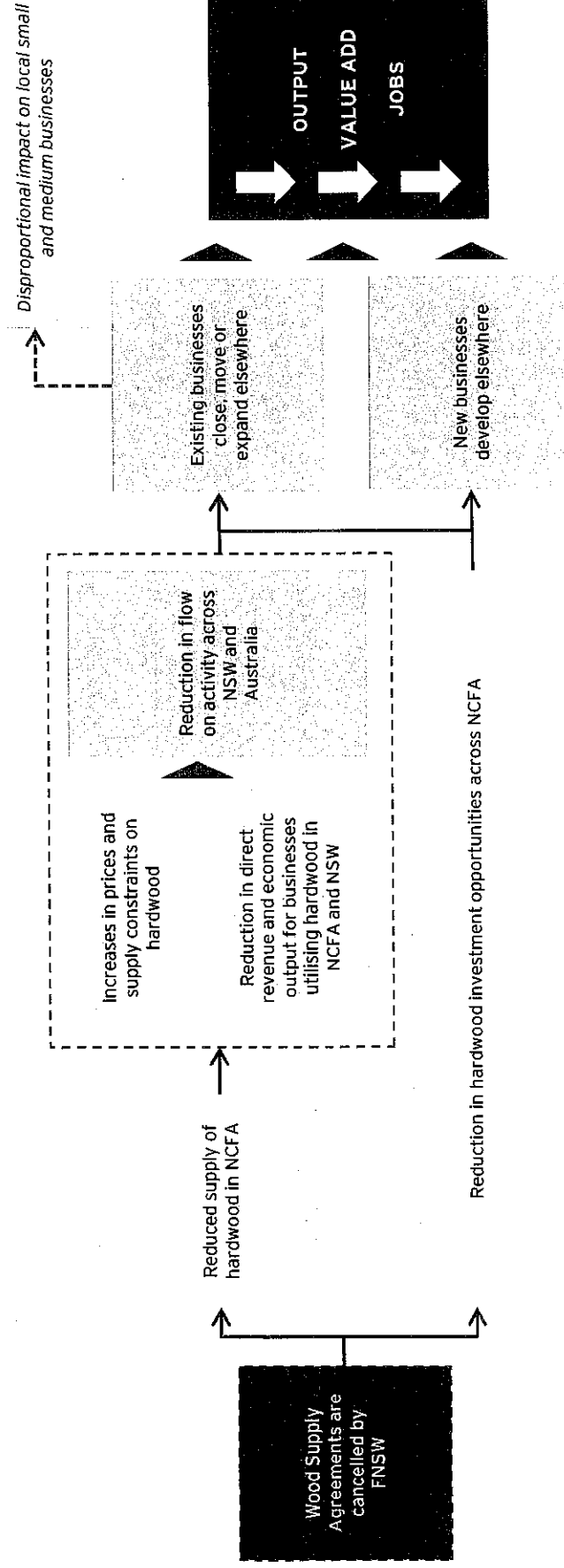
4. Estimate economic impact

Once data was collected from AFPA, it was analysed and revenue lost and foregone expenditure were allocated to the approximate Input Output (IO) industry classification. IO modelling was then used on the industries to estimate the direct and indirect impact of the loss of hardwood supply due to the loss of WSAs in the NCFA, NSW and Australia.

Results are presented in annual terms, based on 2018 values.

The estimate of the economic impact of the cancellation of WSAs will result from the process shown in the following flow chart. Though IO Modelling attempts to quantify the implications of this process, some of these links below may not be quantified, due to limitations associated with the modelling technique.

Figure 21: Impact of the cancellation of WSAs on the NSW economy



A2. Important notes and assumptions

The below lists contains all critical notes and assumptions that were made in the completion of this study.

Notes

Data regarding the impact of the removal of harvestable native forest resource were provided to EY by industry participants. No vetting or verification activities were completed of the provided data.

EY sent a data request to AFPA that was latter disseminated to NSW Forestry Corporation and NCFA's sawmill organisations. Responses to the data request were provided by six organisations.

Data provided by these six organisations collectively contributed to approximately 65% of NCFA's direct output.

All dollar figures are provided in FY2018 Australian dollar terms.

A CPI of 2.5% was used. Data not provided for 2017/18 was escalated appropriately.

Assumptions

It was assumed that:

Due to the creation of the GKNP, all WSA contracts in the NCFA would be cancelled. This assumption was confirmed by AFPA and other stakeholders in the NCFA.

The impact shown is an annual impact whereby the losses would accrue for every year a WSA is cancelled.

The impact shown is based on the assumption that the WSAs in place will continue to have similar price and volume levels as that of 2017/18.

This analysis only looks at the cancellation of the WSAs. No examination has been conducted regarding the additional externalities or impacts that may flow on from the GKNP.

Unless explicitly specified, the revenue impact to manufacturing was assumed to affect the Sawmill Manufacturing sub-industry.

80% of imports into the NCFA come from NSW and 20% come from the rest of Australia.

The forestry industry is made up of the following industries:

- Forestry & Logging
- Sawmill Product Manufacturing
- Other Wood Product Manufacturing
- Pulp, Paper & Paperboard Manufacturing
- Paper Product Manufacturing
- 23% of Agriculture, Forestry & Fishing Support Services (weight based on information accessed from ABS census data).

A3. North Coast Forestry Area - Harvestable hardwood removal - Results summary

	Direct	Indirect	Total
Gross output (\$m)			
Australia	325	496	821
NSW	311	446	757
NCFA	274	296	570
Value-added (\$m, subset of gross output)			
Australia	94	220	314
NSW	91	201	292
NCFA	83	141	224
Annual average employment (jobs)			
Australia	685	1,353	2,038
NSW	652	1,219	1,871
NCFA	566	829	1,395

A4. Glossary

Term	Description
Direct economic impact	Total revenues generated by an industry, plus any applicable value add taxes
Economic impact	The total direct effects of an industry (revenue plus any value add taxes), plus the flow on (indirect) effects. The flow on effects are captured by applying an economic multiplier. It is important to note that economic impact is a gross measure rather than a net (i.e. value add) measure of the impact of an industry. Economic impact studies do not consider substitution impacts, or what would happen if the relevant industry ceased to exist.
Gross Output	Market value of goods and services produced.
Value Add	Market value of goods and services produced, after deducting the cost of goods and services used. This represents the sum of all wages, income and profits generated.
Direct Effect	The direct impact resulting from the production and processing in the forestry industry in the North Coast Forestry Area
Indirect Effect	The flow on impact from the forestry supply chain and increased spending on wages associated with the direct and supply chain impacts.
Economic Growth	Increase in total output of a country / region over a period of time
Economic multiplier	Used to estimate the total economic impact of an industry by multiplying the direct impact. The economic multiplier incorporates the additional economic impact generated by the 'Direct' economic impact (a) which is the industrial effect (b) and the consumption effect (c).
Employment impact	The total direct employment effects of an industry (total employees), plus the flow on (indirect) effects. The flow on effects are captured by applying an employment multiplier.
Employment multiplier	Used to estimate the total economic impact of an industry by multiplying the direct impact. The employment multiplier incorporates the additional employment impact generated by the 'Direct' employment impact.
Flow on (Indirect) economic impact	Additional expenditure as a result of the direct impact of an industry. It is the sum of the industrial effect and the consumption effect
Flow on (Indirect) employment impact	Additional employment that results from the direct employment impact. For example, if an industry employs one additional person, that person can spend their income, and hence require other industries to employ additional people.
Industrial (or supply chain) effect	Flow on (Indirect) impact generated by an industry as it purchases input goods and services generating revenue for other businesses
Consumption effect	Flow on (Indirect) impact generated by an industry as its employees spend their wages and salaries on household consumption, providing revenue for other businesses

A5. Sources

1. GHD, NSW Department of Primary Industries, Review of Coastal Hardwood Wood Supply Agreements, March 2017
2. NSW Labor Party, *Labor's Plan to establish Australia's First Great Koala National Park*, accessed 20 January 2019; http://act.nswlabor.org.au/establishing_australia_s_first_great_koala_national_park
3. Forestry Corporation NSW Annual Report 2017 - 2018; https://www.forestrycorporation.com.au/_data/assets/pdf_file/0004/844186/annual-report-201718.pdf
4. Department of Agriculture and Water Resources, Australian Forest and Wood Products Statistics, 2018
5. Department of Agriculture and Water Resources, *Regional Forest Agreements*, accessed 18 January 2019; <http://www.agriculture.gov.au/forestry/policies/rfa>

Further data have been sourced from the most recent ABS Statistics, including the ABS 2016 Census.

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