Report to Gunns Limited

Building a Pulp Mill at Bell Bay

Economic Impact of a Major Investment

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Summary and conclusions

Summary

Insight Economics was commissioned by Gunns Limited ('Gunns') to evaluate the likely economic impact of the company's proposed major investment in a world scale pulp mill at Bell Bay in northern Tasmania. Southern Star Corporation (SSC), a new private company, has been established to build and operate the pulp mill. Gunns intends to maintain a minimum 51 per cent equity share in SSC, with the remaining shares being made available for potential investors.

With a capital expenditure (CAPEX) presently estimated at $2.3 billion, the proposed mill would be both the largest private sector project ever undertaken in Tasmania and the largest investment in the forestry and wood products sector in Australia. The pulp mill's feedstock would be sourced entirely from plantation timber, its electricity supply would come from renewable energy and the mill's operations would be required to satisfy the most stringent environmental standards imposed by the Australian and State governments.

The market opportunity for a large scale plant to produce bleached hardwood Kraft pulp (BHKP) in Tasmania has long been recognised by government and industry. The wood resource available from plantations in Tasmania is world class and supports a significant woodchip export business. Yet exporting woodchips means that most of the ultimate value of the resource is extracted by those businesses overseas that process the woodchips first into BHKP and then into paper. Only 40 per cent of the value is captured in Tasmania.

In addition, the ongoing demand for BHKP is forecast to be strong, particularly in the Asia-Pacific region. If the proposed pulp mill goes ahead, it would be well placed to take advantage of this market opportunity. In that case, the value of the forest resource exported that would be captured in Tasmania would double from 40 to 80 per cent.

The construction and operations of the pulp mill could be expected to have a significant economic impact, particularly in a relatively small State like Tasmania. Clearly there will be a direct impact, such as benefits to workers employed on building the mill and then on its operatives. There will also be a large number of indirect impacts, however, with benefits to the companies that supply goods and services to the pulp mill, as well as to the general public through governments that will receive additional tax revenue.

In order to capture the total economic impact of the proposed major investment, it is necessary to use a computable general equilibrium (CGE) economic model. The model employed in this case was the Monash Multi-Regional Forecasting (MMRF) model, developed and operated by the Centre of Policy Studies (CoPS) at Monash University. MMRF is widely recognised as the most comprehensive CGE model for regional economic analysis available in Australia. It is regularly used by government treasury departments throughout Australia and has a high degree of credibility.

EXHIBIT 1: SUMMARY OF KEY ECONOMIC IMPACTS OF BELL BAY PULP MILL TO 2030

Measure	Impact
NPV[a] of Gross Domestic (State) Product impacts	
Australia	$2.4 billion
Tasmania	$9.9 billion
NPV of Investment impacts	
Australia	$1.3 billion
Tasmania	$4.5 billion
NPV of Consumption impacts	
Australia	$2.8 billion
Tasmania	$3.7 billion
NPV of increased Taxation revenues	
Australian Government	$391 million
Tasmanian State Government	$597 million
Average annual number of additional jobs in the operational phase	
Australia	600 persons
Tasmania	3,100 persons
NPV of Gross Regional Product impacts in Tasmanian Regions[b]	
Northern Region	$3.7 billion
Mersey Lyell	$2.1 billion
Southern	$0.9 billion
Greater Hobart	$2.6 billion

Note a: The net present values in this report are estimated over the period 2011 to 2030 using a real social discount rate of five per cent.

Note b: The Gross Regional Product figures sum to less than Gross State Product because they are estimated at factor cost and exclude taxes and subsidies.

Source: CoPS Modelling.

A summary of the projected economic impact of the proposed pulp mill is presented in Exhibit 1. In interpreting these results, it should be noted that they represent the economic impact of constructing and operating the pulp mill

compared with a business-as-usual scenario (base case) under which the mill would not go ahead.

The results show that the pulp mill will have a very substantial positive impact on the economy. Even at a national level, where the pulp mill represents just one major project in an economy undergoing an investment boom to 2020 and beyond, the impact is strongly positive, with the net present value (NPV) of the impact on Australia's GDP to 2030 being around $2.4 billion. Despite the fact that both the initial capital expenditure on the mill and then its operations will exert an upward pressure on the exchange rate, the project also has a positive overall impact on aggregate investment in Australia in NPV terms. Generally, major investment projects have virtually no impact on employment at the national level, which the MMRF model assumes to be determined by macroeconomic factors such as the real wage rate. In this case, however, the net employment impact nationally is positive, although the additional jobs would almost all be created in Tasmania with job growth lower than it would otherwise have been in other States.

As would be expected, the impact on the State and regional economies in Tasmania is much greater than for Australia as a whole, where the results reflect some crowding out of projects in other States and territories. In every year of the mill's operations, Tasmania's GSP is projected to be around four per cent higher than it otherwise would have been, equivalent in NPV terms to a boost of nearly $10 billion between 2011 and 2030 compared to business-as-usual. Private consumption by Tasmanians, representing a proxy for economic welfare, would be almost $3.7 billion higher in NPV terms than would otherwise have occurred. The impact of the mill on employment in Tasmania is also strongly positive. Compared with the base case, in the operational phase approximately 3,100 additional full time equivalent jobs will be filled in Tasmania , over twelve times the direct employment level in the pulp mill itself and equivalent to employment in Tasmania being around four per cent higher than otherwise in each year.

All four Tasmanian regions are projected to benefit strongly from the investment in the pulp mill. The Northern region, where the mill will be located, will see a boost to Gross Regional Product (GRP) of around six per cent each year as a result of the mill, with the NPV to 2030 of over $3.6 billion. A similar annual percentage boost to GRP will be experienced in the Southern region, although the lower NPV reflects the fact that it is a much smaller regional economy. The considerable boost in NPV terms to GRP in the Greater Hobart region occurs in a much larger economy and reflects an impact of nearly three per cent a year.

Although both Mersey Lyell and the smaller economy of the Southern region will see a significant increase in employment, the main impact will be

experienced in the Northern region, where around 2,600 full time equivalent jobs will be created every year during the operations phase compared with the business-as-usual scenario. This is equivalent to an increase in employment of over 11 per cent each year in the Northern region compared to the base case.

Conclusions

The ambition to add more value to Australia's abundant natural resources has a perennial appeal. The commercial case for adding value to Australia's forestry resource is often regarded as being stronger than in many other industries, with the potential benefits of Tasmania's high quality plantation resource being particularly attractive. The proposed pulp mill at Bell Bay would add significant value to a valuable resource that would otherwise be exported as woodchips.

The analysis presented in this report demonstrates that the proposed pulp mill would bring very substantial economic benefits, particularly to the Tasmanian community. There would be strong gains in GSP and employment, with all four regions of the State enjoying significant benefits. The pulp mill would represent the largest ever private sector investment in the island State and would come at a time when major investment projects are difficult to secure in the non-resource States because of the impact of the resources boom on the exchange rate for the Australian dollar. The pulp mill could play a very considerable role in offsetting the negative impact of the 'two speed' economy on Tasmania.

CHAPTER 1
This report

1.1 Introduction

Gunns Limited (Gunns) has commissioned Insight Economics Pty Ltd, with the Centre of Policy Studies (CoPS) at Monash University, to undertake a study of the potential economic impact of its proposed pulp mill investment at Bell Bay in northern Tasmania.

While the analysis in this report is based on comprehensive data provided by Gunns relating to capital expenditure on the mill and other factors, this is an independent study. The economic model employed here, the Monash Multi-Regional Forecasting (MMRF) model, is owned and operated by academic economists in CoPS, is transparent and has been subjected to extensive peer review. The model is widely used by Australian governments, particularly Treasury departments and has an excellent reputation for the credibility of its projections.[1]

1.2 Pulp mill at Bell Bay

The Tasmanian-based company Gunns has developed a detailed investment proposal, over many years, to build a world scale pulp mill in northern Tasmania. If the project goes ahead, the mill will be located on a 624 hectare site in the Bell Bay Industrial Zone, adjacent to Gunn's existing woodchip mills and export facilities. In line with appropriate government requirements, the mill will be built to extremely high environmental standards consistent with world's best practice.

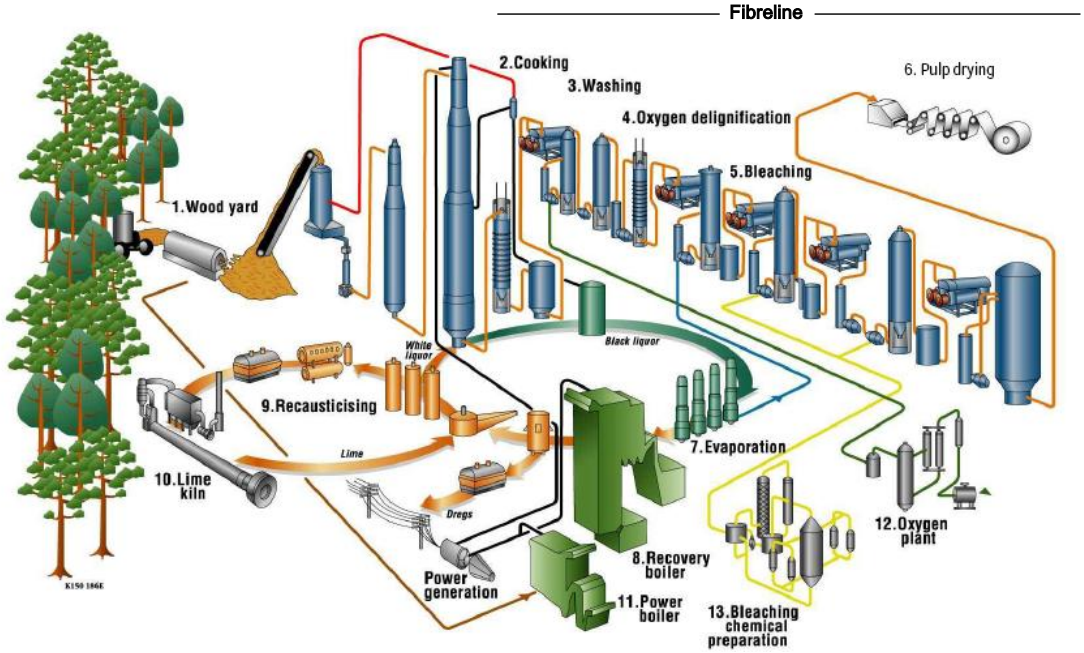
Southern Star Corporation (SSC), a new private company, has been established to build and operate the pulp mill. Gunns intends to maintain a minimum 51 per cent equity share in SSC with the remaining shares being made available for potential investors. With a capital expenditure (CAPEX) presently estimated at $2.3 billion, the proposed mill will be both the largest private sector project ever undertaken in Tasmania and the largest investment in the forestry and wood products sector in Australia.

The mill will be a world-scale, bleached hardwood Kraft pulp (BHKP) facility using an elemental chlorine free light process. Gunns states that the mill will

[1] For example, the Australian Treasury used the MMRF model in 2008 to estimate the economic impact of the government's proposed Carbon Pollution Reduction Scheme (CPRS).

incorporate best available technology and is intended to set new global standards for pulp mill design. A schematic diagram of the mill is shown in Exhibit 1.1.

EXHIBIT 1.1 – DESIGN OF THE PROPOSED BELL BAY PULP MILL



Source: Gunns.

Unlike other Australian pulp mills and earlier proposals for pulp mills in Tasmania, the mill will not draw on native forests for its feedstock. The resource supplied to the mill will come exclusively from high quality plantations that are currently established in Tasmania and southern Australia. The mill will require up to 4.0 million green metric tonnes of hardwood woodchips to produce 1.1 million air dried tonnes (ADt) of BHKP annually. The pulp mill will allow significant value added to the Tasmanian plantation forest resource to be captured within the State.

1.3 Structure of the report

The remainder of the report is structured as follows:

- Chapter 2 contains an analysis of the global market conditions for pulp and the implications for the Bell Bay project
- The modelling methodology is described in Chapter 3
- Chapter 4 contains details of the modelling results, showing the projected economic impact of the pulp mill
- A Summary and some Conclusions are presented at the beginning of the report.

CHAPTER 2
The global market for pulp

2.1 Value adding in the forestry industry

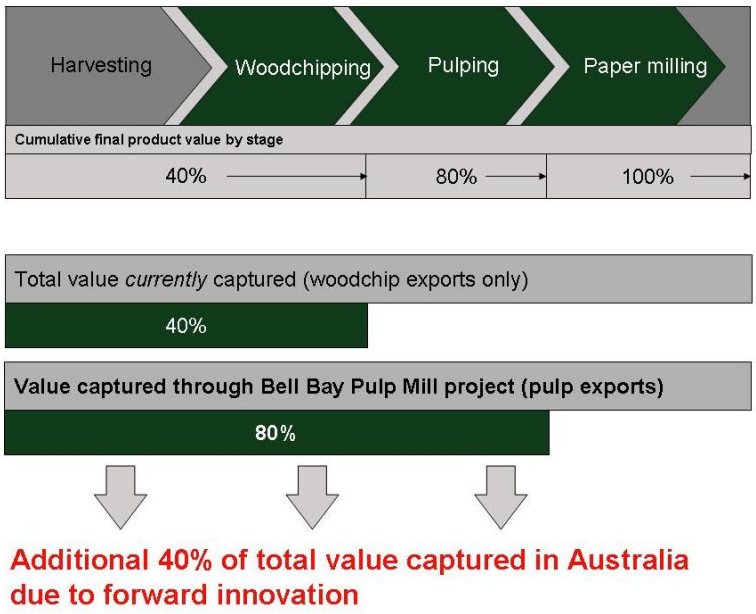
Wood has many advantages as a primary resource. Provided it is harvested in a sustainable way, timber is a renewable, environmentally friendly material that can be used to manufacture a wide range of products. Natural forests and plantations also provide significant environmental benefits, including carbon sequestration and the control of salinity and soil erosion. In recent years, there has been a significant move towards plantation timber as the community becomes increasingly concerned about sustainability issues around the logging of native forests.

The wood and forestry industry already makes a significant contribution to the Australian economy. There is, however, considerable potential for the industry to move up the value chain. This is particularly important as the amount of the forest estate available for development has been substantially reduced in recent years as a consequence of regional forest agreements and other government policies directed towards ensuring the sustainability of the industry. There is now a prospect that the logging of native forests will be largely phased out in the next few years. With the shift to plantation timber in particular, growth in the value added by Australia's forestry industries can deliver large benefits, particularly in sustaining the economies of regional communities.

Currently, Australia produces predominantly low-margin woodchips for export, and imports high cost paper products. Provided it is economic to do so, there would be benefits in moving up the value chain. For many years, governments have pursued a general objective of adding value to Australia's natural resources. In Tasmania, with its significant investment in plantations, there has been a concern that exporting woodchips is a sub-optimal strategy as far as returns to the community are concerned. The proposed Bell Bay pulp mill would significantly propel the Australian forestry and wood products industry forward along the value chain. Industry estimates that only 40 per cent of the value of the final product is captured by the woodchip producer, while if the woodchips were converted to pulp locally, the Australian community would capture a total of 80 per cent of the value. (Exhibit 2.1). Such potential benefits have been recognised by the Australian Bureau of Agricultural and Resource Economics (ABARE):

> Australia must, for good economic, environmental, employment and regional development policy reasons, have the confidence to aspire to be much more than a wood chipper to the North.

EXHIBIT 2.1: CAPTURING MORE VALUE — GREATER RETURNS TO AUSTRALIA



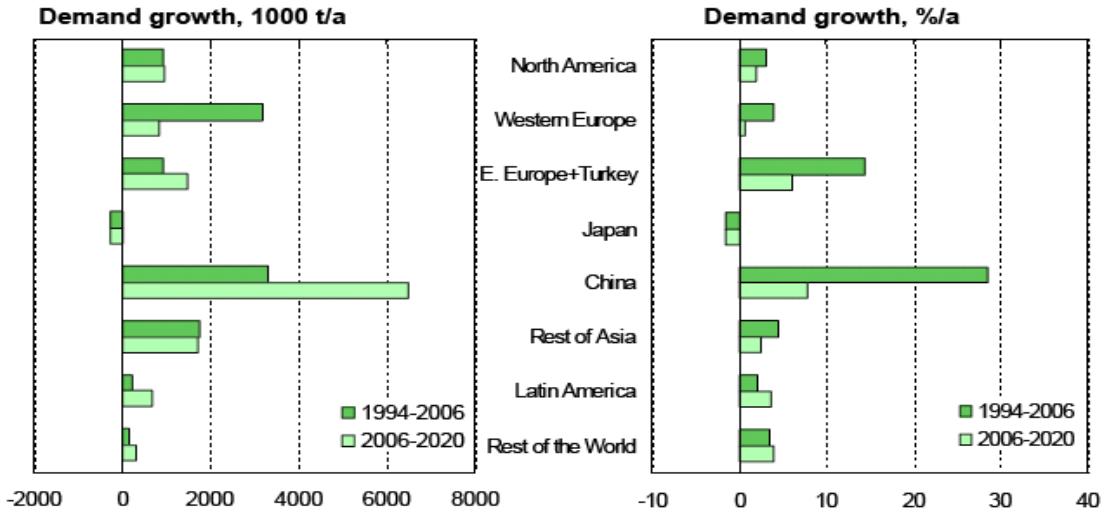
Source: Gunns.

2.2 Supply and demand in the BHKP market

Demand for pulp in the Asia Pacific region

Industry estimates of the growth in the pulp market are shown in Exhibit 2.2.

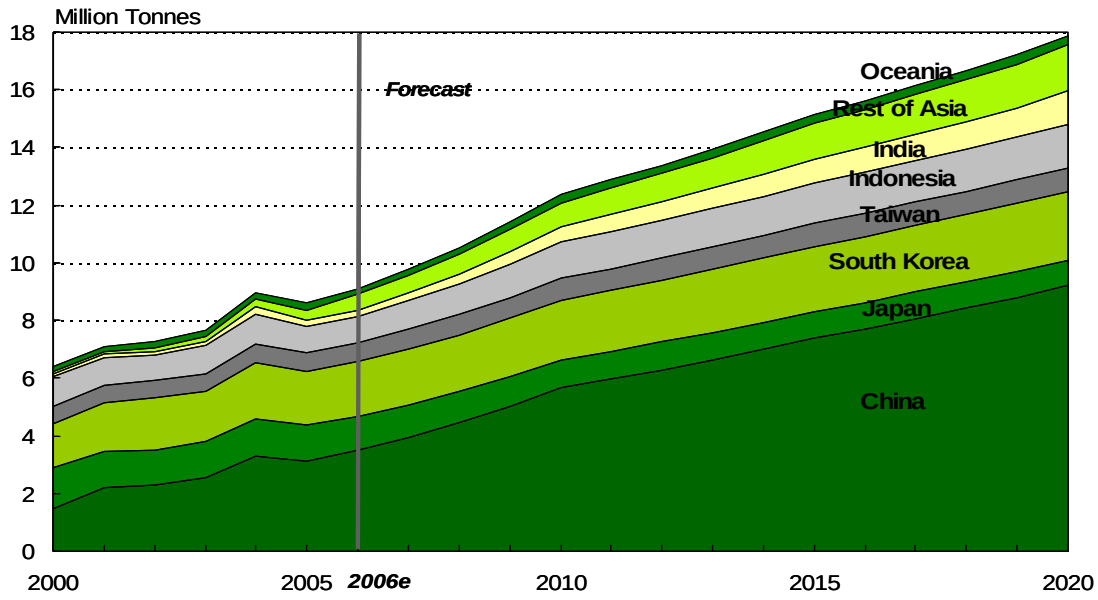
EXHIBIT 2.2 – GROWTH IN DEMAND FOR BHKP



Source: Gunns, originally Poyry

According to a forecast made in 2006 by the Scandinavian company Poyry, the demand for BHKP in the Asia Pacific region is projected to double between 2006 and 2020, from 9.1 million to 18 million air dried tonnes (Exhibit 2.3).

EXHIBIT 2.3 – GROWTH IN DEMAND FOR BHKP IN THE ASIA PACIFIC REGION



Source: Gunns, originally Poyry

Much of this increased demand will come from China and, in light of China's (and India's) very rapid growth in the last few years, this may well now be an underestimate. Four main reasons are cited by Gunns for this rapid increase in the demand for BHKP in the Asia Pacific region:

- Rapid economic growth, particularly in China, driving increasing demand for paper and paperboard
- The introduction of fast, modern and large new paper machines into the region, requiring good quality fibre
- A shortage of local wood fibre, particularly in China and northern Asia
- Closures of non-wood pulp mills, particularly in China.

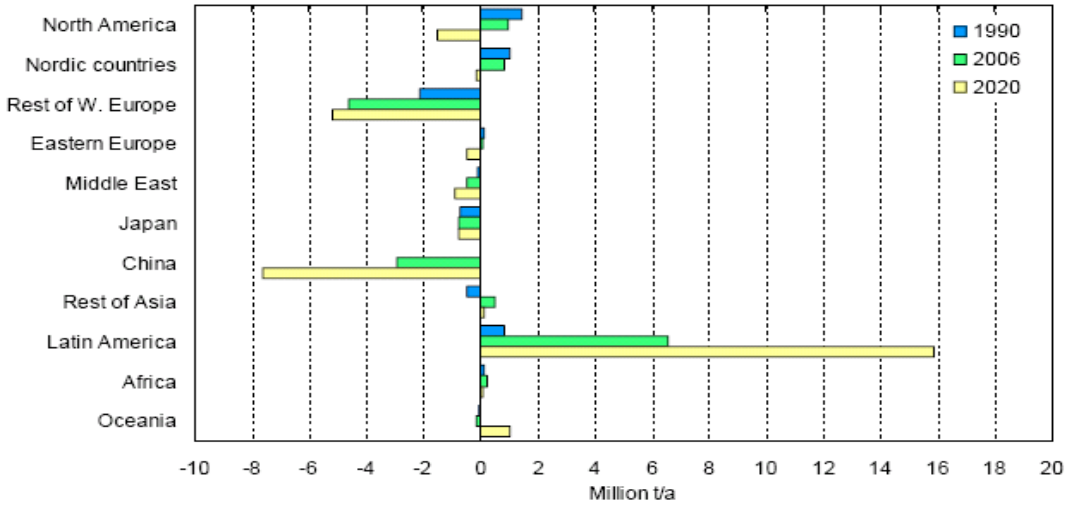
Supply issues: a market opportunity

On the supply side, some countries that are presently exporters of BHKP are likely to become net importers by 2020. This includes the Nordic countries and North America. China and the rest of Western Europe will become much more significant net importers. Countries in Latin America, on the other hand, are building a strong position in the export market (Exhibit 2.4).

The market balance in the Asia Pacific region in particular appears to favour investment in new sources of supply of BHKP. Globally, there are a large number of planned or proposed pulp mill projects projected to come on stream in the next decade. In the opinion of the industry, however, many projects are unlikely to proceed or be subject to significant delays. In addition, there will

be a substantial number of closures of older, inefficient pulp mills. There are also likely to be capacity constraints with wood supply in a number of regions.

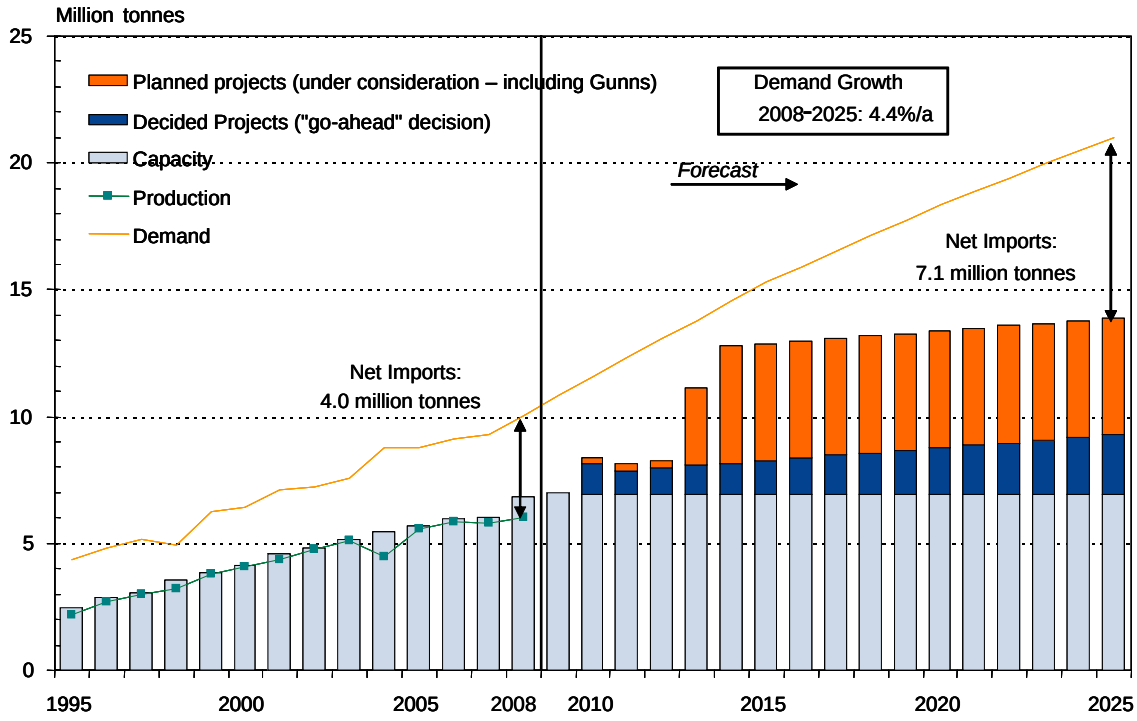
EXHIBIT 2.4 – PROJECTIONS OF INTERNATIONAL TRADE IN BHKP



Source: Gunns, originally Poyry

The Asia Pacific region will continue to be a net importer of BHKP, with demand forecast to be 15 million ADt in 2015 and 18 million ADt in 2020.

EXHIBIT 2.5 – PROJECTED MARKET BALANCE IN BHKP IN ASIA PACIFIC



Note: Estimated pulp capacity may vary depending on pulp and paper market conditions. Supply data current as at May 2010 and includes only producers in Asia Pacific (including Australia). Forecasts have been prepared in good faith and with reasonable care but should not be relied on as a promise of the future.

Source: Poyry 2010

By contrast, planned capacity increases in the region (including the 1.1m ADt from the proposed Bell Bay pulp mill) amount to only 4 million ADt by 2015, thus implying a net import requirement of around 5.5 million ADt in 2015. This shortfall is also based on a fairly heroic assumption that all currently proposed and planned projects will proceed on time (Exhibit 2.5).

2.3 Implications for proposed Bell Bay pulp mill

The market dynamics for BHKP, particularly in the Asia Pacific region, appear to be favourable in terms of a new investment in a pulp mill. It seems apparent that demand will outstrip supply in the region in the next decade and beyond. The supply situation is constrained globally by the availability of land and the lack of growing conditions that support producing plantation fibre on an economic scale. These issues, combined with the time required to establish a critical mass of plantation resource, create significant barriers to entry for additional supply from competing sources.

Gunns considers that the proposed pulp mill at Bell Bay will have a strong competitive position based on the following:

- Close proximity of the forest resource to the mill's location
- Proximity of the mill to the main demand growth centres in Asia compared to other predominant supply regions in South America
- Modern technology and the mill size providing for significant economies of scale and cost efficiency
- The project concept allows significant revenues from renewable energy.

It is clear from the projected market conditions in the BHKP market in the Asia Pacific that, provided it is economic, the commercial prospects for a new pulp mill in Australia are propitious. It is also evident that if the opportunity to invest in new capacity is not taken up in Australia, it will occur somewhere else in the region. If this were to occur, it is unlikely that the alternative mill would meet the high standards of sustainability inherent in the Bell Bay proposal. For example, the environmental standards established by Australian governments are generally higher than in other countries in the region, while it is doubtful that alternative pulp mills would be totally reliant on plantation feedstock. From a global environmental perspective, therefore, the location of the mill in Australia is likely to be a positive.

On the other hand, all Australian major investment projects in internationally traded products, including the Bell Bay pulp mill, currently face significant challenges due to the high exchange rate for the Australian dollar (AUD). The number of major resources-based projects being undertaken in Western Australia and Queensland in particular has the potential to 'crowd out' some

investments in States such as Tasmania. Despite recent improvements in its economic performance, Tasmania still generally lags other Australian States in terms of its community's wealth and living standards. A high level of investment is critical to ensure the long term economic welfare of the Tasmanian community. This investment is presently more difficult to secure because of the high exchange rate for the AUD.

If it goes ahead, the Bell Bay pulp mill project has the potential to provide a considerable stimulus to the State's long term economic performance and provide a buffer against the effects of the so-called 'two speed economy'. The potential impact of the proposed pulp mill on Tasmania's economy is evaluated in the remainder of the report.

CHAPTER 3
Modelling methodology

3.1 Economic modelling

The core purpose of this project is to evaluate the economic impact of the proposed investment of $2.3 billion in a pulp mill at Bell Bay. While the direct impacts of the investment are obvious at one level — in terms of the number of jobs directly created in building and operating the mill, for example, — this takes no account of the indirect effects of the investments. For example, there will be beneficial impacts on a whole raft of industries that sell goods and services to the mill, many of which will be located in Tasmania. There may also be negative impacts on some businesses. For example, the export of higher value pulp rather than woodchips may lead to the exchange rate being slightly higher than it otherwise would have been, while the additional demand for skilled labour could push up wage rates or lead to labour shortages. In short, there is a need to look beyond the direct effects of a new investment project in order to understand the net economic impact on the community.

The best available methodology for estimating the total economic impact of a major investment project, such as that proposed by Gunns, is to employ a computable general equilibrium (CGE) model. A CGE model, whose data base draws on the latest available input-output tables, enables most of the impacts of a project to be traced through the economic system. For this project, the economic modelling was directed by Insight Economics but undertaken by Professor Philip Adams, Director of the Centre of Policy Studies (CoPS) at Monash University.

The model

The model employed for this analysis is the Monash Multi-Regional Forecasting model (MMRF). MMRF is a detailed, dynamic, multi–sectoral, multi–regional CGE model specifically designed to evaluate the impact of changes in policy or of other 'shocks' such as significant new investments. CGE modelling is intended to trace the impact of a change in one or more particular sectors throughout the entire economy. This makes it ideal for assessing the impact of changes to activity levels in Tasmania's forestry and wood products industries because they can be expected to result in corresponding changes in a range of other, often not directly related, sectors of the economy.

The multi-regional facility built into MMRF makes it ideal for analysing the economic impact of projects on individual States. In the model, State economies are represented on the basis of a bottom-up process, where the data base is built from the bottom up for each State using the relevant input-output table. Thus Tasmania is represented as a distinct economy in MMRF, based on comprehensive industry and commodity data contained in the official input-output tables for the State.

Importantly, MMRF also has the ability to provide estimates for the impact of the mill on the four statistical divisions, or regions, in Tasmania, identified by the Australian Bureau of Statistics (ABS). There are no individual input-output tables for statistical divisions and so data are pro rated between industries and commodities on a 'tops down' basis. While detailed results would be less robust than those at the national or State levels, they are useful for providing an estimate of the relative impacts on macro variables such as Gross Regional Product (the regional equivalent of GDP) and employment. Apart from Greater Hobart, which forms one of the Tasmanian regions, there are two statistical divisions in the northern part of the island — the Northern region in the north-east (the pulp mill is located in this region) and Mersey Lyell in the north-west. The remaining Southern region covers the southern half of the State apart from Hobart.

The methodology for using MMRF to determine the impact of an economic or policy change involves imposing a 'shock' onto the model's base case (or business-as-usual) projections for future economic outcomes. The comparison between outcomes under the base case projection and outcomes under the 'shock' scenario then provides an indication of the impact of the specified economic change. In this case, the 'shock' is constituted by the injection of $2.3 billion of capital expenditure into the Tasmanian economy.

3.2 Modelling assumptions

The 'base case'

As suggested above, a key component of the economic modelling is the MMRF model's 'base case' projection. This shows what the model projects will happen to the Australian economy over time if current trends and major policy settings continue.

In generating the base case projections, CoPS draws upon:

- State/Territory macroeconomic forecasts from State Treasury departments and other credible agencies as far as possible into the future
- National level assumptions for changes in industry production technologies and in household preferences from CoPS' data base

- Forecasts of agricultural and mineral exports and estimates of capital expenditure on major minerals and energy projects from various sources, such as State government agencies, ABARE, and the Australian Energy Market Operator (AEMO)
- Government policy changes or commitments that have been announced.

For the later years of the simulation period, where few reliable forecasts are available, CoPS uses, in the main, extrapolations of earlier year-to-year trends.

Importantly, in this case MMRF incorporates in its base case the so-called CPRS-5 scenario, whereby the Australian Government and Opposition have entered into a commitment that greenhouse gas (GHG) emissions will be reduced by five per cent from 2000 levels by 2020. In order to meet this commitment, the modelling assumes that a carbon price will be introduced to the Australian economy during the coming decade and that current climate change policies, such as the 20 per cent Renewable Energy Target, will be continued. Since there have been no firm climate change policy commitments beyond 2020, the base case incorporates the 2020 level of carbon price in each of the out years to 2030.

Interpreting the modelling results

It is important to note, when interpreting the modelling results, that the data are presented not in absolute terms but *relative to what would otherwise be projected to occur under the base case.* For example, if the results of the simulation suggest that Australia's Gross Domestic Product (GDP) would be $300 million higher in 2020, the obvious question is "higher than what?" In this case the answer is: higher than the alternative outcome, when Gunns does not invest in the pulp mill and continues to export woodchips into an uncertain and possibly declining market.

Many project proponents are inevitably disappointed at the model's projections of the employment impact of their investments. Despite the fact that new investment projects will create jobs directly and, it would be plausible to argue, indirectly in the other industries that benefit, MMRF simulations rarely project any substantive increase in employment at the national level. This is because the level of employment in the Australian economy is modelled in MMRF as being the function of macro factors in the economy, such as the level of real wages. In technical terms, employment is determined on the basis of the Non-Accelerating Inflation Rate of Unemployment (NAIRU), currently estimated by Treasury as being around five per cent. There is little, if anything, that an individual investment project, however big, can do materially to affect this. The employment impact of a new project at the national level, therefore, is to draw labour from alternative uses.

While in national terms the employment impact of a new investment project is generally a zero sum game, this is not so for State economies and even less true at the regional level. The MMRF model allows for mobility within the Australian labour market as a whole so that employment in individual States can grow at a faster rate than in others (as has been occurring, for example, in Western Australia recently). Labour mobility is likely to be even greater between Tasmanian regions, and so a major investment like the pulp mill could be expected to have a significant impact on employment in the Northern statistical division.

These assumptions are summarised in Exhibit 3.1.

EXHIBIT 3.1: INTERPRETING THE MODELLING RESULTS

In examining the results presented below, it is important to note three issues relating to the way the MMRF model works:

- First, as noted, all results are presented relative to the base case or business-as-usual scenario where it is assumed that the pulp mill project does not occur. This means for example, that it would be inaccurate to say that as a consequence of the pulp mill that 'GDP would increase by X per cent'; it would be more accurate to say that 'GDP would be X per cent higher than it would otherwise have been, had the pulp mill proposal not gone ahead'.
- Secondly, the workings of the model mean that it is virtually impossible for any project to create a sustained increase in employment at a national level. This is because of the way real wages are assumed to shift in response to an initial increased demand for labour so as to return the labour market to an equilibrium position. Within this national constraint, however, the model does allow significant employment gains in individual States and regions.
- Thirdly, it is important to note that the results show the gross impacts on the economy of the investment in the pulp mill. That is, no adjustments were made to Government or private household budgets to provide for the expenditure on the mill. This essentially means that the model assumes that no other investments are abandoned as a result of the new investment in the mill.

Other key points to note in interpreting the results are:

- The pulp mill essentially draws resources — capital and labour — away from the mainland Australian economy and towards Tasmania. This means that while economic outcomes in Tasmania are better than they would otherwise have been, this may mean that growth in other States and Territories will be marginally less than it otherwise would have been. Nevertheless, the overall net impact of the pulp mill on the national economy is generally positive — the Australian economy as a whole is better off as a result of the development because the positive effects in Tasmania outweigh any negative effects in other States.
- Related to this, the stimulus to the national economy generated by the pulp mill is markedly less than the stimulus to Tasmania. This is because the new net exports of pulp generated by the mill 'crowd out' other export and import–competing sectors. This occurs as the real exchange rate strengthens in response to the increase in net exports, thus reducing the competitiveness of Australia's other traded commodities.

CHAPTER 4
Modelling results

4.1 Introduction

The analysis in this report is based on construction on the pulp mill beginning in 2011, with operations commencing in the second half of 2013. If this schedule should slip, say by one year, then the modelling results will still apply but would be pushed out for another year.

The total capital expenditure (CAPEX) on the pulp mill is estimated at $2.3 billion. The modelling assumes that, irrespective of whether the funds come from Gunns or a foreign joint venture company, the debt finance for the CAPEX would ultimately be sourced from the global capital market.

Most of the inputs for the operations of the pulp mill would be purchased in Tasmania. Between 90 and 100 per cent of most of the materials and personnel employed in the mill would come from within the State. In terms of the woodchips to be processed in the mill, 90 per cent would come from Tasmanian plantations, with the remaining 10 per cent being sourced from plantations on the mainland. The exception is chemicals, where only 10 per cent would be sourced from Tasmania with 70 per cent coming from mainland Australia and the remainder being imported.

As would be expected, most of the pulp mill's revenue will be derived from sales of BHKP, mainly for export. As far as Gunns is concerned, export of woodchips will cease when the mill becomes operational and sales of the much more highly valued BHKP will take over. In addition, it is important to note that the operation will also receive significant revenue from the sale of surplus electricity to the Grid and from sales of Renewable Energy Certificates (RECs).

The economic modelling shows that the investment in the proposed Bell Bay pulp mill would have a very considerable economic impact. As would be expected, the impact will be greatest in the regional economy where the pulp mill is located, that is, in the Northern statistical division of Tasmania, but in fact all regions in the island State benefit. Overall, there is a very substantial impact on the economy of Tasmania itself, with the impact of the investment being proportionally greater to the extent that Tasmania is a relatively small State. Finally, the impact on Australia as a whole is rather less, to the degree that the pulp mill investment, while significant, takes place in the context of a

massive investment program mainly in the mining and energy sectors as a consequence of the resources boom.

The results of the modelling are presented in this Chapter first for Australia as a whole, then for Tasmania and finally for the four Tasmanian statistical divisions or regions.

4.2 Economic impact: Australia

Turning to the results, the major macroeconomic impacts on the Australian economy as a whole are shown in Exhibit 4.1. The values are shown in constant 2010 Australian dollars for selected years top 2030 (after 2016, there is little year to year change in values through the mill's operating phase). Percentage changes are generally not reported at the national level because they are very small. The net present value (NPV) calculations shown in the right hand column are for the period 2011 to 2030 using a real social discount rate of 5 per cent (approximately equivalent to the government long term bond rate).

EXHIBIT 4.1 – IMPACTS ON THE AUSTRALIAN ECONOMY ($M, 2010 VALUES)

	2013	2016	2020	2030	NPV 2011-30
GDP	124	224	216	208	2,350
Private Consumption	-43	345	335	324	2,806
Investment	516	9	-45	-99	1,306
Employment (Persons)	100	600	600	600	na
Export Volumes	-123	84	134	184	794
Import Volumes	244	169	151	132	2,120
Commonwealth Tax Revenue	13	40	39	38	391

Source: CoPS Modelling.

Gross Domestic Product (GDP)

GDP is equivalent to the sum of private consumption, investment, net exports and government spending in the economy. It would be expected to be higher than otherwise as a result of the pulp mill primarily because of:

- The increase in investment, due to increased pulp production and subsequent increases in demand for other goods and services
- The increase in net exports generated when woodchip exports are replaced with higher value pulp exports produced at the mill
- Increasing employment levels and wage rates, which would lead to higher levels of household income and consumption.

Investment would be the primary driver of the growth in GDP in the short run. The long run boost to GDP would be driven by strong employment growth, which would provide a stimulus to wages and consumption, together with export growth.

Despite the fact that the pulp mill investment will occur at the same time as many other major investments in the Australian economy, it will still have a significant impact on GDP for Australia as a whole. The impact on GDP will peak in 2016, when the operations of the mill will add $224 million (equivalent to about 0.02 per cent) to Australia's GDP. While the year to year percentage impact may be small, the NPV of the additions to Australia's GDP between 2011 and 2030 is over $2.3 billion. In the context of the resources boom, which is having an enormous impact on the Australian economy and will crowd out many other investments, this is a very significant result.

Consumption

Consumption is generally regarded by economists as a proxy for the economic welfare of the community. If the pulp mill goes ahead, consumption is expected to increase at both a national and State level. This occurs as increases in production in the pulp industry lead to a rise in both investment and employment levels in this sector. In subsequent rounds of economic impacts, production increases in other industries as well. This in turn generates further increases in total investment and employment and therefore increased household disposable income, which is the sum of wages, dividends to Australians (including from Gunns), and government transfer payments, less direct income tax.

Overall, in NPV terms the impact on private consumption is substantial. Between 2010 and 2025, private consumption in Australia is projected to be $2.8 billion greater than it would have been if Gunns had continued to export woodchips rather than value adding to produce pulp. Although most of this

additional consumption occurs in Tasmania, this suggests that the mill has a positive influence on average Australian living standards overall.

Investment

The impact of the mill on investment in Australia is also positive overall, with a NPV of over $1.3 billion to 2030. In the early years, the high capital expenditure on the mill means that aggregate investment in Australia is greater than it otherwise would have been. Later on, as the additional exports have a small positive effect on the exchange rate for the AUD, investment is lower than it otherwise would have been (noting again that aggregate investment is not projected to fall in absolute terms but that the rate of growth is marginally lower than in the base case projection).

Employment

As discussed above, one of the critical assumptions in the model is that the rate of employment in Australia is largely determined by real wages. Since an individual project can have little impact on real wages nationally, it follows that it can also have little impact on employment in Australia as a whole.

In this case, however, there is a small positive impact on national employment as a consequence of investment in the pulp mill. In the operations phase, employment is higher than it otherwise would have been to the extent of around 600 people, over twice as many as would be employed directly at the pulp mill.[2] While as we shall see these employment gains occur in Tasmania, the national results suggest that the growth in employment in that State is not totally outweighed by a slower growth in employment in other States and territories. In short, on a national basis, the pulp mill produces employment outcomes that are significant and positive and not, therefore, equivalent to a zero sum game.

International trade

The impact of the mill on the international trade account is generally positive. As may be seen from Exhibit 4.1, aggregate Australian exports are higher than they otherwise would have been when the pulp mill is in its operations phase. During the construction phase, however, aggregate exports are lower than they otherwise would have been. This is due to the inflow of foreign capital to finance the construction of the mill, which results in the exchange rate for the Australian dollar being higher than it otherwise would have been.

[2] In the modelling results, employment is reported in terms of full time equivalents, rounded to the nearest hundred persons.

Nevertheless, the NPV of the increase in aggregate exports to 2030 above what otherwise would have occurred amounts to around $800 million.

From the perspective of the community's economic welfare, the benefits of increased exports are delivered in the ability to consume more imported goods. Aggregate imports are significantly higher than otherwise as a result of the investment in the pulp mill, with a NPV to 2030 of $2.1 billion. This figure is higher than the equivalent figure for aggregate exports because of the small appreciation of the AUD. This results from two factors, namely, the significant capital inflows associated with the construction phase and the subsequent exports from the mill.

Tax revenue

The MMRF results demonstrate that the shift to a higher value product by Gunns' will have a positive impact on the Commonwealth government's tax revenue compared to the projected outcome if Gunns had continued to export woodchips.

Throughout the operations phase of the mill, the Commonwealth Budget benefits annually to the tune of around $40 million. In NPV terms, Commonwealth income tax and GST collections are estimated to be $391 million higher between 2011 and 2030 than they would have been if the pulp mill had not gone ahead

It should be noted that while the GST is appropriately classified as a Commonwealth tax, the States mainly benefit from the additional GST revenue. This is not accounted for in the model.

4.3 Economic impact: Tasmania

The impact of the Bell Bay pulp mill will be much greater in Tasmania than in Australia as a whole. The fact that the Tasmanian economy benefits more than the Australian economy as a whole does not mean that there will be an absolute loss of jobs and investment in other States and territories, but rather that growth in those jurisdictions will be slightly less than it otherwise would have been. This is not by any means a 'bad thing'. First of all, as we have seen the impact of the mill on a national basis is strongly positive. Secondly, Tasmanians are less wealthy, on average, than people in other States and to the extent that the pulp mill project provides a 'catch-up' opportunity, that can only be a 'good thing'.

The impact of the Bell Bay pulp mill on the Tasmanian economy is shown in Exhibit 4.2. The AUD values and the percentage changes are not absolute changes but represent projections of the economic outcomes as a result of the

mill going ahead relative to a base case in which the investment in the mill does not occur.

EXHIBIT 4.2 – IMPACTS ON THE TASMANIAN ECONOMY ($M, 2010 VALUES AND % CHANGE)

	2013	2016	2020	2030	NPV 2011-30
GSP ($M) (% Change)	454 (2.1)	899 (3.8)	956 (4.0)	1,013 (4.1)	9,903
Consumption ($M) (% Change)	79 (0.6)	369 (2.5)	389 (2.6)	409 (2.7)	3,666
Investment ($M) (% Change)	705 (10.0)	265 (3.7)	244 (3.4)	223 (3.0)	4,485
Employment (Persons) (% Change)	1,700 (2.2)	3,100 (3.9)	3,100 (3.8)	3,100 (3.8)	n.a.
State Govt Tax Revenue	27	54	58	61	597

Source: CoPS Modelling.

Gross State Product (GSP)

If it goes ahead, the Bell Bay investment project would have a major positive impact on the Tasmanian economy. In each year between 2016 and 2030, GSP in Tasmania would be around four per cent higher than it would otherwise have been. In NPV terms in 2011, Tasmania's GSP is projected to be nearly $10 billion higher than otherwise, equivalent to over four times the value of the original investment in the pulp mill. This is a very substantial impact, with the possibility of giving rise to a major positive change in Tasmania's economic prospects.

It is important to note that this boost to Tasmania's wealth will occur in challenging circumstances for investment in States, such as Tasmania, with economies that will not be major beneficiaries from Australia's resources boom. The investment boom in the resources industries in States such as Western Australia and Queensland is driving up the exchange rate for the Australian dollar, which creates unfavourable conditions for investment in non-resource industries in Australia. If the investment in the Bell Bay pulp

mill goes ahead, it will provide a significant offset to the potential effects of the 'two speed' or 'patchwork' economy on Tasmania.

Tasmanian consumption

Consumption, which serves as a proxy for the community's economic welfare, is essentially determined by household income. If the pulp mill goes ahead, consumption is expected to increase significantly at the State level. This occurs as first the construction and then the operations of the pulp mill lead to increases in both investment and employment levels in this sector. In subsequent rounds of economic impacts, production increases in other industries as well. This in turn generates further increases in total investment and employment and therefore increased household income.

After 2015, the operations of the pulp mill are projected to deliver an increase in consumption in Tasmania in each year of between $370 and $410 million compared to business-as-usual, equivalent to around 2.6 per cent a year. In NPV terms over the period to 2030, the aggregate gains in consumption over base case projections are estimated to be around $3.7 billion for the Tasmanian community.

Employment in Tasmania

As discussed above, while individual investment projects, however large, have little impact on employment on a national basis, they can have a significant effect on employment in individual States and territories and in sub-State regions. The pulp mill itself will employ about 250 people directly in the operations phase, but this direct impact is magnified significantly by the indirect impact of the pulp mill on other Tasmanian businesses that supply goods and services to it. The result is that total employment in Tasmania will be affected very positively by the mill.

In each year in the operations phase of the mill, the model estimates that the number of people employed in Tasmania would be 3,100 higher (or nearly four per cent) on a full time equivalent basis than it otherwise would have been.

Investment in Tasmania

Investment is the engine of growth in any economy and the development of the pulp mill would result in an increase in aggregate investment compared to the business-as-usual projection. The aggregate increase in investment across Tasmania would be larger than the size of the investment in the pulp mill, because the growth in employment and wages arising from the pulp mill would result in an increase in demand for other goods and services. As demand for these other goods and services increases, so would production in those

industries. This would lead to an increase in profitability in those industries, leading to additional investment after a lag. The NPV of the value of aggregate additional investment in Tasmania to 2030, including the CAPEX in the pulp mill, is estimated by the model to be around $4.5 billion compared with the base case, or nearly double the initial investment in the proposed mill.

State taxes

Gunns' proposed investments would also have a positive impact on State government taxes, with an additional $597 million in collections in NPV terms to 2030. This increase in tax revenue would mainly be derived from the additional activity in the Tasmanian economy as a result of the pulp mill.

Impact on Tasmanian industries

Almost all industries in Tasmania are projected to benefit from the pulp mill, boosting investment, employment and production in those industries. As wealth and consumption in Tasmania increase as a result of the operations of the mill, there will be very few industries that do not show positive economic impacts.

As would be expected, the main industry to benefit is Wood products, which includes the production of pulp. In the operations phase of the mill, the value of production in the Wood products industry will be around $1 billion higher each year than it otherwise would have been. The NPV of increased production in this industry to 2030 is projected to be over $10.3 billion.

The Wholesale and retail trade sector also benefits significantly, with increased production of services valued at around $350 annually in the operations phase of the mill and a NPV to 2030 of around $3.7 billion. At first sight, the fact that this industry benefits so strongly may be counter intuitive. The health of Wholesale and retail trade, however, is closely correlated with economic conditions more generally. With the Tasmanian economy being over four per cent larger than otherwise every year as a result of the operations of the pulp mill, this industry will benefit as a result of significantly improved trading conditions.

The renewable electricity (non-hydro) industry is also an important beneficiary as a result of the new generation capacity installed to power the operations of the mill, with the surplus being sold into the Tasmanian grid. The project will also benefit from significant revenue from the sale of RECs. Relative to the base case, this industry benefits to the tune of around $60 million annually during the mill's operations phase, with a NPV to 2030 of just under $600 million.

4.4 Economic impact: Tasmanian regions

The regional economic analysis undertaken in MMRF is on a 'tops down' basis — that is, rather than build up the data base from input-output tables, as is done for the national and State economies, the model's regional data base is constructed on the basis of pro rating values from the State economy. For this reason, the information provided for regional economies is effectively limited to two variables, namely Gross Regional Product (GRP), which is the regional equivalent of GDP and GSP, and employment.

While, at least in dollar terms, the main economic impact of the project will be found in the Northern region of Tasmania, where the pulp mill will be located, all regions in Tasmania benefit in a significant way. This reflects that feedstock for the mill will be drawn from plantations in different regions in Tasmania, while businesses all over the State will be involved in providing services to the mill.

Gross Regional Product[3]

The impacts on GRP in the four Tasmanian regions are shown in Exhibit 4.3.

EXHIBIT 4.3 – IMPACTS ON GROSS REGIONAL PRODUCT ($M, 2010 VALUES)

Tasmanian Region	2013	2016	2020	2030	NPV 2010-30
Northern	169	336	355	374	3,673
(% Change)	(2.7)	(5.6)	(5.7)	(6.0)	
Mersey Lyell	100	194	206	218	2,142
(% Change)	(1.9)	(3.8)	(3.9)	(4.1)	
Southern	38	78	84	89	857
(% Change)	(2.5)	(5.5)	(5.7)	(6.0)	
Greater Hobart	121	236	254	271	2,636
(% Change)	(1.3)	(2.6)	(2.8)	(2.9)	

Source: CoPS Modelling.

The Northern region, which includes Launceston, will see a major increase in its income as a result of the pulp mill project. Not only will the mill be located

[3] The regional GRP data add up to less than the GSP for Tasmania as a whole because they are calculated at factor cost.

in this region, but the greatest share of the feedstock for the mill will be derived from plantations in this region. In each year after 2015, GRP in the Northern Region is projected to be around six per cent higher than it otherwise would have been. The NPV of the impact on GRP in this region to 2030 is over $3.6 billion. This represents a very significant impact on the local economy in northern Tasmania.

In the north-western region of Mersey Lyell, GRP is projected to be around four per cent higher in every year after 2015 as a result of the pulp mill. The NPV of the boost to GRP to 2030 is again substantial, at over $2.1 billion.

While the NPV of the GRP increase in the Southern region, at $857 million, is significantly less than is projected for the other regions, this reflects a much smaller population in this region. In percentage terms the impact is very similar to that in the Northern region, with an annual boost to GRP of around six per cent above what it otherwise would have been. Again, this represents a major annual boost to the region's economy.

The Greater Hobart region also benefits as a result of the pulp mill, with the NPV of the impact on GRP being over $2.6 billion to 2030. In percentage terms, the impact on Greater Hobart is lower than in other regions, although still significant at nearly three per cent a year.

Employment

The impact on employment in the four Tasmanian regions is shown in Exhibit 4.4.

EXHIBIT 4.4 – IMPACTS ON REGIONAL EMPLOYMENT (PERSONS)

Tasmanian Region	2013	2016	2020	2030
Northern	1,900	2,700	2,600	2,600
(% Change)	(9.4)	(12.2)	(11.7)	(11.2)
Mersey Lyell	500	800	800	800
(% Change)	(2.8)	(4.4)	(4.3)	(4.3)
Southern	200	300	300	300
(% Change)	(4.1)	(6.0)	(6.1)	(6.3)
Greater Hobart	-900	-600	-600	-600
(% Change)	(-2.6)	(-1.8)	(-1.8)	(-1-8)

Source: CoPS Modelling.

By far the greatest number of jobs will be created in the Northern region and in the north-west of the State. When the pulp mill is in its operations phase, there will be around 2,600 more jobs a year in the Northern region than there otherwise would have been, an annual increase of around 12 per cent over the business-as-usual projection. This represents a very substantial increase in the number of jobs in a region that includes Launceston and Georgetown. The additional 800 jobs projected for Mersey Lyell each year represents a boost to employment of over four percent, while employment in the Southern region is estimated to be around six per cent greater than otherwise each year as a result of the mill. Again, these figures suggest significant benefits to employment in these regions.

The fact that employment is projected to grow more slowly than otherwise in Greater Hobart as a result of the mill reflects a change in the composition of employment and, to some degree, 'crowding out', as workers move to other regions in Tasmania to take advantage of the opportunities offered by the pulp mill. Since GRP in the Greater Hobart region is projected to be boosted by the operations of the pulp mill project, this also suggests that it will create higher value jobs in the State's capital city.