A comprehensive economic assessment for the Tasmanian economy of the direct benefits of the proposed Gunns pulp mill

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Contents

Executive summary

This study has two objectives, namely:

(i)   to review the Allens Consulting Group (AC) findings in relation to the impact of the proposed Gunns pulp mill; and

(ii)   to re-estimate the economic impact on the Tasmanian economy taking into account additional information that has become available since the Allens Consulting study.

The findings

In relation to the Allens Consulting findings, this study concludes that they are not credible in terms of what would be expected from the MMRF-Green Model that was claimed to be used for the study. Specifically:

•   the gain in Tasmanian gross state product is too high for the increases in employment which is caused by:

•   private consumption expenditure being at least double the level that could possibly be justified by any credible model; and

•   the impact inflows into Tasmania being at leat half of what could be expected given that Tasmania is a small open economy with limited capacity to satisfy domestic demand.

This study concludes that, in the absence of a credible definition by Allens Consulting of their findings, the results can only be explained by:

(i)   errors made in using the MMRF-Green model for analysis; and

(ii)   unjustified adjustment of the model results to make the case for the pulp mill more favourable.

This reduces the assessed consumption benefit to 2030 in terms of the MMRF-Green modelling framework by at least half, to the order of $1.4 billion, excluding the construction benefit.

The next adjustment to the Allens Consulting results is that they have under-estimated the opportunity cost of the logs consumed in the pump mill from existing forestry resources. In part this is probably due to only valuing the opportunity cost at woodchip value added and ignoring the use of the logs for high value added timber exports. Secondly, they do not consider the logs from the new plantations (fully employed after 2020) to have an opportunity cost in terms of forestry products, or the agricultural land that will be used to support the plantation development. Allowing for this reduces the consumption benefit by up to at least $1 billion, to around $0.4 billion.

This report reduces the consumption benefit at the mean of expectations by another $0.7 to -$0.3 billion. The difference between the $0.4 billion and the -$0.3 billion is due to this study taking into account the economic costs of:

•   lost tourism;

•   risk of chemical spillage;

•   risk of Gunns change of ownership from undertaking a high risk investment;

•   blow-out in capital costs;

- deaths and sickness from environmental damage; and

- risk of closure of existing pulp and paper mills.

The -$0.3 billion loss is at the mean of expectations. At the 25 per cent probability benchmark the net consumption loss is estimated at -$0.6 billion, with only a 25 per cent probability that the consumption benefits of the operating phase will be greater than $0.2 billion. If anything goes wrong with the mill the maximum cumulative Tasmanian consumption loss is estimated at -$3 billion, and if everything goes right the gain is assessed at $1.3 billion. That is, there is no chance that the AC estimate of consumption gains from the operational phase of $2.8 billion will be reached.

If the gain from construction is factored in, at the mean, the conclusion is still that the consumption gains to existing Tasmanian residents will not be positive.

1.   Background

The proposed Pulp Mill at Bell Bay in Tasmania's North East (or the mill) has been one of the most controversial industry projects since the proposed damming of the Franklin River in Tasmania's South West in the 1980s. Gunns Limited (Gunns) is proposing to develop a bleached kraft pulp mill in the Bell Bay Major Industrial Zone, south of George Town at a cost of $1.7 billion[1]. The proposed pulp mill will, in the initial stages, produce about 820,000 air dried tonnes (ADT) of pulp and will have the capacity to produce up to 1.1m ADT of pulp for domestic and international markets. Gunns estimates that production of this quantity of pulp will require between 3.2 and 4.0 million green metric tonnes of pulpwood per annum (plus wood required for energy production).

Proponents of the mill, including the Tasmanian Government, the Federal Government and Opposition, have stated that the mill will create jobs and economic benefit for Tasmania. To date, the only substantive economic evaluation of the project has been undertaken by Allen Consulting Group (AC) for the proponent Gunns as part of the company's Integrated Impact Statement.[2] ITS Global was commissioned by the Tasmanian Government to undertake a review of the social and economic benefits of the Gunns proposal[3]. This study was to fulfil the requirements of the *Pulp Mill Assessment Act 2007* – legislation that was drafted and passed after Gunns withdrew from the Resource Planning and Development Commission process in 2006, "ITS Global did not and was not required to perform any new economic modelling or social impact analysis"[4] ITS Global largely repeated the economic claims of the original AC report and summarised public submissions received by the RPDC process prior to its inquiry being halted.

The RPDC received more than 790 submissions. ITS Global found[5] that of the non-pro forma submissions, 523 were generally negative, 94 were neutral and 81 were positive. Almost half, 255, of the submissions related to economic issues. Of these 255 submissions 158 were negative, 28 were neutral and 69 were positive. The consultants listed as 'high concern' submissions to the RPDC stating that the AC evaluation did not assess, did not adequate assess or ignored:

•   potential negative impacts or externalities

•   risks associated with the project

•   impacts on tourism

•   constraints in the labour supply

•   environmental impacts

•   the value of intangibles (such as the Tasmanian brand).

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[1]   Gunns Limited News Release 17 October 2007

[2]   The Allen Consulting Group: *The Bell Bay Pulp Mill Economic Impact Assessment Report* May 2006 Report to Gunns Limited.

[3]   ITS Global: *Review of the Social and Economic Benefits of the Gunns Limited Pulp Mill Project* June 2007.

[4]   *Ibid* pg 9.

[5]   *Ibid* Appendix II pg 110 – 112.

They also listed as 'high concern' submissions relating to the potential negative impact of the project on:

•   other business sectors such as marine industries, aquaculture industries, tourism and agriculture

•   intangible assets such as the Tasmanian brand

•   Tasmania's dependence on forests and forest industries

•   vulnerability of the Tasmanian economy to fluctuations in world pulp markets.

Other studies have attempted to assess all or some of these issues. For instance the submission of Naomi Edwards to the RPDC[6] and a report prepared for the Tasmanian Round Table for Sustainable Industries Project to which two economic consultants contributed.[7] These reports point to a number of indicators that underline concerns expressed in the submissions summarised above.

This study

This report should be seen as by necessity preliminary. New field work has not been undertaken for this study. Instead, it re-evaluates material already on the public record in reports prepared for the RPDC process, for the Tasmanian Government and released publicly in recent months. The main contribution of this study is to comprehensively model all data in a comparable probability framework, so as to provide a more complete picture of the direct economic impact of the Gunns project on the Tasmanian economy. NIEIR has used its econometric model of the Tasmanian economy to highlight the inconsistencies between the AC study and important aspects of the material available for policy makers. This study represents the first modelling assessment to include material that has become available more recently, or was not evaluated by the AC report, or is the result of changes in the broader economic environment since the AC report was prepared.

Since 2006, the Australian economy has continued to grow strongly with the major concern today being inflation, tight labour market conditions and skills shortages. The net benefit of the mill to the Tasmanian economy will be the difference between the mill scenario and the scenario without the mill, which describes the alternative uses of the logs not consumed by the mill.

This study, therefore, examines two scenarios: a business as usual base case (excluding the pulp mill), a mill scenario and an alternative scenario. The mill scenario will endeavour to include a number economic impacts not considered as part of the AC evaluation such as the impacts of tourism; the impacts on other forestry enterprises; impacts on aquaculture; and impacts on agriculture. It will also critically re-evaluate the distribution of benefits from the proposed mill in the form of profits, wages and salaries, taxes and purchases of goods and services, and will consider the government contribution to the mill. In the alternative scenario the same level of government subsidies will be used to develop alternative value-added businesses in Tasmania that are consistent with the Tasmanian Government's economic development agenda, maximise long-term investment in the Tasmanian economy, are consistent with the Tasmanian brand and minimise impact on other industries. The net direct impact on the Tasmanian economy is the difference between the mill scenario and this alternative scenario.

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[6]   Edwards, Naomi *Too much risk for the reward – an analysis of the pulp mill returns to the people of Tasmania*, Submission to the Resource Planning and Development Commission, September 2006.

[7]   Tasmanian Round Table for Sustainable Industries Project (TRTSIP): *Sustainable development in Tasmania is the proposed pulp mill sustainable?* Launceston Environment Centre August 2007.

2. Inconsistencies in the AC study

The AC results are internally inconsistent because they imply implausible values for productivity and consumption.

In order to demonstrate this NIEIR ran its inter-regional Local Government Area (LGA) based model of Tasmania without capacity constraints. The model is an input-output model for each LGA (some of the smaller LGAs have been aggregated) linked by an inter-regional trade flow matrix for each industry, and subject to broad economic constraints, notably those governing trade and financial relationships between Tasmania and the rest of the world, but for the purposes of this run devoid of labour or capital capacity constraints. A ten household-type consumption model generates total household consumption expenditure. The industry structure is based on the two digit ANZSIC classifications with the benchmark data year based on 2006. The data has been adjusted for trends to 2005. This run was for purposes of comparison, and yields a much higher benefit from the investment than NIEIR deems plausible taking all factors into account; it will be referred to as the NIEIR unconstrained run. A more plausible, constrained assessment is given in Chapters 3-6.

The AC report uses the Monash University's Centre of Policy Studies MMRF-Green Model, which is stated to be the "*most comprehensive economic model available in Australia and is highly regarded in terms of robustness of its assumptions and the overall credibility of its results*".[8]

The "comprehensive" and "robustness" claim is based on the fact that the model is a computable general equilibrium (CGE) model which, in addition to input-output relationships, takes account of capacity constraints operating in the economy at the national level (though not at the Tasmanian level). The proponents of the CGE class of models argue that NIEIR's models are inadequately constrained and therefore always over-estimate the impact on the economy compared to CGE models. In Appendix 1 of this report NIEIR gives a summary of its rebuttal of this claim in terms of analysing the impact of the Australian Formula One Grand Prix on the Australian and Victorian economies. This rebuttal involves challenging both claims: first, the claim CGE models are realistically constrained and second, the claim that NIEIR's models are unrealistically unconstrained.

However, what concerns us here is not the credibility of the MMRF-Green Model as a model class, but the credibility of the results in terms of the MMRF-Green Model itself. To do this it is useful to compare the results with the NIEIR unconstrained results.

2.1 What is the direct impact on the Tasmanian economy from the pulp mill?

The first step in examining the credibility of the MMRF-Green Model results is to calculate the direct shock to the Tasmanian economy. This simple estimate is not reported in the AC report. However, it can be estimated from what information is available.

In 2005 prices, a pulp mill of 0.82 million ADT would generate $500 million in gross output at the factory gate, that is, excluding shipping costs.

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[8]   ACG Report P.1.

The AC report states that in 2015, as a result of the new pulp mill, the existing Tasmanian wood and paper industry (i.e. excluding the new mill) would generate $92 million less in national real value added and $56 million less in real Tasmanian value added (AC Report Table C4). From the Australian Bureau of Statistics' (ABS) Australian Input-Output Tables, 2001-02, the pulp and paper industry's value added to output ratio is 0.28, or 0.33 to allow for the higher ratio for wood products. Hence, the decline in output from the existing wood and paper industry nationally is $279 million and $170 million for Tasmania. Therefore, the net expansion in Tasmanian wood and paper products is (500 – 170) or $330 million.

2.2 The MMRF Model does not produce a lower impact on the Tasmanian economy than the unconstrained NIEIR model

To test the MMRF-Green modellers' claim that the model is credible because it produces a conservatively low impact on the economy, NIEIR ran its inter-regional input-output model of Tasmania without labour or capital capacity constraints. The results in comparison with the MMRF-Green Model are shown in Table 2.1.

The most striking aspect of the comparison is the impact on Tasmania's gross state product (GSP), which is similar at around $460 million. However, the AC employment impact is less than half the NIEIR result, while the consumption impact in the AC study is 52 per cent more than the NIEIR results. The divergence is obvious.

As can be seen from the Appendix analysis, the expectation would have been that the more heavily constrained MMRF-Green Model should have produced a lower GSP impact, along with the lower employment impact. This produces inconsistencies that render the results unbelievable. The most obvious inconsistency is that the marginal gross state product per person employed for the MMRF-Green Model is $0.36 million in 2005 prices per person employed. For Tasmania the average GSP per person employed is $0.07 million in 2005 prices, or a differential of 5 to 1. A differential of 2 or 3 to 1 may be plausible but not 5 to 1. Closer inspection indicates that this unbelievable result is caused by:

(i)   the consumption response being far too high

(ii)   the import response by the Tasmanian economy being far too low.

Table 2.1	The Tasmanian pulp mill – a comparison of two models		
		MMRF-Green Model	**Unconstrained Model (NIEIR)**
Direct impact on wood and paper	2005 $m	330	330
Tasmanian gross state product (market prices)	2005 $m	467	460
Tasmanian private household consumption	2005 $m	215	141
Total Tasmanian employment	Number	1,300	3,203

Note: The MMRF-Green Model results are for the 2015 year.

2.3 The consumption response for the MMRF-Green Model is far too high for a credible model

NIEIR agrees with the statement in the AC report that 'consumption... is essentially determined by total household income.' However, it is not possible to check this derivation in the AC report since no estimates are given for the changes in household income, and it is therefore necessary to supply the connection. The obvious route is via the increase in employment. In the MMRF-Green Model results the increase in consumption expenditure is $165,000 per additional person employed. This is unbelievable. Even for the 300 direct pulp mill employees the total estimated labour cost is $130,000 per employee. After on-costs and income taxes this would allow a consumption increase at best of around $70,000 per employee. This is for the highly productive mill which would have to be reduced by at least one third to capture the contraction in wood and pulp products in the AC findings directly stemming from the Mill. The consumption increase for downstream employment would be significantly less than this, at around the Tasmanian average. The NIEIR model estimate of $44,000 per employed person is close to the Tasmanian average of $31000 of consumption generated per person employed and hence much more realistic.

The only other major source of income from the pulp mill would be from its gross operating surplus. However, it is expected that this will be fully accounted for by interest payments at around $130 million, by income taxes and by payment of dividends to non-Tasmanian residents. Very little of the gross operating surplus would be available for consumption expenditure in Tasmania.

The AC results include a substantial figure for induced investment in Tasmania – over $100 million a year. This helps to explain the unexpectedly large increase in GSP although the import content of this should be high largely offsetting the impact in a credible model. In any case employment from this investment appears to be included in the reported increase in employment, and the induced investment therefore does not generate employment incomes to explain the large increase in consumption.

On a credible distribution of income, the consumption increase, given the 1,300 employment increase, should have been around $57 million, not $215 million. (This is derived using the NIEIR estimate of consumption per employed person.) Even if an allowance of $30 million is made for possible other unexplained stimulus, this would mean that the MMRF-Green model has over-estimated consumption expenditure by at least $125 million.

2.4 The import inflows into the Tasmanian economy for the MMRF-Green Model are too low to be credible

The total import flows into the Tasmanian economy induced by the pulp mill are not reported in the AC study but they can be estimated. For 2015 the increase in consumption is reported at $215 million, the increase in investment at $106 million, and the increase in Tasmanian GST at $467 million. International export flows are reported at $213 million, but interstate exports should be added to this. If the total product of the mill is exported from Tasmania, total exports both international and interstate will come to $330 million – the gross value of production, calculated above. Using the national accounts identities, total exports can then be calculated as consumption plus investment plus exports less gross state product equals $184 million. Given that international import inflows are reported at $91.0 million this implies that interstate imports are $93 million. Interstate exports would be the difference between the $330 million and the reported international exports of $213 million, or $117 million. The import to GSP ratio is thus estimated at 0.39. The only rationale given for this low ratio is the claim that many of the inputs to the mill will be locally sourced (AC report page 33). However, this is unlikely to apply to the increase in reported consumption or investment.

For 2005 NIEIR estimates the Tasmanian total import to GSP ratio to be of the order of 0.8, or double the implied MMRF-Green estimate. Given the incorporation of "capacity constraints" in the MMRF-Green Model, one would have expected it to deliver an outcome well above the average 0.8, say at least unity. An import to GSP ratio of unity would have reduced the Tasmanian GSP impact for the MMRF-Green Model to $191 million, with a further reduction to around $130 to $140 million if the consumption impact is adjusted downwards by $125 million. This would make the results "consistent" with the unconstrained NIEIR model results. That is if the employment increase in the MMRF-Green model was a third of the NIEIR models result then it would also be expected that the GSP increase in the former would also be a third of the latter. This is also what was obtained in the comparison of the unconstrained NIEIR model with the MMRF model, which is similar to the MMRF-Green Model, for the Formula One Grand Prix study.

In brief, the MMRF-Green Model results are unbelievable in terms of the results obtained for more or less the same model when used for another study.

2.5 There are a number of possible explanations for the MMRF-Green Model results

There are a number of possible explanations for the unbelievable MMRF-Green results. These include:

(i)   simple error in inputting data into the model

(ii)   serious specification errors in the model (e.g. allocating gross operating surplus from the pulp mill to the Tasmanian household sector)

(iii)   unjustified adjustment of the results to bring them more in line with client expectations based on simple multiplier models

(iv)   some other credible explanation which AC may provide.

However, there is a clue in the write-up which favours the unjustified adjustment possibility. Knowing the consumption results were not credible, but perhaps hoping to deflect any future criticism, the following statement is in the AC report.

> "*The increase in expected disposable income would be expected to support an increase in consumer confidence. This is further reflected in higher rates of private consumption.*" (AC, page 24)

Unfortunately there is no justification for this. The doubling of consumption expenditure from what a credible model would produce can only be financed by a fall in the savings ratio. The recent Tasmanian net savings ratio has been at most zero and generally negative. This means that the fall in the savings ratio could only be financed by additional borrowings. After 20 years this sustained increase in borrowings would result in net additional Tasmanian household debt of $2 billion and debt service payments of $0.26 million per year. This would eventually have the effect of driving consumption expenditure levels below the levels that would have prevailed in the absence of the pulp mill.

In short, if a convincing explanation from Allens Consulting is not forthcoming, it will have to be assumed the overall MMRF-Green Model results were adjusted by adding $125 million to

consumption and GSP with further adjustments to GSP from unjustified reductions in the import propensity of the Tasmanian economy.

3. The impact of the pulp mill on the Tasmanian economy – methodology

Dismissing the MMRF-Green Model results out of hand does not, however, lead to a rejection of the case that the pulp mill could make a significant contribution to Tasmania's economic activity. There are many factors which will determine this, from the opportunity cost of wood to the special costs of risks associated with the project (including the effect of labour capacity constraints on construction costs – see 4.3 below).

Figure 3.1 lists the factors which together determine the net economic benefit of the pulp mill. The pulp mill will create demands for factors of production, such as logs, labour, materials and services. The mill surplus will be the difference between revenue and costs of factors of production. Revenue will be determined by mill output, the US$ price of pulp and the Australian/United States exchange rate. However, only part of the surplus will directly impact on Tasmania. That part of the surplus which will directly impact on Tasmania will be what is left over after payments for interest, taxes and dividend payments to out-of-state shareholders.

The direct risks of the project are well documented in the debate over the mill and are listed in Figure 3.1.

The gross impact of the mill must then be adjusted for the alternative uses of the logs consumed by the mill and for alternative uses for the plantations created to support the mill. These alternative uses include woodchip exports, dressed hardwood exports or agricultural production.

A great deal of uncertainty surrounds many of the factors that will determine whether or not the mill will be an economic positive for the Tasmanian economy. Hence, the approach taken in this study is to formally include this uncertainty in the analysis. This is done by specifying an appropriate probability distribution for each factor that is subject to uncertainty. The system is then simulated to find the joint probability distributions of the key variables of interest and in particular the sum of the discounted sum of the direct impact on the Tasmanian economy. Unless the direct benefit is positive there is no way a positive indirect benefit can be obtained from any credible model.

In any one year there will be a range of possibilities. Except for the case where a discrete probability distribution is justified, as would be the case for risks just as chemical spills into the sea, this study adopts the trigen distribution as the preferred representation of possibilities. The trigen is a triangular distribution which has the advantage that its parameters can be expressed by five easily interpreted parameters. These five parameters are:

(i)   lower bound

(ii)   mode

(iii)   upper bound

(iv)   probability that values will fall below the lower bound

(v)   probability that values will exceed the upper bound.

Figure 3.1: Factors determining the net direct impact of the pulp mill in Tasmania
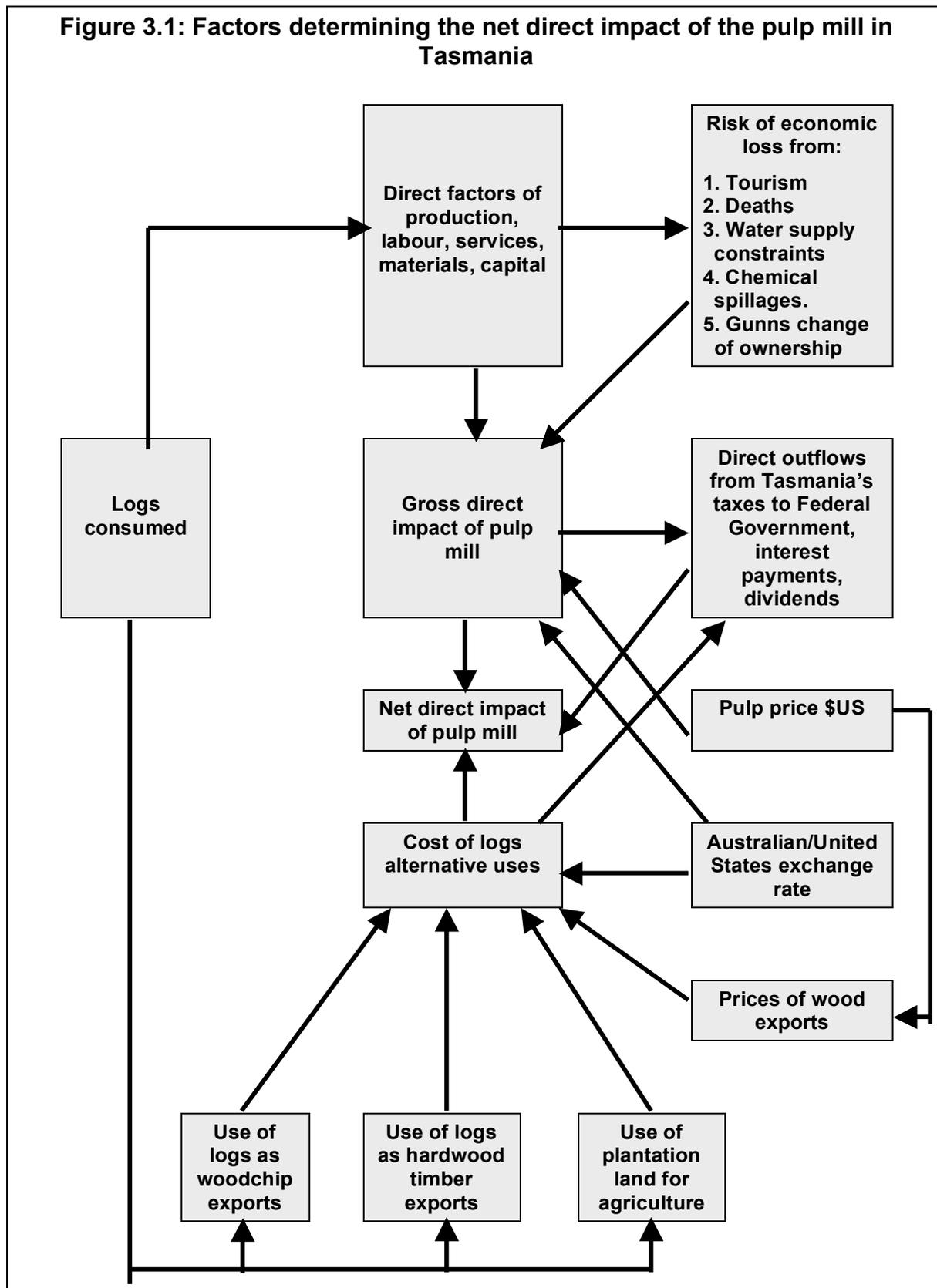
The trigen distribution is used to describe the uncertainty around the pulp mill price, the exchange rate, the scale of alternative uses of the logs, the discount rate applied, etc.

For some risks a trigen distribution is not suitable and a discrete distribution is employed. For example, for chemical spills the parameters which describe the distribution for a given year are the probability that the one-off event will occur and the cost (in million dollars) of the event.

Figure 3.2: The trigen probability distribution
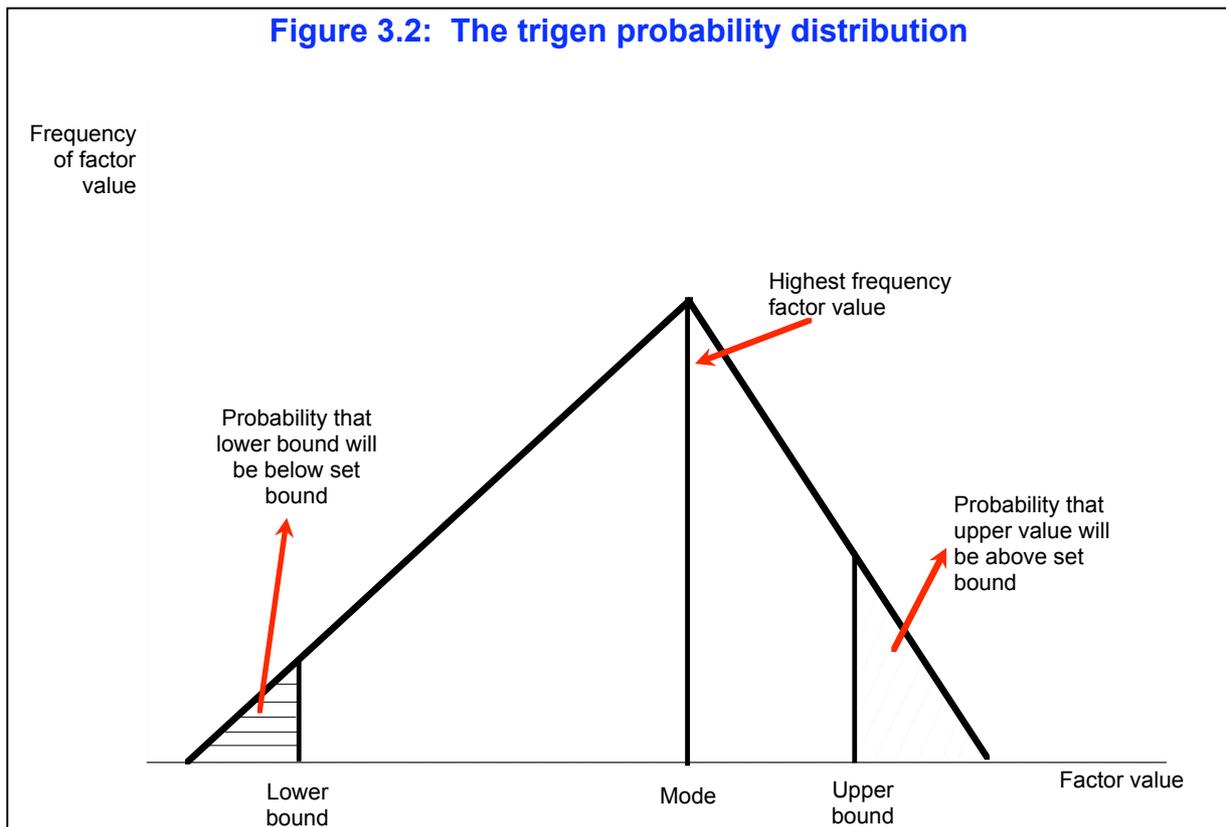
4. The drivers of the gross benefits of the pulp mill – mill scenario outcomes

This section discusses the issues surrounding the drivers of the gross benefits of the mill and, if appropriate, the parameters of the probability distribution employed for each driver.

4.1 The US$ pulp price

The CommSec study in October 2006 assumed that pulp prices would fall to US$520 in late 2009. However, this was before the commencement of the long run devaluation of the US$. For this study the trigen parameters are:

Lower bound	$510
Mode	$600
Upper bound	$650
Lower bound probability	5 per cent
Upper bound probability	85 per cent

The higher upper bound probability (that is, a 15 per cent chance that the upper bound outcome will be exceeded) is to allow for more upside risk than downside risk around the bounds. In addition, the prices are in 2005 prices which, in effect, further adjust prices up by 15 per cent compared to the CommSec study.

For each year to 2030 a trigen distribution is specified for the pulp price. The CommSec study, following historical trends, assumes that the real price falls by 1.5 per cent per annum from 2010 onwards. For the lower bound the assumption is for a fall of 2 per cent per annum. However, for the mode the assumption is less severe than the CommSec study with a specified fall of 1 per cent per annum. For the upper bound the assumption is a constant real pulp mill price of US$650 per ADT from 2010 to 2030. The bound probability settings are held constant at the initial year levels.

The outcomes of these settings for the expected value of the US$ pulp price are given in Figure 4.1. The expected pulp price falls from US$595 in 2009 to US$551 by 2020, or a real fall of just under 8 per cent over the decade. By 2030 the pulp price reaches a level of US$519. The average annual fall in the real pulp price is 0.7 per cent per annum, or half the CommSec assumption.

Figure 4.1: Real pulp price $US
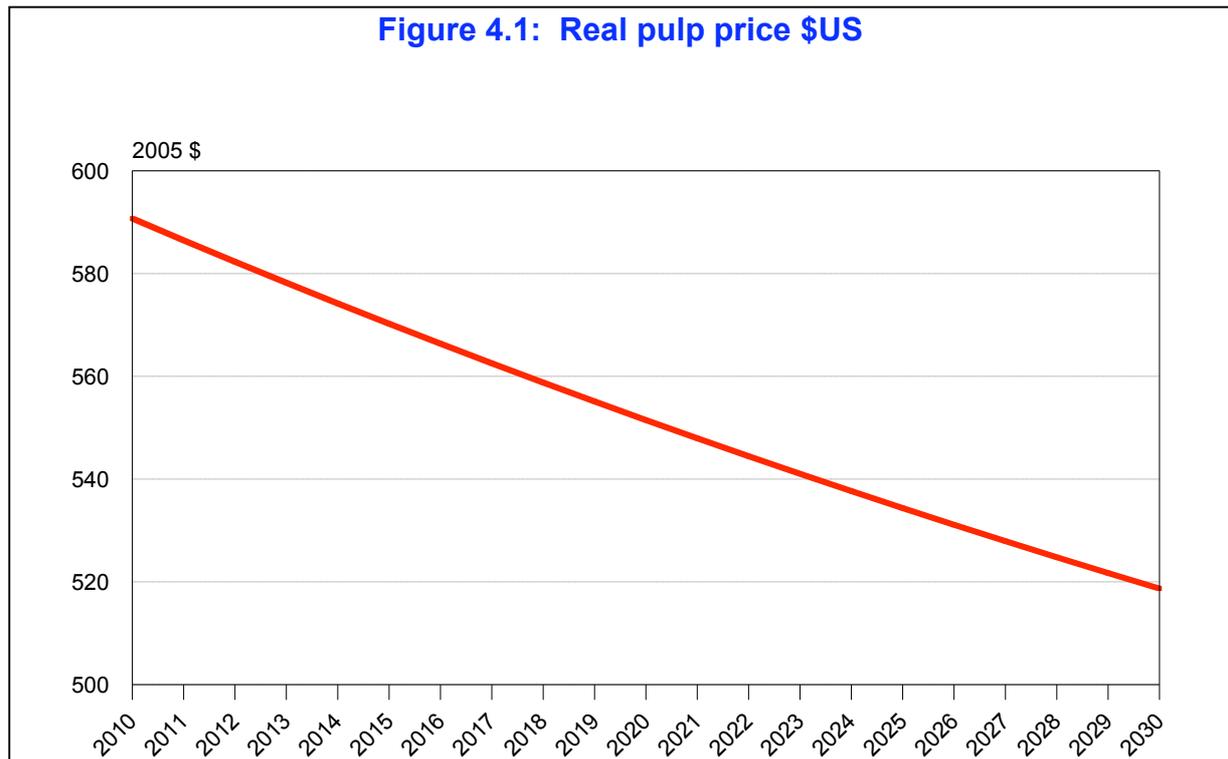
4.2   The Australian/United States dollar exchange rate

The CommSec study assumed a long run $A/$US exchange rate of 0.72. However, there are risks that the exchange rate could be both lower and higher than this assumption. In any case, by 2009 or 2010 current trends indicate that the Australian dollar will be considerably higher than 0.72 cents.

For 2010 the trigen parameters are:

Lower bound	0.81
Mode	0.85
Upper bound	0.93
Lower bound probability	15 per cent
Upper bound probability	85 per cent

By the 2017 to 2020 period the lower bound falls to approximately 0.67, reflecting the vulnerability of the Australian economy for a low long term exchange rate due to its:

(i)   high current account deficit

(ii)   high net international debt

(iii)   exposure to a high carbon price.

By 2030 the lower bound falls to 0.62.

Between 2010 and 2017 the mode exchange rate falls steadily to 0.71, where it remains until 2030. By 2015 the upper bound falls to 0.80, near which it remains for the remainder of the horizon to 2030.

As Figure 4.2 indicates, by 2016 the expected exchange rate is 0.73. The expected exchange rate remains near this level until 2030.

The combination of the expected US$ pulp price and exchange rate outcomes considerably increase the profitability of the mill, compared to the CommSec study. Moreover, the distributions for the pulp price and exchange rate are jointly modelled with a correlation coefficient of one linking them. That is, when the exchange rate is high so will be the pulp price and visa versa.

Figure 4.2: $A/$US exchange rate
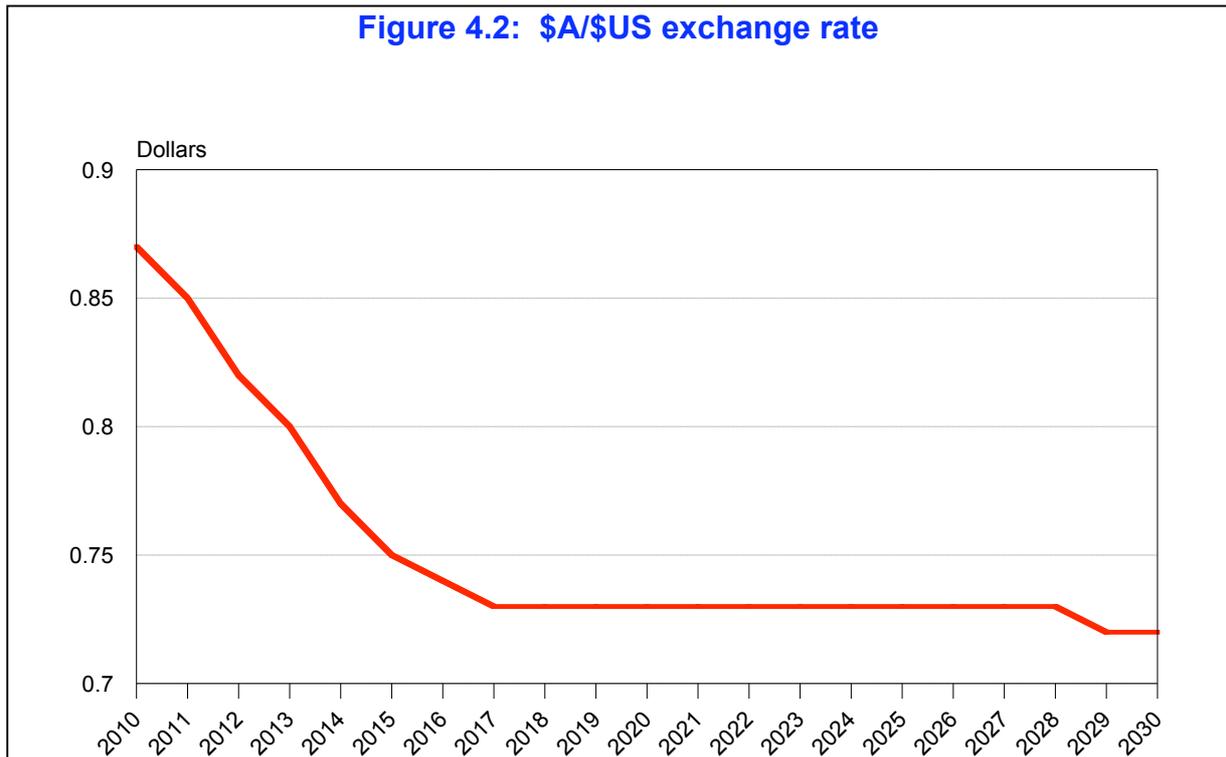
4.3   The capital cost

The current capital cost is estimated at $1.7 billion. However, construction activity is at historically high levels and real costs are rising significantly. Hence, the trigen distribution parameters for the capital costs are:

Lower bound	1,750
Mode	1,900
Upper bound	2,200
Lower bound probability	5 per cent
Upper bound probability	90 per cent

The expected cost is $1,985 million. Interest costs are set at 7 per cent of the capital cost, reflecting the higher risk margin that is likely to prevail in 2008-09 because of the sub-prime crisis in the United States compared to what was expected to be the case when the CommSec study was done.

4.4   Other direct costs

The structure of direct costs (that is, wood, labour, services, etc.) follows the CommSec study, including the dynamics of expansions to 1.05 ADT as the plantation input reaches 80 per cent and the decline in unit wood costs and chemical costs also result as the plantation input reaches 80 per cent.

At start-up the log impact will be 20 per cent plantation and 80 per cent regrowth forest. The plan is that this will be reversed by 2018 with 80 per cent of the logs from plantation and 20 per cent from regrowth forest. This has been challenged in that the rate of plantation expansion is unlikely to enable this target to be reached.[9] Hence, for 2018 the trigen distribution for the share of plantation log into the mill is:

Lower bound	0.4
Mode	0.7
Upper bound	0.8
Lower bound probability	2 per cent
Upper bound probability	98 per cent

This gives an expected impact of 62 per cent plantation logs in 2018. Whatever the 2018 outcome is, the time profile of plantation log input approaches the 2018 linearly from the 20 per cent in 2010. At the latest the mill is expected to reach the 80 per cent benchmark by 2024. Again, this is approached linearly from the 2018 outcome.

No probability bounds are placed around the individual direct cost components. However, an aggregate for direct unit operating costs or contingency bound is applied. The factor value for this distribution is the rate of growth of real unit operational costs per annum above the expected value. The trigen probability distribution parameters are:

Lower bound value	0.0 per cent per annum
Mode	0.4 per cent per annum
Upper bound	0.9 per cent per annum
Lower bound probability	2 per cent
Upper bound probability	98 per cent

The cost contingency only influences the level of subsidy from the Tasmanian Government, not the mill's direct profitability.

That part of depreciation or replacement investment that is directly spent in Tasmania is set at $79 million.

4.5   Subsidy from Tasmanian Government

The current planned subsidies for the mill are ignored because they are assumed to be applied in equal measure in the alternative scenario. The application will be to develop alternative uses of the logs that would have otherwise been consumed by the mill. Subsidies from the Tasmanian Government are triggered in the current analysis if the cash flow from the mill after interest payments, direct operating costs and replacement investment falls below zero.

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[9]   C. Beadle, "*Chasing an Elusive Harvest*", 2007.

Figure 4.3 indicates that this does not happen for the mill case as the surplus available for distribution after direct costs, interest costs, energy savings and replacement investment is between $100 and $150 million until late 2016.

If dividends are payable, 20 per cent of the dividends are assumed to flow directly to Tasmanian households.

Figure 4.3: Pulp mill surplus available for distribution after interest payments and capital expenditure but before taxes
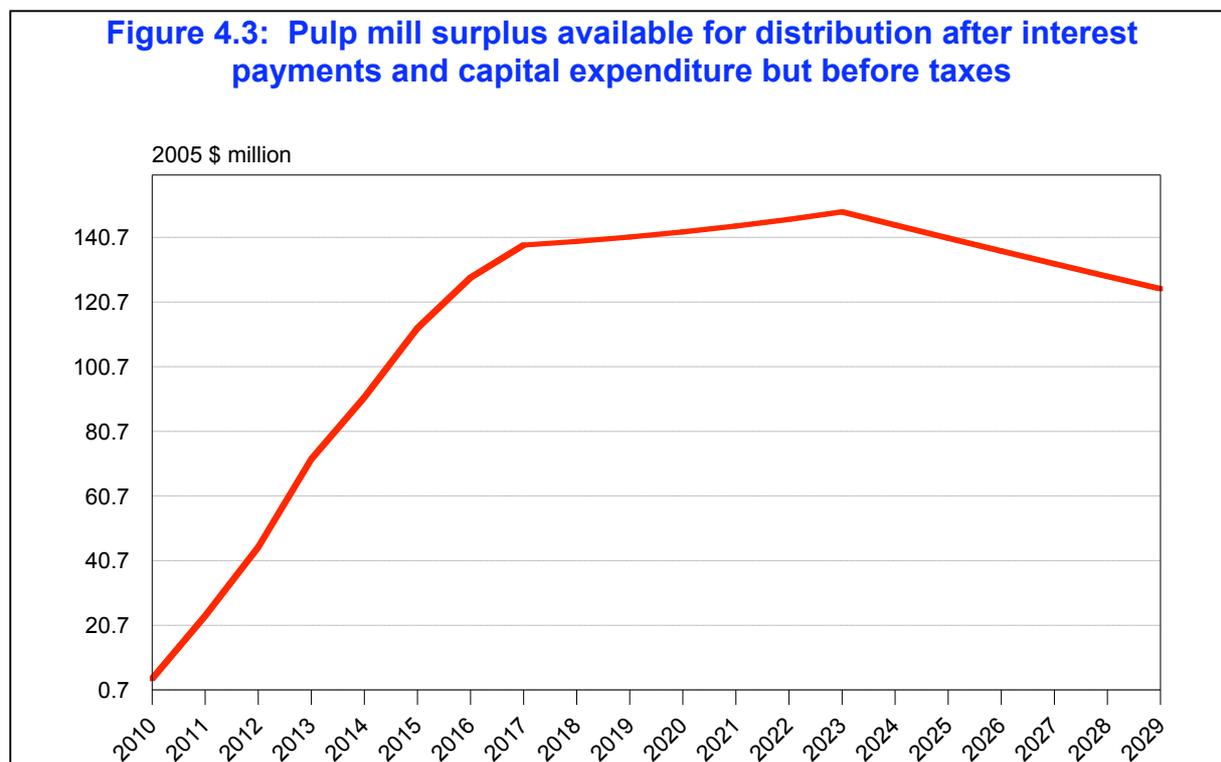
4.6 Tourism

A survey of 700 tourism operators in Tasmania revealed that 34 per cent believed the mill would directly affect their businesses in a negative way while 58 per cent believed it would affect Tasmania's 'clean, green' brand.[10] TRTSIP says that Tasmania finds it difficult to attract first time visitors but is 'incredibly good' at attracting repeat visitors. It quotes a visitor survey showing that of nearly 200 000 additional visits between March 2003 and March 2007, more than 165 000 were repeat visitors. ITS Global points out that tourism contributed 6 per cent of Tasmania's Gross State Product in 2004; that in 2006 Tasmania attracted approximately 870 000 international and interstate visitors who generated 1.07 overnight trips and 4.8 million day trips and; spent $1.8 billion supporting direct employment of 23 000 and indirect employment of 15 500 Tasmanians[11]. *Tourism 21 – Strategic Plan for Tasmanian Tourism Industry,* June 2004 sets a goal of developing the industry into a contributor to the Tasmanian economy of even greater significance. A key component of this strategy is the Tasmanian tourism brand 'the unforgettable natural experience' that provides 'a range of visitor experiences based on the core appeals of nature, cultural heritage and food and wine'. The delivery of the strategy has led to cluster and touring route strategies to

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[10]   TRTSIP 2007 p15.

[11]   ITS Global 2007 p79 attributed to Tourism Tasmania.

focus on traveller interest on nature, cultural heritage and food and wine. The Tamar Valley is part of the touring route strategy and contains a number of designated routes. Approximately half of the interstate and international visitor trips to Tasmania in 2006 (448,000 persons) visited the Tamar Valley.

The most significant impact on tourism during the construction phase of the mill will be a 'crowding out' effect resulting from demand generated by the influx of construction workers. This influx is also likely to change the character of the accommodation, restaurant and entertainment industry due to the prevalence of single males in the construction workforce. It is also expected (and anecdotal evidence suggests this has already started to happen) that many people who moved to the area for the amenity and lifestyle will move out in anticipation of the mill adding to the change in character. ITS Global acknowledges that; (1) additional heavy vehicle movements between Georgetown and Bell Bay could disrupt the tourism experience of visitors using the East Tamar highway, (2) that a number of businesses marketing lifestyle, food and wine experiences immediately west of construction site on the Rowella peninsula will be impacted by loss of visual amenity and noise, (3) the experiences of visitors could be lessened by loss of visual amenity associated with construction of water pipelines (Trevallyn dam to Bell Bay) and effluent pipe (Bell Bay to Four Mile beach). During the construction phase, these losses are likely to be offset by demand generated by the influx of construction workers. However, as noted above, this demand will affect the character of the industry and the area.

Once the project moves to its operational phase, the benefit of the additional demand created by 2 900 construction workers will disappear. The industry would need to refocus and attract back the lifestyle tourists that were 'crowded out' during the construction phase. However, it will have to do so after the character of the hospitality industry had been changed by the substantial influx of single male construction workers during the construction phase. It will also have to regenerate this momentum after the expected loss of 'social capital' – people who had been attracted by the amenity of the area but decided to move out because they expect (rightly or wrongly) that this will be lost as a result of the mill. Most operators are concerned that the 'brand' of the region will be damaged. It will need to rebuild this 'unforgettable natural experience' brand quite possibly, according to ITS Global, in the face of direct and indirect impacts of emissions, odour and effluent on the image of the regional area. A further issue the area would need to deal with in attracting tourists back after construction would be a 36 per cent increase in heavy vehicle traffic on the East Tamar Highway. It is acknowledged that this traffic 'is likely to be associated with a corresponding increase in accidents involving log trucks in the region as well as the number of associated fatalities.'[12] In terms of State impact of these developments, the issue is whether tourists would still travel to Tasmania in the same numbers or shift their travel plans to other 'lifestyle' experiences such as New Zealand which compete with a similar brand.

We may note that the AC report is positive on tourism, on the ground that tourists will flock to see a state-of-the-art pulp mill. This may indeed provide a partial offset to the negative effects listed above.

The trigen distribution parameters for the tourism and cost are:

Lower bound	$4.7 million annually
Mode	$20 million annually
Upper bound	$47 million annually
Lower bound probability	2 per cent
Upper bound probability	95 per cent

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[12] ITS Global 2007 p 38.

4.7   Other pulp and paper mills

The AC study identified Wood and Paper Products (excluding the new pulp mill) as having the largest negative deviation from the base case in modelling commissioned for the Gunns IIS. Results of that modelling show a negative impact peaking at $91.6 million in 2015 for Australia and $55.5 million for Tasmania. This is the largest absolute deviation in dollar terms of any industry. AC says that "because of the constraints on the availability of logs for woodchips in Tasmania, increased pulp production by the mill would result in a reduction in other forms of secondary log production. Thus the project was assumed to result in the reduction of woodchip output."[13] The assumption is that export of pulp would be generated at the expense of woodchip exports from Tasmania although which woodchips plants would close have not been identified in the AC report. However, given the Tamar Valley chip plant is the least likely to be affected, the locations most likely to see the loss of plant would be Burnie and Triabunna both in the north of Tasmania.

While the impact on woodchip processing is significant, this is essentially a reallocation of production from one part of the industry and state to another and has been taken into account in the Gunns modelling. However the AC modelling did not take account of the likely impact on existing pulp and paper capacity in Tasmania. Two mills that are the most likely to be impacted are operated by Australian Paper at Burnie and Wesley Vale. These mills employ approximately 660 people directly and are responsible for a further 650 jobs indirectly. The two plants are operated as related economic units and together generate approximately $240 million in economic activity of which $105 million is directly attributable to Tasmania ($40 million labour, $45 million supplies, $20 million other)[14]. Australian Paper has faced a difficult couple of years with these plants and is currently generating returns well short of targets, and short of the level of returns which been have seen in previous years. Low customer demand (driven by a high Australian dollar) resulted in shutdowns early in 2007 and 40 people being laid off in late 2007. The company is said to be refocusing efforts on key brands and narrowing down their brand portfolio. It recently sought to gain Forest Stewardship Council certification for the plants but was rejected because it was unable to access certified input from Tasmania and has recently attempted to highlight 'carbon neutral' product which is possible through the plant's reliance on hydro electricity. In fact, these plants are responsible for approximately 10 per cent of Tasmania's electric power consumption.

NIEIR believes the proposed Gunns mill could be the last straw for these plants due to constraints on wood supply and the risk of loosing key technical staff. Gunns has already informed Australian Paper that it will be unable to supply the Wesley Vale pulp mill with 30 thousand tonnes of pine woodchips from August 2008 due to the pine plantations being logged out and converted to eucalypt plantation (suitable for the new mill). Australian Paper will find it difficult to replace this supply with softwood pulpwood supplies expected to decline by more than 20 per cent as pine plantations are converted to eucalypt plantations. Forestry Tasmania, supplier of 70 thousand tonnes of hardwood chips, will come under pressure from 2010 to meet commitments to the Gunns mill. Forestry Tasmania's pulpwood production has been above its sustainable harvest level for three out of the last four years[15] and it has recently agreed with Gunns to supply more than half of this production to the new mill (1.5 million tonnes from "sustainable" pulpwood supply of less than 2.8 million tonnes). Forestry Tasmania says the remaining 1.3 million tonnes will supply existing contracts with other

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[13]   The Allen Consulting Group 2006.

[14]   Australian Paper company presentation.

[15]   Forestry Tasmania; Sustainable Forest Management Report 2005 – 2006 July 2007 p18.

customers including the Australian Paper mills[16]. However, it is expected that Forestry Tasmania will come under pressure to meet a greater proportion of the 3.2 to 4.0 million tonnes required by the Gunns mill (plus 500 thousand tonnes of bio-fuel). Robert de Fegely in his commentary on pulp wood supply for the proposed mill analysed Gunns export woodchip records for the past 10 years and found that the average volume of woodchips exported was 4.00 mGT and for the past five years this figure was 4.6 mGT[17]. He said that average pulpwood supply in Tasmania over the five years to 2004 – 05 was 5.3 mGT per annum and at the end of this period was just over 6.0 mGT. In other words the requirement for the Gunns Mill was between 57 per cent and 72 per cent of total pulpwood supply in Tasmania. The mill is highly dependent on growth in hardwood pulpwood supplies from plantations that will start to become available from 2010. However, total hardwood pulpwood supply from plantations in Tasmania is not expected to exceed 4.0 million cubic meters until after 2020.[18] Forecasts of forest yields can be unreliable and subject to environmental factors including climate change.

NIEIR expect that in the absence of a significant change in the competitiveness of the two mills a combination of sourcing difficulties and loss of key personnel will result in the two Australian Paper mills in North West Tasmania closing from 2010.

A discrete probability distribution is specified for the risks of the two existing mills closing. The discrete probability function incorporates a 20 per cent probability that the two mills will close at a direct cost to the Tasmanian economy of $120 million, at some date after 2012 because of the activity of the Gunns mill.

4.8   Fisheries and agriculture

A number of implications from the mill development relating to fisheries and agriculture have been identified by critical studies[19]. These include:

*   Loss of exports from the Tasmanian fishing industry should there be a spill or other significant pollution event associated with the mill. It is estimated[20] the industry contributes $472 million to the Tasmanian economy and generates 7000 jobs. A major spill could reduce this income considerably. Given the nature of material being released into the ocean the likelihood of this occurring during the life of the mill is high. TRTSIP estimates the value of this risk to be 10 per cent of production over the life of the project. NIEIR believes that the loss would be 25 per cent in the year of the event, 10 per cent in the subsequent year and 5 per cent in the third year after an event. The likelihood of one major event over the life of the project would be very high and as a result has included such a scenario. The likelihood of a second event is moderate and hence has included 50 per cent of a second event.

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[16]   Forestry Tasmania; Pulp Mill Wood Supply Agreement Fact Sheet October 2007.

[17]   Robert de Fegely; Export Witness Statement 2006.

[18]   Bureau of Rural Sciences; Australia's plantation log supply 2005 – 2049, 2007.

[19]   TRTSIP 2007 and Naomi Edwards 2006.

[20]   TRTSIP 2007 p 17.

- Loss of brand image for both agricultural production and fisheries. As with the tourism industry, a proportion of operators in both industries see the 'clean, green' image of Tasmanian produce as being an important attribute. These operators expect to see some loss of brand value as a result of both the mill and the publicity that would surround its construction. TRTSIP believes the loss of brand value could amount to 2.5 per cent of production for aquaculture and viticulture.

- Commentators have also pointed to the loss of productive agricultural land as a result of conversion to plantation forestry. NIEIR believes this is only relevant where the change of production has a direct impact on the value of production from that land. Assuming land is priced appropriately so that alternatives are available to different actors wishing to use the land for either agriculture and tree plantations, it is assumed that the loss of production from the land is the same as the value of the subsidy available to those establishing tree plantations. TRTSIP[21] estimates the NPV of this subsidy to be $204 million.

- As noted in the discussion on tourism, anecdotal evidence would suggest that there is already an outflow of people from the region. Locals comment on the large number of boutique agricultural establishments (particularly wine) for sale as people, fearing the mill will impact their lifestyle or their product, seek to relocate to other areas. There is a fear this will cause a loss of social capital making the region less productive due to loss of experience and expertise.

The discrete probability distribution for the annual risk of a channel spill is 1 per cent for a once-off annual cost of $40 million. This is conservative in that two spills over the life of the plant would have substantial compounding effects.

4.9   Health

ITS Global identifies at least two health impacts from the mill; air quality and road accidents from log trucks. TRTSIP has attempted to estimate a financial impact from these issues. It estimates that the cost (both health and lost work time) of respiratory ailments as a result of the mill would be $350 million over a 24 year period and the cost of log truck accidents over the same period would be $39 million.

The trigen distribution for annual health costs for the study is:

Lower bound	$2 million annually
Mode	$12 million annually
Upper bound	$24 million annually
Lower bound probability	15 per cent
Upper bound probability	90 per cent

The undiscounted cumulative expected cost over 20 years is $220 million. The cost profile is conservative with the TRTSIP cost estimates occurring at a relative low probability rating. The main reason for this is a downward adjustment in the cost of a death.

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[21]   TRTSIP 2007 p 47.

4.10 Risk of change of Gunns ownership

The cost of the mill seems to be creeping up having been given as $1.5 billion at the time of the RPDC IIS and now being given as $1.7 billion in company literature. Some suggest this difference results from costs imposed on Gunns as a result of delays in gaining approvals. Current reports suggest the mill could be 100 per cent debt funded through loans raised on international markets thereby generating an interest bill of more than $180 million per annum for the new plant. Some reports suggest as much as a third of the cost could be raised by Gunns issuing equity. While the cost of equity is likely to be cheaper than debt there would still be a cost through returns to equity holders. The vast majority of Gunns shareholders would be on the mainland or overseas. Although not canvassed through the media, a third option would be for Gunns to link with a larger global partner in order to spread the debt burden across a larger organisation. It is believed that a large Asian producer may be interested although that is purely speculation. Nevertheless, whatever option eventuates, it is likely that the mill will have a significant expense as a result of capital raising and that almost all of this service expense will flow overseas. The cost is expected to be spread over the first three years with a peak in Year 2.

The mill represents a high risk to Gunns. If the exchange rate moves the wrong way, compared to the pulp price and construction costs blow out considerably, given the likely high international gearing, Gunns may well be forced to merge. This transfer of ownership may be to a pulp competitor or a wood supply competitor. If a wood supply competitor, the source of the logs may well come from plantations outside Tasmania. Certainly a new owner may not have the same interest in developing the forestry products industry in Tasmania as Gunns.

Hence, the risk of change of Gunns ownership is set at 10 per cent, with an annual direct cost of $200 million to the Tasmanian economy. The risk of change of ownership applies at all times between 2010 and 2030.

4.11 Water supply constraints

The mill will use a significant share of Tasmania's available water resources. Climate change may result in a contraction in supplies for agricultural uses. Accordingly, the trigen distribution for lost agricultural production from constrained water supplies is:

Lower bound	$2 million
Mode	$15 million
Upper bound	$25 million
Lower bound probability	10 per cent
Upper bound probability	65 per cent

5. The alternative uses of the wood – scenario 2

The alternative uses of the logs for the mill are:

(i)   woodchips

(ii)   hardwood exports

(iii)   remaining unutilised.

The new plantations that will be created to support the mill have the same alternative uses or opportunity costs.

5.1 Hardwood exports

At least 25 per cent of logs recovered from regrowth forests or plantations are suitable for timber exports, ranging from rough sawn logs to plywood/veneer. The 25 per cent benchmark is adopted here. Compared to the pulp price, prices per tonne range from 30 to 40 per cent higher for low value added logs to around 80 per cent for high value added timber. Accordingly, for the analysis of this study, the hardwood export price of the alternative use of the mill logs is set at 40 per cent of the pulp price in 2010, after which it steadily increases to 80 per cent of the pulp price by 2030 as the value adding capacity of the Tasmanian forestry product industry expands, in part driven by subsidies that would otherwise have been employed by the mill. This also captures likely real falls in pulp prices relative to hardwood timber export prices.

5.2 Woodchip exports

The residual after hardwood exports could be exported as woodchips at a price equal to 23 per cent of the pulp price. Note two gross tonnes of logs equals one tonne of woodchips. It should be noted that the outflow of the gross surplus from Tasmania for hardwood or woodchip exports is assumed to have a similar ratio to that of the pulp mill surplus.

5.3 Alternative export volumes

Securing markets for alternative uses of the logs that would have otherwise been utilised by the mill will take time. Hence, the assumption is that from start-up 40 per cent of the logs will be able to be used for hardwood or woodchip exports. Uncertainty surrounds the future build-up in the share of the cumulative log stock that otherwise would have been utilised by the mill. Accordingly, for 2030 the following trigen distribution is specified to cover the range of possibilities for that share of the cumulative log stock that otherwise would have been utilised by the mill that is commercially utilised.

The parameters of this trigen distribution are:

Lower bound	40 per cent
Mode	50 per cent
Upper bound	100 per cent
Lower bound probability	10 per cent
Upper bound probability	100 per cent

The mean expectation from this distribution is that 60 per cent of the cumulative stock of logs that would have been consumed by the mill by 2030 are found alternative commercial uses.

5.4   An alternative case

One criticism of the above approach is that it considers that logs from the new plantations that Gunns are installing to support the mill have an alternative use or opportunity cost. This is because, in the absence of the mill, construction of new plantations to at least 150,000 hectares may cease.

To allow for this a no plantations case was designed with the logs available for alternative uses constrained to exclude supply from new plantations. By 2021 at the latest, the log supply to the mill is planned to be from the new plantations, giving a ceiling green log tonnage available for alternative commercial uses of 54 million tonnes. For this case the trigen probability distribution parameters are modified to change the percentage of the total that is commercially utilised by 2030 for forest products. That is:

Lower bound	70 per cent
Mode	90 per cent
Upper bound	100 per cent
Lower bound probability	10 per cent
Upper bound probability	100 per cent

For case 2 the alternative use of the logs consumed from new plantations will be the opportunity cost of lost agricultural production. The area involved is at least 150 000 hectares.

Again, from the responses to the mill there is uncertainty surrounding the likely losses in agricultural production per hectare. The cost estimates in the literature are in terms of value added per hectare, when the appropriate comparable estimate is revenue per hectare.

The trigen distribution parameters for the lost revenue per hectare from the new plantations are:

Lower bound	$500 per hectare
Mode	$1,000 per hectare
Upper bound	$1,400 per hectare
Lower bound probability	15 per cent
Upper bound probability	99 per cent

The mean export loss is $845 per hectare per year. The total opportunity cost from lost agricultural production will build up as the new plantations expand at a rate of 17,000 hectares per year. The opportunity cost of lost agricultural production also applies for case 1 until the logs are harvested for the mill or for alternative wood product uses.

Using the negative value added data in AC Table C.4 for Tasmanian agriculture and wood/pulp and interpolating between benchmark years the total discounted opportunity cost for the logs used in the proposed mill from the AC study is around $1.5b in 2005 prices. The opportunity cost from this study from the above assumptions at the mean of the distributions is at least 2.8 times the AC study results. This is because the AC study has not considered the opportunity cost of high value added wood exports and after 2020 considers the opportunity cost from the new plantations to be zero including any lost agricultural production from the land used to support the new plantations.

6. The proposed mill: Net direct benefit to the Tasmanian economy

The output variable of interest is the discounted cumulative net direct benefit of the mill to the Tasmanian economy. The output will be in the form of a probability distribution that is the product of the joint simulation of all the individual probability distributions specified above.

6.1 The discount rate

A variety of discount rates have been used to assess the mill. One argument is for a low discount rate to reflect the fact that decisions made today cannot be easily reversed, resulting in the locking in of long run costs. Another argument is that because of the uncertainty surrounding the project a relatively high discount rate should apply. However, this would result in minimising any long run costs.

Accordingly, a trigen distribution is also specified for the discount rate. The parameters are:

Lower bound	3 per cent
Mode	5 per cent
Upper bound	7 per cent
Lower bound probability	5 per cent
Upper bound probability	90 per cent

6.2 Case 1: The direct economic benefit on the Tasmanian economy

Figure 6.1 gives the cumulative ascending simulated distribution for the net impact. The range is from a minimum of -$6.6 billion, in 2005 prices, to $3.2 billion. The maximum negative outcome would be when there is a chemical spillage every year, negative factors simultaneously take values at the upper end of their individual distributions, while positive factors are all at the lower end of their distributions. The mean is -$0.6 billion. The 25/75 per cent probability bounds are -$1.4 to $0.5 billion. The 25/75 per cent bounds are fairly tight, reflecting:

(i)   the strong correlation between the US$ pulp price and the exchange rate

(ii)   the fact that a large proportion of the surplus will flow outside Tasmania.

Figure 6.2 shows the relative importance of each factor to the outcome. By design the exchange rate and pulp price offset one another. The next most important driver is the per cent of the mill log cumulative impact that is harvested for commercial use. The greater the percentage, the less the benefit from the project.

Figure 6.1: Case 1 - Distribution for cumulative discounted - direct economic impact on Tasmanian economy - 2005 $m
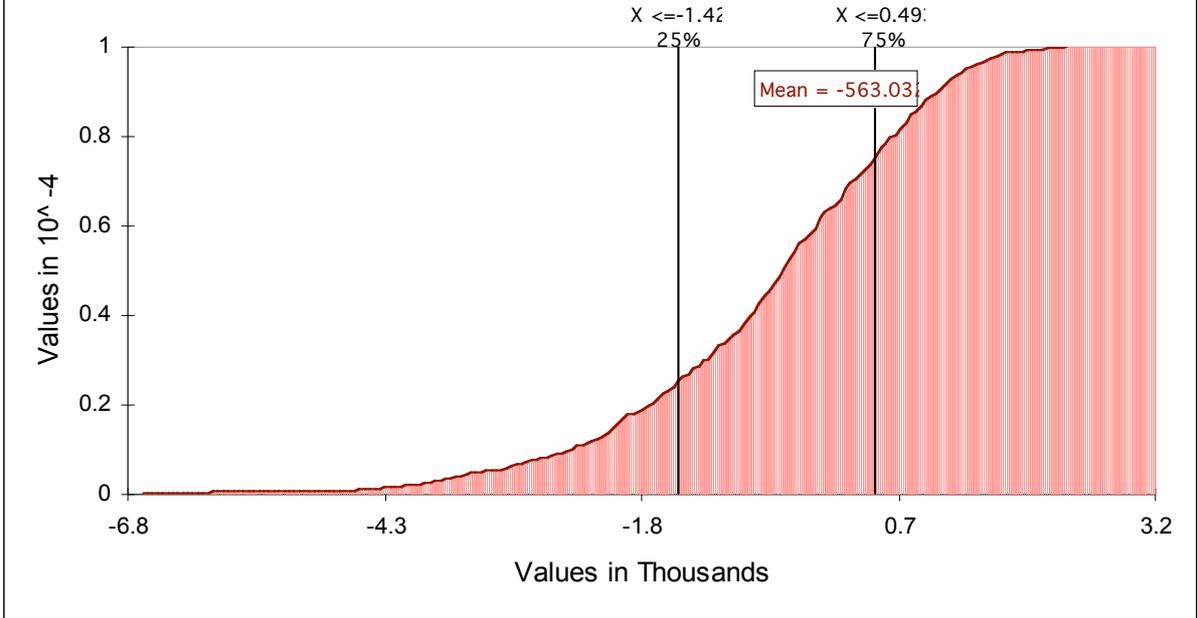
Figure 6.2: Standard deviation change in cumulative discounted net direct benefits for one standard deviation change in drive factors
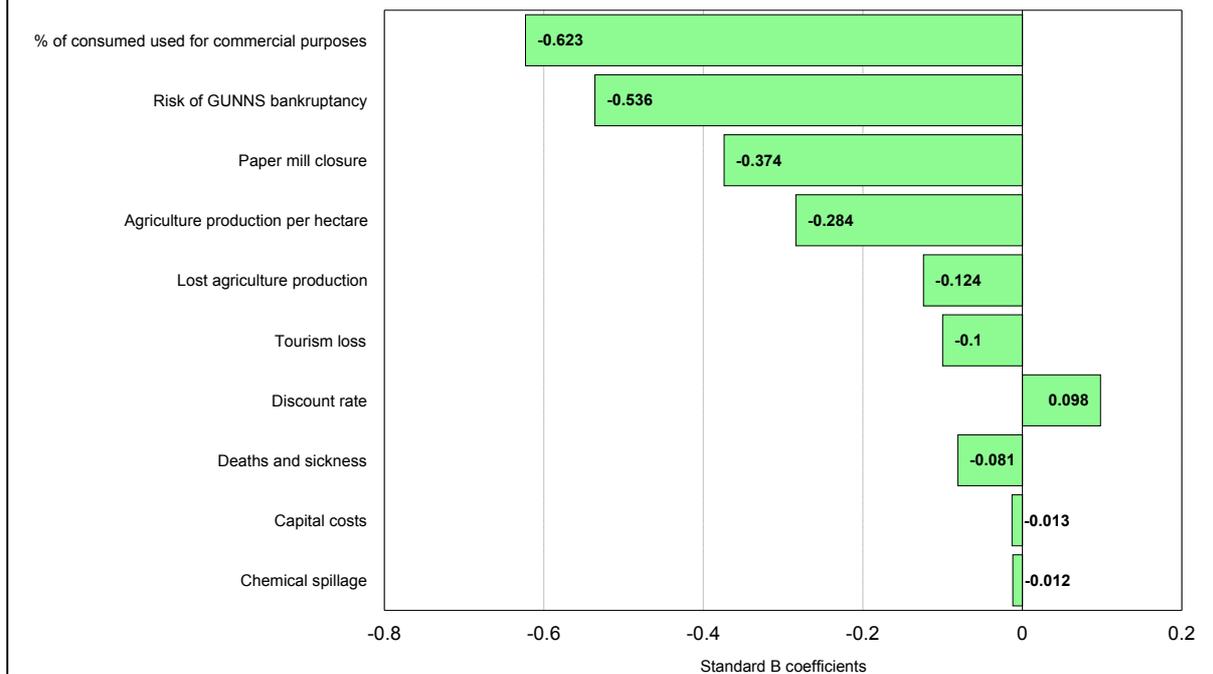
6.3 Case 2: The direct economic benefit to the Tasmanian economy

Case 2 is for the case where, on harvesting, the opportunity cost of the logs is not wood exports but lost agricultural production.

From Figure 6.3 the expected net benefit is -$0.7 billion, with a 25/75 per cent probability range from -$1.2 to $0.1 billion. This is less favourable than case 1, though not significantly different. The reason for this is that the lower stock of logs for alternative wood uses under case 2 is offset by the fact that a greater percentage of logs will be harvested for commercial uses by 2030. In other words, it does not make any material difference whether or not the new plantation logs are treated as having wood product alternative uses or agricultural product opportunity costs.

Note the probability distribution for case 1 and case 2 are drawn from joint probability simulations of 100 iterations.

Figure 6.3: Case 2: Distribution for cumlative discounted direct economic impact on Tasmanian economy - 2005 $billion
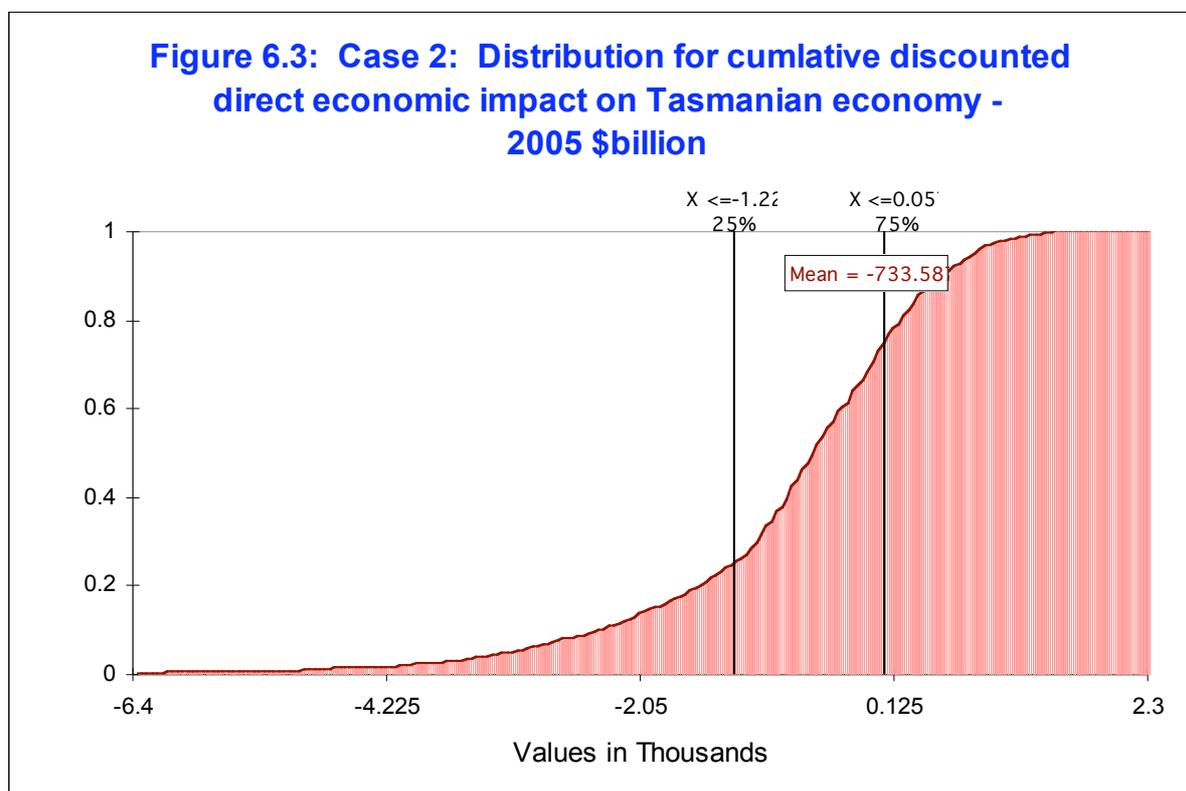
7.   Conclusion

This study has ignored the construction impact and focussed on the operational benefit of the proposed mill. Using the results form the NIEIR model of Tasmania, the direct and indirect consumption benefit will be of the order of (141/330) or 43 per cent of the direct benefit. However, the cumulative discounted consumption benefit from the operation of the mill for the Tasmanian economy will be of the order of -$0.3 billion to 2030. This stands in contrast to the $3.3 billion of consumption benefits assessed by the AC study or $2.8 billion if the estimated $0.5 billion construction benefit in the AC Report is deducted.

In short be noted that the ranges of consumption benefit discussed in the Executive Summary are obtained by applying the 0.43 ratio to the data in Figure 6.1 as well as applying the 0.43 to the difference between the AC estimate of opportunity cost of the logs and the estimate made by this study. That is the at least $1 billion estimate given in the executive Summary.

If the AC construction consumption benefit is added to this study's operational benefit estimate, the total consumption benefit is of the order of $0.2 billion. However if half the construction benefit is captured by temporary imported labour to Tasmania and if most of the operational benefit is captured by existing Tasmanian households (NIEIR's view) then there would be no gain to existing Tasmanian residents in terms of consumption from the totality of the project.

Appendix 1:   NIEIR models versus Monash models

Below is the summary of the critique NIEIR made of the MMRF model which is published in the Victorian Auditor General's Report into Government Support for Major Events, published in May 2007.

The basic NIEIR critique is that the MMRF models are far too constrained to be credible. This is a minor issue in this study because the MMRF-Green Model employment aside is far too expansionary to be credible in terms of its own constraints. Thus, a reading of the supplement below will give the reader what would have been expected from the Monash model for the pulp mill study if it was to be consistent with previous studies.

It should be pointed out that the MMRF-Green Model does allow some increase in Tasmanian employment from existing Tasmanian residents compared to the MMRF model results below, which allowed for no increase. However, this only represents 15 per cent of the total employment increase for Tasmania and, therefore, does not fundamentally alter the comparison of the two Monash models. The zero increase at the national level is retained.

Supplement to the NIEIR response to the Auditor General's report

NIEIR's response to the second last draft of the Auditor General's report is published in the final report. This attachment complements this response.

The core charge of NIEIR against the report is that it is a polemical document, long on argument but short on facts to support the arguments. Where facts or estimates are used, more likely than not, they are used misleading. In short, the report is unprofessional, the Auditor General has failed in his core responsibility to provide factual and unbiased advice to the public free of vested interest influence.

1.   There is not a shred of evidence to support the report's assumption of revenue constraints

The foundation stone of the report is the assertion that because CGE models assume full employed resources nationally, they are somehow more plausible. Yes, Australia is currently experiencing capacity pressures in the construction sector in at least two States. Yet despite this the industry continues to grow rapidly in Queensland and Western Australia.

A plausible model, like the NIEIR IMP model, would be one which allows the influence of skill shortage capacity constraints to operate individually at the industry level depending on the severity and not assume just because one or two industries are capacity constrained then the whole economy must be.

As pointed out in the NIEIR response, the assumption of full employment implies that there is not one hour of additional work available to support the AFOGP or other major events anywhere in Australia. That is, there is not one hour of work available anywhere in Australia from:

• more overtime from the full time employed;
• more hours of work from the part time employed;
• the unemployed;
• those of working age outside the workforce who would work.

Table A.1 shows that based on available statistics, there was 2.6 million available workers nationally, or 0.7 million in Victoria, who would be willing to undertake and, in most cases adequately provide, the generally low and semi-skilled services required to support the AFOGP.

Nationally, employment opportunities NIEIR estimates to be created by the AFOGP represents 0.1 per cent of the available labour.

As NIEIR pointed out in its response, Australia's low workforce participation rate compared to some other countries is consistent with Australia's inability to provide adequate employment to the working age population compared to other countries. That is, the estimates in Table A.1 of unutilised labour are also validated by benchmarking Australia to other countries.

Finally, putting aside the macro issue of available labour and simply looking at the seasonal pattern since the level of activity in the December quarter for the tourism related industries is higher than the March quarter, then the inference is that if the Victorian economy can support Christmas it can then also support the March event.

Table A.1	**Labour resources available and allocation – 2005 and 2006**					
NIEIR	**Additional overtime available (expressed in terms of full time equivalent) persons**	**Part-time who would prefer more hours who have been looking for work**	**Persons not in the labour force who wanted work**	**Unemployed (NIEIR)**	**Total**	**NIEIR Victorian employment from AFOGP as percent of available labour**
Victoria	66.1	123	303.7	204	666.2	0.5
Australia	268.6	495	1165.3	782	2593.2	0.1

	Interstate migration	**un-employment**	**outside the workforce**	**Total**
Sources of Victorian labour to support AFOGP (per cent of total)	5.9	48	46.1	100

MMRF	**Additional overtime available (expressed in terms of full time equivalent) persons**	**Part-time who would prefer more hours who have been looking for work**	**Persons not in the labour force who wanted work**	**Unemployed (NIEIR)**	**Total**
Victoria	0.0	0.0	0.0	0.0	0.0
Australia	0.0	0.0	0.0	0.0	0.0

	Interstate migration	**un-employment**	**outside the workforce**	**Total**
Sources of Victorian labour to support AFOGP (per cent of total)	100	0	0	100

Notes to Table A.1

The Data in the table is taken from Australian Bureau of Statistics Catalogue No. 6220.0, 6265.0 and 6291.0. The unemployment rates are derived from social security data and explained in NIEIR's "*State of the Regions*" report. The additional overtime is derived from the peak average hours worked for full time employed before March quarter 2005 less the actual hours worked by full time employed in the March quarter 2005. The components do not add to the sum because an allowance has been made between the overlap between the ABS estimates of those outside the workforce who want a job and the NIEIR unemployment level.

The NIEIR reports on the AFOGP do not report the sources of the additional employment. However NIEIR, in other similar events, does do this, e.g. the evaluation of the Australian Tennis Open.

2. The implication of the Auditor General report is that much of government policy is pointless

The Auditor General's report model based evaluations is not specific to the AFOGP. What has been evaluated is the benefits of tourism expenditures generally, whether for the AFOGP or safari tours of North Queensland. The results also apply to any other source of exports that generate less $ per employed person than the mining industry.

Education services exports would perform particularly poorly. The implications of the report reflect the views of extreme right wing political economists.

3. There are no capacity constraints in the Victorian tourism industry

The Auditor General's report assumes throughout the report that the AFOGP must impose capacity constraints and price pressure on the Victorian tourism sector that will result in crowding out of activity.

When checked against the facts, there is no evidence for these assumptions whatsoever. The facts which the Auditor General's assertions can be checked against are the:

• rate of growth;

• productivity; and

• price behaviour,

of the Victorian tourism industry which is taken to be represented by ANZSIC industry H, or accommodation, cafes and restaurants.

Figure A.1 shows these series. The first is the cumulative four quarter output growth rate for the Victorian tourist industry. Over the period since 1996, the average annual rate of growth has been 4.7 per cent per annum, well in excess of the average gross state product growth rate of 3.6 per cent per annum over the same period.

The second series is the rate of growth of the real price of Victorian tourist sector. It is the implicit deflator of the Victorian consumption of accommodation, cafes and restaurants, divided by the overall Victorian implicit consumption deflator. The series was adjusted for the differential impact for the GST over 2001 and 2002.

Now the expectation would be since the overall Victorian implicit consumption deflator is biased downwards from:

• the high labour productivity growth of goods industries;

• the China effect on goods prices; and

• the hedonic price adjusted for electronic equipment,

that the rate of growth of the real tourism price index would be significantly greater than the overall deflator. In fact, the average rate of growth of real tourism sector prices in Victoria is only 0.7 per cent per annum.

More importantly, real price growth tends to decline (below the 0.7 per cent trend) when output growth is relatively low and vice versa. Thus, in the late 1990s when output growth was high, in excess of 10 per cent per annum, the real tourism industry price fall.

The reason for this is because productivity growth in the Victorian tourism sector is positively related to output growth. That is, the sector is subject to increasing returns of scale. For every 1 per cent increase in output growth, productivity growth (output per member) increases by around 0.6 per cent. Of special importance is that the data shows no capacity constraints for the Victorian tourism industry around March 2005.

Figure A.1: Culumative four quarter span growth rates (per cent)
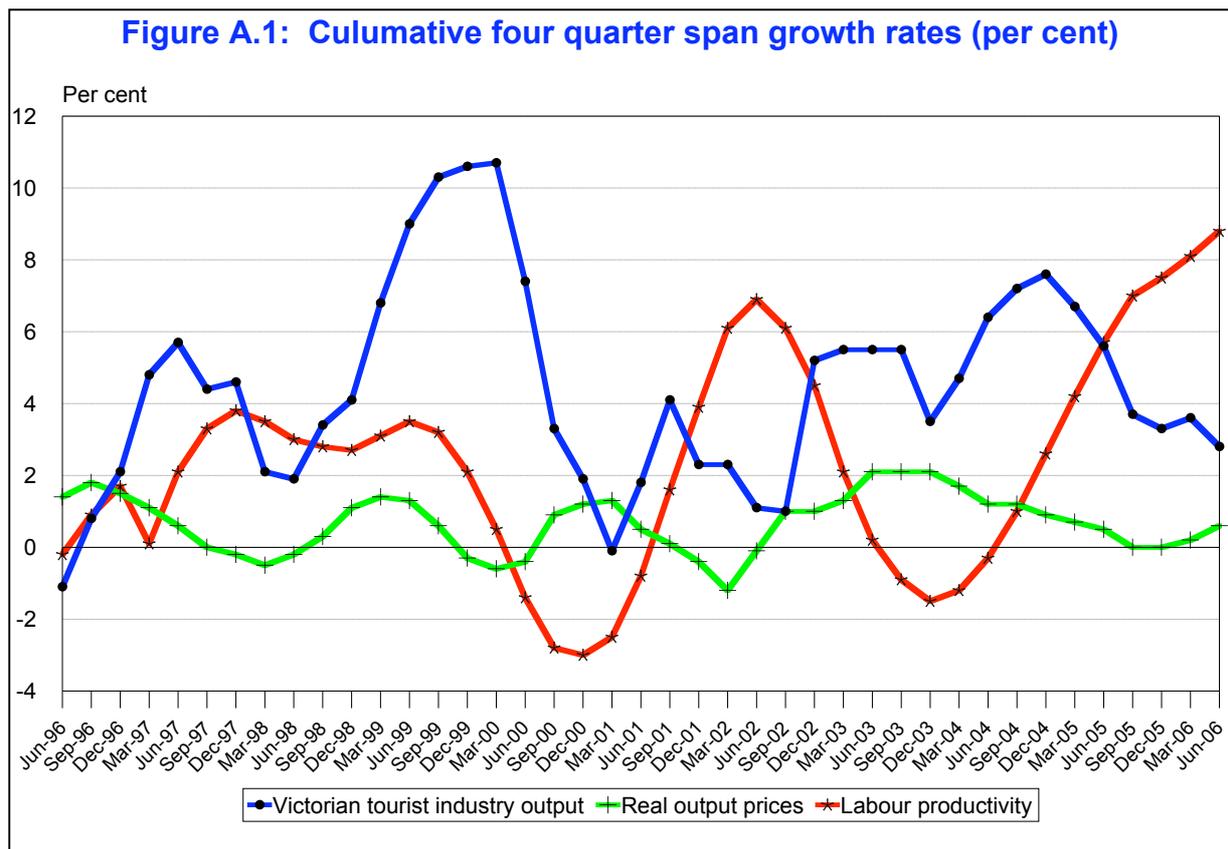
Source: Derived from ABS Catalogue No. 5220.0, 5206.0 and 6291.0.

The Auditor General's report assumes decreasing returns to scale in much of the analysis. As pointed out in NIEIR's reply, this fact alone invalidates all of the Auditor General's conclusions.

Prima facie, a significant amount of the credit for good recent outcomes for the Victorian tourism industry must go to tourism policy in general, and the activities associated with organising major events in Victoria.

A competent Auditor General's report into the value of major events would have investigated these statistical series thoroughly, not ignored them or assume industry conduct which is a myth.