

Expert witness statement of  
Mr Andrew Robert de Fégely  
Expert of Gunns Limited

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**In the matter of the Bell Bay Pulp Mill Project: A Project of State Significance  
Resource Planning and Development Commission Inquiry**

**Proponent: Gunns Limited**

## 1 Name and address

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Mr Andrew Robert de Fégely  
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## 2 Area of expertise

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My area of expertise is Forestry.

My qualifications are Bachelor of Science (Forestry) and Master of Science and my experience is detailed in Attachment 1.

I am sufficiently expert to make this statement because of my 26 years experience in the Australian forest industry including 10 years as head of Pöyry Forest Industry Pty Ltd's (Pöyry's) Australian consulting operations. I have worked in all states of Australia and have had wide exposure to forestry operations overseas.

## 3 Scope

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### 3.1 Instructions

I was requested to review the wood supply contributions to the Draft Integrated Impact Statement (Draft IIS), prepare a witness statement on the pulpwood supply issues which also addresses the key issues raised by submitters on the Draft IIS and any experts they engage, and give expert evidence to the panel.

I was also asked to critically review and comment on the accuracy of the wood supply section of the Draft IIS. This has included the following components:

- Review and comment on the Woodstock model used in the pulpwood supply analysis and the conclusions reached by the modelling, including a sensitivity analysis of the model results.
- Comment on pulpwood supply issues in the context of the Tasmanian Regional Forest Agreement, the *Forest Practices Act 1985*, Forest Practices Code, Plantations 2020 and any other law or policy I considered important.
- Comment on the current and predicted future policy for the growth of the plantation estate in Tasmania and the effect of competition from other plantation companies on Gunns' predictions for the growth of its plantation estate in Tasmania. This includes a discussion on any future constraints on the growth of the plantation estate in Tasmania (e.g. changes to the taxation status for investment or the availability of land for plantation development).
- Comment on the effect of possible changes to the RFA and in particular the possible designation of native forests as 'old growth' forest on Gunns' predictions on wood supply.

- Comment on the current and predicted future domestic and international market for woodchips, and how (if at all) fluctuations in the price of woodchips might compete with, or limit the availability of, wood resources supplied by third parties to the Bell Bay Pulp Mill (“the pulp mill”).
- Address the analysis of the age-class of feedstock presented in Chapter 6.2.12 of Volume 1 of the Draft IIS.
- Comment on whether the supply of feedstock to the pulp mill will result in an intensification of forestry operations in Tasmania, on a state or regional basis, where “intensification” is defined as including an increase in the rate of the conversion of native forest to plantations and/or the development of plantations on agricultural land and silvicultural practices.

### **3.2 Process and methodology**

I have reviewed the following materials and undertaken the following investigations for the purpose of addressing my instructions:

- Reviewed Section 4.2 of the RPDC Final Scope Guidelines for the Draft IIS and Section 6.2 (namely subsections 6.2.1 to 6.2.16) of the Draft IIS.
- Consulted with Forestry Tasmania and Private Forests Tasmania.
- In 2005, I worked for Pöyry Forest Industry Pty Ltd (formerly Jaakko Pöyry Consulting) in a team to validate the wood supply for potential financiers of the proposed pulp mill. My understanding of Gunns and the other forest resources in Tasmania was assisted by me being the principal consultant of this study in 2005.
- I made a number of visits to Gunns over a period of 20 or more days in 2005 and 2006 to review the basis of its forest development, management, protection and harvest and delivery systems which included the following:
  - Site assessment procedures and recording of Gunns forest estate
  - Inventory and Audit procedures
  - Forest mapping protocols and Geographic Information System (GIS)
  - Yield and site quality assessment and forest planning
  - Fire and other pest protection measures
  - Yield modelling and the basis of Gunns pulp mill wood supply model
  - Wood supply opportunities from non Gunns controlled sources
  - Ground and aerial inspections over five days of the forest resources in the north of Tasmania
  - Harvesting and haulage operations
  - Site inspection of public forest management with personnel from Forestry Tasmania and some private native forest operations in north east Tasmania.

I have reviewed the 2005 work again this year to gain an up-to-date appreciation of Gunns’ resource data.

### **3.3 Reports reviewed**

In preparing my witness statement, I have reviewed the following reports:

- State of the Forests Report, Gunns, 30 June 2006.

- 2004-05 Annual Reports of Forestry Tasmania, Private Forests Tasmania and the Forest Practices Authority.
- Plantation Inventory Program, Gunns Secured Eucalypt Plantation Estate, July 2006
- Sustainable Forest Management Report, Gunns 2004-05.
- Gunns Chain of Custody, Policy and Procedures Manual.
- Gunns Australian Forestry Standard Policy and Procedures Manual.
- Gunns Forest Management Statement, October 2005.
- The Regional Forest Agreement for Tasmania, November 1997.
- Supplementary Tasmanian Regional Forest Agreement, 13 May 2005 which is also known as the Community Forest Agreement.
- Forest Talk, Topic 1 Forest Types in Tasmania – Forestry Tasmania, 2002.
- Australia’s Forests at a Glance – Federal Department of Agriculture, Fisheries and Forestry 2004.
- Bureau of Rural Sciences – Australia’s Plantations, 2006.
- State of the Forests Report - Department of Agriculture, Fisheries and Forestry, Bureau of Rural Sciences, 2003.
- Plantations for Australia: The 2020 Vision – 1997 and the 2002 Revision.
- Gunns Wood Resources Review 2005 – A commercial-in-confidence report by Jaakko Pöyry Consulting on the potential wood supply to the proposed pulp mill.

### **3.4 Assumptions**

In preparing my witness statement, I have made the following assumptions:

- Based on my instructions I have assumed that the proposed pulp mill will commence operations in 2009. The initial output of the mill will be 820 000 Air Dry tonnes per annum (ADt/a) and this will require 3.2 million Green Metric tonnes (GMt) of pulpwood (round logs and woodchips). When the mill reaches full output, it will produce 1.1 million ADt/a and at this level of production the annual pulpwood intake will increase to 4.0 million GMt.
- In addition, the pulp mill power boiler will consume another 500 000 t/a of predominantly waste wood from processing and residues from harvesting operations.
- The proposed pulp mill will be able to process both hardwood and softwood.
- That individual species and grades of wood have different pulping qualities but the following conversions (as supplied by Pöyry and other experts) from green wood to the end product of air dried pulp are typical for the various grades of wood likely to be supplied to the proposed pulpmill:
  - “Regrowth Wood” from native forests will have an average conversion of 3.8 GMt of wood per ADt of pulp.
  - “Plantation Hardwood” will have an average conversion of 3.6 GMt of wood per ADt of pulp.
  - “Plantation Softwood” will have an average conversion of 5.3 GMt of wood per ADt of pulp.
- That Forestry Tasmania can supply the volumes of pulpwood they have provided to Gunns and that these are sustainable.

- That Private Forests Tasmania and Gunns have provided their best estimates for the extent and availability of private forest resources in Tasmania.
- Forests change with time, and yields will vary due to physical and environmental factors.

### **3.5 Limitations and exclusions**

My witness statement is subject to the following limitations and exclusions:

- The information upon which this statement is based includes forest descriptions, management records, inventory data, forest yields and maps prepared by Gunns, Private Forests Tasmania and Forestry Tasmania.
- While I have undertaken a review of the processes and systems used to assess available volumes and compared these with industry best practice, I have not independently audited those systems or attempted to develop my own projection of supply from independent data.
- I have undertaken a review of a sample of the Gunns owned or managed forest estate, but did not audit their entire estate.
- I have met with a representative of Private Forests Tasmania who provided me with information on the process used for planning forest operations on private land in Tasmania, and the basis for predicting future harvest volumes from this land. However, I have not independently audited this resource to determine its extent.
- I have met with a representative of Forestry Tasmania who has shown me a range of forest types that either have been or will be harvested in north east Tasmania. However, I have not been able to verify the supply projections from public forests in Tasmania.
- I have not been provided with copies of any wood supply contracts for the pulp mill nor any instructions in regards to negotiations on the wood supply for the pulp mill. I have assumed that the data provided to me by Forestry Tasmania and Private Forests Tasmania is reliable. Gunns and Forestry Tasmania have informed me that the conditions of their supply contracts are commercial-in-confidence.

## **4 Findings**

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### **4.1 Pulp mill requirement**

Based on my instructions I have assumed that the proposed pulp mill will commence operations in 2009. The initial output of the mill will be 820 000 ADt/a of bleached hardwood kraft pulp. Based on the mix of wood types expected to be available, this output will require 3.2 million GMt of pulpwood (round logs and woodchips). When the mill reaches full output it will produce 1.1 million ADt/a, and at this level of production the wood fibre intake will increase to 4.0 million GMt/a.

The pulp mill will initially process 100% hardwood pulpwood from eucalypt species. However I have been advised that the pulp mill may be configured to be able to process up to approximately 400 000 GMt/a of softwood pulpwood from radiata pine.

### **4.2 Current harvesting in Tasmania**

Over the last five years, the total harvest in Tasmania has risen from 6.3 million GMt to nearly 7.0 million GMt, as shown in Table 4-1.

**Table 4-1:  
Tasmanian roundwood harvest levels**

Roundwood product	Financial Year Volumes (GMt)				
	00/01	01/02	02/03	03/04	04/05
<b>Hardwood</b>					
Native Forest Sawlogs and Veneer	618 300	626 600	708 800	791 900	732 700
Plantation Sawlogs and Veneer	-	-	-	6 900	3 400
<b>Total Sawlog &amp; Veneer</b>	<b>618 300</b>	<b>626 600</b>	<b>708 800</b>	<b>798 800</b>	<b>736 100</b>
Native Forest Pulpwood	4 520 700	4 093 200	4 620 900	4 571 500	4 353 000
Plantation Pulpwood	265 500	547 200	748 900	654 400	917 700
<b>Total Pulpwood</b>	<b>4 786 200</b>	<b>4 640 400</b>	<b>5 369 800</b>	<b>5 225 900</b>	<b>5 270 700</b>
<b>Total Hardwood Volume</b>	<b>5 404 500</b>	<b>5 267 000</b>	<b>6 079 600</b>	<b>6 024 700</b>	<b>6 006 800</b>
<b>Softwood</b>					
Sawlogs	371 200	522 300	410 300	401 100	377 500
Pulpwood	500 000	402 700	508 900	497 800	405 900
<b>Total Softwood Volume</b>	<b>871 200</b>	<b>925 000</b>	<b>919 200</b>	<b>898 900</b>	<b>783 400</b>
Minor Softwood and Hardwood Products	14 700	3 700	600	900	900
<b>Total Harvest Volume</b>	<b>6 290 400</b>	<b>6 195 700</b>	<b>6 999 400</b>	<b>6 924 500</b>	<b>6 791 100</b>

Source: Forestry Tasmania Annual reports 2002/03 & 2004/05 and Private Forests Tasmania 2004/05.  
Note: figures rounded to nearest 100.

Over the same period the annual potential supply of pulpwood has risen from approximately 5.6 million to 6.0 million GMt, as shown in Table 4-2.

**Table 4-2:  
Tasmanian pulpwood supply**

Roundwood product	Financial Year Volumes (GMt)				
	00/01	01/02	02/03	03/04	04/05
<b>Hardwood</b>					
Native Forest Pulpwood	4 520 700	4 093 200	4 620 900	4 571 500	4 353 000
Plantation Pulpwood	265 500	547 200	748 900	654 400	917 700
Sawmill Residues <sup>1</sup>	216 400	219 300	248 100	279 600	257 600
<b>Sub total hardwood</b>	<b>5 002 600</b>	<b>4 859 700</b>	<b>5 617 900</b>	<b>5 505 500</b>	<b>5 528 300</b>
<b>Softwood</b>					
Pulpwood	500 000	402 700	508 900	497 800	405 900
Sawmill Residues	122 500	172 400	135 400	132 400	124 600
<b>Sub-total softwood</b>	<b>622 500</b>	<b>575 100</b>	<b>644 300</b>	<b>630 200</b>	<b>530 500</b>
<b>Total Potential Supply</b>	<b>5 625 100</b>	<b>5 434 800</b>	<b>6 262 200</b>	<b>6 135 700</b>	<b>6 058 800</b>

Source: Forestry Tasmania Annual reports 2002/03 & 2004/05 and Private Forests Tasmania 2004/05.  
Note: figures rounded to nearest 100.

<sup>1</sup> I have estimated sawmill residues on the basis of 35% of hardwood sawlog volume and 33% of softwood sawlog volume – however the volume of residue could be significantly higher for mills that process very low quality logs.

As mentioned earlier, the volume of hardwood required by the proposed pulp mill is estimated to be 3.2 to 4.0 million GMt/a (log equivalent) of pulpwood. This represents an average of 57% and 72% respectively of the current hardwood pulpwood supply in Tasmania, which averaged 5.3 million GMt/a over the last five years. If softwood is processed the supply potential increases and the total hardwood pulpwood requirement will be less.

In addition, the pulp mill is expected to produce energy from wood waste collected from Gunns and other wood processors in Tasmania (e.g. sawmills and chip mills), and waste wood from harvesting operations in the forest, and this is expected to amount to approximately 500 000 t/a. This waste volume is neither recorded by processors due to its low sale value, nor is it recorded in forest supply statistics as it is currently left in situ in the forest following harvesting of sawlogs and pulplogs.

### 4.3 Business-as-Usual Outlook

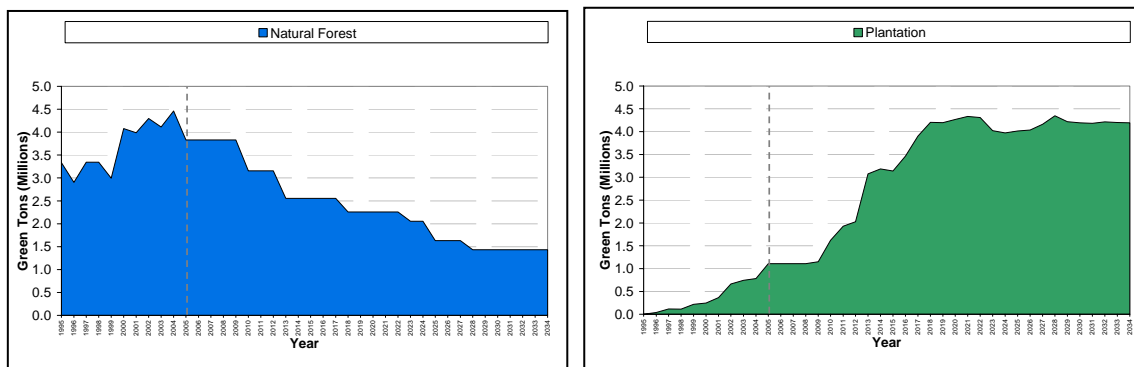
In my view, the Draft IIS does not present a clear synthesis of the Tasmanian hardwood-pulpwood-based industry sector in the event a pulp mill was not developed. Nevertheless, I consider that the key information required to undertake this assessment is contained within the Draft IIS, and I have reorganised it and combined it with my own views to present this outlook.

The Tasmanian wood supply will continue to experience significant change as the impacts of past resource allocation decisions, mainly the Regional Forest Agreement of 1997 (RFA) and the recent expansion in plantation development, work their way through to be reflected in the harvest volumes. In terms of the public forest estate the changes agreed to by the Commonwealth Government and the Tasmanian Government in the RFA have been incorporated by Forestry Tasmania, and the broad consequences of the available supply for forest products to industry can be anticipated and is publicly reported in their Sustainable Forest Management Report. Within private native forests the future is less certain as there is no requirement for landowners to make their forests available for harvest. However, historical supply records combined with a private forest survey instigated by Private Forests Tasmania, as shown in their 2004-05 Annual Report, provide a useful indicator of the potential future supply. In terms of the private plantation sector the future is more certain. The BRS Plantations Australia 2006 report states that the plantation estate in Tasmania as at December 2005 is 155 500 ha of which 142 100 ha are privately owned. I can develop an indication of supply from these plantations by using my own estimates of growth rates.

Consequently, while there are some unknown factors I believe the magnitude of the forest resource in Tasmania is sufficiently well known for me to develop a plausible view of what could happen if the pulp mill was not built. I have provided this outlook as context for my views on a range of issues I have been instructed to address. In this section I refer to materials I have discussed in more detail in subsequent sections of my statement.

Addressing firstly the fibre supply equation that will govern the wood that is available to supply exports, I expect two distinct trends. These are shown in Figure 4-1.

**Figure 4-1:  
Projected Tasmanian Pulpwood Availability – Native Forest and Plantation**



The volumes shown are from Gunns' interpretation of available volumes by source (native forest and plantation) over time. It is these volumes that I expect will require different end-uses if the pulp mill is not developed. In Section 6 of this witness statement, I have discussed the assumptions underpinning these charts and have concluded that they represent a reasonable interpretation of the available data.

### **Decline in native forest pulpwood supply**

In my view, a long-term decline in the total volume of native forest pulpwood available from all sources in the state can be expected.

Forestry Tasmania stated in their Sustainable Forest Management Report 2004-2005 that the long term sustainable pulpwood *arisings* (pulpwood recovered as a result from sawlog operations) from public forests is approximately 2.8 million t/a. Following a discussion with Forestry Tasmania I understand that an increasing proportion of *arisings* will come from plantations, as the area of native forest harvested declines over time. The Forestry Tasmania plantations include those developed to grow replacement sawlogs to offset volumes made unavailable by expanding the State's conservation areas.

Within this broader declining trend, Forestry Tasmania's supply of native forest pulpwood has typically fluctuated because it is a by-product of sawlog harvests, and volumes vary depending on the sawlog to pulpwood ratio of the stands being harvested.

Private Forests Tasmania (Annual Report 2004-2005) flagged a decline in pulpwood harvest from private native forests from approximately 1.7 million t/a in 2010 to approximately 550 000 tonnes in 2030. I have discussed this estimate later in my statement (see Section 6.3), and have concluded that this trend is correct although the decline may vary as it is dependent on landowner intentions, which are difficult to predict.

In combination, the volume of native forest pulpwood is projected in the Gunns wood supply model to decline from over 3.8 million GMt/a currently "available", to an estimated 1.4 million GMt/a projected to be "available" by 2030. This volume would be produced by harvesting operations that, if undertaken, would be consistent with all existing agreements and certification requirements. I provide further discussion on these estimates in Section 6 of this statement.

### **Increased supply of plantation-grown hardwood pulpwood**

The second trend is for a strong increase in the supply of plantation-grown hardwood pulpwood available for harvest. The plantations already established and in the ground will supply most of the fibre required for the pulp mill or industry generally over the next 10 to 15 years however future supplies require some estimate of the expansion of the plantation estate. Gunns has nominated an estate size of 150 000 ha for this purpose as contained in Figure 4-1. New plantations will be established and I expect the plantation developers already in the State, including Great Southern Plantations, Gunns and Forest Enterprises Australia, will be the major developers of these increases.

These changes are in line with regional expectations and, in part, government and industry support for continued plantation development (see Section 7.1.2 of this statement).

The Gunns wood supply model which I have checked suggests that the pulpwood volume available from Tasmanian plantations will increase from just over 1 million GMt/a today, to be approximately 4 million GMt/a by 2030. I suspect given the continued expansion of plantations in Tasmania generally that this figure could be conservative. Nationally, Australia is expected to have a surplus hardwood woodchip volume of approximately 7.5 million m<sup>3</sup>/a in 2009 which will rise to 12 million m<sup>3</sup>/a in 2016 before falling to around 9 million m<sup>3</sup>/a in 2019.

While it is expected that the domestic and export markets may be able to absorb this volume, there is unlikely to be any upward pressure on export prices as demand in the main export market of Japan is relatively flat. I discuss the market implications further in Section 9 of this statement. Furthermore, Japan has an increasing preference for imports



of plantation woodchips and this could cause in my opinion a price weakening in the export price for native forest woodchips.

As noted above, most of the trees supplying this increase are already planted, and decisions by landowners and plantation companies to incrementally grow the size of the plantation estate in Tasmania will merely reinforce an existing trend.

### **End-use changes**

While the Draft IIS does not specifically make this point, it is implicit from the analysis and modelling presented in section 6.2 of Volume 1 of the Draft IIS that woodchip exports will continue once the pulp mill becomes operational. However the Draft IIS did not provide an explicit scenario showing this.

In my opinion a likely scenario if the pulp mill does not proceed is that higher levels of Tasmanian woodchip exports will continue, but with a shift away from native forest-sourced woodchips towards plantation-sourced woodchips. This will be caused by the declining supply potential outlined above, and reinforced by a shift in Japanese market preferences.

Japan is the major market for Australia's export woodchips. Based on my market research, I expect Japanese buyers to increasingly seek out plantation-sourced woodchips in preference to mixed species woodchips from natural forests. I expect that this change will be significant, with timing based on the increasing availability of plantation-based pulpwood early in the next decade.

In my opinion, new markets for native forest woodchips will become available including (for example) China, Korea and possibly India. However, these markets will be more volatile and will have lower margins than the industry has achieved in its sales to Japan. I have provided further discussion on these markets later in Section 9 of this statement. Consequently, the declining trend in the supply of native forest-sourced woodchips in Tasmania will correspond with a declining market trend for these products.

Based on my knowledge of Forestry Tasmania's RFA obligations to maintain sawlog supply security, the declining markets for native forest-sourced woodchips will not have a material effect on the level of harvest on Crown Forests in Tasmania. These harvests are driven by the sawlog yield obligations which have been memorialised in the Federal/State and government/industry agreements underpinning today's Tasmanian forest sector.

In terms of ongoing operations at processing facilities, I expect market developments to be important in shaping which facilities would benefit from the fact that the pulp mill is not developed. I expect that the Gunns' woodchip mills at Hampshire, Bell Bay and Triabunna will continue, as will the operations at Bell Bay managed by SmartFiber and Artec.

The other domestic users of hardwood pulpwood will likewise continue, including Norske Skog at Boyer near Hobart and Paperlinx at Wesleyvale with their annual intake of approximately 160 000 GMt/a and 70 000 GMt/a respectively.

### **Conclusions**

If the project does not go ahead, I conclude that only minor changes to the wood supply picture are likely for the following reasons:

- Most of the trees/plantations intended to supply hardwood pulpwood over the next 20 or more years are already planted and/or managed, and the decisions to expand plantation areas are being made by plantation developers independently of the pulp mill project.
- The area of native forest harvested in the state will continue to decline in accordance with the existing agreements. Consequently, the supply of native forest-sourced pulpwood will also decline, and this will occur irrespective of whether the pulp mill proceeds.

- The markets for native forest-sourced export woodchips will also decline and this change reflects shifting market preferences that would occur irrespective of whether the pulp mill is constructed or not.

#### 4.4 Gunns' pulpwood sourcing capacity

While reviewing Gunns forest and harvesting operations I queried its capacity to source and harvest not only its own wood supply but supply from other sources as well. Gunns are confident in its ability to source supply for the pulp mill however, I requested a copy of its export volumes over the last 10 years.

The average volume exported from Tasmania by Gunns over the last 10 years<sup>2</sup> was nearly 4.0 million GMt/a and over the last five years it has been 4.6 million GMt/a.

I have no doubt that the Gunns business has demonstrated the capacity to procure and transport the volume of wood needed to meet the pulp mill's fibre intake needs.

#### 4.5 Biofuel

Gunns has stated that it wishes to collect approximately 500 000 GMt/a of waste wood to use as fuel for bioenergy production. Approximately 200 000 GMt/a of waste wood is to be sourced from existing processors, such as sawmills and chipmills. The waste product is invariably in the form of sawdust and fines and over- and under-size woodchips, which are currently disposed of by burning or sold for landscaping purposes.

A further 300 000 GMt/a is proposed to be collected from harvesting operations where this wood is currently left behind on the forest floor. This volume is not included in the volumes in Table 4-1 or Table 4-2 nor has it been modelled as an available source of wood supply as it is currently considered non-commercial. The common Australian practice is for this wood to be burnt in situ on the forest floor after the native forest has been harvested as part of the forest regeneration process. However, there is an increasing interest and trend overseas (in particular Finland and Sweden) of collecting harvesting residues for biofuel.

Assuming all biofuel operations meet the requirements of the *Forest Practices Act, 1985* and good forest management principles in relation to harvest slash retention, then this operation will reduce waste wood on the forest floor and improve the recovery of harvested wood from the forest. I have discussed this issue with the Chief Forest Practices Officer of the Forest Practices Authority (FPA) in Tasmania, Mr Graham Wilkinson and it will be important for Gunns to work with the FPA to ensure this operation meets their forest protection and biodiversity requirements. While I am reasonably confident that a significant volume of wood exists in the forest that would be categorised as waste as studies by Forestry Tasmania in the southern forests suggest volumes of around 200 GMt/ha<sup>3</sup> could be available, I cannot either quantify this volume or suggest that it can be easily extracted from the forest and efficiently transported to the pulp mill.

## 5 Overview of supply and species

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The following section outlines the proposed sources of pulpwood supply for the pulp mill which is expected to come from a mixture of four sources which are:

- Hardwood plantations

<sup>2</sup> Includes the export volumes of Boral's Tasmanian operations and North Forest Products who were purchased by Gunns

<sup>3</sup> D Ridley - Forestry Bioenergy Projects in Tasmania, Paper presented to Bioenergy Australia Conference, Fremantle, December 2006.

- Native forest
- Softwood plantations
- Sawmill residues.

Individual species and grades of wood have different pulping qualities. Consequently, their attractiveness to a pulp mill will also vary.

Within the hardwood plantations the species are predominantly *Eucalyptus nitens* and some *E.globulus*. These are mainly managed on pulpwood rotations of around 13 to 15 years, with some longer rotations for sawlogs and veneer extending to around 20 years or longer.

Within the native forest there is a mixture of species. The wet eucalypt forest is predominantly *E.obliqua*, *E.regnans* and *E.delegatensis* and the drier forests contain a larger mixture of eucalypt species<sup>4</sup>. The native forests are managed on varying long term rotations, and on Crown forests these are predominantly around 80 to 100 years for multiple use production forests where they adjoin major conservation reserves. Where Crown forests adjoin plantations or are close to the agricultural landscape, rotations are typically around 60 years and these are often thinned at around age 30 to improve the production of structural and appearance products.<sup>5</sup>

It is anticipated that the softwood species of *Pinus radiata* (radiata pine) may also be processed in the pulp mill and this would be sourced from plantations primarily owned by Taswood Growers and/or Gunns. Softwood produces a different type of pulp to eucalypt wood with a different selling price and different end-uses. The use of softwood allows the mill the flexibility to supply different markets.

Sawmill residues are expected to be primarily hardwood, but softwood woodchips could also be sourced as well.

The pulping yield of eucalypt plantation wood is significantly higher than that of the native forest pulpwood, and typically uses less chemical to process. These factors make plantation wood generally more attractive to a pulp mill than wood from mixed species natural forest. This means that for a mill operating at the upper limit of its recovery boiler's capacity, a higher pulp production rate can be achieved with eucalypt plantation wood than with other native forest pulpwood.

## 6 Background on fibre supply sources

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The following section reviews in more detail the various sources of pulpwood supply to the pulp mill and the projected volumes from each source. This section includes a discussion on how these projections were developed, the forecasting models used, and the modelling results to predict the potential future supply.

The Draft IIS states that wood supply for the pulp mill could come from a mixture of four sources which are:

1. Gunns owned or managed forest resource
2. Crown or Public forests managed by Forestry Tasmania
3. Private forests
4. Sawmill residues.

In each case, the majority of the resources are hardwood species.

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<sup>4</sup> Forest Talk, Topic 1: Forest Types in Tasmania – Forestry Tasmania 2002.

<sup>5</sup> Forestry Tasmania Sustainable Forest Management Brochure 2002.

## **6.1 Gunns owned or managed resource**

### **6.1.1 Overview**

Gunns owns or manages forests under a variety of land tenure arrangements including their own freehold land, other private freehold land, and State forest land.

The Gunns State of the Forests Report at 30 June 2006 records the area for its owned or managed estate. The area of Gunns freehold land is reported at 204 296 ha which is the basis of its permanent forest estate, and another 69 634 ha as semi-permanent estate which includes areas managed under Forest Practices Plans on private property and plantations under other forms of tenure (Sharefarm, lease, etc.) on private property. Therefore, the total estate in which Gunns has some form of interest is 273 931 ha.

In terms of plantations across its total estate, Gunns records a current area of 123 994 ha which is predominantly hardwood (118 239 ha), but includes some softwood plantations (5 755 ha). It also has a first right of refusal to purchase wood from another 2 992 ha of plantations.

The Gunns State of the Forests Report defines the hardwood plantation area under four schemes, and these are briefly outlined below:

- Gunns Ltd - This resource is owned outright by Gunns and as at 30 June 2006 totalled 45 535 ha.
- Gunns Plantation Ltd (GPL) – This resource has been established as a managed investment scheme (MIS). Gunns provides the management. As at 30 June 2006, this resource totalled 56 453 ha. Gunns has first right of refusal to purchase this wood at the current market price at harvest. Gunns plans to use a similar or identical ownership structure for most of its planned expansion of its plantation estate.
- Tamar Tree Farms (TTF) – This resource has been established under a joint venture between Gunns and Mitsubishi/TEPCO. As at 30 June 2006, this resource totalled 14 720 ha with establishment continuing towards an eventual target area of 25 500 ha. Gunns has 62% of the equity in the venture.
- Plantation Platform Tasmania (PPT) - This resource has been established under an agreement between Gunns, Daio Paper, Kawasho and Forestry Tasmania. As at 30 June 2006 this resource totalled 1 531 ha with establishment continuing towards an eventual target area of 7 500 ha. Gunns is the manager of this project, but has no equity in the venture.

Gunns also owns a large native forest estate of which 38 628 ha is managed in perpetuity for wood production.

### **6.1.2 Wood supply projections and assumptions**

#### **Outline of Gunns' Forest Management Information System**

Because of previous wood supply planning work I have done for Gunns, and before that for North Forest Products (a company acquired by Gunns), I am aware of the company's strategic wood supply planning processes. Gunns, like most other major forest industry companies in my experience, routinely prepare wood supply projections to analyse the prospects for its business in terms of available volumes, by type, by ownership, and by cost. This is particularly important in an environment such as has persisted in Tasmania where access to wood has been a major constraint on the industry.

Gunns' fibre supply planning has required the company to make assumptions about key factors that will affect supply. In my experience, such assumptions are made on the basis of the best available knowledge at the time. The assumptions are then typically reviewed as new information becomes available and the projections are re-run if the change is deemed significant.

I discuss the projections from non-company sources later in this statement, and have identified the assumptions implicit in those projections. The following discusses how the company has developed the projections for supply from its lands.

In my opinion, the most critical projection from the Gunns' owned and managed estate is the volume of plantation wood and how that will change over time. The key components of making such a prediction are to understand the area that has been planted and will be planted, the growth rates for the areas planted, and the length of time (rotation) the plantation will be grown before it is harvested. Of these components, the growth rates and rotation lengths are largely known, as is the size of the existing estate. What is not known is how much additional area of plantation the company will establish.

Gunns has been successful in developing GPL, its forest plantations Managed Investment Scheme (MIS) business. I have been advised that this entity developed 10 000 ha of plantations last year and Gunns is assuming continued growth in new plantings by this company, plus additional new plantings to continue to satisfy its obligations in its other plantation development projects. Based on this, the company has assumed a hardwood plantation area of 150 000 ha in its strategic wood supply planning, and this is the value that has been used in the Draft IIS.

From the work that I have done and the Gunns systems that I have reviewed, I am confident that Gunns has a very professional approach to the development, management and recording of its forest estate. The external inventory and audit procedures will highlight any problems in growth or other management criteria in the estate and the systems used for accounting for any unmeasured forest in the estate are conservative. In summary, I believe the Gunns Forest Management Information System is a very good and systematic representation of the resources that the company either own or have an interest in.

### **Forest management**

North Forest Products, a company purchased by Gunns in 2001 was certified in 1998 under the International Organisation for Standardisation's ISO 14001 in relation to Environmental Management System implementation and performance. In 2003, Gunns achieved Australian Forestry Standard AS4708 (AFS) certification of environmental, economic and social sustainability in forest management. I had the opportunity to review these environmental management systems when I visited the Gunns Tamar offices in 2005.

The AFS applies international sustainability criteria that had their origins in the 1992 Rio de Janeiro Earth Summit. The development of the standard was carried out under accreditation granted by the standards Accreditation Board of Standards Australia in 2002. The AFS has nine criteria for which sustainable forest management is assessed.

The criteria are as follows:

1. Systematic manner (for which ISO 14001 assists to achieve)
2. Public Participation and Good Neighbour
3. Biological Diversity
4. Productive Capacity
5. Forest Health and Vitality
6. Soil and Water Resources
7. Contribution to Carbon Cycles
8. Indigenous and Non-indigenous Values
9. Social and Economic Benefits.

Gunns' certification credentials are independently audited and verified by Det Norske Veritas (DNV). DNV is an accredited certification body under the processes of Joint Accreditation Systems of Australia and New Zealand (JAS-ANZ). As part of this audit process, Gunns prepares an Annual Report which records its performance against the above nine criteria.

In 2004, the AFS achieved recognition under the Programme for the Endorsement of Forest Certification schemes (PEFC), which is the world's largest sustainability recognition framework. Also in 2004, Gunns achieved certification for the Chain of Custody Standard (AS4707) which verifies the source of all forest products supplied by the company. Consequently, the company is allowed to label its products using the PEFC and AFS logos.

The certification under ISO 14001 provides Gunns with a systematic process to ensure all criteria under the AFS, as well as other regulatory requirements such as the *Forest Practices Act 1985*, are complied with and there is a process for continuous improvement.

I understand that Gunns has been re-certified under AFS in October 2006.

### **Gunns' forest area**

During my visits to Gunns' offices I inspected and discussed the operation of its ArcView<sup>6</sup> based Geographic Information System (GIS) which contains a range of forest information data such as:

- Forest area and type
- Tenure
- Age of planting and other operations
- Site quality.

The data from the GIS forms the basis of the area statement used in the resource modelling for the pulp mill.

Different methods of mapping can result in varying degrees of accuracy. Gunns has accounted for this by using net area discounts when calculating volume estimates.

For modelling of woodflows, Gunns has used various net area discounts which have resulted in a 4.3% reduction in gross area to account for any unforeseen errors in mapping and provide some conservatism in its forecasts.

In my experience, this level of discount is normal industry practice.

### **Forest condition and health**

Gunns undertakes surveillance of its plantations to identify potential pest and disease outbreaks. The monitoring program determines whether they pose a significant threat to the plantations, and action is taken if needed using appropriate techniques. Gunns operates its own nursery and breeding programme that selects genetic stock for improved growth and disease resistance.

I undertook a field and aerial inspection of the north east and north west regions of the State on 9-10 September and 15 October 2005 and on the 12 and 13 October 2006, and found there were no visual signs of any factors affecting forest condition or health that were not represented in Gunns' stand records and yield predictions.

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<sup>6</sup> ArcView is geographic information system (GIS) software that allows mapping and storage of spatial data. GIS is computer software that links geographic information (where things are) with descriptive information (what things are like). ArcView is produced by the US company ESRI and is one of the main GIS software systems used in the forest industry.

Of particular interest were the areas of poorer growth in the southern Surrey Hills estate in the north-west region of Tasmania. These were early plantings where high altitude and aspect are limiting the growth of the plantations and I am confident that these poor quality forests are adequately represented in the yield table estimates. I am also advised by Gunns that some of these areas will not be re-established as plantations in subsequent rotations, and that this was accounted for in the pulp mill wood supply model.

### **Silvicultural regimes**

The majority of Gunns' existing hardwood plantations are managed to produce pulpwood over a 13 to 20 year rotation.

GPL MIS investors are given the option<sup>7</sup> to select either a hardwood pulpwood regime or a clearwood/veneer regime or a softwood sawlog regime. The features of each of these silvicultural regimes are as follows:

- Pulpwood regime – plantations are grown for a rotation length of 13 years with a commercial thinning at age 9. All recoverable volume from thinning and final harvest will be sold for pulplogs.
- Veneer regime – Gunns is planning to grow these plantations on a rotation length of 20 years with a commercial thinning at age 9. Selected stems will be high pruned in three lifts at ages 4, 6 and 7 to produce clearwood. Recoverable volume from thinning will be sold for pulplogs and final harvest will be a combination of high value veneer logs and pulplogs.
- Softwood regime – Gunns has recently offered investors the option for radiata pine pulpwood and sawlog regime which includes a first thinning at age 13, a second thinning at age 18 and clearfall at age 25.

I have reviewed Gunns' silviculture assumptions used in its hardwood supply model, and believe them to be in line with Gunns' stated management intentions.

### **Inventory systems and audit procedures**

Gunns undertakes an annual assessment of its hardwood plantation estate, which targets stands aged 6 and 12 years. These assessments are conducted by experienced inventory contractors. The purpose of the assessments is to determine standing volume and predict growth and yield potential for estate modelling and harvest planning purposes.

The inventory method used is temporary basal area plots which are located within coupes at a sampling intensity proportional to area. The plots are located using a random-grid method that takes into account site variability and any unstocked areas.

Gunns undertakes annual assessments of its hardwood estate and this information is used to update the GIS.

The inventory contractor used by Gunns since 2000 has an in-house audit system which is further audited by Gunns' resources staff to ensure quality and accuracy of the information collected. I am also familiar with the inventory contractor used by Gunns, and they are well respected within the forest industry in Australia and New Zealand for the quality of their work.

As part of a Pöyry team, I interrogated the Gunns stand record system in 2005 to check the inventory coverage across stands 6 years and older. The results showed at that time around 80% of the estate had been inventoried. Gunns now inform me that this coverage has increased to over 90% following this year's program. Yields for stands younger than 6 years of age or those that for some reason have not been measured (i.e., recently purchased) are predicted by using a spatial averaging approach, which adopts a growth

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<sup>7</sup> Gunns Plantations Limited, Woodlot Project 2006, Product Disclosure Statement

rate from the five nearest inventory plots. This approach generally underestimates volume due to the fact that younger age stands have improved genetics and improved site establishment.

Gunns also undertake an inventory on its native forest and softwood estates although this is at a lower intensity, as they have not been the focus of the productive estate.

### **Yield modelling**

Results from the annual inventory program are used to update yield estimates for estate modelling and harvest planning. The volume results of the age 6 and age 12 inventories are then matched to site quality curves to get an estimate of future yields.

Basal areas and predominate height estimates from the inventory are used in a stand volume equation to predict total standing volume. This stand volume equation was developed by Steve Candy in 1997 and reviewed in 2002, with coefficients fitted from data collected from Gunns' own growth plots. The Pöyry team compared this model with public domain models developed for *E.nitens* and *E.globulus* and found them to be of similar functional form. The other stand volume equations used for comparative purposes were the Candy<sup>8</sup> (1997) equation and Wong et al<sup>9</sup> (2000).

Gunns has not assumed any future yield improvements from the use of improved genetic stock, which is a relatively conservative assumption. I am satisfied that Gunns has used an appropriate stand volume model for the calculation of current standing volumes.

### **Forest growth and yield**

The standing volumes from inventories undertaken at ages 6 and 12 are matched to a set of standard mean annual increment (MAI) growth curves developed from the Candy growth models. Two curves are used, one for the North East region and one for the North West region of the State. The curves are used to predict future total standing underbark volumes. Merchantable volumes are derived from total underbark stem volume by using a 7% reduction.

A standard age of 15 is used to develop a site quality rating, which is recorded within Gunns' stand record system.

I am satisfied that the yield estimates used by Gunns in its woodflow modelling are appropriate. In using spatial averaging of older stand inventories to younger neighbouring stands, there is some conservatism in Gunns' predictions.

### **Actual versus predicted yields**

The Pöyry team was provided with actual versus predicted yields from hardwood plantation operations completed within the period July 2002 – June 2004.

The overall volume harvested during the period was 1 018 938 tonnes. This correlated with the predicted volumes from the yield forecasts of 1 046 597 tonnes. The overall yield results are summarised in Table 6-1.

**Table 6-1:**  
**Actual versus predicted volumes from hardwood plantations harvested in the period July 2002 to June 2004**

	<b>Tonnes</b>	<b>Area (ha)</b>	<b>t/ha</b>
Actual	1 018 938	4 881	209
Predicted	1 046 597	4 881	214

Source: Gunns data

<sup>8</sup> Candy, S.G. (1997). Growth and yield models for *Eucalyptus nitens* plantations in Tasmania and New Zealand, Tasforests 9:167-198.

<sup>9</sup> Wong, J., Baker, T., Duncan, M., McGuire, D. and Bulman, P. (2000). Forecasting growth of key agroforestry species in south-eastern Australia, RIRDC Publication No 00/68.



The overall variance between predicted and actual yields for the period was +2.7%.

I am satisfied that Gunns' plantation yield estimates are a reasonable estimate of actual yields.

## **6.2 Forestry Tasmania**

### **6.2.1 Overview**

Forestry Tasmania is a Government Business Enterprise with a board of directors. According to its website, Forestry Tasmania manages approximately 1.5 million ha of public land of which 830 000 ha is available for wood production. In addition, Forestry Tasmania has around 100 000 ha of plantation made up of 55 000 ha of softwood and 45 000 ha of hardwood<sup>10</sup>. These plantations have been developed either as direct investments by Forestry Tasmania or as joint ventures with a variety of partners including Gunns, Norske Skog and Taswood Growers.

Forestry Tasmania has developed plantations in its own right and according to its annual report, it established 1 531 ha in 2004/05 and 1 200 ha in 2003/04.

Under the *Forestry Act 1920* and in line with the Regional Forest Agreement, Forestry Tasmania is required to make available around 300 000 m<sup>3</sup>/a of high quality sawlogs. This produces a considerable volume of lower quality log products which accounts for a total annual production of around 3 million GMt of forest products. This production includes veneer logs for slicing and peeling, sawlogs for sawntimber, pulplogs for domestic and export markets, fuelwood and other specialty products such as craft wood.

The operations of Forestry Tasmania are independently certified under Environmental Management System ISO 14001 and the Australian Forestry Standard (AS 4708) and no non conformances were recorded during the 2004/05 period.<sup>11</sup>

### **6.2.2 Wood supply projections and assumptions**

In 2004, Forestry Tasmania provided to Gunns a draft schedule of volumes potentially available to the pulp mill project under a possible 20 year wood supply agreement.

I have relied on the data provided to Gunns by Forestry Tasmania in developing the forecast supply presented in this statement.

I understand that Forestry Tasmania will supply approximately 2.0 million GMt/a of hardwood pulpwood from native forests and plantations under this long-term wood supply agreement, including the pulpwood harvested as a by-product of native forest sawlog harvesting. In my opinion, this is achievable as Forestry Tasmania estimate its sustainable supply of pulpwood from all sources at 2.8 million GMt/a.<sup>12</sup>

## **6.3 Privately owned forest**

### **6.3.1 Overview**

The private native forest resource is widely spread across Tasmania and totals around 922 000 ha.<sup>13</sup> Often this forest is managed in conjunction with other farming operations.

The harvesting of private forests is controlled under the *Forest Practices Act 1985* which created legal requirements concerning the planning and harvesting of forests on freehold land. This Act is still relatively unique in Australia. The eastern mainland states do not

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<sup>10</sup> Forestry Tasmania Annual Report 2004-05

<sup>11</sup> *ibid.*

<sup>12</sup> Forestry Tasmania Sustainable Forest Management Report 2004-2005

<sup>13</sup> Australia's forests at a glance, Bureau of Rural Sciences, Dept of Agriculture, Fisheries and Forestry, 2004

exercise the same levels of oversight, control and reporting for harvest planning and management on private land as exists in Tasmania.

The Private Forests Tasmania 2004-05 Annual Report stated that the total harvest from private native forest in that year was around 1.7 million GMt. If the private plantation resource is included, this figure increases to 2.83 million GMt, which is around 43% of the total state timber harvest.

Private landowners can have their forests gazetted as a Private Timber Reserve which provides incentives for private landowners to invest in their forests as well as providing some security from regulatory changes. As at June 2005, there was a total of 403 256 ha gazetted as Private Timber Reserves in Tasmania.<sup>14</sup>

Private native forests are an important source of wood supply to Gunns' existing facilities and are expected to remain so in the future. In terms of plantations, Gunns and Forestry Tasmania are not the only developers. Forest Enterprises Australia and Great Southern Plantations are also developing significant plantation estates within Tasmania. According to the Bureau of Rural Sciences' (BRS) *Australia's Plantations 2006* report, there was at the end of December 2005 around 155 500 ha of hardwood plantations and 71 600 ha of softwood plantations in the State. After deducting the Gunns owned or managed plantation estate, there remains approximately 50 000 ha of hardwood plantation and 76 000 ha of softwood plantation in Tasmania that is not owned or controlled by Gunns.

### **6.3.2 Wood supply projections and assumptions**

Private Forests Tasmania (PFT) is a Tasmanian government authority established under the *Private Forests Act 1994* to promote the development of private forestry in Tasmania. PFT reviews private forests in Tasmania approximately every five years, with the last review completed in 2002. The review estimates the potential volumes of wood available by product from private forests for the next 20 years. Data from this 2002 review was provided to Gunns and formed the basis of its woodflow predictions for the pulp mill.

I met with a representative from PFT on 20 October, 2005. PFT note that its area review is not exhaustive due to constraints on imagery and skilled interpretative resources. However, it is the best available information and is being updated when possible.

Base woodflow and area data on the private forest resource was formulated by PFT from recognised forestry assessment techniques which included air photo interpretation, GIS analyses, landowner intent surveys, previous experience and harvesting history and yield analyses. This is explained in more detail in the following sections.

#### **Private forest area**

Maps of air photo-interpreted (PI) forest types were produced by Forestry Tasmania for the whole state. The process involved delineation of relatively uniform patches of forest into computer definable descriptors called polygons. The polygons were then given a PI typing, which is a coded description of forest vegetation. The codes describe each stand in terms of specie groups, crown height and density, age group and stand condition.

The major industrial forest owners in Tasmania also provide PFT with a copy of their forest covers to incorporate into the dataset. These owners include Gunns, Forest Enterprises Australia and Norske Skog.

Using the PI codes, a Geographic Information System (GIS) is used to delineate the commercially suitable forest areas. Gunns was provided with a copy of this GIS dataset from PFT. As this dataset included Gunns owned and managed areas, a series of spatial queries was used to remove the Gunns forest to avoid double counting these areas.

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<sup>14</sup> Private Forests Tasmania 2004-05 Annual Report.

### Available harvest areas

Following the PI typing of commercial forest types, area discounts were applied to estimate the areas of forest that may be potentially available for harvesting. Two types of discounting were applied; firstly, Environmental and secondly, Landowner Intent.

*Environmental Discounts* – these account for areas that restrict harvesting or regeneration activity and are based on previous industry and PFT experience. These were limited to native forest harvests, as it was assumed all plantations could be harvested. A summary of environmental discounts used by PFT is given in Table 6-2.

The area weighted average reduction in commercial native forest for Tasmania from these figures is around 16%. Gunns' modelling of the private woodflows for the pulp mill has used the same area discount for environmental exclusions as PFT.

**Table 6-2:  
Private Forests Tasmania environmental discounts by cause and region**

Environmental Aspect	North West	North East	East Coast	Central Highlands	South
Slope	0.8	2.4	2.2	4.6	11.2
Streams	7.0	7.0	7.0	7.0	7.0
Forest Practices	5.0	5.0	5.0	5.0	5.0
<b>Total</b>	<b>12.8%</b>	<b>14.4%</b>	<b>14.2%</b>	<b>16.6%</b>	<b>23.2%</b>

Source: Private Forests Tasmania

*Landowner Intent Discounts* – these reflect the intent of current landowners to undertake forest harvesting activities on their land. As some landowners may be unwilling to harvest native forests due to current markets or lifestyle/environmental reasons, a discount in available areas is needed. The University of Tasmania Economics department undertook the survey of some 400-600 respondents on behalf of PFT. The results were weighted based on the landowners' forest area. The results by PFT region are summarised in Table 6-3.

**Table 6-3:  
Private Forests Tasmania Landowner intent discounts**

	North West	North East	East Coast	Central Highlands	South
Landowner intent	26%	38%	29%	21%	43%

Source: Private Forests Tasmania

I am aware that landowner intents vary from year to year due to current market conditions in both the forestry and agricultural sectors. Sensitivities on the availability of private forest supply and delivered wood cost have been undertaken to assess the impact of these discounts.

While Gunns has used the environmental discounts used by PFT in its pulpwood modelling, it feels (based on its industry experience) that the landowner discounts are overly conservative and so have reduced these in its modelling by a further 10%, for example, reducing the area discount from 26% to 16% in the North West of Tasmania. This aspect was discussed with PFT independently of Gunns and it was decided that Gunns' industry experience is valid and that its lower landowner intent discounts were reasonable assumptions of potential supply. It is difficult to predict how private landowners will respond in terms of making their forest available and as such I would base my judgement on the combined experience of Gunns and PFT.

### **Silviculture and yields**

Native forest yields and silvicultural assumptions were derived by PFT following discussions with consultants, senior planning and supervisory staff within private companies, and Forestry Tasmania. Their combined input provided a set of yield tables by forest class, region and regime. The average mean annual increment (MAI) for the private native forest resource is 1 m<sup>3</sup>/ha/a with a current average standing yield of 124 m<sup>3</sup>/ha. The growth rates range from 0.5-1 m<sup>3</sup>/ha/a in the central highlands up to 4-5 m<sup>3</sup>/ha/a for the better quality regrowth areas.

Yields for private hardwood plantations were assumed to be similar to Gunns' own resource (discussed in the following section). These private hardwood plantations are mostly concentrated in the north of the State and are in close proximity to Gunns' own plantations. A large proportion of these plantations are managed by Forest Enterprises Australia. I believe the yield estimates made by Gunns for this resource to be reasonable.

### **Potential woodflow**

Gunns has developed estimates for hardwood woodflows for private native forests and private (non Gunns owned or managed) plantations by four year periods from 2007 until 2031. The initial harvest is expected to be around 1.9 million t/a but reducing over time to less than 1.3 million t/a. The reduction is due to the decline in harvesting of native forest, and this is only partially compensated for by the growth of plantations.

These woodflow estimates are slightly different to the PFT assessment, but relate to the different landowner intent discounts. This in my opinion is reasonable.

## **6.4 Sawmill residues**

When sawlogs are cut into sawntimber in sawmills the log edges, sawn offcuts and waste products are chipped and these are referred to as sawmill residues. Gunns currently obtains sawmill residues from its own and other sawmills in Tasmania. These woodchips are currently exported, but Gunns plans to re-direct them to the pulp mill when it commences operation.

Sawmill residues are projected to be relatively stable. This is because Tasmanian public forest management is based on meeting targeted levels of sawlog yields.

I reviewed Gunns' purchased woodchip data for its three current export operations for the period July-September 2005 and as Gunns are the largest hardwood sawmiller in Tasmania they control the majority of the supply. The Gunns solid wood processing plants (sawmills and veneer mills) accounted for around 36% of the volume, with the remaining 64% coming from independently owned sawmills. Note the volume can change as some sawmills process very low quality logs which mean they produce large volumes of woodchips. The total volume of sawmill residues is estimated at around 360 000 GMt at mill start-up.

## **6.5 Supply Security**

Security of fibre supply is an important pre-requisite for investment in a processing facility of this magnitude, and I understand that Gunns will secure wood for the pulp mill through a series of agreement mechanisms, including the following:

**Table 6-4:  
Supply security to the pulp mill**

<b>Source of Supply</b>	<b>Form of Security</b>
Gunns owned or managed	Combination of its own resource and right of first refusal
Forestry Tasmania	20 year contract
Private Property	Mixed contracts mostly short term less than five years
Sawmill Residues	Combination of Gunns and independent sawmills

Gunns will secure the majority of the pulp mill wood intake from:

- Company owned sawmill residues as woodchips
- Forests that the company either owns or has the first right of refusal for the pulpwood, or
- Through long and short term contracts from other growers.

Given that the total pulpwood volume available in Tasmania is well in excess of the requirements of the pulp mill, as shown in both Table 4-2 and Figure 4.2.6.6 of the Draft IIS, Gunns will have some flexibility in the source of its supply.

If Gunns can secure a long term contract from Forestry Tasmania for approximately 2 million GMt/a then, with the addition of its own sawmill residues and supplies from the plantations owned by the company, Gunns will have theoretical control over approximately 90% of the pulp mill's supply requirements at commencement.

By having a combination of long and short term contracts, Gunns will have the flexibility to manage its supply arrangements to optimise its delivered cost of wood to the mill. Because fibre costs represent a major part of the pulp manufacturing costs, this should deliver commercial advantages to Gunns.

The following section reviews the forecast wood supply for the pulp mill.

## **6.6 Gunns' forecast wood supply**

In developing an estimate of the future wood supply for the pulp mill, Gunns developed a wood supply model (the supply model) which is based on the area and volume estimates by grade from the various wood supply sources in Tasmania.

The data and assumptions on the resource described above have been used as inputs to model the resource and confirm the wood availability and cost for the project. While I am comfortable with the inputs used and the logic of the output I am not a forest resource modeller and so to test the Gunns model I requested in 2005 that Pöyry run another model in parallel with the Gunns model to see if the results were comparative. In summary the approaches were:

- Approach 1: Gunns' resource forestry staff employed their forest description information in developing a collective woodflow model using the modelling package 'Woodstock', and then a transport simulation model.
- Approach 2: Gunns provided Pöyry with resource description information relating to the plantation forest resource that it manages, and additional information on the wider resource. Pöyry developed a forest estate model for the collective resource using the modelling package 'FOLPI', including an integrated "allocation model".

Both model types have been applied in analysing the availability and cost of wood supply under a range of scenarios.

The models were set up to assess and allocate potential hardwood supply among the pulp mill and the export chipmills. First priority was assigned to meeting the pulp mill's intake with the chipmills' needs met out of the balance. The output from both models confirmed that there is sufficient resource to supply the pulp mill at its projected design intake, and that Bell Bay is the most effective site of those evaluated. In addition, the model outputs indicated that the existing chipmills at Hampshire and Triabunna would continue to operate following commencement of the pulp mill's operations.

The modelling has confirmed that there is sufficient wood fibre available to supply a pulp mill with a capacity of 1.1 million ADt/a, and that the most cost-effective site is Bell Bay. In addition I am comfortable that the Gunns wood supply model provides a good indication of the potential supply to the pulp mill over time.

### Model structure

The models were set up to allocate the total pulpwood resource in the State which was divided into 35 different supply regions. Allocations were made using the general premise that available supply will in the first instance flow to the closest existing processing facility, and will only be directed to the proposed pulp mill to the extent necessary to meet its demand. The forest estate modelling process addresses both the physical yield and forest growth related parameters, and the associated financial factors.

Forest estate models typically employ a linear programming formulation. This enables the process of finding optimal solutions to be automated. The assumed objective function has been to maximise the net present value of the margin between a notional mill gate price and the collective costs. This is essentially equivalent to finding the most efficient (i.e. lowest cost) supply scenario for the combined Gunns processing facilities.

Importantly, the model needs an estate size so that it can develop total woodflow over time, which is why the estimate of 150 000 ha for the Gunns plantation estate was used for modelling purposes.

The model is guided in large measure by transport cost and recognises that wood types that provide a higher pulp yield are inherently more efficient to transport.

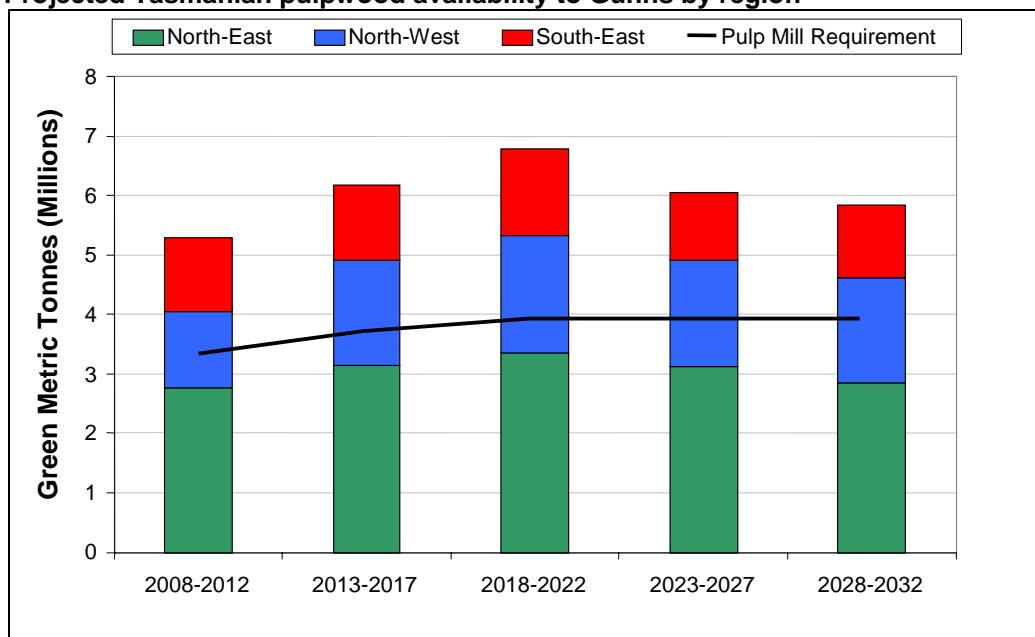
The two most common forest estate models used by the Australian forest industry are *Woodstock* and *FOLPI*. *Woodstock* is produced by the Canadian company Remsoft, whilst *FOLPI* (Forest Oriented Linear Programming Interpolator) is produced by the New Zealand Forest Research Institute. Both software packages are well respected and are commonly utilised by most of the forest companies and consultants in Australia and New Zealand.

However of the two, *Woodstock* is used by Gunns and also by other forest growers such as Forestry Tasmania, VicForests, Forests NSW and Carter Holt Harvey.

### Wood availability

The projected annual supply capacity of the total resource available to Gunns is illustrated below in Figure 6-1 which is reproduced from Figure 4.2.6.7 in section 4.2 of the Draft IIS and Figure 6-11 of Volume 1B of the Draft IIS. The large concentration of available supply located in the north east region clearly indicates the reason for the selection of the Bell Bay site for the development of the pulp mill.

**Figure 6-1:**  
**Projected Tasmanian pulpwood availability to Gunns by region**

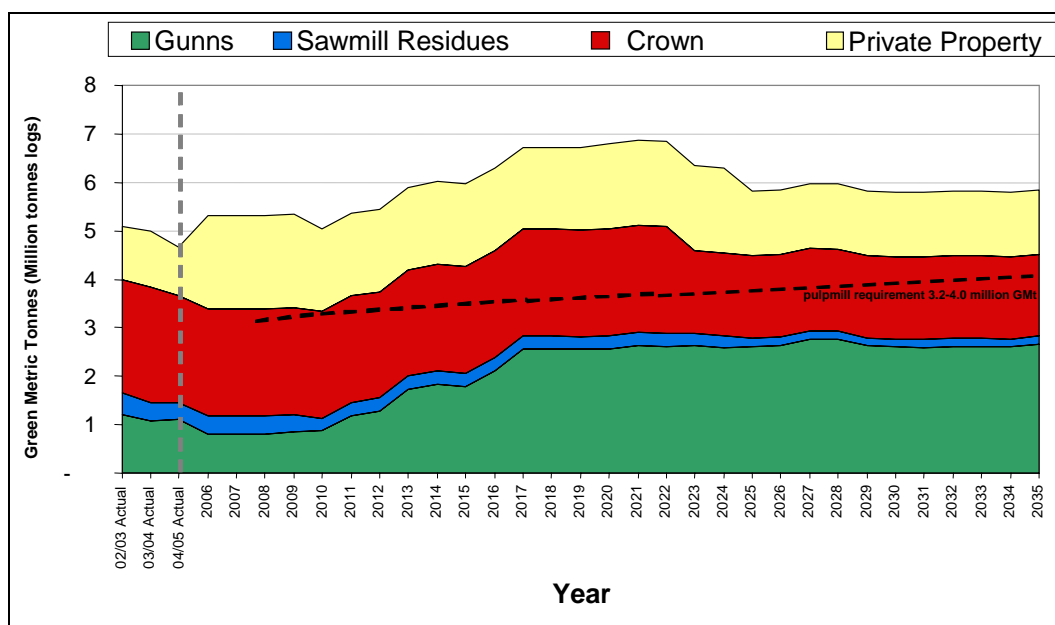


Source: Gunns Pulpwood Resource Modelling

The wood supply modelling has demonstrated that, subject to the resource availability assumptions, there is excess fibre of a suitable quality to supply the requirements of the Gunns pulp mill.

Similarly Figure 6-2 below, reproduced from the Draft IIS where it is shown as Figure 4.2.6.6 in Section 4.2 and Figure 6-10 in Volume 1B, shows the total projected supply available from each class of resource ownership. The "Gunns" classification includes the resource owned outright by the company and the volume available from lands managed by it.

**Figure 6-2:  
Gunns business volumes actual and forecasts by resource ownership**



Source: Gunns Pulpwood Resource Modelling and Sales Data 2005

In 2005, we (Pöyry and myself) checked the Gunns output by parallel testing of Gunns' wood supply model which verified the volumes were available by the sources as shown above in Figure 6-2 and to the destinations described above in Figure 6-1.

Past sales volumes and projected woodflows for the Gunns business by resource owner also indicate that the total hardwood resource potentially available in Tasmania for the pulp mill ranges from 5 to 6 million GMT. In addition, if softwood residues were to be processed at some time in the future, this figure could increase by up to 400 000 GMT.

On the basis of the above, it is my opinion that there is more than enough pulpwood in Tasmania to supply the proposed pulp mill. This will mean that Gunns will have a choice in its sources of wood supply, which is a commercially desirable position for the company.

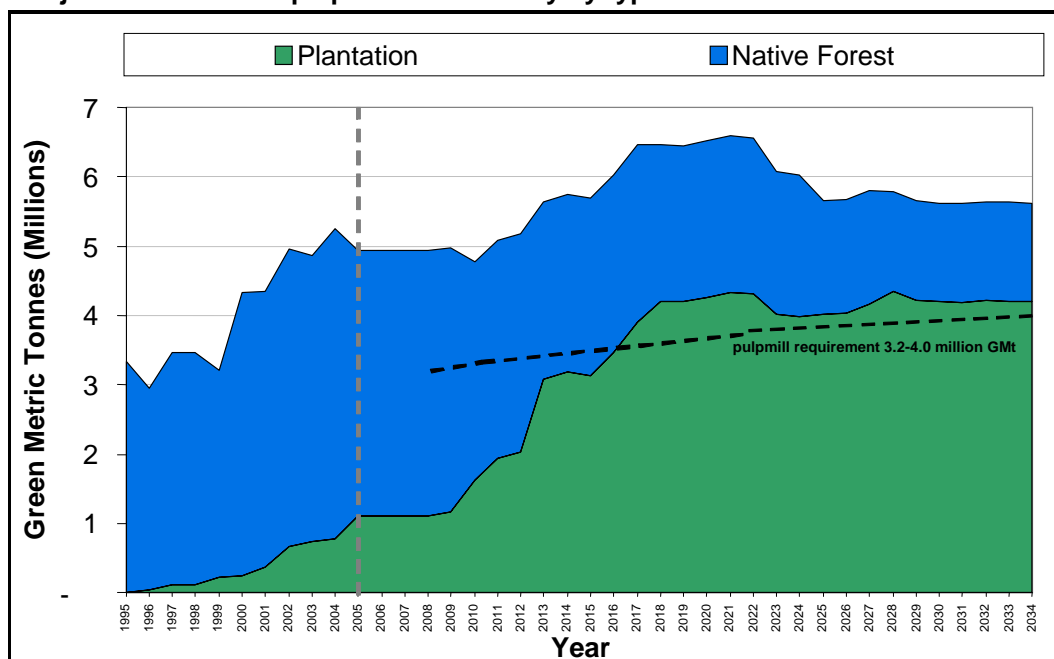
The supply of waste wood for biofuel in the pulp mill was not modelled. Gunns have advised me that it plans to consume around 500 000 GMt/a of biofuel of which approximately 200 000 GMt is expected to come from sawmill and chipmill waste which is currently either burnt or sold for landscape and garden use. This volume is not recorded in any official statistics. The remaining 300 000 GMt is expected to come from residues from existing harvesting operations. These residues are normally left in the forest and burnt as part of the regeneration process. Collection of residues should be undertaken in ways that meet the requirements of good environmental stewardship as prescribed by legislation in the *Forest Practices Act 1985* and the environmental certification frameworks under which Gunns operates. However I also believe that as this is a new forest product Gunns will need to work with the Forest Practices Authority to ensure that biofuel harvesting is undertaken without any detrimental effect on the forest environment.

I am aware, based on my personal experience, that there can be significant volumes of either low quality pulpwood (e.g., unacceptable species) and/or waste wood remaining after harvesting. While Gunns have yet to define how it proposes to harvest this material, I can see no likely reason for it not to be possible to capture a proportion of this for use as a biofuel. I am aware of numerous operations in Europe where this occurs routinely.

### Wood mix over time

The historic sales volumes and projected woodflows for the Gunns business by resource type are shown below in Figure 6-3 (reproduced from Figure 6-12 of Volume 1B and Figure 4.2.6.8 of Section 4 of the Draft IIS).

**Figure 6-3:  
Projected Tasmanian pulpwood availability by type**



Source: Gunns Pulpwood Resource Modelling and Sales Data 2005

This figure indicates that the increasing supply from maturing plantations could theoretically meet 100% of the pulp mill's intake by 2017.

Figure 6-3 also illustrates that the average age of the wood supplied to the pulp mill will decline over time as younger plantation wood replaces older native forest wood.

The following Figure 6-4 (reproduced from Figure 4.2.6.10 of Section 4.2 and Figure 6-14 of Volume 1B of the Draft IIS) also illustrates this trend of increasing plantation supply over time but segregates the supply by region.

Importantly though this Figure also indicates that the pulp mill will continue to process a mixture of native forest and plantation wood.

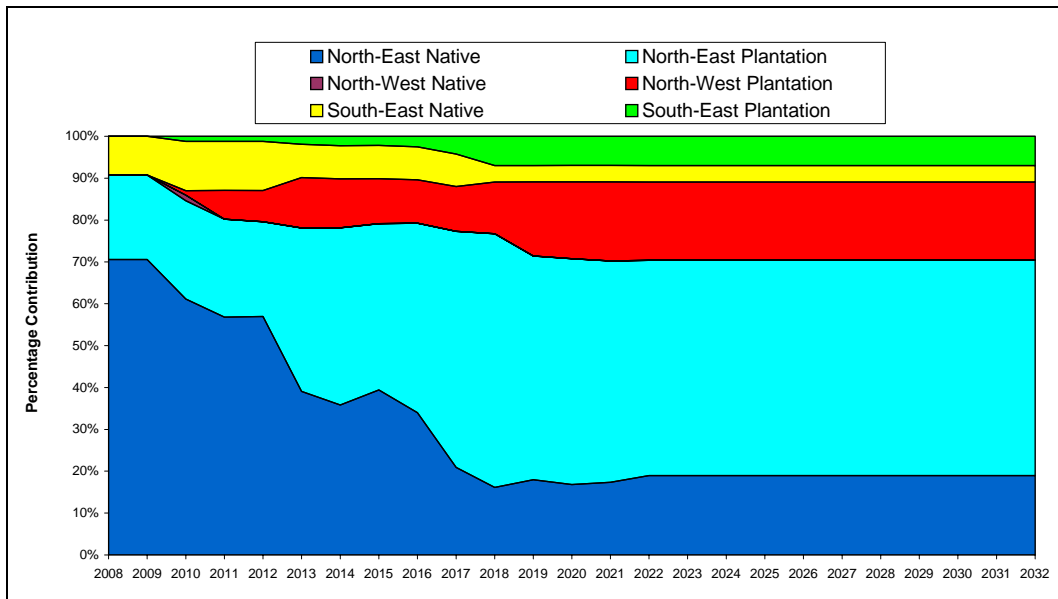
The reason for the continuation of the native forest and plantation wood mix is due to the optimisation of the delivered cost of various wood supplies and their resulting pulp yields in the pulp mill.

I was instructed to review Section 6, Volume 1B of the Draft IIS where it discusses Gunns Plantation Preference Strategy (Volume 1:6-239).

While Figure 6-3 above suggests that on current assumptions it is theoretically possible to supply the pulp mill with 100% plantation wood from around 2017, my analysis of the landed costs suggests that due to additional haulage and stumpage costs this strategy is not economic. I discuss this issue again in the following Section 7.



**Figure 6-4:**  
**Anticipated contribution to total pulp mill supply by regional supply**



Source: Gunns Pulpwood Resource Modelling

If the Commonwealth Government does not change the existing taxation treatment for plantations then in my opinion the wood volume potentially available to the pulp mill will increase with time as I doubt that the recent growth in the expansion of the plantation estate will slow in the short term even though it is not required by the pulp mill.

As far as wood mix is concerned, Gunns is likely to have more plantation fibre available than it originally envisaged because of this expansion. However, I expect this will be reviewed by Gunns and compared to the supply of wood from native forest which, while declining, will still be significant. As all sales of pulpwood are market driven, it is difficult to predict how the mix of wood will ultimately flow over time as it will depend on the future prices for the various grades. I would expect that Gunns will have a choice in supply sources, and so it will continue to monitor the prices for the various pulpwood grades to optimise the landed cost of pulpwood at the pulp mill.

## 7 Possible factors affecting future fibre supply

There are various factors that could impact on the pulp mill including government policy changes and operational supply risks such as competing markets, and loss of resource due to fire and disease. These issues are discussed in this section.

### 7.1 Policy Change

State and national forest policies that impact on the proposed pulp mill are of particular importance to this assessment. In particular, the National Forest Policy Statement and the Tasmanian Regional Forest Agreement (RFA) are important catalysts for encouraging investment in the processing of forest products. The discussion of these policies in sections 6.2.1 and 6.2.2 of Volume 1B of the Draft IIS accords with my understanding of these matters. Based on this, I believe the pulp mill project to be consistent with the various objectives of these policies.

However, there are a number of potential changes to some policies which could affect the pulp mill over time and these are discussed below.

### **7.1.1 Termination of the RFA**

The Tasmanian RFA ends in 2017, around eight years after the proposed commencement of the pulp mill, although the process for renegotiating a replacement or extension is due to commence in 2012. While there is a stated intention for the Commonwealth and State Governments to renegotiate and re-sign, it is possible that this agreement will not be renewed. In my opinion, this will depend on the respective policies of future State and Federal Governments.

I cannot predict whether the RFA will be re-signed, although the legislative framework for the protection and management of forests implemented as a result of the RFA will outlive the RFA. In particular the CAR reserve system, the Permanent Native Forest Estate and the Forest Practices Act do not need an RFA in place to remain in force as key initiatives shaping forestry and conservation of the forest estate in Tasmania

These requirements have been incorporated into the forest industry's planning processes, and operations have adapted to meet the requirements as integral aspects of best management practice.

### **7.1.2 Changes to taxation on plantations**

The Commonwealth Government is currently reviewing taxation on plantation establishment.

A number of aspects of the tax laws as they relate to plantation investment are under review, but Tax ruling TR95/6 (known as the 12 month rule) which concerns immediate deductibility of expenditure is the one that I believe has a potentially significant impact on plantation development.

While this review is concentrating on the taxation treatment of plantations and in particular the deductions associated with establishment it is not necessarily trying to stop further development of plantations. The current taxation arrangements are in place until 2008 and any changes as a result of the review will not be implemented until 2009.

While it is difficult to predict the outcome of the review I expect some favourable tax treatment to continue for plantation establishment, albeit with some possible changes. The Federal Government has a strong record of supporting plantation development. The 2020 Vision is a strategic partnership between the Commonwealth, State and Territory Governments and the plantation timber growing and processing industry and this policy is not under review.<sup>15</sup>

The 2020 Vision was first signed in 1997 and was designed to increase the investment in plantations in Australia and had a goal of trebling the area of plantations from 1 million to 3 million ha by the year 2020. The underlying aim was to create regional wealth and enhance international competitiveness through a sustainable increase in Australia's plantation resources.

This has fostered a strong growth in plantation development across the country, with major new plantation areas being developed and existing areas expanded in Western Australia, the 'Green Triangle' region of south east South Australia, south west Victoria and Tasmania. The expanded activities have been prompted by the generous tax provisions referred to above, plus expectations of good returns upon the sale of the logs produced. Gunns, like other companies with an opportunity to foster the growing interest in this sector, developed GPL (see Section 6.1) to develop this commercial opportunity.

The current Gunns hardwood plantation estate is around 120 000 ha, and the annual MIS plantation expansion has been around 10 000 ha/a for the last three or four years. I expect Gunns and the other MIS proponents in Tasmania will continue to develop plantations while this investment class remains attractive to investors.

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<sup>15</sup> [www.plantations2020.com.au](http://www.plantations2020.com.au)

Consequently, while Gunns has assumed a figure of 150 000 ha of plantations in its Woodstock modelling to 2030 and beyond, whether Gunns achieves or exceeds this estimate will depend on the company's success in placing its MIS services with investors. In my opinion, it is not critical that the 150 000 ha of plantation is fully developed as a precondition for the pulp mill to proceed as there is sufficient pulpwood resource already in Tasmania to supply the pulp mill.

## 7.2 Supply risks

### Unsecured private native forest

The base information for the private resource has been collated by Private Forests Tasmania. These datasets have incorporated that agency's estimate of *landholder intent*, which it defines as the likelihood that an individual landowner will or will not want to harvest their property over the longer term. The reasons for decisions to sell or not to sell vary widely, from individual to individual and from year to year.

The 2005 Pöyry wood supply study which I was involved in sought to test whether landowner intent-related reductions in available volume would have an impact on delivered wood cost for the pulp mill. In this scenario, the volumes available from the private resource were reduced by 20% and the results indicated that the impact on delivered wood cost over the first 20 years of the mill is minimal, with an increase in average delivered cost of less than 0.5%.

Whilst the private resource is an important component of Gunns' overall business, based on the sensitivity testing undertaken by Pöyry in 2005 a reduction in available volumes by 20% will not induce a shortage in supply and/or higher delivered wood costs. The data reviewed at that time indicated that the pulp mill could operate without drawing any wood from Tasmanian private native forest, and this is still my view.

### Loss of native forest supply

As I discussed in Section 6 of this statement, the pulp mill is proposing to process a mixture of native forest and plantation wood which will continue to be optimised on a delivered cost and yield basis. I am advised by Gunns that the current optimal mix anticipates running the mill at around 80% of plantation wood in the longer term. While it may be possible to supply the pulp mill with 100% plantation grown wood from 2017, this would come at an increased delivered wood cost due to transport distances to the mill (see section 6.2.8 of Volume 1B of the Draft IIS).

In 2005, Pöyry ran a scenario that assumed all available plantation wood would be delivered to the pulp mill regardless of cost. The results indicated that the delivered wood cost over the first 20 years of the mill life would increase by approximately 9%. This was largely due to the higher stumpage paid for plantation wood combined with longer haulage distances.

From a commercial perspective, this explains Gunns' preferred strategy as described in section 6.2.8 of Volume 1B of the Draft IIS, which balances plantation supply and utilising natural forest pulpwood that is harvested as a result of sawlog production.

### Fire risk

Fire is an ever present risk to plantations and forests in Australia. Tasmania's climate poses a lower risk of devastating fire than mainland Australia due to its lower temperatures and generally high rainfall. Notwithstanding this, the increased climate variability being experienced in recent years means that Tasmanian fire fighting authorities will have to proactively manage risk by fire suppression and prevention activities. As a major landowner and in-field operator, in my view Gunns has a particularly important role in these activities.

In assessing the risk posed by fire to Gunns owned and managed resources, Gunns have advised me that plantation losses due to fire in the last 12 months were around 40 ha (0.04% of estate) due to arson. In the preceding two to three years, losses had been less than 2 ha/a. Forestry Tasmania maintains annual wildfire land tenure/vegetation burnt statistics for the entire State. Gunns advised me that the average annual area of hardwood and softwood plantations burnt in Tasmania over the last six years is 0.02% and 0.57% of the total areas respectively.

During my field review of Gunns forest management operations, its fire management strategy was explained to me and the strategy aims to include hazard reduction burning and wildfire suppression. Key components of Gunns' fire management strategy include:

- Training – Gunns employees and contractors receive appropriate fire fighting training.
- Prevention – Gunns maintain a comprehensive network of roads and firebreaks for access during wildfires. Hazard reduction is also carried out to reduce fuel loads.
- Surveillance – during the fire danger period Gunns utilises fire lookout towers and a spotter plane on standby to detect and locate fires quickly. Staff and contractors are rostered on to provide rapid response to any fires detected.
- Fire plans – outline policy and procedures for fire protection and suppression.

Notwithstanding the above, if a large fire were to affect a wider area and to impact on larger volumes, the cushion of "surplus" pulpwood fibre which I identified and discussed in Section 6 of this statement would be diminished. The scale of the surplus, particularly in the early years gives time for Gunns to adapt to the new supply circumstances and costs. Therefore due to the low history of fire losses and the potential surplus of pulpwood I did not consider it necessary to specifically allow for any loss of resource to fire in the wood supply model.

### **Pest and disease**

Gunns has advised me that it maintains a monitoring program of its plantations to prevent damage to its plantation from pests and disease. This was explained to me during my field review of its operations as a requirement to monitor forest health and vitality under Gunns sustainable forest management certification under the Australian Forestry Standard.

During field inspections and a fly over of the plantations I did not notice any significant areas of plantation that were suffering from any form of attack from pests or disease. Neither have I heard about such large scale risks in my experience in Tasmania. I am satisfied that no pests or diseases are known or could be anticipated to attack the forests such that the wood fibre losses and/or degradation would diminish supplies to the extent that the pulp mill intake needs were impacted either in volume or cost terms.

## **8 Intensification potential**

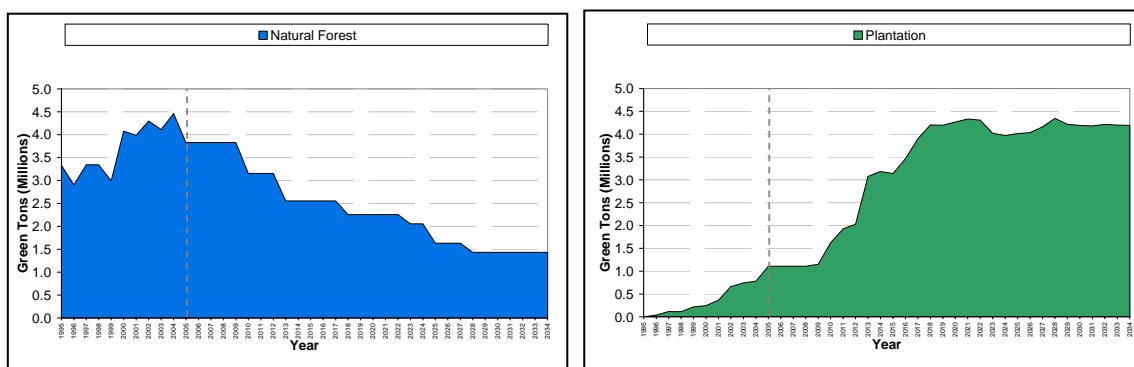
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The Scope Guidelines for the IIS requests details of any potential intensification of forest operations in Tasmania as a result of the pulp mill. In this section I have outlined my assessment of the potential for the pulp mill to intensify the available wood supply in Tasmania.

In Section 4.3 of this statement I considered the implications of a 'business-as-usual' scenario to the supply of pulpwood from Tasmania if the pulp mill is not developed. In my view it is important to understand two main trends that are occurring in the forest industry in Tasmania in order to assess the intensification potential of the pulp mill, these being the decline in the harvesting of native forest and the increase in wood supply from plantations. This is illustrated in Figure 8-1 below.

Almost in synchronisation with this supply trend is the declining demand from Japan, the major buyer of Australian hardwood woodchips, for mixed species woodchips from native forests and increasing interest in purchasing woodchips from plantations. These trends are occurring now, independently of the pulp mill. The overseas demand for woodchips is considered in detail in Section 9 of this statement.

**Figure 8-1:  
Projected Tasmanian Pulpwood Availability – Native Forest and Plantation**



While there may be an increase in volume from plantations if the area of the estate continues to increase and growth rates are improved with tree breeding and management, there cannot be any increase in the volume of harvest from native forests irrespective of demand.

As discussed earlier, the harvesting of native forests in Tasmania is legislatively tied to sustainability criteria defined in the RFA. To prevent unsustainable harvesting all forest operations must be planned and implemented in accordance with the *Forest Practices Act 1985* and the Forest Practices Code. Only authorised Forest Practices Officers can develop and implement Forest Practices Plans which must be in accordance with the Forest Practices Code. This Code includes requirements to plan for and to protect a wide array of values such as rare and endangered species, water and soil conservation and landscape values. The compliance of Forest Practices Plans with the Code and their implementation can be independently audited and the Forest Practices Officers who develop and implement the plans are held personally accountable for their work.

In addition to these legal requirements, Gunns and Forestry Tasmania are certified under the Australian Forestry Standard (AFS) which certifies sustainable forest management under the International Program for the Endorsement of Forest Certification (PEFC), which is committed to promoting sustainable forest management globally through third party certification. In addition, both organisations have their environmental management systems certified under ISO 14001, which should ensure their forest operations are systematically managed and there is a process of continuous improvement.

I believe the combined legislative requirements of the Forest Practices Act and the AFS certification criteria provide a process to prevent unsustainable forest harvesting.

I do not consider that the proposed pulp mill will cause any increase in intensification of forest operations in Tasmania. In reaching this conclusion, I have had regard to the definition in the Final Scope Guidelines for the IIS of “intensification”, which includes the rate of conversion of native forest to plantations, the establishment of plantations on agricultural land and silvicultural practices.

There is more than enough pulpwood potentially available in Tasmania now to support the pulp mill and no need to intensify any operations to meet its demand.

While both Gunns and Pöyry have undertaken detailed and sophisticated modelling of the pulpwood supply in Tasmania by location, region, ownership, wood quality and landed

cost, I have undertaken the following very simple analysis to support my general view of the supply position in Tasmania. This is shown below in Table 8-1.

**Table 8-1:  
Estimate of Surplus Pulpwood Availability 2009 and 2030**

Source of Pulpwood	2009 Million GMt/a	2030 Million GMt/a	Comment
Forestry Tasmania	2.0	2.0	Assumes long term sustainable supply contract to Gunns (more may be available)
Private Native Forest	1.7	0.6	PFT Projection Annual Report 2004/05
Plantation Hardwood	1.5	2.5	2009 figure from PFT above and 2030 figure assumes 155 000 ha plantation estate with an estimated MAI of 16 m <sup>3</sup> /ha/a.
Sawmill Residues	0.4	0.4	Estimate only
<b>Total Pulpwood</b>	<b>6.6</b>	<b>5.5</b>	
Pulpmill Intake need	3.2	4.0	As per Draft IIS
Hardwood Surplus	3.4	1.5	Assumes pulp mill processes only hardwood
Plantation Softwood	0.4	0.5	PFT (as above) and Rayonier pers comm.
<b>Total Surplus</b>	<b>3.8</b>	<b>2.0</b>	Assumes pulp mill processes softwood & hardwood

While Gunns' modelling has been far more detailed and sophisticated, Table 8-1 illustrates the order of magnitude of supply and demand for pulpwood (softwood and hardwood) in Tasmania at two future dates – 2009 when the pulp mill would be operating just after start-up, and in 2030 when the pulp mill will be operating at its peak output later in its economic life. I have compiled the pulpwood volumes potentially available by source based on my own knowledge and from identified public sources.

I conclude from this simple analysis that the combined total hardwood pulpwood and residues available in 2009 will be 6.6 million GMt/a, which is more than double the projected intake for the pulp mill of 3.2 million GMt/a for that year. Consequently, the total "surplus" of 3.4 million GMt/a is well in excess of the volume required to supply the pulp mill after start-up. The hardwood "surplus" diminishes to a projected 1.5 million GMt/a by 2030, which in my opinion still provides a reasonable supply buffer and does not account for any increase in the current plantation estate.

This supply buffer is further enhanced by the potential to access softwood pulpwood. The softwood volumes required for the pulp mill (400 000 GMt/a) are relatively small but if it is processed then the demand for hardwood pulpwood will decline.

In my opinion, any expansion of plantations in Tasmania will most likely be motivated by government policy such as the 2020 Vision, the associated tax-driven plantation development business opportunities described in Section 7 of this statement, and the market for wood fibre. I expect these factors will be of far greater importance to assessing the financial drivers for the establishment of future plantations than the opportunity to supply marginal incremental volumes to the pulp mill. In my opinion, the situation in Western Australia provides a clear example of an analogous situation. In 2005 over 21 000 ha<sup>16</sup> of plantations were established in that state (the largest state increase) despite there being no real prospects of a pulp mill being constructed.

<sup>16</sup> BRS Australia's Plantations 2006.

What this suggests is that plantations are expanding across Australia in regions where pulp mills are planned (e.g. Tasmania) and where they are not (e.g. Western Australia). The underlying economics of growing wood to supply export markets remain broadly the same regardless of whether you supply export woodchips or supply to domestic pulp mills.

For these reasons, companies such as Gunns, Forest Enterprises Australia and Great Southern Plantations are likely to continue to develop plantations either on converted native forest or on agricultural land. However, I believe these decisions will be motivated by a commercial desire to make money as a fibre grower, and not because of some imperative to supply feedstock to the pulp mill. I would expect the rate of growth of plantations in Tasmania to be more sensitive to the outcome of the tax ruling discussed earlier than to the decision to proceed with the pulp mill.

In terms of fostering additional silvicultural activities in native forest, I am not aware of any circumstances where the ability to supply marginal pulpwood volumes to a pulp mill would motivate additional investments. In terms of existing silvicultural programs, Forestry Tasmania is thinning some of its regrowth native forests to improve sawlog production. The cost of undertaking these programs exceeds the return, and Forestry Tasmania has received funding support for this under the Tasmanian Community Forest Agreement. However, this practice is not being undertaken with the expectation of generating pulpwood to supply the pulp mill, but it is being done to promote sawlog growth. In my opinion, Forestry Tasmania would undertake this program irrespective of the pulp mill being developed or not.

Some private forest owners with more productive native forests and/or forests located closer to processing sites may perceive the benefits in terms of enhanced sawlog/veneer log production, and may elect to thin for that reason.

In summary, in my opinion the pulp mill will not cause any intensification of forest operations because the harvest from native forests is limited by sustainability criteria. The pulp mill can operate successfully with the plantations that are already established, and any increase in silvicultural practices is more likely to be aimed at sawlog production than pulpwood for the pulp mill.

## 9 Competing uses for woodchips in Tasmania

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In Tasmania, the demand for both softwood and hardwood woodchips is driven by the export market. There are only two domestic purchasers of woodchips in Tasmania; Norske Skog at Boyer in the south of the State whose annual volume is relatively small at around 160 000 m<sup>3</sup> of hardwood and 370 000 m<sup>3</sup> of softwood, and PaperlinX's plant at Wesley Vale which purchases around 70 000 m<sup>3</sup>/a of hardwood. There is little opportunity to expand the domestic market as there are no plans to expand any existing domestic processing, and the Carter Holt Harvey Medium Density Fibreboard (MDF) plant at Bell Bay, which processed softwood woodchips, has been permanently closed after a recent fire damaged the main press. The opportunity to supply other domestic processing plants in other states of Australia is minimal due to transport costs.

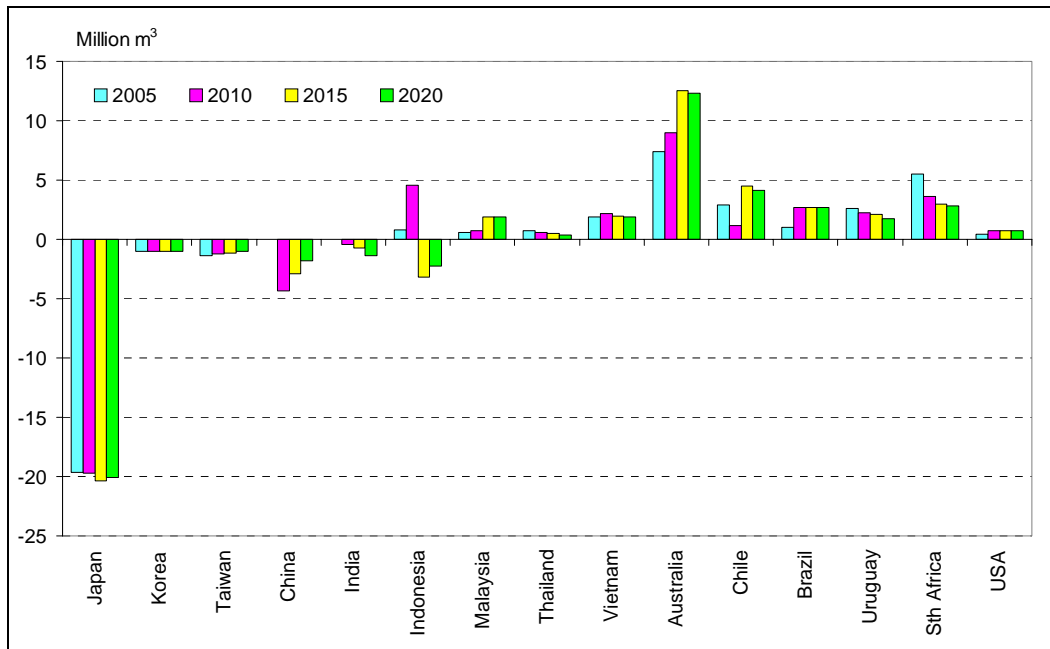
The main demand for Tasmanian woodchips is export to Japan, and Australia is their main supplier of both hardwood (3.7 million BDt) and softwood (1.0 million BDt) woodchips<sup>17</sup>.

Figure 9-1 provides an illustrative view of the net surplus/deficits in the hardwood woodchip market which clearly shows the strong demand from Japan and Australia as the main supplier.

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<sup>17</sup> Japan Paper Association – Pulp and Paper Statistics 2006

**Figure 9-1:  
Hardwood pulpwood net surplus/deficit for selected countries**



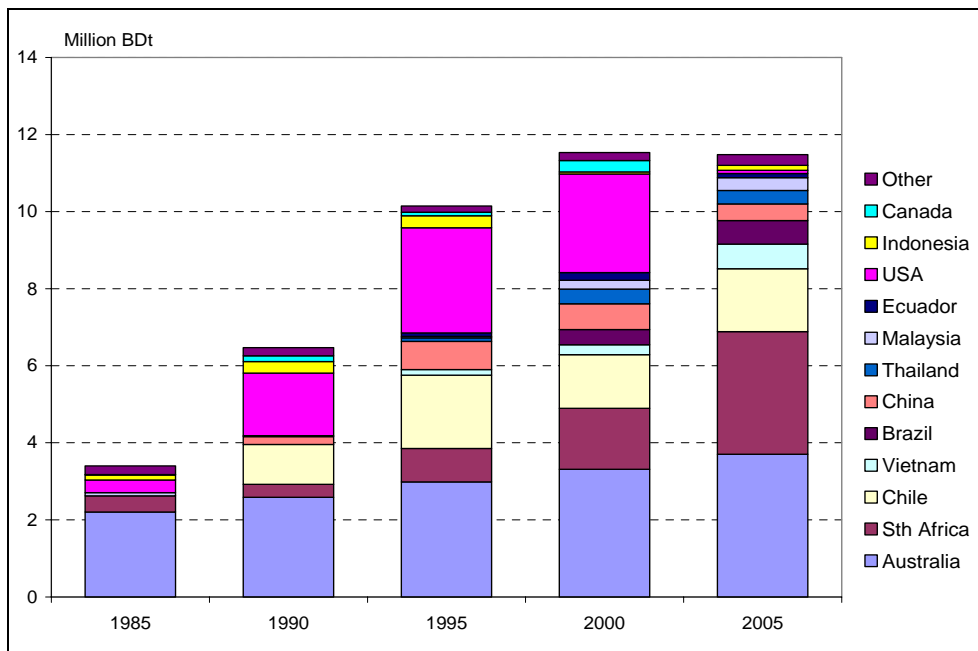
Source: Pöyry 2006

The following sub-sections provide an overview of the Japanese market and other emerging markets and the potential supply from Australia and its main competitors.

### 9.1 Japanese demand for hardwood woodchips

Japan commenced woodchip imports from Tasmania in the late 1960s and Australia has been a predominant and stable supplier to Japan over the last decade, providing around 30% of imports over this period, as shown below in Figure 9-2.

**Figure 9-2:  
Japan hardwood woodchip imports by country 1985 to 2005**



Source: World Trade Atlas & Pöyry Research



Australia has held a dominant share of the Japanese market over the last 20 years. In 1985 Australian woodchips represented around 60% of the imports, and currently represent around 30%. Interestingly though, while the Japanese market has grown considerably, Australia's share of the market has not been maintained, as shown in Figure 9-2 above.

In my opinion there are two reasons for this. Firstly, Japan has concentrated on diversifying its supply to ensure that it is not overly dependant on one supplier or country. Secondly, and a potential catalyst for the first reason, was that Australia's export volumes through the late 1980s and early 1990s were capped by export licences. The requirement for an export licence for woodchips was removed following the signing of the Regional Forest Agreements. This is one of the reasons for the apparent increase in export volumes from Australia after 1997.

In spite of Japan's abundant domestic forest resource (around 25 million ha)<sup>18</sup>, it has continued to rely heavily on imported wood to meet domestic demand. The domestic forests are predominantly softwood, mostly planted on steep country, and the ownership is quite fragmented which makes it difficult to develop any scale in forest harvesting operations. Traditionally, importing raw forest materials has been cheaper than procuring it domestically.

Since 1995, imports of softwood pulpwood have declined in Japan from around 3.3 million BDt to around 2.6 million BDt in 2005. Conversely, hardwood imports have increased over the same period from 9.9 million BDt to 11.2 million BDt in 2005. At a national level however, consumption is declining and has dropped from around 20.1 million BDt in 2000 to 19.2 million BDt in 2005. Domestic supply has fallen from around 6.5 million BDt in 1995 to 5.4 million BDt in 2005 due mainly to the decline of hardwood supply.<sup>19</sup>

I am unaware of any major new processing developments in Japan that would increase domestic demand. Therefore, I would expect demand to remain flat or even decline over the next 10 to 15 years as lower cost processing options offshore are developed. In my opinion, the main demand driver for hardwood woodchip imports to Japan will be the falling domestic supply rather than any increase in consumption. Conversely, I expect softwood imports will continue to soften due to increasing domestic supply.

## **9.2 Other Asian export markets**

The two other traditional export markets have been Taiwan and South Korea, but neither is expected to increase. In fact, a gradual decline is anticipated for Taiwan. The two significant paper markets that are growing in Asia are China and India and these have created interest as potential importers of woodchips. These two countries are discussed in the following sections.

### **9.2.1 China**

The Chinese paper industry has traditionally relied on straw based pulp due to its lack of forest resources. However, the Chinese government has urged the replacement of straw based pulp with wood based pulp for environmental reasons. As such, over the last decade there has been a significant increase in the development of plantations and the utilisation of wood based pulp in China.

The ultimate development of China's pulp-making industry and the import potential for woodchips is not totally clear. China has been a major exporter of hardwood woodchips into neighbouring countries such as Japan, Taiwan and South Korea. However, estimates

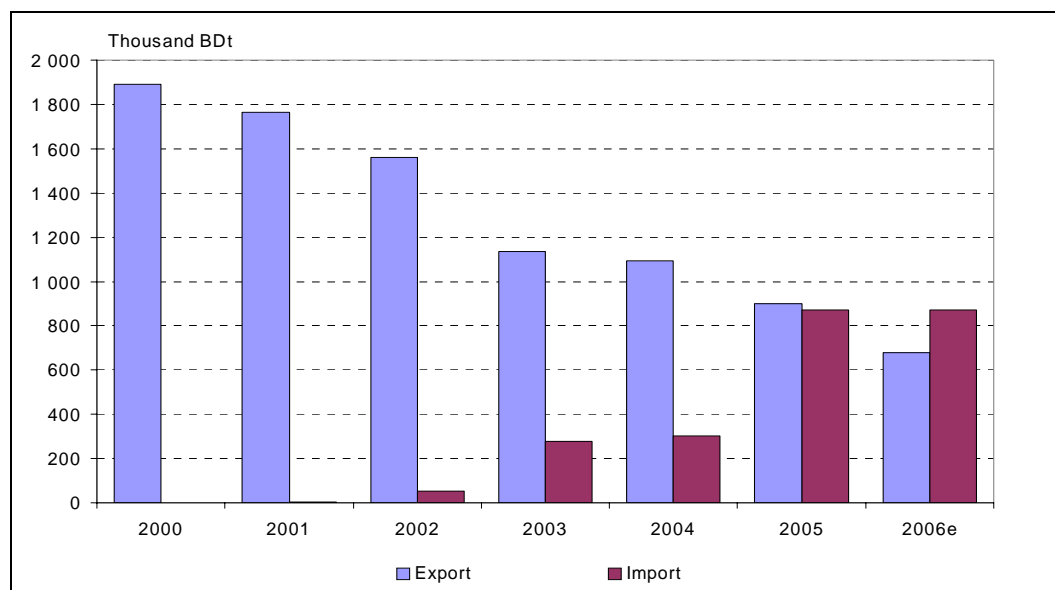
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<sup>18</sup> FAO – Country Statistics for Japan

<sup>19</sup> Ministry of Finance, Japan Paper Association 2006.

from Pöyry and the World Trade Statistics suggest that for the 2006 calendar year China will become a net importer of hardwood woodchips for the first time.

**Figure 9-3:  
China hardwood woodchip export and import, 2000-2006e**



Source: World Trade Atlas & Pöyry Research

The recent increase in China's hardwood woodchip imports is mainly driven by the start-up of two new pulp mills. In addition, there are a number of domestic pulping projects confirmed or planned over the next decade. Should all these mills be constructed, then the hardwood eucalypt pulp processing capacity increase could be in excess of 5 million t/a. This could (depending on wood quality) generate an additional demand of over 15-20 million m<sup>3</sup>/a of hardwood pulpwood.

To meet this potential demand, China has an aggressive pulpwood plantation programme. It is anticipated that a time lag between plantation development and pulping capacity expansion will support increased demand for hardwood woodchip imports in the short to medium term. In time though, China could establish adequate hardwood plantations to supply the majority of its future needs and this would result in a decline in demand for woodchip imports.

### 9.2.2 India

India is considered a less promising woodchip market compared to China, both in terms of activity/plans to develop plantation forests and the expansion of their wood pulping capacities. Nevertheless, with its significant population and favourable economic prospects, India has been viewed as a potentially significant importer of woodchips. To date, however, this has not been realised and India's existing wood pulping capacity is still relatively small.

The main driver for India's potential industry expansion is the projected increase in paper and paperboard products, which will roughly double over the next 10 years from around 6.4 million tonnes to around 13 million tonnes.<sup>20</sup> This is a similar demand pattern to China, where steady economic growth over a large population base will result in a significant increase in demand, and India is expected to be one of the fastest growing paper markets during the next decade. In particular, demand for printing and writing paper will increase significantly as education levels increase and the economy grows.

<sup>20</sup> Pöyry Forest Industry Research

While there are a number of paper mill projects under consideration, the development of pulping capacity in India is anticipated to be considerably slower.

Therefore, it is doubtful whether the expected large increase in paper demand will lead to India becoming a major woodchip importer.

A significant rise in woodchip imports would only become a reality if:

- (i) The domestic wood pulping capacity is developed in line with the growing papermaking industry.
- (ii) Raw materials (i.e. woodchips) for the new pulp mills could not be met through domestic fibre supply.
- (iii) The transport infrastructure of ports and roads is improved to allow the cost efficient import of woodchips.

There is expected to be a shortage of pulpwood in India during the 2010s, which could be supplemented by woodchip imports. In the meantime, imports of wood pulp (instead of pulpwood) are expected to increase sharply over the next decade, supporting the country's planned paper mill projects.

### 9.3 Australian export market supply

Australia is expected to continue to be the largest net exporter of hardwood woodchips into the Asia-Pacific region over the next 10 to 15 years.

Australia has gradually reduced the areas of native forest that are available for harvesting as a consequence of expanding the conservation reserve system in key states. Native forests, which are predominantly managed by the state government forest agencies, currently provide around 37% of Australia's total forest harvest. This harvest represents around 10 million m<sup>3</sup>/a and consists of around 3 million m<sup>3</sup> of saw and veneer logs and 7 million m<sup>3</sup> of pulpwood. In regard to the pulpwood, around 66% is exported of which around 86% goes to Japan<sup>21</sup>.

In terms of softwood, the total harvest is around 14 million m<sup>3</sup>/a of which around 9 million is saw and veneer logs and 5 million pulpwood. Australia also exports around 1.1 million tonne of softwood woodchips, of which close to 100% goes to Japan.

Forecasting future production from native and plantation forests is difficult because of varying growth rates and incomplete data for some resources. However, the surplus hardwood woodchip volume available from Australia by 2009 is expected to be about 7.5 million m<sup>3</sup>/a, and increase to around 12 million m<sup>3</sup>/a in 2016 before falling to around 9 million m<sup>3</sup>/a by 2019.<sup>22</sup>

These surplus volumes assume that the Australian Paper expansion at Maryvale in Victoria and the Gunns pulp mill at Bell Bay in Tasmania will be operational by 2008/09, but they do not include any other major pulp mills being constructed over this timeframe. If new pulp mills are constructed, such as those proposed for Heywood in Victoria and Penola in South Australia, or if anything eventuates in Western Australia, then the surplus volumes will be less.

Australia's hardwood plantation estate, which is currently around 740 000 ha<sup>23</sup>, will provide increasing volumes of quality pulpwood, principally *Eucalyptus globulus* (blue gum) and *Eucalyptus nitens* (shining gum).

In terms of Australia's hardwood woodchip exports, the following factors are expected to be the major market drivers over the next 10 years:

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<sup>21</sup> ABARE – Australia Forest and Wood Products Statistics, May 2006

<sup>22</sup> Pöyry Forest Industry estimate.

<sup>23</sup> BRS Australia's Plantations, 2006

- Japanese importers' procurement strategy
- Potential development of the Australian pulp and paper industry
- Foreign exchange, price and ocean freight
- Magnitude of the threat from competitors such as Chile and South Africa and the development of domestic pulp mills in these countries.
- Non-Japan market development such as China and India.

The importers in the Japanese paper industry have a stated aim of decreasing their imports from mature natural forests and increasing their imports of certified plantation grown or regrowth natural forest woodchips<sup>24</sup>. In my opinion, the longer term strategy of Japan's paper industry will be to prioritise imports firstly from their own plantations overseas (currently around 375 000 ha)<sup>25</sup> then from Japanese-owned export operations, and finally from other non-Japanese sources. In my opinion amongst the non-Japanese woodchip suppliers, priority will be assigned on quality and cost of delivery to Japan.

Eucalypt plantations, particularly those that are certified under the Forest Stewardship Council or the Australian Forestry Standard, are expected to have preference over non-certified sources. Conversely, imports of native forest woodchips will depend on quality and cost but are expected to diminish over time.

Australia currently imports around \$4 billion worth of forest products a year, of which over 50% are for pulp and paper and paperboard products. Exports by contrast are only around \$2 billion, of which 40% comes for woodchips<sup>26</sup>. The trade deficit has long been a focus of concern for both industry and government and is a major factor in planning the industry's future. Major government policies such as Vision 2020 were developed in part to address Australia's significant imports of forest products and encourage competitive and state-of-the-art forest product processing in Australia. The ultimate level of surplus woodchips for export will depend on whether the pulp and paper projects discussed above are developed.

Australian hardwood woodchips are sold to Japan in Australian dollars (AUD), whereas our competitors sell in US dollars. Hence exchange rates between the US dollar, the Japanese Yen and the Australian dollar are very important in this trade.

The price for Australian hardwood woodchips (sold on AUD/BDt Free on Board (FOB)) is set by annual negotiation between suppliers and the Japanese pulp and paper manufacturers in conjunction with their trading houses. Gunns purchase of North Forest Products made them the lead negotiator for the Australian industry and the price agreed for native forest woodchips became the benchmark price (known as the Leading Australian Hardwood Chip Exporter or LAHCE price). Although the LAHCE price is for Tasmanian native forest woodchips, prices for higher quality plantation-grown woodchips have been directly related to this price via a percentage premium which is currently around 12%.

The FOB woodchip price for native eucalyptus for 2006 was held to the 2005 price of AUD162/BDt. The FOB woodchip price for plantation eucalyptus in 2006 is AUD181/BDt which is a slight increase over the 2005 price of AUD179/BDt.

The movements in the LAHCE price are shown in Figure 9-4 and illustrate that Japan has successfully held the woodchip price relatively stable in real terms over the last 30 years, and even managed a real price decrease over the last decade.

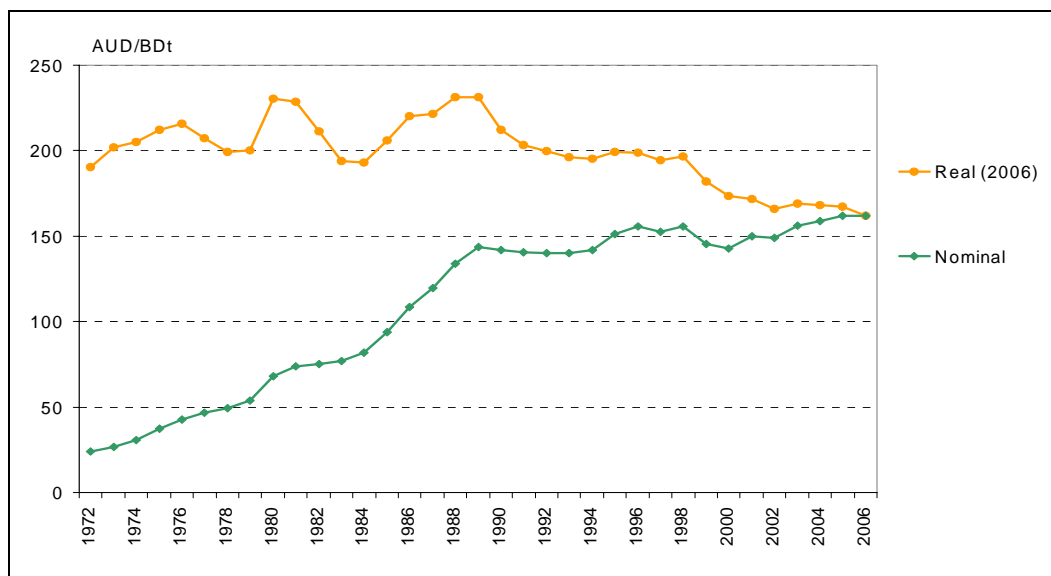
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<sup>24</sup> Mitsubishi Paper – Press Release June 2004, Paperloop.

<sup>25</sup> Japanese Overseas Plantation Projects - [www.jopp.or.jp/plant/plantarea2004-e.pdf](http://www.jopp.or.jp/plant/plantarea2004-e.pdf)

<sup>26</sup> ABARE - *ibid*

**Figure 9-4:  
LAHCE benchmark prices**



Export prices to other markets such as China, Taiwan and Korea tend to be significantly lower than the Japanese price and are the reason such small volumes are exported to these markets.

Due to its location, Australia is a cost competitive supplier to the Japanese market when compared to its main competitors in South Africa and South America, particularly Chile. However the exchange rate can complicate the hardwood woodchip trade and the recent rise of the Australian dollar against the US dollar has disadvantaged Australian hardwood woodchip exporters to the benefit of its main competitors, many of whom are a longer distance from the market. If the currency exchange rate conditions of the late 1990s return, then Australia's competitive position will improve because of the shorter shipping distances compared to their major competitors, Chile and South Africa.

Australia will significantly increase its harvest of plantation grown eucalypt over the next 10 years, and the majority is expected to be exported. This will create significant competition in the export market, particularly in the Japanese market, which is not expanding.

In my opinion, to sell all the total Australian potential hardwood supply to Japan will be a major task. Australia will have to significantly increase its market share potentially to over 50% of Japanese imports - a position it has not been able to achieve since the early to mid 1980s.

The success of achieving this increase in market share for hardwood will depend on Australia's cost competitiveness into the Japanese market and the relative competitiveness of other suppliers. Although, in summary, given the relatively flat demand from Japan and Australia's increasing supply, I consider it is unlikely to cause any significant real increase in export prices for hardwood woodchips.

In terms of softwood, the domestic market in Tasmania is limited and while softwood woodchips have been exported, this market is not as strong as hardwood. As is the case for hardwood, Japan is the dominant market and Australia is also the dominant supplier with about 38% of imports in 2005. The US is the second largest supplier.

The import trend for softwood in Japan has been declining and has fallen from over 3.2 million BDt in 1995 to 2.6 million BDt in 2005.<sup>27</sup> Export prices are less than for

<sup>27</sup> Japan Paper Association Pulp and Paper Statistics 2006

hardwood being around AUD135/BDt, but this depends on the moisture content of the woodchips.

#### **9.4 Other potential hardwood suppliers to Japan**

Chile is expected to be the only other country around the Asia-Pacific rim that will have a significant increase in its net surplus of hardwood pulpwood during the next decade. However, the domestic pulp industry is expanding and it is anticipated that these mills will consume much of this growth in production, leaving the majority of the export volumes to come from the Japanese owned plantations which are currently around 50 000 ha<sup>28</sup>.

Despite the recent increase in South Africa's woodchip exports to Japan, the slowdown of plantation development activities combined with some increase in domestic processing is expected to reduce the volume of pulpwood available for export.

Only limited quantities of hardwood woodchips are expected be shipped from the US to Asian countries in the foreseeable future.

Brazil and Uruguay have a massive plantation base, but their domestic pulp industries are expanding to utilise this resource which should offset the export potential to Japan. In addition, other export markets such as North America and Europe are more easily accessed by these countries.

Indonesia will offer a considerable net surplus in the short to medium term, most of which is likely to be destined for China, but it is anticipated that they will eventually become a net importer of hardwood pulpwood as its pulp industry develops. Malaysia is expected to fill the majority of Indonesia's deficit.

#### **9.5 Conclusion**

In conclusion, I expect that Australia will remain the dominant supplier of hardwood woodchips to the Asia-Pacific markets, Japan will remain the dominant export market for Australian woodchip exports, and that this market will increasingly give preference to certified plantation grown woodchips over mixed species woodchips from native forests.

Demand from other domestic processors is expected to be minimal.

Other markets are likely to develop in China and possibly India and the smaller Korean market is also likely to evolve. However, in my opinion these markets are less likely to be as stable as the Japanese market in terms of annual pricing arrangements, and I expect demand to be more volatile.

Australia will have a significant increase in export volumes of hardwood woodchips in 2009 when the pulp mill is expected to commence operations, and export volumes are expected to increase over the next decade.

In my opinion the combined ramifications of Australia's increasing volumes of hardwood woodchips and Japan's preference for certified plantation woodchips will progressively dampen demand for low yielding pulpwood from native forests. In my opinion, if Gunns constructs a pulp mill at Bell Bay, then it has the potential to be an attractive market for native forest woodchips in Tasmania.

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<sup>28</sup> [www.jopp.or.jp/plant/plantarea2004-e.pdf](http://www.jopp.or.jp/plant/plantarea2004-e.pdf)

## 10 Response to community concerns and key submissions

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I have reviewed the community submissions that relate to the wood supply sections of the Draft IIS and the URS report to the Tasmanian Resource Planning and Development Commission (RPDC). I have structured my responses under the following headings:

- The harvesting of native forest and associated impacts
- The expansion of plantations on agricultural land
- The sources of wood supply for the pulp mill
- Log prices for private growers
- URS Report.

### 10.1 Harvesting native forest

The majority of pulpwood harvested from Tasmania's native forests is produced as a by-product (known as arisings) of sawlog-oriented operations. Thinning of native forest regrowth stands to enhance production of sawlogs also provides a small amount of pulpwood.

Harvesting of native forest in Tasmania is designed around sustainable yields governed by the RFA and relevant Tasmanian laws. All forest operations are planned and implemented in accordance with the *Forest Practices Act 1985* and the Forest Practices Code. Forestry operations must be undertaken in accordance with Forest Practice Plans, which must be assessed against the Code and approved by Forest Practice Officers. The extent to which forestry operations comply with their Forest Practices Plans are audited by the Forest Practices Authority. The Code includes requirements to plan for and to protect a wide array of values such as rare and endangered species, water and soil conservation and landscape values.

In addition to the above legislative requirements, Gunns and Forestry Tasmania (the major supplier of native forest products) have in place environmental management systems which are certified under ISO 1400. This should ensure that the environmental impacts of both Gunns and Forestry Tasmania are systematically managed and there is a process of continuous improvement. In addition, Gunns and Forestry Tasmania are also certified under the Australian Forestry Standard (AFS) which is accredited under the international Program for the Endorsement of Forest Certification (PEFC), which is committed to promoting sustainable forest management through third party certification.

Following a discussion with one of Gunns' third party AFS auditors, I understand that there have been no significant non conformances of its operations under the AFS. I also understand that Forestry Tasmania has not had any non conformances of their AFS certification.

### 10.2 Plantation development and water impacts

There were a number of community submissions relating to the expansion of plantations on agricultural land, and the potential impacts on water supply. These submissions were concerned that the pulp mill will create a dramatic increase in plantation development on agricultural land in the north east of the State close to the proposed pulp mill site, and that these plantations will have an impact on the water flow in the affected catchments.

As discussed in Section 8 of this statement, there is no need to increase the plantation estate from its current level in order to supply the pulp mill as there is already sufficient pulpwood in Tasmania to meet its needs.

Gunns stated in the Draft IIS that it modelled a notional estate area of 150 000 ha of hardwood plantations, which is approximately 30 000 ha more than its existing estate. In

addition, Forest Enterprises Australia and Great Southern Plantations are also planning to increase their plantation estates. If all three companies expand their plantation estates then in my opinion the aggregate area could increase by a further 50-55 000 ha. Other private landowners may also develop plantations if they believe it is financially attractive.

However, and as discussed earlier in all instances, these companies and individuals would be investing in plantations for their own commercial reasons and not to specifically supply the pulp mill. In addition, the majority of the wood supply from plantations that will impact the first 10 years of the pulp mill's life has already been planted.

I also suspect that it is unlikely that the full extent of any plantation expansion will occur on cleared agricultural land, as there is still the potential to convert approximately 49 000 ha of native forest to plantations<sup>29</sup>.

However, the development of plantations on agricultural land and its potential impact on water supplies needs to be placed in context. Approximately 50 million ha of woody vegetation has been cleared in Australia since the beginning of European settlement.<sup>30</sup> In the context of Tasmania, the assessed area of forest in 1750 was approximately 4.8 million ha of which only 3.2 million ha remained in 2001, suggesting that around 1.6 million ha of forest has been cleared.<sup>31</sup> This means that there was significantly more forested catchments in Tasmania prior to European settlement than there is today so that carefully reforesting another 3 to 4% (assuming 55 000 ha) of the area that has been cleared for agriculture, would seem in my view more beneficial than detrimental.

As I am not a hydrologist I will not comment on the perceived impacts of plantations on water supply.

### **10.3 Log prices for private growers**

There is a concern by some private native forest growers that if Forestry Tasmania sells pulpwood at a low price to the Gunns pulp mill, then they will be setting an artificially low market price for pulpwood which smaller private growers will be forced to accept. I can understand this concern but would expect that Forestry Tasmania as a commercial entity will negotiate a commercial price for its pulpwood.

While it should be a commercial decision for Forestry Tasmania to settle on the price of pulpwood for the pulp mill, private growers can achieve some comfort in the knowledge that the export market will continue to provide some competition for wood apart from Gunns' proposed pulp mill.

### **10.4 URS Report**

URS Forestry was engaged by the RPDC to provide independent advice on whether the Gunns Draft IIS adequately addressed subsections 4, 9, 10, 11, 12 and 13 of section 4.2.1 of the Final Scope Guidelines set out by the RPDC for the Gunns IIS.

The URS report raises questions and identifies issues where the authors believe the Draft IIS is deficient in terms of the information provided and/or that potential critical errors or omissions were made.

I have largely reproduced the URS report in Attachment 2 of this statement and commented appropriately on the various URS claims. URS included in its report the relevant sections from the Final Scope Guidelines from the RPDC which sets out the

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<sup>29</sup> G Wilkinson Chief Forest Practices Officer, Forest Practices Authority, Hobart – pers comm.

<sup>30</sup> Ensis - Maximising the benefits of new tree plantations in the Murray-Darling Basin - A joint statement by CSIRO Forestry and Forest Products and CSIRO Land and Water.

<sup>31</sup> Forest Practices Authority Annual Report 2005.



requirements for the pulpwood supply matters to be dealt with by the IIS in Section 4.2.1 under subsections 4, 9, 10, 11, 12 and 13.

URS have not had the opportunity to review the Gunns forest management information or interrogate the pulp mill supply model to the same degree that I have and this obviously places them at a disadvantage in terms of being able to make definitive comments.

However wherever I felt it was useful in this statement I have provided additional and albeit in some cases simplistic supply calculations based on publicly available data that URS could comment on and I believe come to the same conclusion that there is currently a significant surplus (to the pulp mill's requirement) of pulpwood supply in Tasmania and that this is likely to remain so for the foreseeable future.

## 11 Conclusion

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Following my review of Gunns' potential wood supply to its Bell Bay pulp mill, I am satisfied of the following matters:

- That the pulp mill intake of 3.2 to 4.0 million GMt/a of hardwood fibre is well below the estimated 5 to 6 million GMt/a potentially available in Tasmania over the first 20 years of the mill's life. The majority of the supply will be eucalyptus hardwood, but radiata pine softwood may also be processed.
- The majority of the resource is in the north east of the State, and as such constructing the pulp mill at Bell Bay is logical.
- If Gunns proceeds with its intention to also produce bio-energy using wood waste, then they will source an additional 500 000 GMt/a of wood waste which is not currently accounted for in the annual production figures for Tasmania. However based on my knowledge of harvesting operations in Tasmania, I believe that volumes of suitable material should be available.
- Gunns' average annual export volume for the last five years is well over 4 million GMt of hardwood pulpwood. I conclude that this demonstrates the company has the ability to source, plan, harvest, haul and deliver the volume of wood required by the pulp mill.
- The sustainable harvesting of native forest in Tasmania is governed by the RFA and all forest operations are planned and implemented in accordance with the Forest Practices Act and the Forest Practices Code. These processes regulate the conduct of forestry operations in Tasmania, require forest practice plans to be prepared in accordance with the Code, approved, and implemented. The Code regulates a range of environmental and cultural matters, and forestry operations are audited by the Forest Practices Authority.
- It is anticipated that a combination of resources will be used in supplying the pulp mill. These include both hardwood and softwood from Gunns' owned or managed resources, Crown resources from Forestry Tasmania, from private property and from sawmill residues:
  - Gunns has a significant productive forest estate with close to 120 000 ha of hardwood and over 5 000 ha of softwood plantations, plus over 38 000 ha of native forest.
  - Forestry Tasmania is also expected to sustainably supply the pulp mill with around 2 million GMt/a of hardwood pulpwood from Tasmania's public forests as a by-product of sawlog harvesting operations. This volume is less than their estimated long term pulpwood supply of 2.8 million GMt/a, and reflects the fact that Forestry Tasmania has other customers for this resource.

- Private property also represents a potentially significant resource, although the intent of owners to harvest and the growth of private plantations in the future is difficult to forecast and the base data on sustainable supply is weaker than the other suppliers. However, past experience and recent surveys suggest this resource state-wide could decline from 1.9 million to 1.3 million GMt/a.
- Sawmill residues are the other source of pulpwood supply, and as Gunns is the major hardwood sawmiller in Tasmania they are assured of this supply but are also well placed to secure supplies from other sawmills. Historically, Gunns has been sourcing around 300 000 GMt/a.
- Gunns has also expressed an interest in processing softwood and the potential requirement is up to 400 000 GMt/a which would come from a mixture of Gunns' own softwood plantations, sawmill residues and pulpwood from other growers such as Taswood Growers, the joint venture between Forestry Tasmania and GMO.
- Gunns has developed an extensive wood supply model from the above sources (excluding softwood) based on 35 supply regions in the State, which I have reviewed and believe to be providing a reliable estimate of future supply for the pulp mill over the next 20 years. Total supply that could be available ranges from over 5 million GMt/a to nearly 7 million GMt/a over this period, which is significantly more wood than the pulp mill requires.
- Given the above supply outlook, I do not believe that it is necessary for Gunns to secure 100% of its supply for the life of the pulp mill from the commencement of the project. However if it secures a long term contract from Forestry Tasmania for 2 million GMt/a and combines this with resources that it owns, then theoretically Gunns will have a secure supply of 90% of the volume required at commencement of the pulp mill. However, allowing some flexibility and choice in its future supply arrangements would in my opinion be a sensible commercial decision.
- There are some potential supply risks to the pulp mill, but I regard them as relatively small – the main risks are:
  - Environmental Risks - of disease, pest and fire are all closely monitored as part of the sustainable forest management criteria of the Australian Forestry Standard. In addition there is no uncertainty regarding future plantation development, as the current estate provides sufficient resource along with other existing supplies.
  - Political Risk - of a change to plantation policy or the RFA are possible. However Gunns does not need any more plantation area for the pulp mill to operate efficiently. There is a potential for the RFA not to be renegotiated and re-signed, but the main enabling legislation such as the CAR reserve system and the Forest Practices Act would not be affected by the absence of a RFA.
  - Business Risk – competitors for the wood supply do exist although domestically they are small and in the export market Japan, which has been the major buyer, is shifting away from native forest to plantation wood supplies. This shift in preference may increase the export price for plantation woodchips but in my opinion it will be at the expense of native forest woodchips, and their export price may decline.
- In my opinion, there is no need to intensify the existing capacity for forest operations, including any further expansion of plantations on agricultural land or on land converted from native forest, for the purpose of supplying feedstock to the pulp mill. The reason for this is that there is currently a significant surplus of pulpwood to the pulp mill's requirements, and this is expected to remain the case for the economic life of the pulp mill. In addition, there may be thinning of native forests that has beneficial

impacts for the pulp mill, but this practice will be driven by a desire by forest owners to increase sawlog production, not pulpwood.

- Finally, the likely scenario if the pulp mill does not proceed is that higher levels of Tasmanian woodchip exports will continue, but with a shift away from native forest-sourced woodchips towards plantation-sourced woodchips. This will be caused by the declining supply from native forests and reinforced by a shift in Japanese market preferences away from native forest woodchips to plantation grown woodchips. While new markets for native forest woodchips may become available including (for example) China, Korea and possibly India, these markets will be more volatile and will have lower margins than the industry has achieved in its past sales to Japan.

## 12 Provisional opinion

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The opinions that I have expressed in this report are based on my experience and the experience, advice and information provided to me by Gunns. Subject to any limitations and exclusions identified in this statement, my opinions are complete and accurate in every respect.

I am satisfied through my inquiries that the opinions I have expressed are reasonable in regard to there being a surplus of hardwood pulpwood potentially available to supply the pulp mill at commencement and over at least the next 20 years, and that there is no need to intensify forestry operations, as defined in the Scope Guidelines for the IIS, for the purpose of supplying pulpwood to the proposed pulp mill.

## 13 Declaration

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I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Commission.



Rob de Fégely

18 December 2006

## 14 Glossary

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/a	annum
ADt	Air dried ton
BEK	Bleached Eucalypt Kraft
BHKP	Bleached Hardwood Kraft Pulp
BSKP	Bleached Softwood Kraft Pulp
CAI	Current Annual Increment – the volume growth over a year in a forest
CAR	Comprehensive and Adequate Reserve System
CRA	Comprehensive Regional Assessment
C/F	Carriage and freight
FPA	Forest Practices Act
FPP	Forest Practices Plan
GIS	Geographic Information System
GMt	Green Metric tons
IIS	Integrated Impact Statement
JANIS	Joint ANZECC MCFFA National Forest Policy Statement Implementation Subcommittee
MAI	Mean Annual Increment – the average volume growth over the life of the forest
Merch Volume	Volume of wood in a tree that can be sold
MIS	Managed Investment Schemes
m <sup>3</sup>	cubic metre
NFPS	National Forest Policy Statement
OSH	Occupational Health and Safety
PFT	Private Forests Tasmania
PI	Air Photo Interpretation
RFA	Regional Forest Agreement
RPDC	Resource Planning and Development Commission
t	ton = metric ton (when referring to pulpwood refers to green metric ton)
Total Standing Volume	The total volume in a tree from the base to tip
Taswood Growers	Joint Venture between Forestry Tasmania and GMO
t/a	ton per annum
t/d	ton per day

## A1 Qualifications – A Robert de Fégely

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<b>Education</b>	B Sc (For) Australian National University (1978) M Sc (For) Aberdeen University, UK (1989)
<b>Specialty</b>	<ul style="list-style-type: none"><li>▪ Strategic planning &amp; Market reviews</li><li>▪ Project feasibility and forest industry development</li></ul>
<b>Professional Affiliations</b>	Member, Institute of Foresters of Australia (MIFA) Member, Association of Consulting Foresters of Australia (MACFA) Fellow, Australian Institute of Company Directors (FAICD) Fellow of the Australian Rural Leadership Foundation

### Employment Record

Current	<b>Myoora Investments Pty Ltd</b> Director
1980-2006	<b>Jaakko Pöyry Consulting (Asia-Pacific) Pty Ltd (now Pöyry Forest Industry Pty Ltd)</b> – (includes Margules Pty Ltd). Forester, Consultant Associate Director – 1980-1995 Principal & Managing Director 1995-2006

Rob de Fégely has over 26 years experience in the Australian forest industry working in all states including the Australian Capital Territory and in various countries overseas.

His career has included 8 years developing softwood plantations and managing natural forest at Bombala in southern New South Wales before commencing a career in consulting in late 1989. His consulting experience includes plantation valuations in Western Australia, South Australia, Victoria, Tasmania, New South Wales and the ACT.

He has assisted companies with both softwood and hardwood forest development management and harvesting. He has provided expert advice in log price reviews for both public and corporate clients in Queensland, Tasmania, Western Australia, New South Wales, South Australia and Victoria.

He has provided strategic forest industry and investment advice to the Federal Government on issues such as plantation investment, the impacts of illegal logging on the imports of forest products, the taxation impact on plantation investment and the need for change in the Australia Forest Products.

Rob has a sound understanding of the critical challenges facing the Australian forest and wood products industry and has provided strategic planning advice to members of the industry, financial institutions and governments at both the state and national level.

He also takes a keen interest in the development of forest product markets and has reviewed them in Australia, Japan, Korea, Taiwan, South East Asia and North America.

### A2 Response to URS Report

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The following attachment largely reproduces the URS report to the RPDC, which is shown in italics. For background, URS also included the relevant sections from the Final Scope Guidelines from the RPDC which sets out the requirements for the pulpwood supply matters to be dealt with by the IIS in Section 4.2.1 under subsections 4, 9, 10, 11, 12 and 13.

My comments on the issues or claims made by URS follow in normal text.

#### A2.1 Intensification of forestry operations

*“Subsection 4 of Section 4.2.1 of the Guidelines requests that the Draft IIS include:*

*‘Details of any intensification of forestry operations in Tasmania (including conversion of native forest and the establishment of plantations on agricultural land (hardwood or softwood) and silviculture practices) for the supply of pulpwood of all types (from now until the end of the projected life of the mill), the likely environmental, social, economic and community issues and effects of any such intensification, and how those effects will be addressed.’”*

##### A2.1.1 2.1 Adequacy of the Draft IIS

*“URS notes that there are several business aspects that may be interpreted as an intensification of activities, which may have environmental, social, economic or community impacts. These include:*

- The rate of native forest conversion to plantation in order to achieve a proposed plantation estate of 150,000 ha;*
- The rate of plantation expansion on agricultural land in order to achieve a proposed plantation estate of 150,000 ha;*
- Changes to harvesting and transport operations relative to the base case of ongoing woodchip exports; and*
- Changes in regional harvest plans as a result of the pulp mill proposal.”*

Of the above points, I can comment only on the first, the second and last, as the issue of transport has been covered by another expert. In regard to these three issues I comment as follows:

- In relation to the first point, the softwood and hardwood plantation estate owned and/or managed by Gunns is about 123 000 ha, and last financial year grew by about 10 000 ha (see sections 6.1.2 and 7.1.2 of my statement).
- In relation to the second point, if the rate of growth experienced last year was to continue, 150 000 ha would be achieved by 2009.

However as noted in Section 8 of my statement the decisions by Gunns or other growers to expand the plantation estate are driven by commercial incentives not the pulp mill.

- In regard to the final point, I foresee no reason why these should change as a result of the pulp mill. The harvest plans on Crown forests are developed to meet the sustainable supply of sawlogs. Pulpwood is produced as a by-product of sawlog production.

*“Section 6.2.5 of the Draft IIS states that ‘all wood for the pulp mill will be sourced from wood that will otherwise have been exported as woodchips’ and that ‘the pulp mill is not dependent on changes to the manner in which forestry activities are carried out...within Tasmania’. Gunns believe that these statements can be supported by figures that indicate the estimated pulp mill log input of 3.2 to 4.0 million green metric tonnes per annum (GMT pa) is substantially less than the 5.3 to 6.7 million GMT pa that is forecast to be available from all sources over the life of the pulp mill. Gunns concludes that therefore ‘the pulp mill...(will not)...intensify timber operations within Tasmania’ and ‘as there will not be any significant change in the extent or nature of current levels of forestry operations in Tasmania, there are no relevant environmental, social, economic or community impacts to be assessed and / or mitigated’.”*

I agree with the above comments.

#### **A2.1.2 2.2 Validity of the methodology and findings**

*“In URS’ opinion, assessments of whether forestry operations are likely to intensify should be based on a proposed scenario that includes supply of pulpwood to both the pulp mill and to other markets, such as export woodchips.*

*The argument presented by Gunns (i.e. that there will be no intensification of operations) appears to be based on an implicit assumption that one market will completely substitute for the other. Forecasts in Figure 6-3 of the Draft IIS suggest that there will continue to be pulpwood available in excess of the requirements of the pulp mill and that some level of woodchip export will continue, however there is no description of a market strategy that would integrate the two operations.”*

This is correct. However, in Section 6.6 I explain how the Gunns wood supply model assumes the delivery of pulpwood to both the pulp mill and its export woodchip plants at Hampshire and Triabunna. The company will make relevant commercial decisions on the quantities it sends to the chipmills once the pulp mill volume requirements have been met.

*“Notwithstanding the above, Gunns has argued in the Draft IIS that there will be no intensification of forestry operations when compared to a ‘business as usual’ case. However, no description or support for a business as usual case has been provided in the document. For example, there is anecdotal evidence to suggest that a business as usual scenario may not result in demand for 100% of the available pulpwood resource. For example the outgoing Forestry Tasmania chief executive is reported as saying an anti-Tasmanian campaign by international environmental groups has caused current sales of woodchips by Gunns to Japan to have fallen well below past year sales.”*

I have outlined a business-as-usual scenario in Section 4.3 of this statement. With weakening export markets for native forest woodchips (discussed in more detail in Section 0 of my statement), suppliers such as Gunns will be forced into less attractive markets including China, Korea and possibly India. This will deliver lower margins than supplying Japanese markets, and may or may not be sufficient to continue the business. Consequently, I foresee no noticeable change in the intensity of harvesting with or without the pulp mill, and the reason for this is that harvesting is limited to a maximum level irrespective of markets.

*“Further examples of insufficient supporting information include:*

- Figure 6-14 of the Draft IIS, which shows anticipated contributions to the pulp mill by regional supply zone from 2008. Without an indication of current and historic log supplies by region it is not possible to determine whether or not logging is likely to intensify in any one region; and*
- In relation to the overall plantation establishment, Gunns suggest that the expansion is consistent with previous and current business strategies, however no information is provided relating to such a strategy.”*

I agree with URS that Figure 6-14 of the Draft IIS does not provide an indication of past supply by region. However it does show future supply to the pulp mill by native and plantation supplies at the regional level. The Draft IIS identified the regions which support plantations, and indicated that the growth in harvests would take place in these locations. In terms of the impact attributable to the pulp mill, these incremental harvests would take place irrespective of whether the wood is delivered to the pulp mill or to the export ports.

The strategic drivers for Gunns' (and other proponents of plantation development) plantation establishment has been discussed in Section 8 of my statement.

#### **A2.1.3 2.3 Validity of the conclusions**

*"The validity of Gunns' conclusions cannot be evaluated in the absence of a base case (no mill) scenario."*

I disagree with this comment. In terms of the upper limit of forest harvesting, the case presented would be the same with or without the pulp mill. However, if the export market was to slow significantly then harvesting may fall but this would depend on sawlog production and pulpwood could be left in the forest as waste if there is no market for it. In general terms, the only issue is where the harvested pulpwood would be sent (if at all) under the alternative scenarios.

Harvesting cannot increase due to legislated requirements for sustainability under the RFA, and the certification requirements that must be met by Gunns. The Draft IIS showed the projected split between the pulp mill and export volumes. The base case URS is seeking to have explained would show increasing exports from the various processing ports.

Despite this, a base case scenario has been discussed in Section 4.3 of my statement. In my opinion, the analysis of the base case supports the fundamental conclusions of the Draft IIS regarding the intensification of its forestry operations.

#### **A2.1.4 2.4 critical errors of omissions on intensification of forestry operations**

*Past, present and planned future rates of native forest conversion on Gunns owned, crown and private property land.*

Given that the current annual pulpwood supply in Tasmania, as shown in Table 4-2 of this statement, is over 6 million GMt and the pulp mill requires less than 70% of this volume, there is no need for further conversion of native forest in order to sustain pulpwood supply to the pulp mill. Any expansion of the plantation estate in Tasmania will be driven by investment decisions that are independent of the pulp mill (see Section 8 of my statement). In addition the rate of conversion of native forest is restricted and monitored by bioregion and will cease in time on both public and private land irrespective of whether the total allowable area is cleared or not.

*"The availability of suitable cleared agricultural land for plantation establishment and the expected competition for this land from companies such as Forest Enterprises and Great Southern Plantations over the period during which Gunns proposes to increase its plantation estate."*

There is no demand from the pulp mill for any additional plantations on agricultural land in Tasmania – see my comments in Section 10.2 of my statement.

*"The nature (conversion versus cleared pasture) of land to be acquired by Gunns as part of its program to increase its plantation estate."*

As discussed in the preceding sections, there is no requirement for Gunns to acquire any further land to supply feedstock to the pulp mill.

*"Regional supply of pulpwood under a business-as-usual scenario to augment forecast data presented in Figure 6-14 of the Draft IIS."*

See earlier comments, especially Section 4.3 of my statement.



*“Anticipated market demand for hardwood woodchip exports in the absence of a pulpmill.”*

My opinions on the export market for woodchips are contained in Section 9 of my statement.

## **A2.2 Quantity of Pulpwood Required**

*“Subsection 9 of Section 4.2.1 of the Guidelines requests that the IIS include:*

*‘The quantity of pulpwood (including the maximum ratio of softwood and hardwood to be used in manufacturing pulp in any one time) required for the project (thousands tonnes per annum).’ “*

### **A2.2.1 3.1 Adequacy of the Draft IIS**

*“Pulp mill intake is directly related to the anticipated source of wood fibre and the expected pulp output capacity of the mill, in this case described as 0.82 million air dry metric tonnes per annum (ADMT pa) of pulp at start up, increasing to 1.1 million ADMT pa over the life of the project. The conversion of ADMT of pulp to GMT of pulpwood requires an understanding of a number of conversion processes throughout the processing cycle, including pulping efficiencies associated with different wood fibres; and fibre and moisture losses during the log harvest, transport, chipping and chip storage processes.*

See comments later in this section

*Section 6.2.11 of the Draft IIS states the pulp mill will use approximately 3.0 million GMT pa of pulpwood and 0.2 million GMT pa of sawmill residues at start-up, increasing to approximately 3.75 million GMT pa of pulpwood and 0.25 million GMT pa of sawmill residues over the life of the project.*

This statement is not correct the Draft IIS actually states in 6.2.11 "Pulplog intake is estimated to range between 3-3.75 million GMt during the 25 year time span, whilst residue supply is anticipated to range from 0.2-0.25 million GMt. Total intake of pulpwood and residues is anticipated to be in the range of 3.2 to 4.0 million GMt/yr"

*Figure 6-19 of the Draft IIS outlines the likely ratio of softwood and hardwood feedstock over the modelled life of the project (2008-2032) for Gunns' preferred strategy of a plantation and native forest resource mix.”*

This is correct.

### **A2.2.2 3.2 Validity of the methodology and findings**

*“The assumptions used to convert raw fibre (measured in GMT) to output of pulp (measured in ADMT) do not appear to have been provided in the Draft IIS. URS is unable to confirm the validity of the methodology used to determine the quantity of pulpwood required without further information on these conversion factors for the different sources of wood fibre to be used.*

*There is insufficient breakdown of the plantation area available (hardwood vs. softwood), the likely yields from plantation areas over time and competing markets to comment on validity of the ratios of softwood to hardwood.”*

I agree with URS that conversion rates from GMt to ADt of pulp are important for analysis of pulp mill feasibility, and they are not presented in the wood supply sections of the Draft IIS. The conversions that I understand have been used by Gunns are contained in Section 3.4 of my statement.

Gunns has identified the potential use of softwood as a substitute for part of the hardwood fibre furnish. To my knowledge, the company does not have plans to use significant quantities of softwood and consequently any discussions beyond the level of detail provided in the Draft IIS would be speculative. While more detail on the plantation

areas could have been provided, the volume of softwood pulpwood is relatively small and in my opinion well within the supply potential of the estate.

#### **A2.2.3 3.4 Critical errors or omissions**

*“Key assumption factors used in the production of pulp (measured in ADMt) from different sources of wood fibre (measured in GMt).”*

Individual species and grades of wood have different pulping qualities and therefore their attractiveness to a pulp mill will vary. The pulpwood resource in Tasmania has been defined in terms of the following grades and corresponding pulp yields:

- “Native forest” – This is hardwood pulpwood produced from native forests, typically “regrowth” wood. The pulp yield from this wood varies between forest types, with the pulp yield (cooking yield) of the wood to be used by Gunns averaging 50%. Overall, 3.8 GMt of wood is required per ADt of pulp.
- “Plantation hardwood” – this is hardwood pulpwood produced from eucalypt plantations. The pulp yield from this wood is higher, requiring only 3.6 GMt of wood per ADt of pulp. The pulp yield from plantation wood averages 55.7%.
- “Plantation softwood” – this is softwood pulpwood from radiata pine plantations. The pulp yield is anticipated to be around 47% and around 5.3 GMt (under bark) of wood is required per ADt of pulp.

The pulping yield of the eucalypt plantation wood is significantly higher than that of the native forest pulpwood. This means that for a mill operating at the limit of the capacity of its recovery boiler, a higher pulp production rate can be achieved with eucalypt plantation wood than with native forest pulpwood. As the quantities of eucalypt plantation pulpwood available to the pulp mill increases over the life of the pulp mill, this will mean the capacity of the mill will increase over time as the proportion of plantation wood increases.

Softwood produces a different type of pulp to wood from eucalypts with different selling prices and different end-uses. The use of softwood allows the pulp mill the flexibility to supply different markets.

*“Uncertainties associated with key conversion assumptions.”*

I am not an expert in wood pulping and have accepted the pulp conversion rates provided to me for the range of wood inputs anticipated. These were depicted as being “typical” for these categories.

*“The source of conversion assumptions and how they benchmark against similar processing facilities already in operation.”*

These conversion yields have been provided to me by Gunns but they have been reviewed by specialist pulping consultants within the Pöyry Group and pulp equipment suppliers<sup>32</sup>. The figures accord with my general understanding of the relative differences between these grades.

#### **A2.3 4.0 Proportion of young and old wood**

*“Subsection 10 of Section 4.2.1 of the Guidelines requests that the IIS include:*

*‘A broad indication of the proportion of young (less than 30 years old) to older wood (more than 30 years old) which is likely to form the feedstock for the mill. A projection of any changes to the proportion of younger and older wood used as feedstock over the life of the mill should also be provided.’*

*(This information is required as the age of the wood will affect pulp yield and bleaching requirements, and, in consequence, emissions from the mill. In any case, the limits*

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<sup>32</sup> Pöyry Forest Industry pers comm

*indicated in the Tasmanian Government 2004, Environmental emission limit guidelines for any new bleached eucalypt kraft pulp mill in Tasmania, are to be met.)”*

It is my understanding that the pulp mill will have to operate within the Tasmanian Government Environmental Emission Guidelines referenced above irrespective of the age of eucalypt fibre processed.

#### **A2.3.1 4.1 Adequacy of the Draft IIS**

*“Section 6.2.12 of the Draft IIS states that all (hardwood and softwood) plantations will be harvested at less than 30 years of age and that native forest will be harvested at greater than 30 years of age. Gunns therefore indicates that the proportion of plantation hardwood species to native forest species, presented in Figure 6-19 of the Draft IIS for 2008 to 2032, provides the best, broad indication of the proportion of young to older wood.”*

I agree with URS that the Draft IIS states that “plantations will be harvested at less than 30 years of age whilst native forests will be harvested at greater than 30 years of age”.

In most cases this statement will be correct but harvesting age can vary depending on supply and demand requirements.

However I also agree that Figure 6-19 of Volume 1B of the Draft IIS provides a good overview of the proportion of wood type to supply the pulp mill over time. It is not accurate and is labelled as “likely contributions” as the final supply agreements have not been confirmed and resource modelling is only an estimate at a point in time.

#### **A2.3.2 4.2 Validity of the methodology and findings**

*“The majority of hardwood plantations in Tasmania are currently managed for pulpwood and sawlog production on a 10 to 25 year rotation. This rotation age is largely driven by the economics of production and the assumption that all hardwood plantations will be harvested at less than 30 years of age is therefore reasonable.”*

I agree with this comment.

*“The majority of softwood plantations in Australia are currently managed for sawlog and pulpwood production on a 26 to 35 year rotation with one or more thinning operations typically undertaken between 14 and 24 years of age. Clearfell operations in softwood plantations typically produce between 20% and 45% pulpwood, which could be defined as “older” wood under the criteria set out in the Guidelines, and may make up a proportion of the 10% of total mill feedstock sourced from softwood plantations.”*

The URS statement is potentially true, but the suggestion that the volume of softwood over 30 years of age could make up 10% of the total mill feedstock is unlikely. This could only occur if the total supply of softwood came from either pulpwood from clearfall operations or sawlog residues from clearfall operations that are over 30 years of age. The majority of softwood pulpwood roundwood generally comes from first and second thinnings, which would be less than 30 years of age.

*“The majority of native forests in Australia are managed for sawlog production on a rotation in excess of 30 years, however thinning may take place earlier in the rotation. Gunns cite the publication Towards a New Silviculture in Tasmania’s Public Old growth Forests: Final Advice to the Tasmanian Government, April 2005 as part of its discussion on wood supply. One of the recommendations in Section 7 of that report is for an accelerated program of eucalypt regrowth thinning. It is understood that Forestry Tasmania intends to thin the bulk of its productive native forest at around age 25 to 35. Therefore the assumption that all pulpwood from native forest will be harvested at greater than 30 years of age may not be valid.”*

Forestry Tasmania's advice is that its wood supply modelling assumes a modest level of thinning of regrowth forest. The average age of the thinning in its current models is estimated at 35 to 40 years.

### **A2.3.3 4.4 Critical Errors and Omissions**

*“The total mill feedstock derived from clearfelling operations in softwood plantations and the age of these clearfell operations.”*

Advice from Rayonier, the managers of Taswood Growers (the joint venture between Forestry Tasmania and GMO), suggest that their average clearfall age is around 26 to 38 years. However Rayonier expect this age to decline over time to below 30 years of age.

*“The total feedstock from thinning of native forests and the age of these thinning operations.”*

Advice from Forestry Tasmania is that under the Tasmanian Community Forestry Agreement (TCFA) of 2005 they identified an "accelerated program of eucalypt regrowth thinning, with technical financial support for improved thinning technology commencing 2005 to 2010." It was costed at \$4 million for 2 500 ha over five years. This program is entirely aimed at the accelerated production of high quality sawlog. While modest in scale it essentially makes available a volume of sawlog about 20 years earlier than would otherwise be the case, and assists in mitigating the effects of resource withdrawals as a result of new conservation reserves created under the TCFA. This has nothing to do with pulp mill supplies. This program therefore would produce, at 100 GMT/ha, about 50 000 GMT/a of pulpwood, over the period 2005-2010. Based on a 20 year supply scenario, Forestry Tasmania modelled only an average of 250 ha/a of thinning, which at an average yield of 100 GMT/ha, produces only 25 000 GMT/a, and a total of about 500 000 GMT for a 20 year period.

Thinned areas are likely to be concentrated in the south of the State (Huon and Derwent will represent > 80%), and will not necessarily provide feedstock for the pulp mill, recognising that Forestry Tasmania has other customers for regrowth pulpwood in that region, notably Norske Skog at Boyer near Hobart.

## **A2.4 5.0 Security of Supply**

*“Subsection 11 of Section 4.2.1 of the Guidelines requests that the IIS:*

*‘Detail the arrangements which are or will be in place to secure a sufficient supply of pulpwood for the projected life of the mill.’”*

### **A2.4.1 5.1 Adequacy of the draft IIS**

*“Resource security is generally provided for as part of a feasibility study for a major wood processing facility in three primary ways:*

- *Through ownership and control of the resource, with supply assumptions consistent with land tenure arrangements;*
- *Through long term supply contracts with third parties that are underpinned by robust inventory data of the supply resource; and*
- *By undertaking economic modelling of log inputs from unsecured resource using prices that are, at least, on parity with alternative markets for the same resource.”*

Gunns has developed a proprietary wood supply modelling system that allows the company to evaluate all its supply options. The company has identified an interim sourcing strategy that combines fibre from its own or managed forest resource, fibre that is expected to be supplied under long term contract, and to this “secured” resource supply it has added “unsecured” sources. These have been modelled across the whole State assuming market parity prices to determine the overall supply options.

*“Figure 6-21 of the Draft IIS indicates that Gunns (owned and controlled resources), the Crown (Forestry Tasmania), private property and sawmill residues make up the total potential feedstock resource for the proposed mill.”*

This is correct and what this figure also indicates is that there is a considerable surplus of supply so that Gunns need not secure 100% of its supply for the life of the pulp mill from the outset.

### **Gunns owned or controlled supply**

*“Figure 6-21 of the Draft IIS indicates that Gunns will initially supply approximately 0.8 million GMT pa (~25%) of the total proposed feedstock and that this will increase to approximately 2.5 million GMT pa (~66%) by 2017.”*

This comment is only partially correct as Gunns will not necessarily direct all its volume to the pulp mill.

*“Section 6.2.2 of the Draft IIS states Gunns owns 75,000 net ha of plantations and 40,000 net ha of native forest, and leases or manages under joint ventures a further 37,000 ha of plantations. The area under lease or joint venture is equivalent to ~25% of the current, total productive forest area managed by Gunns.”*

This statement is not totally correct. Section 6.2.2 of the Draft IIS under Ownership states that of the 188 868 ha of land owned by Gunns 75 000 ha are plantations – it does not state that Gunns owns all these plantations. In some instances they may only own the land and the plantations are owned by others such as MIS investors.

*“There are no references in Section 6.2 of the Draft IIS that describe the terms of lease and joint venture arrangements, including expiry dates, renewal options for subsequent rotations and associated wood flow modelling assumptions.”*

I do not know the terms of all of Gunns’ leases and joint venture arrangements for each property, but a general overview of the availability of wood supply from the various components of the Gunns owned and managed estate is set out in Section 6.1.1 of my statement and a summary is provided later in this Attachment.

*“There is no reference to the preferred land tenure associated with the proposed 45,000 ha plantation expansion programme described in Section 6.2.5 of the Draft IIS.”*

See my comments above.

### **Forestry Tasmania supply**

*“The Regional Forest Agreement (RFA) provides for Forestry Tasmania to make available 300,000 m<sup>3</sup> of high quality hardwood sawlog each year to 2017. The level of cut is reviewed every five years through a review process with the next review due in 2007. The RFA does not specify a target harvest volume for pulpwood production. Pulpwood production is considered a residual product arising from the harvest of sawlogs.”*

I agree with these comments. However the Forestry Tasmania Sustainable Forest Management Report 2004-2005 (Table 32, page 33) does state that the indicative long term sustainable level of pulpwood production is 2.8 million t/a.

*“Section 6.2.2 of the Draft IIS states that native forest pulpwood is supplied by Forestry Tasmania ‘under various contractual arrangements’ and that timber from State Forests will initially be a significant source of supply under ‘existing and future contractual arrangements’. Gunns also states that current supplies of native forest pulpwood is administered under Forestry Tasmania’s rolling Three Year Wood Production Plan.*

*Section 6.2.13 of the Draft IIS states that Gunns has been provided data by Forestry Tasmania ‘as part of an intended long-term supply agreement with (Forestry Tasmania). There are no references in Section 6.2 of the Draft IIS that detail key obligations under current or intended contracts governing supplies beyond the current Three Year Wood*

*Production Plan, including supply volumes, expiry dates and renewal or first right of refusal options.”*

I have no knowledge of the proposed contractual arrangements between Gunns and Forestry Tasmania. I have assumed that the contract will sustainably supply approximately 2 million GMT/a for 20 years, and will be governed by existing harvesting requirements within the RFA and Tasmanian Government legislation. I have made this assumption based on data that has been provided to me by Forestry Tasmania (see Section 6.2.2 of my statement).

#### **Private Property supply**

*“Section 6.2.13 of the Draft IIS states that Gunns will maintain supply from private forests ‘on an as needed basis’, indicating that Gunns has no wood supply agreements in place with private growers.”*

I agree with this comment.

#### **Sawmill residues**

*“Section 6.2.11 of the Draft IIS states sawmill residue feedstock is anticipated to range from 0.2 to 0.25 million GMT per year. There is no detail in Section 6.2 of the Draft IIS indicating the contractual status of this supply. Sawmill residues make up ~6% of the total proposed input at start up and its contractual status is not considered material to the overall assessment of resource security.”*

I agree with this comment.

#### **A2.4.2 5.2 Validity of the methodology and findings**

*“Gunns own and control a proportion of the resource that is intended for supply to the pulp mill and this proportion increases over time. This will provide some security of supply as a result of the management control by Gunns, but two aspects of this supply that impact on security are unclear.*

*Firstly, there is no detail on the current or proposed tenure of the plantation land.”*

Gunns owns over 60% of the land under its plantations. Future tenure is immaterial to the pulp mill, though the preferred model for the establishment of plantations is through the MIS established by GPL (see Section 6.1.1 of my statement).

*“Secondly, there is no statement of the company’s philosophy with respect to supply to the pulp mill in the event that other markets are available that yield a superior return to the forest owner. It is also noted that Gunns manage some of the plantation estate on behalf of third party investors and these investors will no doubt be expecting the highest possible return.”*

Gunns has modelled the woodflow to the proposed pulp mill on the basis of market parity prices. While the prices are confidential I have reviewed them and consider them to be reasonable.

Given there is a surplus of wood available, Gunns will be able to optimise woodflow to both the pulp mill and its woodchip export business on the basis of market prices at the time. With woodchip exports as the main competing use, Gunns’ pulp mill will have to out-compete international pulp mills for this fibre. Factors that lead international buyers to be in a position to lift prices they pay for Tasmanian woodchips (e.g., a rising pulp price) will also likely benefit Gunns’ pulp mill as well.

*“Contractual arrangements with third party growers such as Forestry Tasmania and private forest managers are unclear from the information provided and so too is the basis for projections of resource availability.”*

I have no direct knowledge about the contractual arrangements negotiated between Forestry Tasmania and Gunns. My assessment has been based upon the supply data provided by Forestry Tasmania to Gunns.

I understand there are only limited supply agreements with private growers and it is not expected that there will be any major move to develop long-term supply contracts (greater than five years) with private growers. The basis for the wood supply projections are discussed in Section 6 of my statement.

*“The production of pulpwood as a by-product from the production of sawlog could lead to pulpwood supply fluctuations depending on the choice of stands Forestry Tasmania allocates to its Three Year Wood Production Plan. Figure 6-21 of the Draft IIS indicates that supplies could vary between 1.7 and 2.3 million GMT pa without changing the annual production of sawlogs.”*

I agree with this comment, and this has been incorporated into Gunns’ fibre planning. However, with an approximate surplus of around 2 million tonnes in the State, a variation of 15% in Forestry Tasmania’s annual harvest volume is unlikely to cause any significant supply problems. I note that export market demands can vary by more than this figure, and this variation is being managed by the industry today.

*“Section 6.2.13 of the Draft IIS states that ‘as the wood requirement for the pulp mill is significantly less than the total harvest in Tasmania, any unforeseen reductions in wood availability from a particular source will readily be overcome by supply from another source’. Where there are competing markets for the wood supply (as there currently is from woodchip exports) such an assessment could be considered simplistic. Before any such conclusion can be drawn there needs to be a clear analysis of alternative markets and clear assumptions regarding the pulp mill’s capacity to pay for wood fibre.”*

I have presented a market analysis for woodchip exports in Section 0 of my statement. Alternative domestic markets for hardwood (and softwood) pulpwood are very limited, and while there may be competing uses for the whole supply in Tasmania it is my view that this is less likely than a surplus due to Japan’s shift away from purchasing mixed species native forest woodchips – particularly those with a low pulp yield.

#### **A2.4.3 5.3 Validity of the conclusions**

*“In our opinion the Draft IIS does not sufficiently detail the arrangements that are, or will be, in place to secure a sufficient supply of pulpwood for the projected life of the mill. Security would normally be demonstrated through a combination of secure land tenure, contractual arrangements for wood supply, and a demonstrated capacity for the pulp mill to pay a price for third party owned wood fibre that is on parity with alternative markets.”*

Gunns can, with the support of a 20 year supply contract from Forestry Tasmania, secure approximately 90% of its supply requirements at commencement of the pulp mill, as shown below:

1. Forestry Tasmania	2.0 GMt/a
2. Gunns own plantations	0.7 GMt/a (my estimate of Gunns own 45 000 ha)
3. Sawmill residues	0.1 (estimate)
4. Gunns NF resource	0.1
<b>Total</b>	<b>2.9 million GMt/a</b>

The above simple analysis does not include any of Gunns’ softwood estate or any supply from its MIS business, which it has first right of refusal to purchase.

Given the total supply from the state is expected to range from 5 to 6 million GMt/a, this will allow the company the flexibility to substitute one source for another. Tasmanian hardwood pulpwood markets are becoming more diverse with new plantation owners and investors entering the region. In such markets a well managed, competitive scale mill should have the ability to compete with alternative buyers located offshore. In my opinion,

provided Gunns' contractual arrangements with Forestry Tasmania are finalised, it will have secured enough of its fibre supply to be in a comfortable position to secure the balance in an orderly way from the market for the duration of the project life.

#### A2.4.4 Item 11; 5.4 Critical Errors or Omissions

*"A summary of the existing lease and joint venture arrangements for Gunns owned and managed land, including net planted areas, expiry dates and renewal options."*

I have prepared the following summary of Gunns' freehold and other land tenure arrangements for its total hardwood and softwood plantation estate based on its 2006 State of the Forests Report (see Table A- 1 below).

**Table A- 1:  
Summary of Gunns freehold and other land tenure arrangements**

Owner	Gunns Freehold Land (ha)	Privately Owned Land (ha)	State Forest Land (ha)	Grand Total (ha)
Gunns Ltd	41 089	8 002	562	49 653
Gunns Plantation Ltd (GPL)	33 337	12 701	12 053	58 090
Tamar Tree Farms (TTF)	6 052	7 341	1 327	14 720
Plantation Platform Tasmania			1 531	1 531
Total Plantation Estate	80 478	28 044	15 472	123 994
First Right of Refusal				2 992
<b>Total Potential Plantation estate</b>				<b>126 986</b>

Source: *Gunns State of the Forests Report*, Gunns, 30 June 2006.

*"A summary of existing and intended wood supply contracts with third parties, including details of supply volumes, expiry dates and renewal of first right of refusal options."*

I have no knowledge of these arrangements. I have spoken to other plantation growers and processors who have said they are willing to sell their wood to Gunns, but I am unaware of any firm arrangements.

Based on my discussions with some private landowners I understand that they may not be seeking long-term supply agreements, although they would be interested in selling to the pulp mill if it is constructed.

*"An indication of preferred land ownership arrangements for the proposed 45 000 ha plantation expansion programme."*

While Gunns stated that it had modelled a plantation estate of 150 000 ha, there is no requirement by the pulp mill for this target to be reached. In 2005 as part of the Pöyry team reviewing the wood supply, we modelled an estate of 130 000 ha and found the impact on the pulp mill of a smaller plantation estate was minimal. BRS reported that the level of hardwood plantation in Tasmania at the end of 2005 was 155 500 ha<sup>33</sup> however with the inclusion of planting this winter this figure would be in my opinion over 165 000 ha. Therefore as discussed, the pulp mill does not need any expansion in the plantation estate for it to commence operations. If Gunns expands its estate it will be a commercial decision based on its investment criteria and may include freehold land

<sup>33</sup> Bureau of Rural Sciences – Australia's Plantations 2006.



purchase, joint venture or lease. In my opinion it will depend on what is the most commercial option at the time.

*“Output from a wood supply model indicating the likely levels of contractually secured and unsecured feedstock.”*

The wood supply model is described in Section 6 of my statement, and the status of contractual arrangements is also discussed in Section 6 and above in response to the comments at section 5.2 of the URS report. As I understand key negotiations are still in progress, I see little benefit in undertaking such a modelling exercise.

*“Assumptions regarding the future prices in alternative markets and the capacity of the pulp mill to compete for wood fibre at these prices.”*

As discussed in Section 0 of my statement, the main market by far for Australian woodchip exports is Japan. However other markets do exist in Korea, China and Taiwan but the export prices tend to be lower. From the current Japanese hardwood price of \$156/BDt, prices to Korea tend to be approximately \$10 to 15/BDt less followed by \$20 to 30/BDt less for China and then \$30 to 40 less for Taiwan with no sales to India at present.<sup>34</sup> Gunns is assuming that it will have to compete with Japan and these other markets to secure wood supply for the pulp mill.

If export woodchip prices were to increase dramatically, then Gunns would expect to see some corresponding increase in the hardwood pulp price to compensate and therefore increase Gunns' own capacity to pay for delivered wood.

In my view it is unlikely that the export price for hardwood woodchips will increase dramatically as Japan is expected to remain the major market, and as illustrated in Figure 9-4 of my statement, they have been able to retain a relatively stable price for Australian woodchips since they commenced exports in the late 1960s.

## **A2.5 Impacts to the variations to the security of supply**

*“Subsection 12 of Section 4.2.1 of the Guidelines requests that the IIS:*

*‘Specify if and how the pulpwood supply including the security of supply might vary through the life of the project, and the likely effect of such variations in terms of the issues identified in the preceding paragraphs of this clause.’”*

See Section 6 of my statement and my response above to section 5.2 of the URS report.

### **A2.5.1 6.1 Adequacy of the Draft IIS**

*“Section 6.2.14 of the Draft IIS specifically addresses potential variations to the security of feedstock over the life of the project. In this section Gunns proposes that since there are no constraints on the supply of wood from private landowners and Forestry Tasmania, ‘there are no expected variances in security’ over feedstock.”*

#### **Gunns owned or controlled supply**

*“The Draft IIS does not provide details of the source of supply over time from different land tenures managed by Gunns or contractual terms governing land use on current and potential future areas that are under lease or joint venture. There is no discussion of obligations that Gunns may have to market wood that is managed for third party investors such as those in a Managed Investment Schemes or other third party investors.”*

This is discussed in Section 6.1 of my statement.

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<sup>34</sup> Gunns pers comm.

### **Forestry Tasmania supply**

*“Section 6.2.1 of the Draft IIS describes the RFA framework including its key objectives of maintaining an ecologically sustainable and internationally competitive wood production and wood products industry. The Draft IIS also notes the five yearly review process, the outcomes of the 2002 review and subsequent Supplementary Agreement signed in 2005.”*

URS is correct.

### **Private Property supply**

*“Section 6.2.13 of the Draft IIS states that Gunns will maintain supply from private forests ‘on an as needed basis’. This infers that Gunns has no wood supply agreements in place and it is assumed (although it is not clear) that this situation will continue.”*

See Section 6.3 of my statement.

### **Sawmill residues**

*“Sawmill residues make up ~6% of the total proposed input at start up and are not considered to be material to the overall assessment of resource security.”*

I agree with this comment.

## **A2.5.2 6.2 Validity of the methodology and findings**

*“It is common practice to undertake a sensitivity analysis during a feasibility study for the purpose of quantifying potential contractual and market based risks to a development associated with key raw material inputs, in this case pulpwood. The Draft IIS did not indicate such an analysis has been undertaken.”*

Pöyry has undertaken a sensitivity analysis on the supply from private native forests (a 20% reduction) and the expansion of the Gunns plantation estate (limited to 130 000 ha). Neither source had a material impact on the overall economics of the project. However while supplying the pulp mill with in 2017 with 100% plantation grown wood is physically possible it would significantly increase landed wood costs.

*“As discussed ....., the lack of detail on land tenure makes it difficult to assess the impact of potential variations to the security of supply sourced from land managed by Gunns.”*

See Table A-1 of this statement and my comments above in response to section 5.2 of the URS report.

*“While the RFA will theoretically provide some protection for the State with respect to its supply objectives, it does not provide any guarantees regarding the supply of this wood fibre to Gunns. It should also be noted that the Supplementary Agreement, while generally maintaining wood supply, it did include the removal of 141,000 ha of State Forest and freehold land from potential timber production, and noted the need for industry re-structuring. The Draft IIS does not list future RFA reviews as a potential sovereign risk despite the precedent set in 2005 in Tasmania and similar precedents in Western Australia and New South Wales.”*

This matter is considered at Section 7.1.1 of my statement.

*“As discussed in Section 5.1 of this report the Draft IIS is also silent on the wood supply contract terms between Forestry Tasmania and Gunns, including supply volumes, expiry dates and renewal or first right of refusal options. This lack of detail makes it difficult to assess the impact of potential variations to the security of supply sourced from land managed by Forestry Tasmania.”*

I am not familiar with the details of the contractual arrangements between Gunns and Forestry Tasmania, but I have based my assessment on data provided by Forestry Tasmania. See Section 6.2 of my statement.

### **A2.5.3 6.3 Validity of the conclusions**

*“Broad references within the Draft IIS to the lack of constraints on the supply of feedstock from private landowners and Forestry Tasmania, and to the RFA framework do not sufficiently describe how the security of supply might vary over the life of the project and the risks associated with any such security.”*

I disagree with this comment. For the last 10 years, based on the data I have reviewed Gunns has generally been able to secure and export, on an annual basis, significantly more wood than the pulp mill will require.

I acknowledge the last year has been a difficult market and export volumes have been low, though that of itself does not suggest that Gunns could not satisfy market demand in the event of a market rebound.

Based on my knowledge of the industry and the information I have reviewed, Gunns has a long track record of securing sufficient wood supply to satisfy market demand. I expect Gunns will use this experience in securing wood supply for the pulp mill. In my opinion, commencing the project with a significant surplus of pulpwood, a declining export market, and an expanding plantation estate provides Gunns with sufficient wood supply for the pulp mill for the foreseeable future.

### **A2.5.4 Critical Errors or omissions**

*“An assessment of the sovereign risk associated with further changes to the RFA.”*

This is considered in Section 7.1.1 of my statement.

Furthermore, as shown in Figure 6-10 of the Draft IIS, Gunns could nearly secure all its requirements for the pulp mill from its own and managed plantations plus sawmill residues and private property.

### **A2.6 Outputs from a wood supply model indicating the sensitivities associated with key contractual and market based risks**

The outputs of the wood supply model as reviewed by Pöyry and myself are contained in both Section 6 of my statement and the Gunns Draft IIS.

The impact of reduced supply from private native forest and a smaller plantation estate was assessed and the result was a minimal impact on the pulp mill. See Section 7 of my statement.

### **A2.7 Evidence of a sustainable wood supply**

*“Subsection 13 of Section 4.2.1 of the Guidelines requests:*

*‘A demonstration of how the supply of pulpwood of all types and age classes and from all Tasmanian sources is to be maintained on a sustainable yield basis.*

*Note: This should include a discussion on the use of pulpwood from Tasmanian plantations on a sustainable yield basis for the mill, which indicates possible scenarios for the use of plantation wood in the mill and canvasses the feasibility and environmental issues associated with an “all plantation” sustainable yield wood supply strategy. Provide details of the calculations and assumptions upon which the sustainable yield for the supply of pulpwood of all types and age classes to the mill over the projected life of the mill has been determined.”*

Gunns has modelled the potential wood supply available to it, including the plantation estate it owns and manages, plantations and native forest supplies on private land, the potential supply from Forestry Tasmania, and sawmill residues. The outputs of this model are shown in numerous charts in Volume 1B of the Draft IIS, for example:

1. Supply by resource owner over time (Figure 6-10)
2. Supply by region over time (Figure 6-11)
3. Plantation and native forest supply over time (Figure 6-12)
4. Supply source over time to the pulp mill (Figure 6-13)
5. Potential supply mix by region over time to the pulp mill (Figure 6-14).

The model develops sustainable yields for Gunns' plantation estate (hence the need for an area estimate given as 150 000 ha), and assumes supplies based on information provided from Forestry Tasmania and Private Forests Tasmania. Following my review of its operations, Gunns is required to meet sustainability criteria in all its forest operations to meet the certification criteria set out in the Australian Forestry Standard and a further check on this consistency of operation is provided by Gunns' certification under ISO 14001.

Gunns' compliance under both schemes is independently audited, and I am advised by Gunns that no major non-conformances have been recorded. Forestry Tasmania has also advised me that they have not recorded any non-conformances either.

#### **A2.7.1 Adequacy of the Draft IIS**

*"Section 6.2.15 of the Draft IIS provides an overview of how pulpwood supply will be maintained on a sustainable yield basis. The section references evidence of sustainable management, including Gunns' Sustainable Management Policy, commitment to regeneration of forests as per the Forest Practices Act 1985, the RFA, Private Forestry Tasmania surveys of private landowner intent, and modelling of the Gunns resource on a non-declining<sup>35</sup> basis.*

*Section 6.2.8 of the Draft IIS indicates a possible scenario for the use of plantation feedstock only, noting that this is potentially possible from 2018 once the current plantation estate matures and is expanded by an additional 45,000 ha. Section 6.2.5 of the Draft IIS indicates that since a plantation only strategy can be achieved at current plantation expansion rates and under current legislative frameworks, there are no relevant environmental impacts to be assessed and/or mitigated.*

*Section 6.2.7 of the Draft IIS summarises the resource modelling process undertaken by Gunns to determine wood flows over time by ownership/tenure, species and supply region (operational catchment).*

*The Draft IIS references a review of model inputs undertaken by Jaakko Pöyry Consulting. URS is led to believe Gunns has advised RPDC that the review was carried out as part of internal financial due diligence processes. The review reportedly contains information commercial in confidence."*

I have no particular comment to make other than that I am familiar with the report referred to.

#### **A2.7.2 7.2 Validity of the methodology and findings**

*"Gunns has used forest industry specific software, the Woodstock Forest Modelling System (Woodstock) to undertake the wood flow analysis of its own freehold and controlled resource. URS considers Woodstock to be one of the leading software tools available to undertake this type of analysis. Key Woodstock inputs typically used to describe a resource by forest type and ownership include:*

- *Location;*
- *Net productive area by age;*

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<sup>35</sup> A wood flow modelling parameter that ensures the yield from a nominated resource in one year will be greater than the yield for the previous year.

- *Estimated harvest yield by product based on site-specific, inventory or regional yield data;*
- *Transport distances or costs; and*
- *Model constraints, including replanting, new land planting and market supply constraints.*

*The Draft IIS indicates that wood flow data for Forestry Tasmania and private property (through Private Forests Tasmania) were modelled internally by the respective third parties and supplied to Gunns for integration into wood flow summaries.*

*URS has reviewed the Draft IIS for evidence of each key wood flow modelling input by ownership (Table A- 2) and found in most cases that the Draft IIS does not adequately address this Guideline.”*

The type of inputs used in the modelling are described in Section 6.6 of my statement.

**Table A- 2:  
Summary of key woodflow model inputs by forest type and ownership, as described in the Draft IIS**

<b>Model input</b>	<b>Gunns</b>	<b>Forestry Tasmania</b>	<b>Private property</b>
Location	Resource split into 35 log transport catchments and summarised into the three regional areas of North-east, North-west and South-east		
Area by age	Only total net area quoted	Only total net area quoted	No data supplied
Yield by product	No data supplied	No data supplied	No data supplied
Yield source <sup>1</sup>	No data supplied	No data supplied	No data supplied
Yield assessment methodology <sup>2</sup>	No data supplied	No data supplied	No data supplied
Model constraints <sup>3</sup>	Non-declining yield constraint	No data supplied	No data supplied

<sup>1</sup> Typical yield sources include professional estimate, site assessment, current inventory or grown forward inventory data.

<sup>2</sup> Including site or inventory assessment methodologies, growth modelling assumptions, growth model sources, target or actual inventory error bounds, the conversion used to go from inventory data assessed in cubic metres to yields reported in the Draft IIS in GMT, harvest reconciliation data and genetic or silvicultural gain assumptions.

<sup>3</sup> Typically include maximum and minimum harvest age, replanting assumptions, non-declining or smoothed yield constraints, minimum supply constraints and species mix constraints.

*“It is normal practice to undertake a sensitivity analysis during a feasibility study for the purpose of quantifying potential environmental and operational risks associated with key raw material inputs, in this case pulpwood. The Draft IIS does not indicate such an analysis has been undertaken.*

*In addition ..... there are a number of environmental and operational risks that could impact resource sustainability. URS notes that the Draft IIS is currently silent on key risks, including potential losses through:*

- *Fire;*
- *Insects;*
- *Browsing pressure;*
- *Disease;*
- *Frost, snow and hail;*
- *Climate change, including mean annual rainfall and daytime temperature trends, and drought risk;*

- *Inaccurate area statements;*
- *Inaccurate inventory assessments; and*
- *Inaccurate or inappropriate growth modelling data.”*

The first five issues have been broadly addressed in Section 7.2 of my statement. I have reviewed Gunns’ procedures for site selection and how potential errors in its Forest Management Information System are managed, and found Gunns’ system to be of a high standard.

In general, area statements are continually updated using the latest technology which is field checked by Gunns’ foresters. Gunns’ inventory is undertaken by an independent third party contractor who is well respected in the industry and their work is audited by Gunns. Assignment of yield to unmeasured stands is deliberately conservative, and my review of Gunns’ yield estimates concluded that they were a reasonable estimate of actual yields (see Section 6.1.2 of my statement).

In my professional judgement, absent a catastrophic fire disaster, the above factors will not affect Gunns’ ability to secure the fibre required to supply the pulp mill.

#### **A2.7.3 7.3 Validity of the conclusions**

*“URS does not consider broad references to resource area and location as sufficient demonstration of the sustainability of wood supply. On the basis of available information, it is not possible for URS to comment on the validity of the ratio of softwood to hardwood intake (see Section 3 of this report) or on documented proportions of eucalypt plantation, pine plantation and native forest intake (see Section 4 of this report).”*

As discussed previously, modelled outputs were provided in chart format. These outputs showed the significant surplus referenced previously. I would expect that a modern well managed, world scale domestic pulp mill will be competitive in the local market against export woodchips. Gunns’ Forest Management Information System and the Woodstock wood supply model have been used by the company to internally evaluate and manage key fibre supply risk.

I agree that it is difficult to assess the sustainable supply from the information provided, as much of the data in the Draft IIS is provided in chart format. However this is provided to protect the commercial nature of the data of the various owners.

In my opinion URS could have developed a view of sustainability from first principles and data that is public knowledge such as Forestry Tasmania’s *Sustainable Forest Management Report 2004-2005*, *Private Forests Tasmania Annual Report 2004-2005* and the *BRS Australia’s Plantations 2006* (or previous versions). While it is not possible for URS to reproduce modelling undertaken by Gunns, I believe there is sufficient information in the public domain for them to determine that there is sufficient pulpwood in Tasmania to meet the pulp mill’s needs and no pressure to harvest any forest unsustainably.

#### **A2.7.4 7.4 Critical errors or omissions**

*“A summary of key inputs to the wood supply models for each of Gunns, Forestry Tasmania and Private property resources including:*

*Area by species by age data*

*Harvest yield by product data*

*Yield source,*

*Yield assessment methodology*

*Model constraints*

*An assessment of key environmental or operational risks that may directly impact on wood flows.”*

These are summarised in Section 6 of my statement.