

A Socio-Economic Assessment of the Plantation Processing Sector in Queensland



Timber Queensland

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MBAC Consulting

A handwritten signature in black ink, appearing to read 'Rod Meynink', with a stylized flourish at the end.

Rod Meynink

Director

29 August 2005

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GLOSSARY

a.	actual
c.	approximately
DPIF	Department Primary Industries and Fisheries
e.	estimate
gmt	green metric tonne
ha	hectare
m	
m ³	cubic metre
m ³ / gmt	We have assumed 1 m ³ = 1 gmt in instances where we have combined these quantities
MDF	medium density fibreboard
PP	private property (forest)
The estate	Queensland's public and private exotic and Araucaria plantations

SUMMARY

This report reviews the socio-economic contribution of the Exotic Pine and Araucaria processing sectors in Queensland (the estate). Eleven processors were visited and interviewed representing 1.83 million m³ (82%) of the 2.24 million m³ supplied by the estate in 2004. Supply is dominated by the publicly owned plantation softwood resource, which contributed 95% or 2.13 million m³. The South East region consumed 87% of the log supply.

The exotic processing sector consists of twenty-two facilities (mills), which consumed 1.76 million m³ of logs. Twelve sawmills consumed 64% of the exotic estate logs, four panel mills consumed 13% and three export facilities (fibre and log) consumed 0.34 million m³ logs and 0.17 million gmt chips/residue. Three other mills — two preservation and a log trader — processed a combined total of 0.08 million m³ logs.

1.77 million m³ of exotic logs are purchased by exotic industry, of which 0.17 million m³ are diverted to other mills.

The Araucaria processing sector consists of sixteen facilities which consumed 0.43 million m³ of logs and 0.14 million gmt fibre. Nine sawmills used a combined 0.33 million m³ logs, six panel mills used a combined 0.97 million m³ of logs and 0.07 million gmt fibre and one export facility exported around 0.05 million Araucaria fibre (along with substantially greater quantities of exotic fibre).

0.41 million m³ logs were used by the Araucaria industry, of which 0.06 million m³ were diverted to other Araucaria mills.

There are sixteen Araucaria and exotic plantation based sawmills in Queensland with a current intake of 1.44 million m³ logs per year. Of this, 95% or 1.36 million m³ logs were sourced directly from the forest and the remaining 5% or 0.07 million m³ are logs sourced from other mills (called diversions).

The panels sector consists of plywood/veneer, particleboard and medium density fibreboard (MDF) producers. There are seven panel facilities using 0.32 million m³ logs and an additional 0.37 million gmt chips, either from converting pulpwood into chip or purchasing residues from primary processors, such as sawmills.

There are three plantation softwood plywood/veneer manufacturers using plantation softwood in Queensland. These are Boral Hancock (Ipswich), Austral plywoods (Brisbane), Brims (Brisbane) and Austicks, at Gladstone. Brims also manufactures high quality particleboard. There is one MDF producer, one particleboard producer, three log/fibre (chip) exporters and a number of treatment operations.

The softwood processing sector turned over approximately \$571 million. The 100% exotic processing sector contributed \$390 million while the 100% Araucaria processing sector contributed \$95 million. These sectors directly employed 795 and 526 people respectively — a total of 1 321 people. Those processors using both exotic and Araucaria turned over \$86 million and directly employed a further 431 people. Total direct employment was 1 752 people.

Overall, the total value of sales was \$571 million based on 2.25 million m³ logs, 0.62 million gmt chips. Value per employee was \$326 000. Value per m³/gmt raw material was \$200.

Total value of wages paid was \$71.5 million, with an additional \$17.7 million in associated wages and salaries on-costs for a total wages and associated costs of \$89.2 million.

The total contractor-spend was \$95.5 million, of which \$58.5 million was for harvesting and haulage contractors, \$15.4 million for mill contractors and \$21.6 million for contractors associated with distribution of finished products. The total people employed as full-time contractors is estimated to be 670 people, with 377 employed by harvesting and haulage contractors, 154 persons employed as contractors within the mills and another 140 in distribution of finished products.

The total value of sales made by the processing sector – i.e., the gross value of output was \$571 million, as shown below for the various sectors.

Sector of industry	Log intake million m ³ (% of total)	Output (value of sales) \$ million (% of total)
Araucaria sector	0.31 (14%)	95 (17%)
Exotic sector	1.63 (74%)	390 (68%)
Mixed sector	0.30 (14%)	86 (15%)
TOTAL	2.25 (100%)	571 (100%)

There are some rounding differences with these tables.

The sector added some \$450 million to the value of the softwood timber resource, based on estimated stumpage value. In other words, the activities of the industry are increasing the value of the timber resource by 3.7 times – and in so doing, these activities are contributing to economic activity in other sectors, as well as providing household income via wages paid to employed persons.

Using 1.8 a multiplier, the total output impact of the Queensland softwood industry on the State economy is around \$1 026 million. Additionally, some 3 150 jobs could be supported (directly and indirectly) as a result of the operations of this industry sector. A total of around \$96 million in household income could be dependant, directly or indirectly, on payments made to labour in the industry.

Industry responses to a series of general and forward looking questions ranged from expectations about the resource to concerns regarding corporatisation of the state softwood plantation activities. Responses confirmed industry's total reliance on the public resource and concerns regarding industry's ability to expand. These are not new revelations. Industry expansion is now occurring interstate. Industry consolidation is a likely development in Queensland, although this will not be easy, given the significant investment held within the sector.

The industry is approaching a period of significant change associated with stabilisation in overall volume from the forest, change in product assortments from the forest and a change in exotic species mix.

While different resource scenarios are discussed, the reality is there will be no increase in availability from the existing public or private estate — a situation which has been known by industry for some time. In addition, it is unlikely there will any significant expansion of the public or private estate.

A robust forest owner and industry blue-print or plan is required for the next 1-2 decades if an optimal and sustainable industry structure is to result. Both the forest owner and the processors have obligations here, as an efficient and dynamic industry will improve returns to the forest owner.

1 INTRODUCTION

This report reviews the socio-economic contribution of the Exotic Pine and Araucaria processing sectors in Queensland. The report focuses on the primary processing sector, which takes logs from the forest and the secondary processing sector, which takes products from the primary processing sector, further processing these. However, there are industries, such as segments within the panel industry, which take logs from the forest as well as products from primary processors. Given the need to maintain individual processor confidentiality, these two segments have been combined in this report.

The industry has been divided into four segments – sawmilling, panel production, log/fibre (woodchip) export and other (treatment, paper, log trading) industries. The report also comments on highly dependent upstream and downstream businesses, such as harvesting and haulage contractors and chemical suppliers.

The report does not cover further processing such as truss and furniture manufacturers.

The review outlines the social and economic implications of three future industrial scenarios - status quo, industry consolidation and industry expansion.

1.1 APPROACH

MBAC undertook the following:

- Prepared a detailed survey form for processors (Appendix 2).
- Distributed survey forms to industrial participants (via Timber Queensland).
- One-on-one interviews with Austicks (Gladstone), Pentarch (Townsville), Ravenshoe Timbers (Ravenshoe), Hyne & Son (Tuan), Canterwood (Owanyilla), Laminex (Toolara), Carter Holt Harvey (Gympie), Hyne & Son (Imbil), Weyerhaeuser (Caboolture), Brims (Brisbane) and Allied Timber Products (Burpengary).
- Met with Timber Queensland.
- Developed a survey form for contractors, which was sent to few contractors as there was significant delay in receiving the processing survey forms.
- Contacted some of the larger processors not visited with specific questions.
- Met with DPIF to discuss allocated volumes for processors not surveyed although this was on an aggregated level basis and individual customer information was not discussed.

It is easy to imply high precision, with items such as log intake, production and turnover. These are dynamic quantities, varying day to day, week to week, month to month and year to year. Where practical, we have rounded numbers.

2 SOFTWOOD PLANTATION RESOURCE

Queensland has around 56 million ha of native and planted, public and private forests, which represents 33% of the land area. Around 80% of the forest is publicly owned with the remaining 20% privately owned. Much of this forest is classed as sparse. The state has 191 500 ha (88%) public plantations and 25 000 ha (12%) of private plantations – a total planted forest area of 216 500 ha.

Of the plantation resource, approximately 92% or 200 000 ha is softwood plantation, the remaining 16 500 ha (8%) being hardwood plantations.

The Queensland Department of Primary Industries and Fisheries (DPIF) is the largest plantation owner in Queensland with around 90% of the softwood plantation resource under management. The remainder is owned by smaller growers¹.

For this study, the state was divided into three regions, although for reporting purposes, two were combined, to maintain confidentiality:

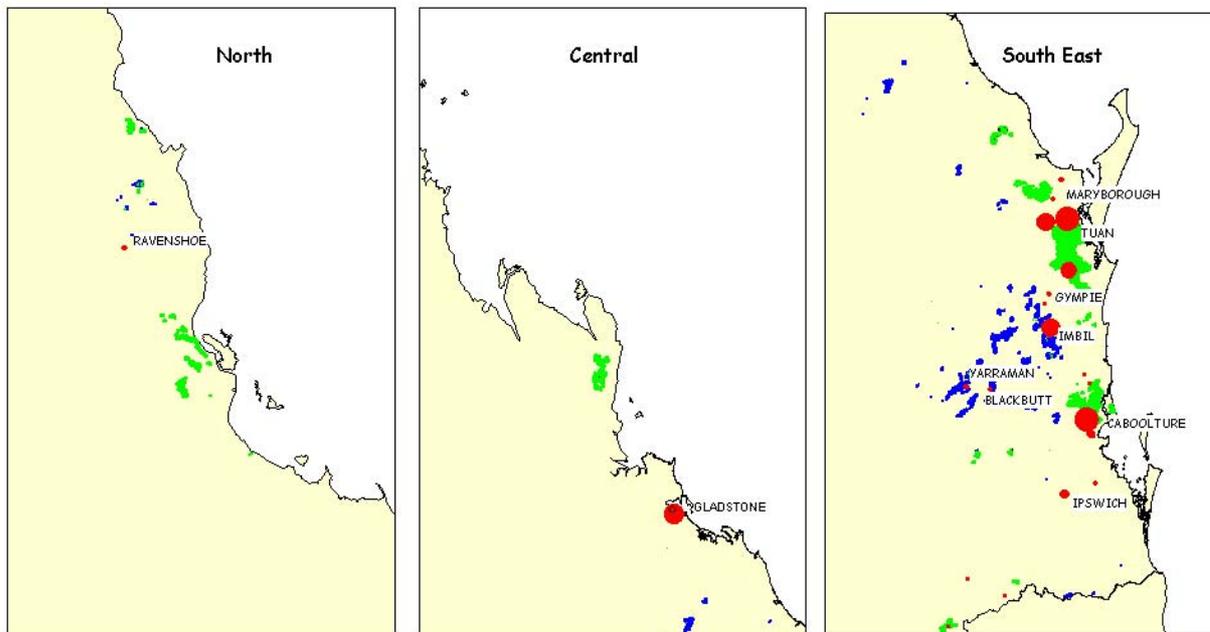
- 1) South East Region extending from the NSW:QLD border to Bundaberg, containing the Wide Bay-Burnett and South East plantations, as well as scattered plantations west to Warwick and Stanthorpe.
- 2) The Central and Northern Regions:
 - a. Central Region – extending north of Bundaberg to north of Rockhampton, containing the Byfield and Cardwell plantations.
 - b. Northern Region – extending from north of Rockhampton to north of Cairns, containing the Atherton Tablelands and Cairns plantations.

2.1 LOCATION AND AREA

The estate is dominated by exotic softwood species concentrated in the South East Region. Almost 85 per cent of the plantations are in South East Queensland, with the largest concentration in the Beerburrum-Maryborough area, within 200 kilometres of Brisbane. As a consequence, industry is also concentrated in the South East of the State, as shown in Figure 1.

Figure 1, shows the public Araucaria plantation resource in blue and the public exotic resource in green. Industry is thematically mapped – the larger the point the larger the log/fibre intake.

Figure 1: Softwood plantation resource and associated industry in Queensland - SE, Central and North



Source: DPIF and survey data

2.2 SPECIES

The major softwood species groups in Queensland are the exotic planted softwoods and the native or Araucaria planted softwoods.

Exotic planted softwoods:

- slash pine (*Pinus elliottii* var. *elliottii*) – just under 20% of the resource
- Caribbean pine (*Pinus caribaea* var. *hondurensis*) – just under 30% of the resource
- slash pine and Caribbean pine hybrids – just over 20% of the resource

Araucaria planted softwoods

- mainly hoop pine (*Araucaria cunninghamii*) – 22 per cent of the resource.¹

Araucaria (Araucaria cunninghamii)

Araucaria cunninghamii (Araucaria in this report) plantings commenced in the 1920s, under a range of employment and rural development schemes. The species is the only native Australian softwood that has adapted to intensive plantation development. There is around 42 000 ha², representing around 22% of DPIF's softwood plantation estate. The plantations are grown on very long rotations, with a small number of stands being harvested that were established in the 1920s.

The wood is highly valued as a decorative timber, as opposed to a structural timber such as slash pine, as it is finely grained, even-textured, resin-free, tasteless and odourless. It meets the strict food and hygiene regulations for use with food products, which allow it to be used, for example, to manufacture ice-cream sticks.

DPIF has investigated alternatives to planting of Araucaria; however, many species have been trialled and Araucaria has proved to be best species for these sites (essentially ex-rainforest sites).

Numerous minor species

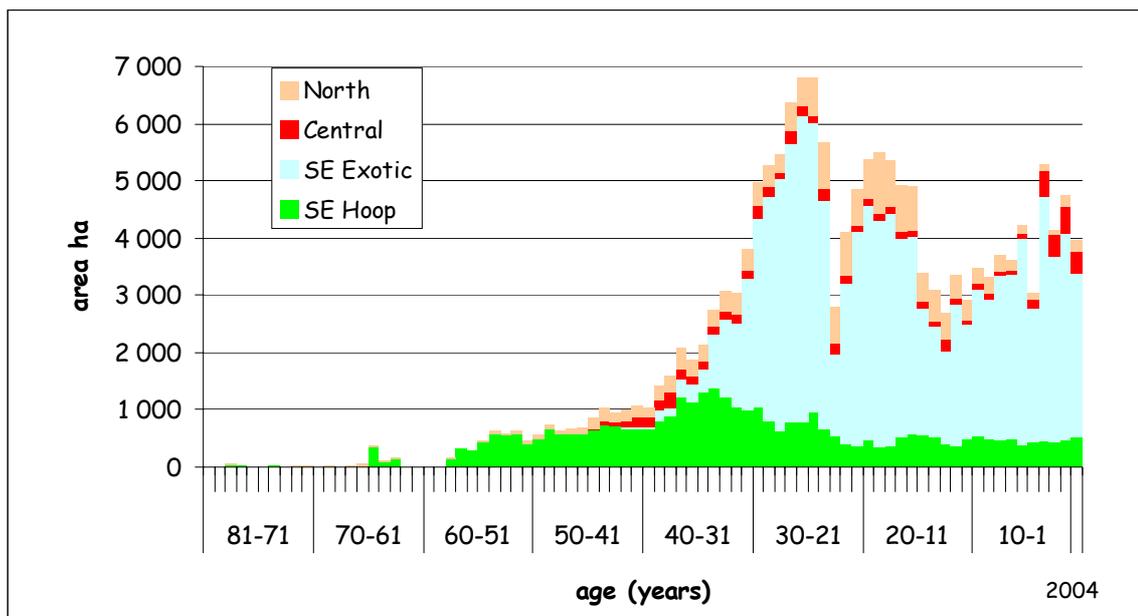
These were largely established as trials and are being progressively felled to make way for more commercial species. These represent around 8% of the resource.

2.3 AGE CLASS

Most of the DPIF softwood plantations are less than 40 years old, with a peak in planting 24 to 30 years ago at around 6 000 ha per year, as the exotic plantations in Beerburrum and Tuan/Toolara (Fraser Coast) were established (see Figure 2). This was followed by another peak 15 to 21 years ago in the same region, where planting reached 4-5 000 ha per year. Planting declined to 2-2 500 ha per year a little over a decade ago only to steadily increase this decade to between 3 000 and 5 000 ha per year.

Araucaria planting peaked 30-40 years ago at about 1 000 ha per year, steadily declining to a level of around 400 ha per year. This planting rate has been reasonably stable for the last two decades. See Figure 2.

Figure 2: DPIF softwood plantation estate by location and year planted

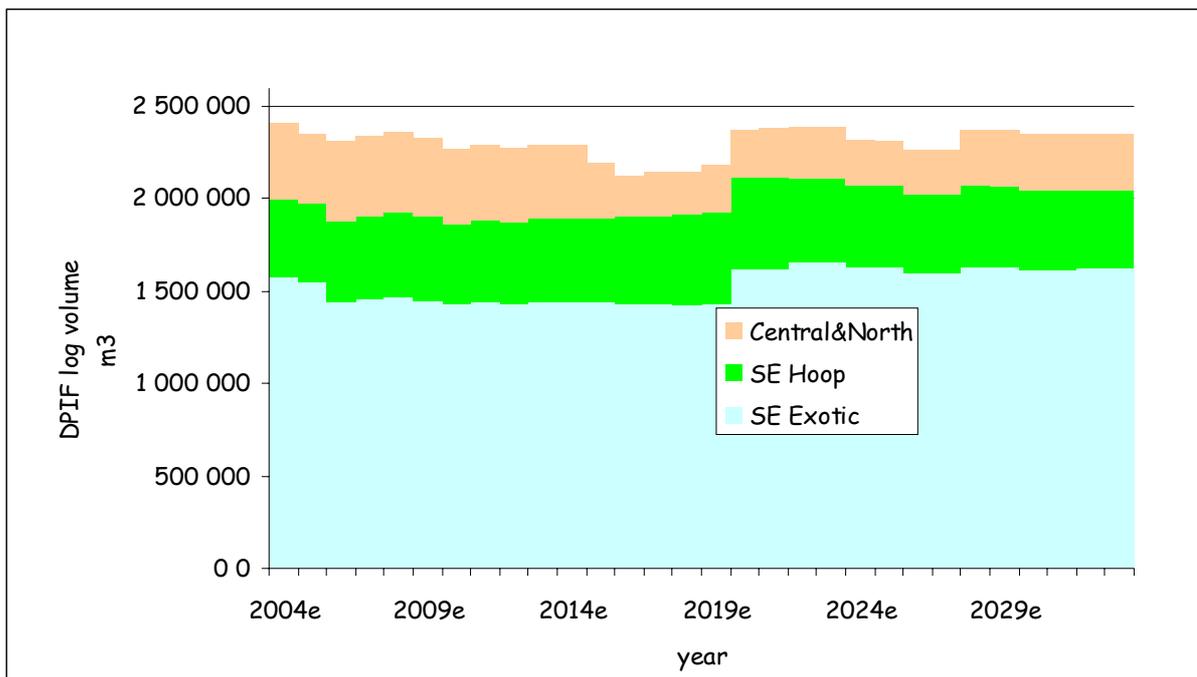


Source DPIF

2.4 WOOD AVAILABILITY

Queensland's softwood plantations are being harvested at younger ages. This reflects demand and DPIFs desire to reduce rotation age and improve financial returns. Over the next decade, availability should be stable, as peaks and troughs (Figure 3) are removed by wood flow modelling. Of course, supply and availability are not the same and actual wood sales may differ to predicted. Any changes will be due to impacts on removals associated with changes in silvicultural regimes, specifically thinnings availabilities and reduction in catch up thinnings.

Figure 3: DPIF softwood plantation wood availability by region



Source DPIF

Over the next decade (2005-2014), DPIF is predicting the following regional average annual availability:

- South East exotic softwood — 1 450 000 m³
- South East Araucaria — 450 000 m³
- Northern Region — 320 00 m³
- Central Region — 90 000 m³

Total average annual availability over the next 10 years is predicted to be around 2 300 000 m³.

2.5 SURVEYED VOLUME

MBAC surveyed Carter Holt Harvey (Gympie), Laminex (Toolara), Hyne & Son (Imbil), Austicks (Gladstone), Pentarch (Townsville), QCE (Brisbane), Yarraman Pine (Yarraman), Canterwood (Owanyilla), Austral Plywoods (Brisbane), Brims Wood Panels (Brisbane),

Muller's (Blackbutt) near Benarkin, Weyerhaeuser (Caboolture), Hyne Timber (Tuan) and Allied Timber Products ATP (Burrpengary). These mills harvested 1.83 million m³ (82%) from public and private planted softwood forests (the estate) in Queensland in 2004.

The following companies were not sampled or did not respond to the survey. Pidgeons Sawmill (Stanthorpe), S & S Timbers (Gympie), Ravenshoe Timbers (Ravenshoe), Boral plywood (Brisbane), PermaLog (Kallangur), CHH Doorskins (Ipswich), Koppers Wood Products (Brisbane), Amcor (Brisbane), Wade (Maryborough), Josephs, Wongi Timbers (near Maryborough), Pinewood Products (Oxenford), Greenland Timbers (Stanthorpe), Walton Wood Products (Brisbane) and Audanus (Brisbane).

In discussions with industry, the results of the survey and discussions with DPIF, MBAC estimates the log intake from the forest was a further 0.42 million m³ (18%). The survey results are summarised in Table 1 below.

Table 1: Log volumes removed from the forests – surveyed and non-surveyed mills

Survey status	Total m ³	%
Not surveyed*	410 100	18
Surveyed	1 828 500	82
Total	2 238 600	100

* Note this volume was determined by discussions with industry, DPIF and downstream sales from survey returns.

The DPIF advised their actual harvest in 2004 from their estate was 2.1 million m³. MBAC has determined an additional 0.1 million m³ was harvested from the private estate (ie from the survey) for an estimated total likely harvest of 2.2 million m³. The survey data captures 1.828 million m³ (82%) and the projected volume is within 1% of likely actual harvested volumes in 2004.

2.6 NATURE OF SUPPLY - SUPPLIER, SOURCE, SPECIES

Based on the survey data, the breakdown of the 2004 estate supply by supplier (DPIF and PP) is shown in Table 2. The key data are (% of total in brackets):

- The publicly owned resource supplied around 2.13 million m³ (95%).
- The private estate produced around 0.11 million m³ (5%).
- The South East Region produced around 1.95 million m³ (87%).
- The Central and Northern Regions produced around 0.28 million m³ (13%).

Table 2: Public and private estate harvest 2004 by supplier group and region – m³

Source	South East	Central & Northern	Total	%
DPIF	1 844 100	284 500	2 128 600	95%
Private Property	110 000		110 000	5%
Total	1 954 100	284 500	2 238 600	100%
%	87%	13%	100%	0%

The breakdown of the 2004 estate supply, by species group (exotic and Araucaria) is shown in Table 3. The key data are (% of total in brackets):

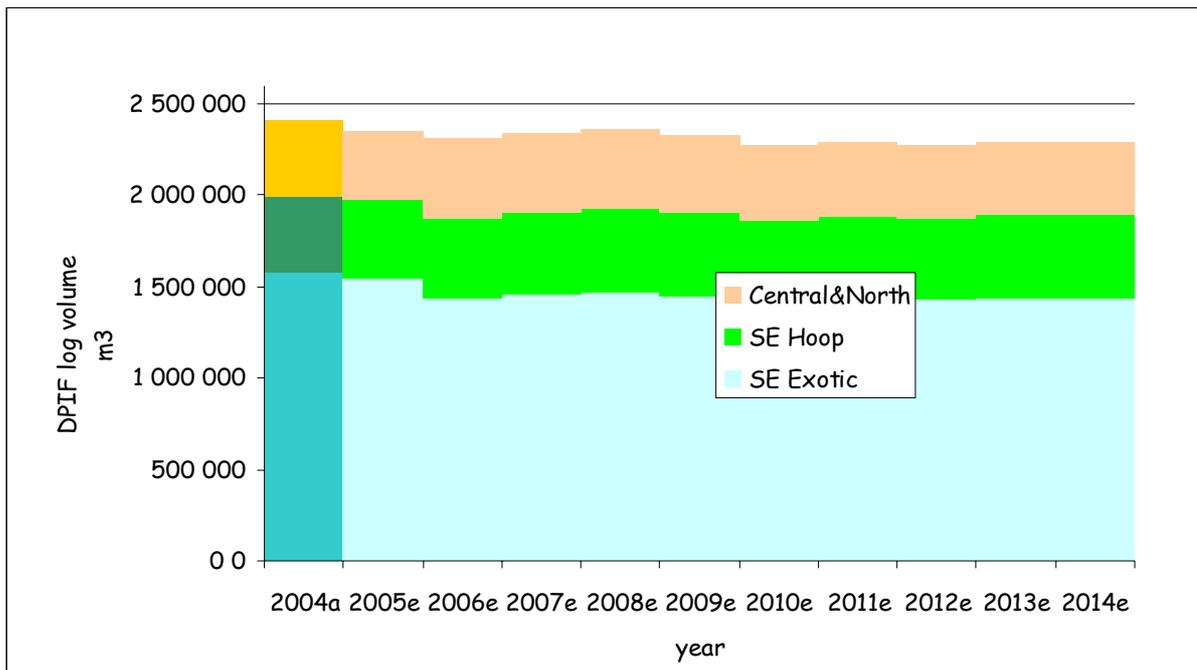
- Exotic pine log production accounted for around 1.76 million m³ (80%).
- Araucaria log production was around 0.43 million m³ (20%).

Table 3: Public and private estate harvest 2004 by species group and region – m³

Species group	South East	Central & Northern	Total	%
exotic	1 535 800	229 000	1 764 800	80%
Araucaria	375 300	55 500	430 800	20%
Total	1 911 100	284 500	2 195 600	100%
%	87%	13%	100%	0%

The comparison between the DPIF availability figures and MBAC's assessment of actual volume harvested in 2004 is shown in Figure 4 below.

Figure 4: Surveyed volume (act) by region combined with DPIF projections (e)



In discussions with DPIF³, MBAC believes the volume estimates used in this socio-economic analysis are within a one or two percent of what actually occurred in Queensland, in terms of volume removals from the forest, in 2004.

2.7 WOOD QUALITY

The critical issues, from processor perspectives, for the three major species are:

- Slash pine – resin content and density.
- Caribbean pine – slow growth and high moisture content.

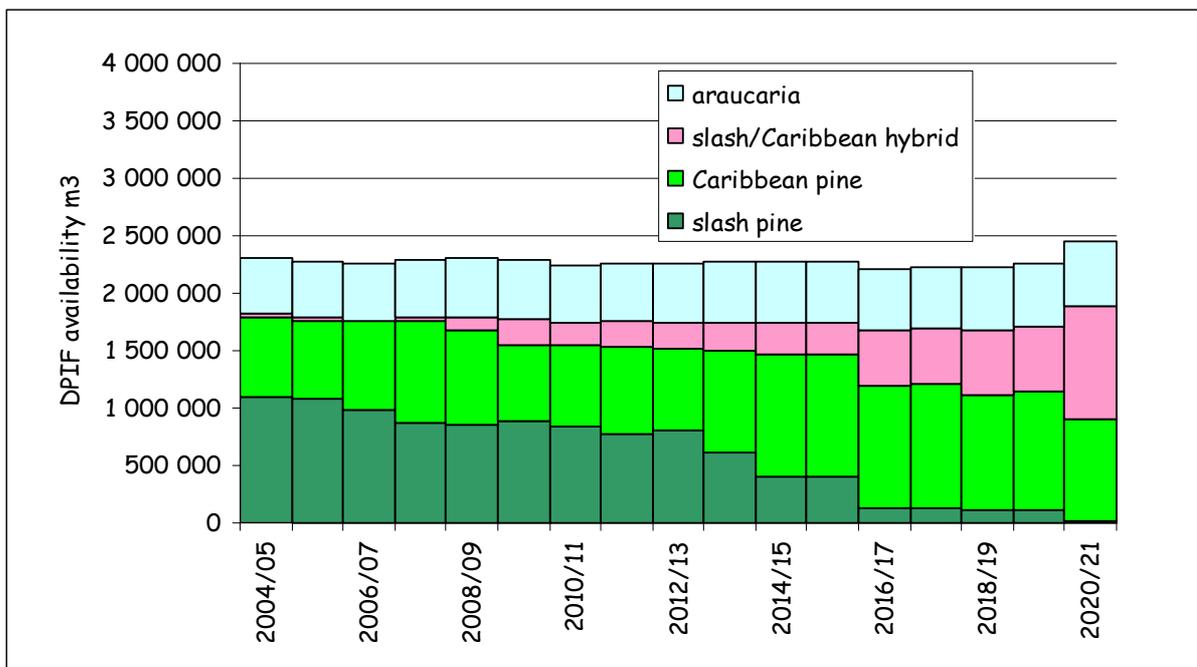
- Slash/Caribbean hybrid – will be moisture content and density.
- Araucaria – very the long rotation and need for pruned butt logs.

The wood resource will change over the next two decades in response to changing planting history. The major changes will be:

- Decreasing volumes of slash pine, from the present c. 1.0 million m³ (48%) to nil by 2020.
- Increasing volumes of Caribbean pine, from the present 0.7 million m³ per year (30%) to just over 1.0 million m³ per year by 2017 (45%).
- Beginnings of the hybrid volumes around 2008 rising to just under 1.0 million m³ (40%) of major species availability by 2020.

These features are shown in Figure 5 below.

Figure 5: DPIF wood availability by species



Source DPIF

Other resource-issues identified by processors¹ were:

- Recent changes to plantation silviculture, in particular the reduction in stocking, reducing thinning volumes and hence pulpwood production. The other side of this issue is faster production of larger diameter sawlogs improving DPIF returns.
- An associated elimination of outrow thinning, reducing larger pulp logs available to the pulp and panel industries.
- Increased size in mounding in the exotic public estate, influencing harvesting and forwarding productivity and hence wood costs.
- Cessation of thinnings backlog program and impact on residue/pulpwood users.

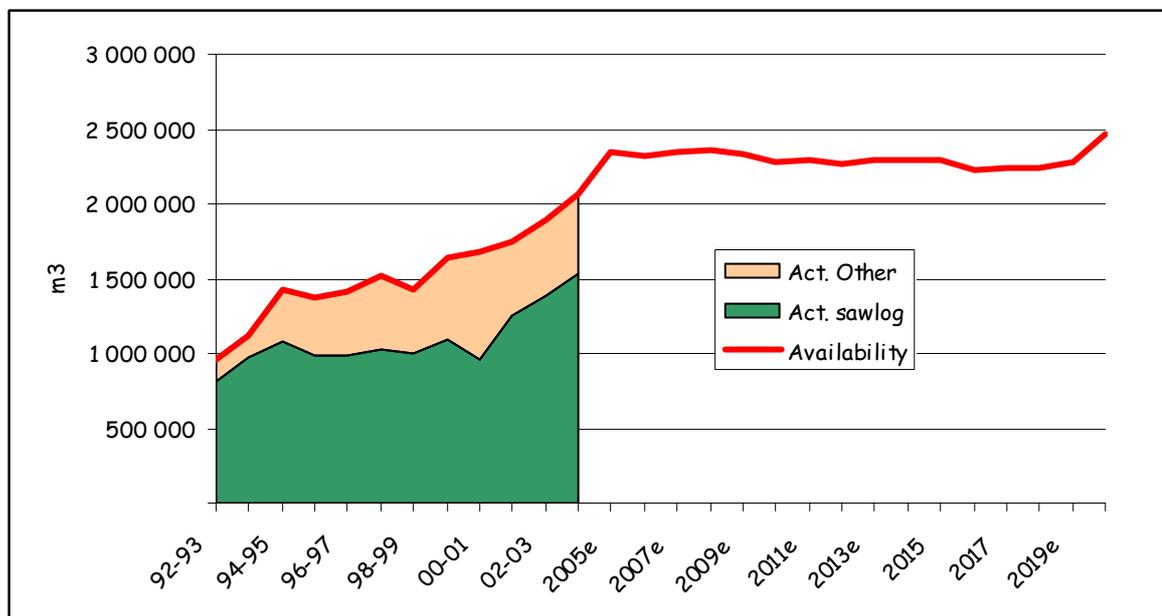
¹ These comments have not been changed from those made by industry. We make no comment on them other than to report them.

3 PROCESSING INDUSTRY

The exotic and Araucaria processing sector has slowly expanded with the resource. Ten years ago, this sector was consuming around 1.4 million m³ logs each year. Five years ago, this was around 1.5 million m³ logs per year. It is presently consuming around 2.18 million m³ logs each year, although this volume will stabilise now for the next decade and a half. This represents a major challenge for industry, which will seek to expand to remain nationally and internationally competitive.

The actual volumes used from DPIF plantations combined with availability estimates is shown in Figure 6.

Figure 6: Actual DPIF sales 92/3 to 03/04 and availability projections to 05/6 to 19/20



3.1 EXOTIC PLANTATION

The exotic softwood processing sector uses the state's exotic resource which is almost entirely slash and Caribbean pine and increasingly their various hybrids (see Figure 5). A few mills use mostly exotic and some small volumes of Araucaria. Other mills use mostly Araucaria resource with some exotic intake. The approach taken here is to report all mills that take some exotic logs or fibre.

The sector consists of twenty-two facilities (mills), which consumed 1 765 000 m³. Of these, there are:

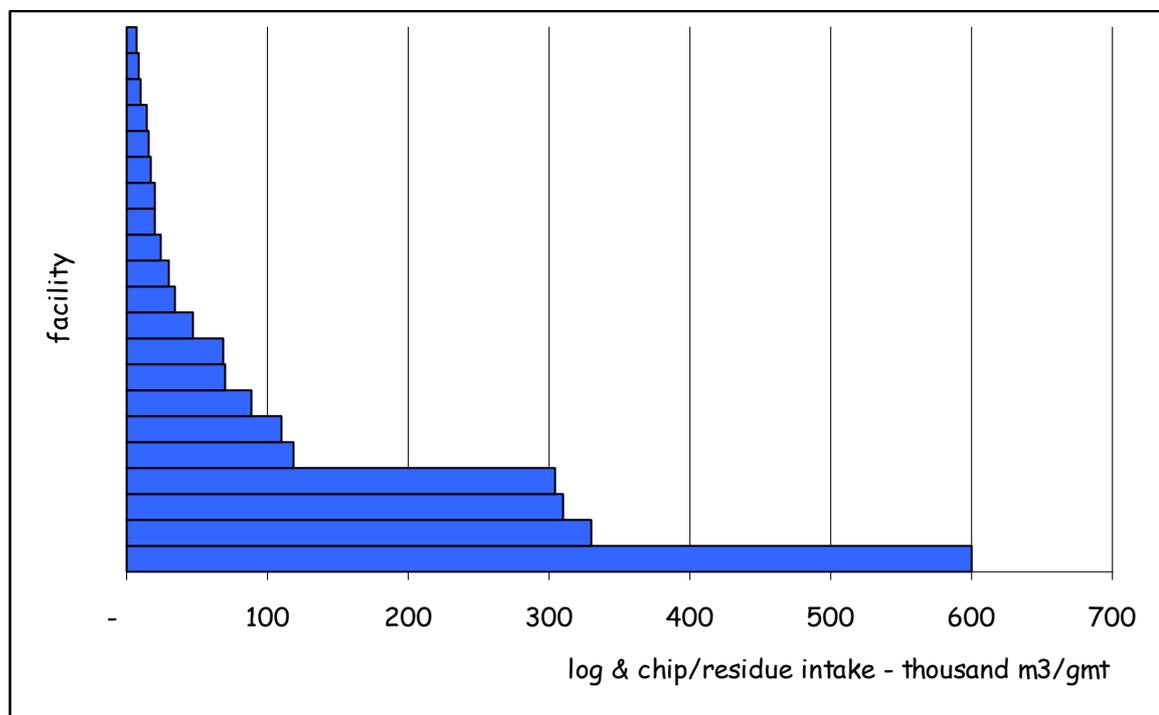
- Twelve sawmills, with a combined log intake of 1 127 000 m³ or 64% of the exotic estate logs. These mills range in size from around 8 000 m³ to around 600 000 m³ log intake per year. Approximately 89% or 1 million m³ of this 1.127 million m³ is consumed by the three largest sawmills.
- Four panel mills, with a combined log intake is 223 000 m³ or 13% of the exotic log resource. These mills also use another 303 000 gmt of fibre sourced from other

mills. This represents 12% of all exotic plantation log resource and 22% of the exotic log and fibre consumed in Queensland. These mills range in size from 34 000 to over 300 000 m³/gmt log/chip intake, with the two largest mills using around 80% of the log and residue volume.

- Three export facilities (fibre and log) currently consuming 338 000 m³ logs and 168 000 gmt chips/residue.
- Three other mills – two preservation and a log trader processing a combined total of 77 000 m³ logs.

The exotic plantation processing sector, by log and fibre intake, is shown in Figure 7 below.

Figure 7: Exotic softwood plantation processing sector by log/chip/residue intake — 2004



The four largest mills, based on log/fibre intake, use a combined 1.6 million m³/gmt, which is around 60% of the log and fibre intake into all plantation softwood mills in Queensland.

3.2 ARAUCARIA

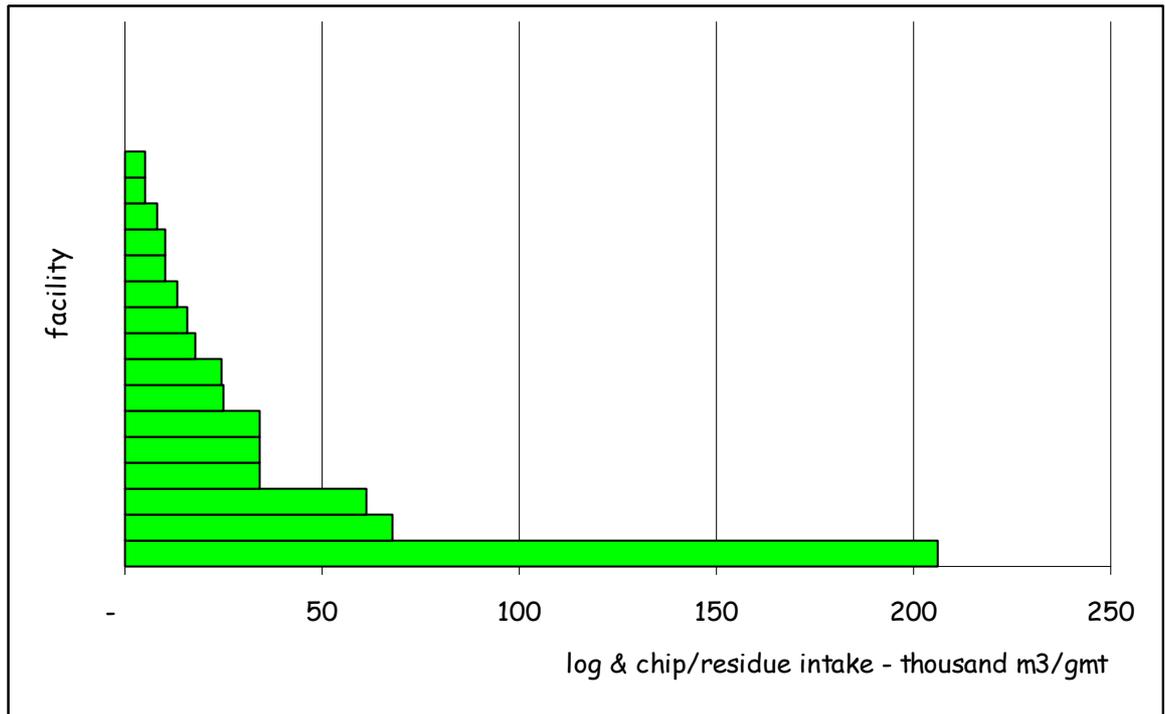
The Araucaria processing sector consists of sixteen facilities (mills) that consumed 431 000 m³ of logs and 141 000 gmt fibre (including 5 000 veneer cores). Some of these mills also consumed exotic logs. Of the sixteen mills, there are:

- Nine sawmills, using a combined 334 000 m³ logs. Three of these mills also used some exotic wood. These nine mills range in size (based on Araucaria intake) from a mill using 5 000 m³ (plywood veneer cores) to one using around over 200 000 m³.
- Six panel mills, two of which also use some exotic fibre, using a combined 97 000 m³ of logs and 68 000 gmt fibre.

- One export facility exports around 25-50 000 Araucaria fibre (along with substantially greater quantities of exotic fibre).
- There was one log trader dealing in less than 10 000 m³ logs, which were on-sold to industry.

The log and chip/fibre intake of the Araucaria based industry is shown in Figure 8 below.

Figure 8: Araucaria processing sector by log/chip/residue intake – 2004



The three largest facilities used 335 000 log and chip/residue or around 65% of the log chip/fibre resource used by this sector.

3.3 SAWMILLING SECTOR

There are sixteen Araucaria and exotic plantation based sawmills in Queensland with a current intake of 1 436 000 m³ logs per year. Of this, 95% or 1 364 000 m³ logs are sourced directly from the forest and the remaining 5% or 72 000 m³ are logs sourced from other mills.

This sector is dominated by two sawmills - one owned by Hyne Timber located at Tuan near Maryborough and the other owned by Weyerhaeuser, located at Caboolture. These use approximately 42% of the state's softwood roundwood log resource and around 65% of the states saw/veneer log production.

Weyerhaeuser – Caboolture

Is located at Caboolture and source their logs from the South East region. They commenced operation in their current configuration in 1977, although a sawmill has been

onsite for over 50 years. They consume increasing volumes of exotic softwood logs each year. They on-sell some logs to a preservation plant and sell their residues to Queensland Commodity Exports (QCE) chip export facility in Brisbane as well as some to AMCOR, the paper manufacturer in Brisbane. Some sawdust is sold to Carter Holt Harvey (CHH) Wood Panels at Gympie, where it is converted into particleboard.

The company uses contractors to harvest and transport logs to the mill, for some mill maintenance and for transport of finished goods to market.

Weyerhaeuser plans to continue to invest on the site.

Hyne Timber – Tuan

Hyne Timber at Tuan near Maryborough is the region's major sawmill. Operations on site commenced in 1985, placing the mill within the large Tuan-Toolara softwood resource between Brisbane and Maryborough. This is one of Australia's largest continuous stretches of plantation, being around 75 km from north to south and around 12 km wide with a net area of around 85 000 ha in size.

In 2000, Hyne Timber entered into a new Fibre Alliance with the other major stakeholders in the Tuan-Toolara forests, that has seen an optimisation of the available resource that under-pinned the building of Hyne Timber's new softwood mill at Tuan in 2002.

The company has contract arrangements for the harvest and transport of logs to the mill, logyard operations and for the transport of finished goods to market.

Hyne & Son – Imbil

Hyne & So at Imbil is Queensland's largest Araucaria sawlog processor with an input capacity of over 200 000 m³ logs. The mill is located centrally to the large Imbil Araucaria resource which is approximately 25 000 ha in size. They presently operate to their capacity. Around 90% of their logs are purchased from DPIF and they on-sell logs and fibre to Amcor, Austral, Boral and Laminex.

The company uses contractors to harvest and transport logs to the mill, for some woodyard activities and for transport of finished goods to market.

Hyne & Son plans to continue to invest on the site, commencing with improvements in their log scanning technology.

Allied Timber Products (ATP) – Brisbane

ATP is located at Burpengary in Brisbane and was established in 1990. They are a medium sized operation with an intake of around 100 000m³ logs per year, most of which is from DPIF plantations. They accept some diversions from a range of other processors. In return, they provide residues to a panel manufacturer.

Direct employment is 55 persons.

ATP is resource constrained and is in the process of constructing a new mill in Bathurst, NSW.

Yarraman Pine — Yarraman

This is the sawmilling arm of Finlaysons, a major Brisbane building materials merchant. This company has backward integrated into the sawmilling sector to secure their supplies of Araucaria. Yarraman Pine use around 25 000 m³ Araucaria logs each year. They commenced operations in 1930 and are operating at their capacity at present. Their intake is partially from an allocation from DPIF as well as from others' allocations, including a veneer mill from the Central region and a ply mill from the South East.

Direct employment is around 55 people, up from around 35 five years ago.

They have been regularly investing on site and plan further investments in the next few years - largely to cope with the diminishing log sizes.

(Formerly) Muller's Sawmill — Taromeo

(Formerly) Mullers Sawmills are located at Taromeo - recently on-sold. The mill was built in the early 1900s and has an intake capacity of around 18 000 m³ per year from public and private forests located in the South East Region. The buy logs from DPIF and logs (middle, tops and set length thinnings) from upstream processors and sell some plybutts to downstream ply mills. The mill produces product for furniture and pallet manufacturers. They employ around 30 people and have been investing on the site in kilns, docking line, debarking and multisawing.

3.4 PANELS

The panels sector consists of plywood/veneer, particleboard and medium density fibreboard (MDF) producers. There are seven panel facilities using 320 000 m³ logs and an additional 374 000 gmt chips, either from converting roundwood from the forest into chip or purchasing residues from primary processors, such as sawmills.

3.5 PLYWOOD

There are three plantation softwood plywood/veneer manufacturers using plantation softwood in Queensland. These are Boral Hancock, at Ipswich, Austral plywoods (Brisbane), Brims (Brisbane) and Austicks, at Gladstone. Brims also manufactures high quality particleboard.

Boral Hancock — Brisbane

In 1935, Hancock Bros Pty Ltd began manufacturing plywood products in Ipswich. In 1995, the Boral Group acquired Hancock Bros., investing in the plant and improving production methods. The Ipswich mill is now a major producer of plywood products. The company value-adds some of their plywood products, including treatment against fungal and insect attack, and a fire-retardant treatment.

The company's Araucaria and exotic pine log intake is presently 90% supplied by DPIF from South East plantations. Residues are used within the mill for energy production or sold to a local landscaping company.

The Ipswich mill currently employs over 200 staff. Products are sold in all states of Australia, and exported to New Zealand, as well as to a number of Asian markets.

Variations in the quality and reliability of the log timber input is of concern for Boral Hancock, especially with the tendency for plantations to be harvested at younger ages due to the greater demand for timber.

(source: Queensland Forest Industry, DPIF 2004, p49)

Brims — Brisbane

Brims Wood Panels Pty. Ltd. is a third generation family owned company located in Brisbane. This company commenced operations in 1915 and produces high quality plywood and particleboard from Araucaria whole-tree logs sourced from DPIF plantations in South East Queensland and veneers sourced from Australia and overseas. The bottom logs essential become plylogs, the middle logs are on-sold to sawmills and the top logs are used for particleboard manufacture.

Brims produces a wide range of high quality plywoods used for model aircraft production for example, to fire doors. Clippings and other waste from the ply mill are combined with lower quality pulp logs from the tops of the Araucaria trees, to produce high quality particleboard.

Log intake is 10-20 000 m³, ignoring the volumes purchased and then on-sold to other mills. They directly employ around 100 staff plus a 6 contracting crew who cut, snig, debark and haul the logs to the mill in Brisbane.

Log are purchased on a whole-tree stumpage basis. The only residues sold is the bark, the remainder used for particleboard production or for fuel.

Austicks — Gladstone

Austicks Pty Ltd is a private, family-owned business. Following ownership changes in 1997, Austicks has also developed a veneering and small log sawing capability with markets in Australia and offshore. The company produces ice-cream sticks from Araucaria logs, around 15 000 m³ per year, harvested from DPI Central Region plantations. The company uses the bottom logs, which are debarked, steamed and then peeled in small triple-ribbon lathes (ie produce three veneer sheets simultaneously). These are then dried and icecream sticks punched from the veneer.

Critical to the utilisation from the forest, the middle logs are sold to Wongi Timber and the top logs to Canterwood for export as woodchip.

Austicks is the only factory of its kind in Australia. Its global competitors are producers in Canada, China and the EC. The company currently employs about 60 people.

The ice-cream stick manufacturing process requires a high degree of precision. Once a stick goes into an ice-cream it becomes the 'handle' for the rest of the manufacturing process. Out-of-specification ice-cream sticks are sold as coffee stirrers.

Computer-guided grading machines are used to check the ice-cream sticks for dimensions, warpage, texture, splits and knots at the rate of 20 sticks per second.

The business operates in the international market place and is exposed to currency fluctuations. Accordingly, they maintain a diversity of markets and products.

3.6 MDF

Laminex — Toolara

Laminex at Toolara is the state's sole producer of medium density fibreboard (MDF). The company produces around 250 000 m³ of MDF per year from around 350 000 roundwood equivalent m³ of logs. They directly employ around 190 people.

Laminex is part of a fibre-alliance between Hyne and Son, Canterwood and DPIF, which optimises the log supply to Hyne & Son, the fibre supply to Laminex and Canterwood, as well as the revenue to DPIF.

Laminex largely uses sawmill residues and thinning logs. The mill receives residues from many locations.

3.7 PARTICLEBOARD

Particleboard production in Australia traditionally followed the domestic building cycle. However, more recently, this industry tends to follow two cycles — the house building cycle and the home renovation, in particular the kitchen renovation cycle, which can be in or out of phase with the building cycle. In Australia, there has been a gradual increase in production from the 1980s to the present; a result of increases in capacity of existing mills. There have been no new mills built in Australia in the last 30 years. Most mills have concentrated on improvements in their value-adding capacity, for example tongue and groove moisture resistant flooring and melamine and veneer overlays.

The Australian market for particleboard is mature with most of the increases in production being exported.

Exports have grown significantly from very little in 1988-89 to over 100 000 m³/a in 1995-96. These have been mainly of melamine overlaid products for South East and North Asian furniture manufacturers. Australia has developed a reputation for high quality melamine overlaid particleboard in Asia.⁴

Pinepanels — A Carter Holt Harvey business — Gympie

Located at Gympie, the plant was built in 1975 and presently uses around 130 000 gmt per year. The mill processes sawmill residues, chip, sawdust, planer shavings, log ends, dockings and reject boards from sawmills and secondary processors throughout the South

East Region. The mill is highly dependant on the continued viability of these operations and provides an important outlet for these residues. All fibre is hauled by road.

The mill directly employs around 100 people.

95% of product produced is further value added, via kitchen manufacturers (85%), furniture manufacturers (5%) and door manufacturers (10%).

Most of their investments have been to accommodate the use of low cost residues.

3.8 LOG CHIP EXPORTERS

There are three log/fibre export facilities. They consume around 400 000 m³ logs and an additional 170 000 gmt of residues from primary processors.

Canterwood — Owanyilla

Canterwood commenced operations in 1994 to utilise the short term excess in exotic thinnings from DPIF plantations. They have regularly accepted around 220 000 gmt of roundwood p.a. including thinnings, reject sawlogs and saw log tops from Hyne & Son operations, as well as around 75 000 gmt residues/chips from Hyne & Son (Tuan), and Austicks. They directly employ around 20 people and also have dedicated Canterwood forest operations contractors (fell, snig and haul) plus chip truck contract drivers totalling around an additional 20 full time jobs. Personnel employed by Qld Rail, Gladstone Port Authority and Canterwood's shipping agents add approximately another 20 personnel.

A major issue for Canterwood is the cessation of exotic thinnings volumes, as DPIF completes their thinnings-backlog program. Canterwood recently announced they would cease operations at the end of June 2006, brought about by the lack of sufficient resource from the DPIF forests when the thinnings sale is due to expire.

Queensland Commodity Exports (QCE)

Queensland Commodity Exports Pty Ltd (QCE) was established in 1989 to export softwood woodchips to markets in Japan from private exotic softwood plantations north of Brisbane. The company is owned by Andrew Wright Holdings — a subsidiary of the New Hope Corporation; Holyman Ltd — a subsidiary of the Patrick Corporation and Itochu Corporation — one of Japan's largest trading houses.

QCE currently purchases approximately 220 000 gmt of softwood woodchips for marketing and sale into Japan each year. The woodchips are made into kraft pulp that is used by the Oji Paper Company to manufacture newsprint and cardboard. Production has declined recently due to decreasing resource availability in southeast Queensland and increased competition from domestic users of softwood woodchips.

Much of QCE's resource is sourced from the Weyerhaeuser Australia's Caboolture sawmill. Weyerhaeuser supply sawmill residue woodchip, as well as about 60 000 gmt of woodchip derived from pulp wood logs from South East Queensland. This pulpwood is chipped at the QCE facility at Fisherman Island.

QCE also purchases a small amount of pulp wood from private sellers and State Forests of New South Wales from northern New South Wales.

The QCE facility uses road transportation of its intake of woodchips and pulp wood logs. Pulp wood logs are chipped on site.

QCE has six shipments per year of approximately 36 000 gmt. Each ship takes about 52 hours to load and 12 days to sail to Japan.

QCE was established as a trading company and has a limited number of employees. The contract services of a number of companies are used to undertake the receipt, storage and shipment of woodchips.

QCE will continue to export softwood woodchips to Japan while there is a reliable supply available. The performance of the new hardwood plantations established on private land in South East Queensland is being monitored. QCE anticipates potential future export opportunities for this resource in a number of Asian-Pacific markets.

Pentarch (Australian Marshalling Services) — Townsville

Pentarch commenced operations in 2003 and are based at Townsville. They presently export around 110 000 gmt logs from Cardwell the major Central Region plantations. This represents around five shipments per year.

Pentarch directly employs 11 people. They use one harvesting contractor employing 7 people, one haulage contractor employing 14 people, one ship loading haulage contractor in the woodyard who employs 8 people. They also outsource their maintenance and ship loading requirements.

Pentarch produce J grade, SP ('sawable' pulp) and Pulp logs for export to China (around 50%) and Japan (around 50%). They are also developing a market in Korea. They also sell the smaller (<15 cm) logs to Townsville Pallett and crate, who in turn produce export pallets for a local abattoir.

The company plans to invest further in their operations in Central and Northern Queensland.

3.9 OTHER

These consist of the two treatment plants, Amcor's paper plant in Brisbane and a log trader who buys and sells logs to primary processors.

3.10 WOOD/FIBRE FLOWS

The wood and fibre flow in Queensland is complex, due largely to log diversions associated with whole-of-bush logs sales from DPIF and processor specialisation. While diversions are discretionary, they have become essential, if processors are to optimise the logs they process. Diversions result from one processor purchasing all trees within a compartment

with the responsibility to on-sell (i.e. diversions) to other mills. The commonest diversion is pulpwood purchased by a sawmiller and diverted to panel industries and middle and top logs purchased by a plywood manufacturer and diverted to sawmills. In addition, there are small volumes of logs which enter a mill only to leave again for processing at other centres. The main reason for this later 'diversion' is oversize logs entering sawmills and under size logs entering plymills.

There are also mill residues which leave primary processors and are purchased by secondary processors or fibre exporters for example.

Table 4 identifies the log and fibre flows within and between region, species group and processor type.

Table 4: Log and fibre flows within and between region, species group and processor type

Supply Region	Supply Type	Supply Product	Supply Species	To South East mills				To Central & Northern mills			Total
				Sawmill	Panel	LC/export	Other	Sawmill	Panel	LC/export	
From the South East	Public Forest	Forest log	exotic	931 230	202 000	153 700	47 000				1 333 930
			Arauc.	246 300	60 000						306 300
	Private Forest	Forest log	exotic	37 000		11 000	0				48 000
			Arauc.	19 000			0				19 000
	Sawmill	Diverted log	exotic	8 000	21 000	113 300	30 000				172 300
			Arauc.	6 000	21 000						27 000
		Chip	cypress		7 000						7 000
			exotic		331 000	160 000					491 000
			Arauc.		50 000		20 500				70 500
			Panel	Diverted log	exotic	37 000					
			Arauc.	9 000							9 000
			Other	Diverted log	exotic	10 000					
			Arauc.	5 000							5 000
			Other	Diverted log	exotic	13 000					
		Arauc.	7 000							7 000	
		Chip	exotic		16 000	8 000					24 000
From Central & North	Public Forest	Forest log	exotic	81 570				20 000		110 000	211 570
			Arauc.					5 000	15 800		20 800
	Panel	Diverted log	Arauc.	34 700							34 700
			Chip	Arauc.			7 600				7 600
	LC/export	Diverted log	exotic					15 000			15 000
Total				1 444 800	708 000	453 600	97 500	40 000	15 800	110 000	2 869 700

The key values from Table 4 are:

- 968 000 m³ of South East exotic forest logs are sent directly to South East sawmills.
- 265 000 m³ of South East Araucaria logs are sent directly to South East sawmills.
- 202 000 m³ South East exotic logs are sent directly to South East panel mills
- 165 000 m³ South East exotic logs are sent to South East exporters (where they are converted to chips and exported).

- 287 000 m³ South East exotic sawmill chips are sent to South East panel mills.
- 331 000 and 160 000 m³ South East exotic sawmill chips are sent to South East panel mills and exporters respectively.
- 82 000 m³ Central & Northern Araucaria logs are sent directly to sawmills in the South East.
- 63 000 gmt Central & Northern Araucaria chips are sent to export from the South East
- 110 000 m³ Central & Northern logs are exported.

The wood and fibre flows are also shown in Figure 9 and Figure 10 below.

Figure 9: Exotic wood and fibre flow — wiring diagram

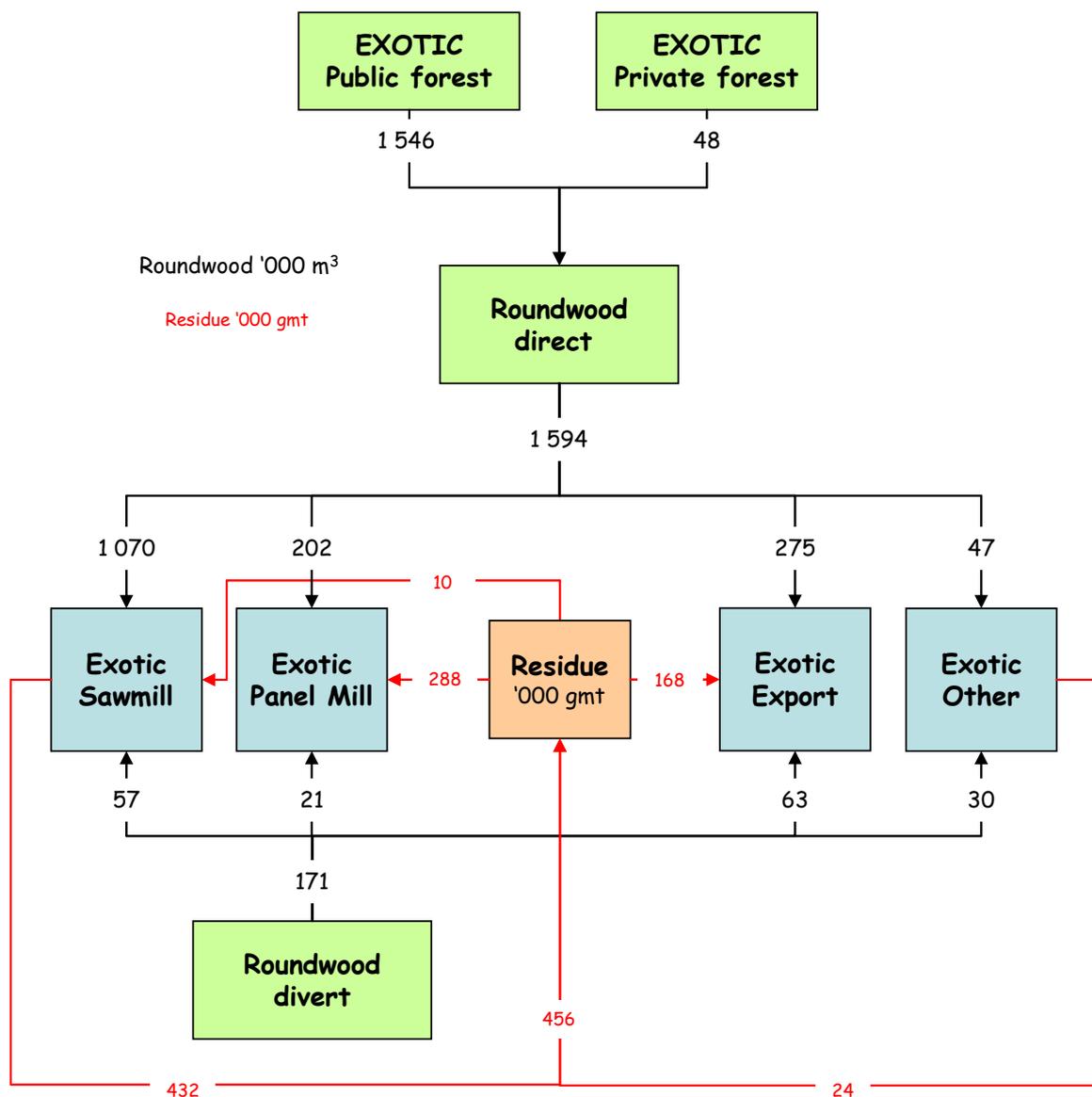
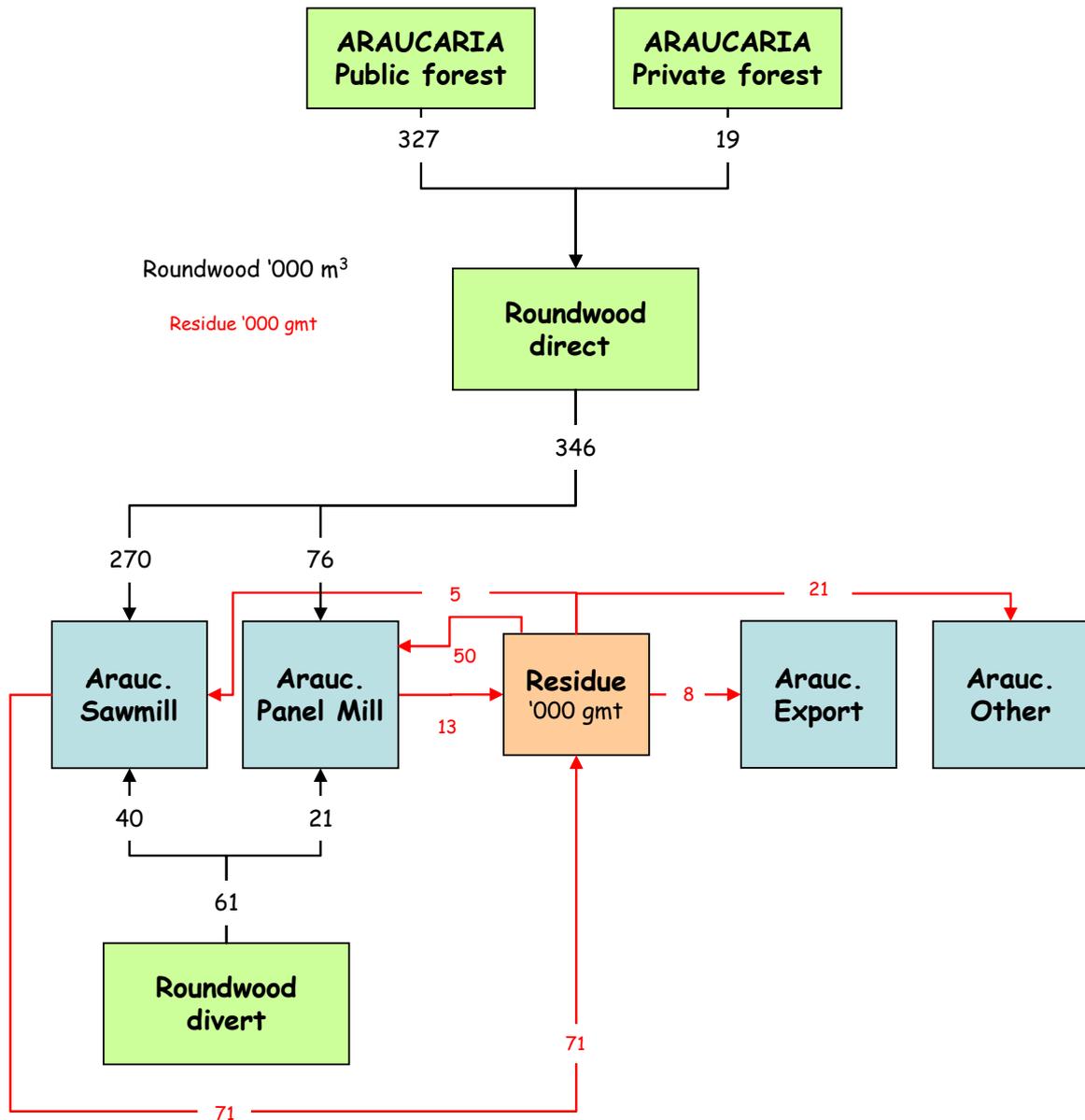


Figure 10: Araucaria wood and fibre flow – wiring diagram



Note the data used in Figure 9 and Figure 10 are from a different dataset to the value of sales, costs, wages data. This is because the woodflow by species and type (direct, diversion, chip etc) was developed outside of the survey data. As a result, there are slight differences between the volumes (ie reported in the survey and developed separately for the above woodflow analysis by MBAC. The difference is around 3 000 m³ and is not material.

4 SURVEY RESULTS

4.1 TURNOVER

The softwood processing sector turned over approximately \$572 million, based on reported sales (for those surveyed) and estimated sales for the remainder.

The 100% exotic processing sector turned over \$388 million. The key financial data for this sector is shown in Table 5 below.

Table 5: Key wood and financial data by processor – 100% exotic mills

Data	Sawmill	Panel	Log/Fibre export	Other	Total
Count of Type	9	2	3	3	17
Direct employees	369	296	28	102	795
Value of log sales in forest	56 536	11 035	6 327	1 273	75 171
Value logs/chips mill door	75 697	17 960	20 847	2 918	117 422
Wages \$ '000	13 025	18 799	1 073	7 185	40 081
Wage on costs \$ '000	3 274	4 557	123	1 581	9 534
Contractor \$ '000	29 590	14 847	21 719	4 112	70 268
Sales SE \$ '000	126 206	55 814	-	38 133	220 153
Sales C&N \$ '000	10 214	7 804	-	-	18 018
Sales IS \$ '000	13 125	34 700	-	16 997	64 822
Sales OS \$ '000	4 607	40 000	39 040	137	83 784
Value sales \$ '000	156 252	138 318	39 040	55 267	388 877
Logs from forest '000 m3	1 150	150	290	47	1 637
Log transfers in '000 m3	47	-	113	30	190
Log transfers out '000 m3	172	16	15	-	203
Total Log Intake m3	1 024 800	134 000	388 000	77 000	1 623 800
Total chip in gmt	-	374 000	175 600	20 500	570 100

- The value of sales here was \$388 million.
- This was based on 1.623 million m³ logs and 570 000 gmt chips.
- The sector directly employed 795 persons.
- Value per employee was \$490 000.
- Value per m³ or gmt raw material was \$177.

Table 6: Key wood and financial data by processor — 100% Araucaria mills

Data	Sawmill	Panel	Total (excl other*)
Count of Type	5	4	9
Direct employees	307	219	526
Value of log sales in forest	21 401	2 979	24 380
Value logs/chips mill door	27 649	3 646	31 295
Wages \$'000	9 480	8 328	17 807
Wage on costs \$'000	3 541	1 777	5 319
Contractor \$'000	9 691	907	10 598
Sales SE \$'000	52 049	10 811	62 860
Sales C&N \$'000	-	754	754
Sales IS \$'000	692	17 384	18 076
Sales OS \$'000	10 557	2 615	13 172
Value sales \$'000	63 298	31 563	94 861
Logs from forest '000 m3	261	66	327
Log transfers in '000 m3	40	10	50
Log transfers out '000 m3	27	40	67
Total Log Intake m3	273 700	35 800	309 500
Total chip in gmt		30 000	30 000

* one (1) log trader removed from data

Summarising this sector:

- The 100% Araucaria sector turned over \$95 million as shown in Table 6.
- This was based on 309 000 m³ logs
- Also based on 30 000 gmt chips
- The sector directly employed 526 people.
- Value per employee was \$180 000.
- Value per raw material m³ or gmt was \$280.

Table 7: Key wood and financial data by processor — Mills using both Exotic and Araucaria

Data	Total
Count of Type	5
Direct employees	431
Value of log sales in forest	20 329
Value logs/chips mill door	28 955
Wages \$ '000	13 504
Wage on costs \$ '000	2 856
Contractor \$ '000	11 304
Sales SE \$ '000	33 527
Sales C&N \$ '000	6 925
Sales IS \$ '000	41 867
Sales OS \$ '000	4 044
Value sales \$ '000	86 363
Logs from forest '000 m ³	258
Log transfers in '000 m ³	75
Log transfers out '000 m ³	25
Total Log Intake m ³	308 300
Total chip in gmt	15 000

Summarising this sector:

- The mixed (exotic/Araucaria) sector turned over \$86 million.
- This was based on 308 000 m³ logs
- Also based on 15 000 gmt chips
- The sector directly employed 431 people.
- Value per employee was \$200 000.
- Value per raw material m³ or gmt was \$280.

Table 8: Key data — all processors all species types

Data	Sawmill	Panel	Log/Fibre export	Other	Grand Total
Count of Type	18	7	3	4	32
Direct employees	847	775	28	103	1 754
Value of log sales in forest	85 576	26 704	6 327	2 073	120 680
Value logs/chips mill door	114 886	39 021	20 847	4 418	179 172
Wages \$'000	26 876	36 259	1 073	7 353	71 560
Wage on costs \$'000	7 661	8 344	123	1 618	17 746
Contractor \$'000	43 279	23 060	21 719	4 812	92 870
Sales SE \$'000	196 797	81 610	-	40 533	318 940
Sales C&N \$'000	14 439	11 258	-		25 697
Sales IS \$'000	14 509	93 259	-	16 997	124 765
Sales OS \$'000	17 183	44 640	39 040	137	100 999
Value sales \$'000	245 028	230 766	39 040	57 667	572 501
Logs from forest '000 m3	1 534	351	290	67	2 242
Log transfers in '000 m3	130	42	113	30	315
Log transfers out '000 m3	199	81	15	20	315
Total Log Intake m3	1 464 800	311 800	388 000	77 000	2 241 600
Total chip in gmt	15 000	404 000	175 600	20 500	615 100

The total value of sales here was \$573 million based on 2.241 million m³ logs, 615 000 gmt chips and 1 754 direct employees. Value per employee was \$326 000. Value per m³/gmt raw material was \$200.

4.2 WAGES

Total value of wages paid was \$71.5 million, with an additional \$17.7 million in associated wages and salaries on-costs for a total wages and associated costs of \$89.2 million. This represented 18% of total direct (fixed and variable) costs.

4.3 SPENDING ON CONTRACTORS

At the time of writing, it was not possible to isolate the number of contractors and the number of contractor employees from the survey data. This is because each respondent indicated the number of contractors servicing their particular mill. However, it has not been possible to identify contractors which service a number of mills, although this information is known for the key processors.

The contractor-spend was \$77.3 million based only on the surveyed data. The surveyed data relating to harvesting and haulage contractors is represented by 1 726 000 m³ logs and 546 000 gmt chip intake.

The contractor data for the surveyed mills are shown in Table 9 below. Based on estimates for the non-surveyed processors, the likely harvesting and haulage contractor spending for all Queensland softwood processors is around \$58.5 million. It is not possible to assign

this to an average volume per m³ log, although combining the log and residue intake (2.25 million m³ and 0.615 million gmt) this represents just over \$20 per m³/gmt.

The likely spending on mill based contractors, on a prorata basis, is around \$15.4 million and spending on contractors involved in transport of finished products around \$21.6 million.

Table 9: Payments to contractors (surveyed processors and prorata) – \$million

	Total (surveyed) \$m	Est. state \$m	basis
Harvesting & haulage contractors	47.1	58.5	calc
Mill contractors	12.5	15.4	prorata
Finished product transport	17.7	21.6	prorata
Total	77.3	95.5	

The likely total spending on contractors is estimated to be around \$96 million.

4.4 RECENT INVESTMENT

Thirteen respondents to the survey described their capital expenditure over the last 10 years and looking ahead. Capital expenditure over the last 10 years ranged from nil to \$120 million for a total of \$212.5 million. Looking ahead, most respondents indicated that additional resource was critical to further substantial capital expenditure. However, even given the current projected resource situation, three respondents indicated their immediate capex would be \$3 million, \$11 million and \$19.35 million, for a total of \$33.4 million.

Including non-surveyed processors, capital expenditure could be over \$300 million, (estimated) combining past expenditure and planned future (3 years).

4.5 EMPLOYMENT BY SECTOR

Industry

The industry sector directly employs 1 754 people, based on:

- 1 153 persons for the 14 processors that responded to the survey
- 336 from two mills visited and whose numbers are known, although they did not respond to the survey
- An estimated additional 265 persons directly employed in 15 mills for the other processors, although MBAC immediately notes the difficulty involved in estimating employees in any particular mill given the great variation here.

This aside, the distribution of these direct employees, by species and processor group, is shown in Table 10 below.

Table 10: Direct employees by species and industry group

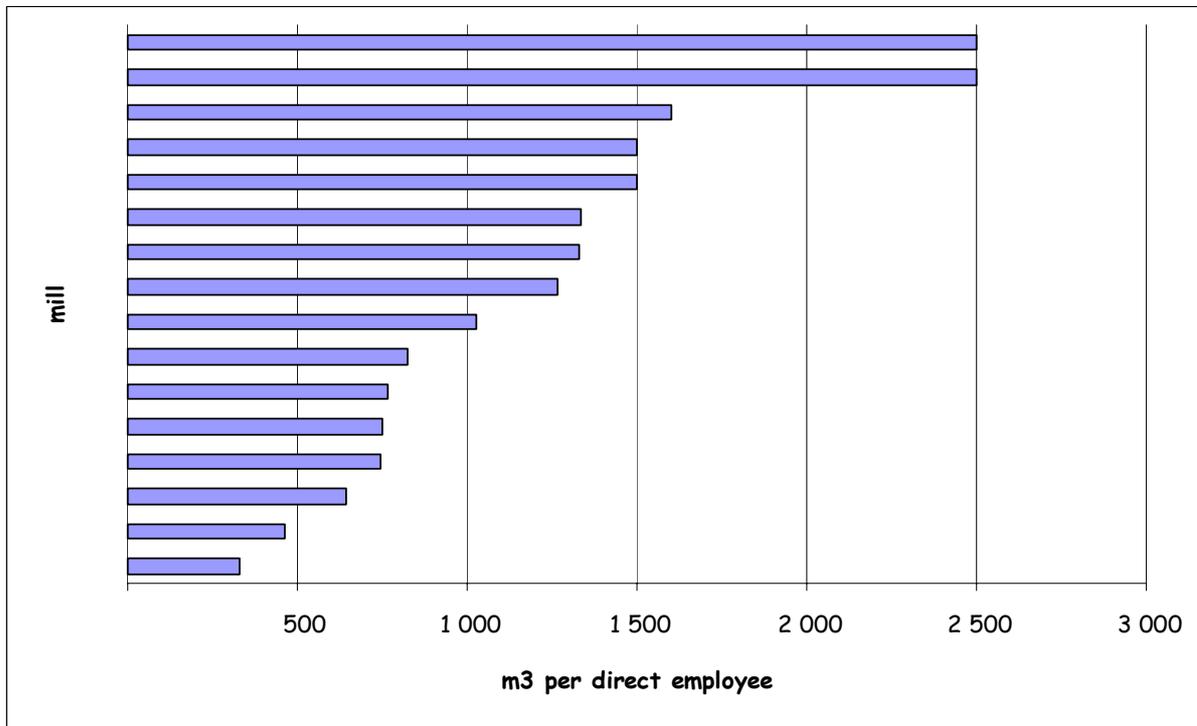
Type	Sawmill	Panel	Log/Fibre export	Other	Total
Exotic	369	296	28	102	795
Araucaria	307	219		1	527
Mix	171	260			431
Total	847	775	28	103	1 754

Of interest is the direct employment numbers by wood volume and turnover. This differed significantly within and between the sectors. For example, between the panel sector and the sawmilling sector and within the sawmilling sector.

For the softwood sawmilling sector, the log intake per employee varied from lows of around 400 to highs over 2 000 m³ per employee. The results are shown in Figure 11 below.

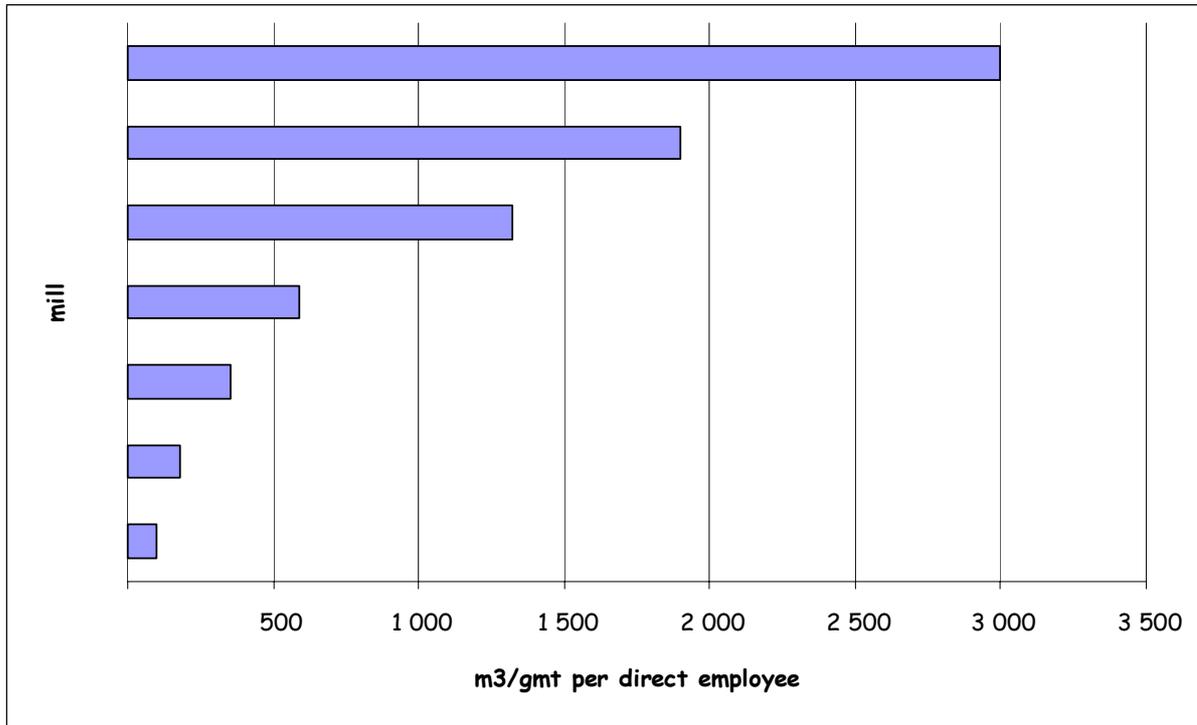
The two mills in the above 2 000 m³ per employee category have volumes per employee significantly above 2 000 m³.

Figure 11: Wood volume per direct employee - softwood sawmills



The volume per direct employee in the panel sector is shown in Figure 12. Again, there is a very large range.

Figure 12: Wood volume chip mass per direct employee - panels sector



Contractors

As shown in Table 9, MBAC estimates that total spending on upstream (ie harvest and haulage contractors) was \$47.1 million, representing payments for the harvest and transport of logs (1.726 million m³) and chips (0.546 million gmt).

Based on limited contractor returns, we have assessed the following:

- Contractor 1 has a turnover of \$1.1 million and employs 8 people, an average of \$137 500 per person.
- Contractor 2 has a turnover of \$3.0 million and employs 18 people for an average of \$167 000 per person.
- Contractor 3 has a turnover of \$159 000 and employs 1.

The average here is approximately \$155 000 per person and obviously covers labour as well as machinery and business related costs. Assuming gross revenue of \$155 000 per contractor staff and a total contractor spend in this sector of \$58.5 (see Table 9), the likely number of people directly employed by harvesting and haulage contractors to the softwood processing sector is around 377 persons.

The cost for mill contractors would be significantly less than that for harvesting and haulage contractors and probably a similar amount for haulage contractors engaged to haul finished products. In one survey return, the finished product haulage cost was \$159 000 per person.

Using an estimated \$100 000 per person for mill contractors, then the likely number of people employed as contractors in mill activities is \$15 400 000 divided by \$100 000. This equals are 154 persons.

Using \$155 000 per person for haulage of finished product, the likely number directly employed in transport of finished products is \$21 640 000 divided by \$155 000. This equals around 140 persons. The estimated total direct contractor employment by to the softwood processing industry is 377 in harvesting and haulage, 154 in the mill and 140 in haulage of finished products - a total of 671 - say 670.

As there are an estimated 1 754 persons directly employed within the softwood processing sector, this suggests there is 1 contractor job for every 2.6 direct industry jobs.

4.6 EMPLOYMENT BY SKILLS / TASKS

To determine numbers by skills is difficult. MBAC has combined numbers provided in survey responses with our estimates for mills which did not respond to the survey. However, employment by skills differs greatly between processing sectors (ie sawmill to panel mill) and within a sector (ie between different panel mills). Accordingly, it is not possible to simply prorata employment numbers by skills.

Based on surveyed returns, the direct employment by skills/tasks are as follows:

- 13 in resource procurement, representing around 1% of surveyed direct employees
- 136 in management, representing around 14% of surveyed direct employees
- 825 in operations and processing, representing around 83% of direct employees
- 20 in sales, representing around 2% of direct employees
- 4 in research and development, representing <1% of surveyed direct employees

In total, there were 998 direct employees surveyed. Note that two mills that were not surveyed employed an additional 336 people – a greater proportion of which would be engaged in operations and processing.

4.7 EMPLOYMENT BY LOCATION

Employment by location is shown in Table 11 below. 92% of those directly employed are employed within the South East region, with the remaining 8% in the Central and North regions.

Table 11: Employment by sector and location

Log source	Sawmill	Panel	Log/Fibre export	Other	Total
Central & North	86	53	8		147
South East	761	722	20	103	1 606
Total	847	775	28	103	1 754

The South East directly employs around 92% of the total direct employees in the sector. 48% are employed by the sawmilling sector and 44% in the panel sector.

5 SOCIO-ECONOMIC IMPACTS

Some of the data collected via the industry survey has been reported without any analysis in the previous sections 5 (Financial) and 6 (Employment). This information is summarised and discussed below. While the survey has provided a baseline data set, it has not obtained all the desired information. However, further analysis has enabled the development of a detailed wood flow model, which has been used as the basis for estimating economic dimensions of the industry where necessary.

5.1 ECONOMIC IMPACTS

The main areas of economic impacts that the forest and timber processing industry has on the State (and nation) are via:

- impact on regional (and State) value of output
- value-added generated by this activity, which includes amounts paid to contractors and for other operational expenditure, including payments to labour.

Direct Output value of Industry

The survey results and data from selected interviews were used to compare the results with known data on total industry throughput. The result suggests a total value of output (sales) generated by the industry of **\$572 million**. This is the total value of sales made by the processing sector – i.e., the gross value of output. The turnover resulting from activity in the forest management and contracting (logging and haulage) sectors is considered as a cost to the processing sector, and so is not added.

The generation of this output is the primary impact that the industry has on the economy of the State. This total impact can be allocated between the various processing sectors, and between the regions of the State, as indicated in Table 12.

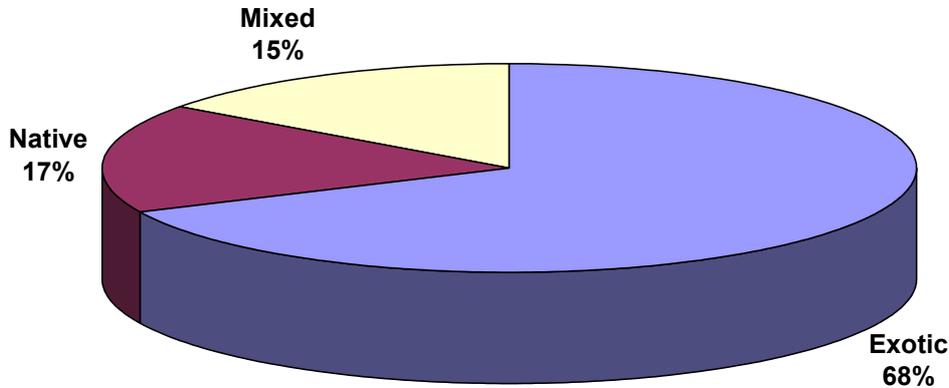
Table 12: Output by sector

Sector of industry	Output (value of sales) \$ million
Araucaria sector	94.9
Exotic sector	388.9
Mixed sector	86.4
TOTAL	570.2

Source : Industry survey

The native softwood sector therefore provides 17% of the total output generated by the industry in Queensland, with the exotic softwood sector contributing 68%. The remaining 15% is generated from processing activities based on both types of resource – see Figure 13

Figure 13: Value of Output – Contribution of Sectors within Industry



This proportion of total output from the three sectors can be compared to the contribution of each to total log intake, as shown in Table 13 below.

Table 13: Proportion of total output by sector

Sector of industry	Contribution to total log intake '000 m ³
Exotic sector	1 632 (74%)
Araucaria sector	310 (14%)
Mixed sector	304 (14%)
TOTAL	2 246 (100%)

The exotic sector therefore provides 74% of log intake, but just 68% of total value of output.

5.2 VALUE-ADDED GENERATED BY THE INDUSTRY

The difference between the sales generated by the industry, and the value of the forest timber used (via processing) to generate those sales, indicates the value that is added to the resource via the activity of the industry. Part of this "value-added" is used to make payments to contractors (harvest and haulage) to bring the resource to the mill, and other portions are used to pay all the costs associated with processing (including payments to labour and charges levied by the public sector). After all payments (costs) are made, the residual value-added provides a return to the owners of the capital employed to support the processing activity.

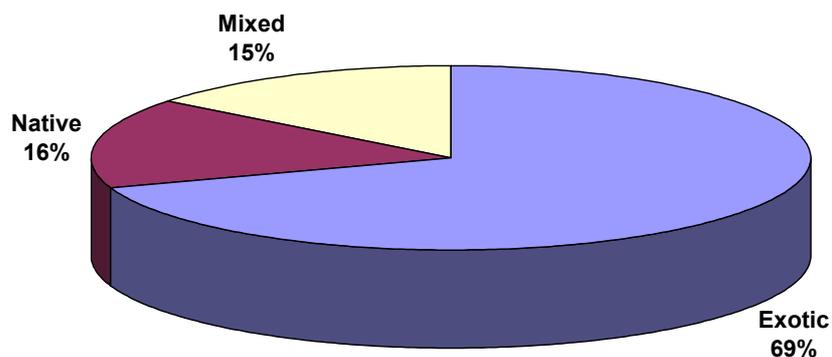
This analysis reveals that a considerable level of value-adding can be associated with the conversion of the standing timber resource, and the sale of final products from the processing sector. Total output (see above) from the industry is assessed as being in the

order of \$571 million – while the value of the standing timber (value of roundwood at stump) has been assessed as being in the order of \$121 million.

The activities of the Queensland softwood processing industry are therefore adding some **\$450 million to the value of the softwood timber resource**. In other words, the activities of the industry are increasing the value of the timber resource by 3.7 times – and in so doing, these activities are contributing to economic activity in other sectors, as well as providing household income via wages paid to employed persons.

The contribution of each sector to this total level of gross value-added is indicated in the following figure, which reveals that the exotic sector is providing 69% of this total of \$450 million. In terms of the total gross value-added per unit of log intake, the Araucaria sector provides the best performance (\$230/m³ log intake), with the exotic sector providing \$192/m³ log intake.

Figure 14: Value of Output – Contribution of Sectors within Industry



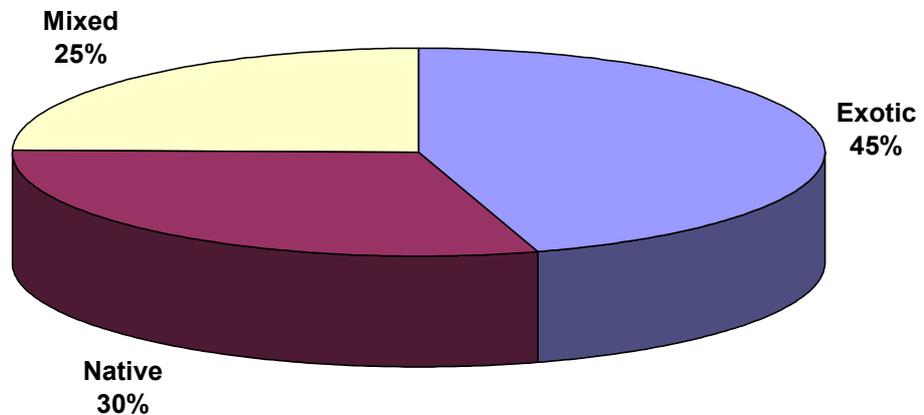
5.3 SOCIAL IMPACTS

The major sources of social impact that the industry has on the relevant regional communities are via the creation of jobs, and the associated contribution to household incomes that results from payments to labour (wages and salaries).

Employment

The survey has indicated that total employment in the softwood processing sector is around 1 754 persons. As indicated in Figure 15 below, the largest single share of this employment (45%) is in the exotic sector. In terms of employment productivity (output generated per employee), higher figures are also yielded by the exotic mills, as this sector has higher average throughputs as well as lower average employment levels.

Figure 15: Employment – Contribution of Sectors within Industry



To this total mill employment should be added employment in the contracting sector (harvesting and haulage, as well as contracted activities in mills, and associated with transport of finished product) and also employment in the forest sector (plantation establishment and management). As outlined in previous sections, it has been estimated that employment in these two areas of the industry could total :

Contractors - 377 harvesting and hauling, 154 in mill contracting, 140 in haulage of output (i.e. a total of around 670).

It has been assessed that a total of 2 424 persons are employed in the softwood forest and timber processing sector in Queensland. If forest employment is included (unknown at present), it is likely that over 2 500 are directly employed by this industry sector.

Household Income Impacts

Wages paid to employees are only a part of total labour costs to the mill. However, in economic terms, this component of labour costs is important, as total wages (less taxes) provide an addition to levels of household income.

An important social impact of the industry is therefore the contribution of some \$71.6 million in gross wages and salaries, paid to employees of the mills. In addition, wages are paid to the contractors and other ancillary employees of the industry. If it is assumed that average tax payments on total incomes are around 25%, then it is apparent that around \$53.7 million is added to household incomes as a result of payments to labour made by the softwood processing industry.

5.4 OTHER IMPACTS ON LOCAL COMMUNITY

The extent to which the industry makes payments to local business enterprises can also influence the total socio-economic impact of the industry. From the survey, it has been estimated that total expenditure by the industry is \$500 million (see Table 8). It has also

been estimated that of this, payments made to enterprises located outside Queensland total around \$12 million.

This means that a total of around \$488 million is added to total turnover in other business enterprises in Queensland, as a result of the activity of the softwood processing industry in the State.

5.5 TOTAL ECONOMIC IMPACTS

It is generally accepted that the total impact of any economic activity on a regional economy is larger than the direct impact created via output, employment, and payments made for other goods and services required by the industry. Via transactions between different sectors within the economy, any increase in demand in one sector will in turn stimulate demand in other sectors. This is termed the “flow-on” or multiplier effect.

Various studies in the past (Dwyer Leslie, 1990; Margules Groome Pöyry, 1995) have conducted extensive research to identify these linkages between the timber industry and other sectors within regional economies. These studies have provided multipliers which are factors describing the relationship between demand in the timber industry, and demand in other sectors within the defined economy. These multipliers have been found to vary between 1.5 and 2.3, varying with the regional economy being considered, and the nature of the processing activity in question. Similarly, DPIF has estimated that for every additional \$1 of value added created in the forest industry, another \$1.80 of value-added is generated elsewhere in the Queensland economy.

Using appropriate multipliers for types of activity relevant to the Queensland softwood processing industry, estimates have been derived of the possible total economic impact of the industry within this region.

Using 1.8 as being indicative of a relevant multiplier indicates that the total output impact of the Queensland softwood industry on the State economy, once the flow-on effects are considered, is in the order of **\$1 026 million**. Additionally, some **3 154** jobs could be supported (directly and indirectly) as a result of the operations of this industry sector. A total of around **\$96 million** in household income could be dependant, directly or indirectly, on payments made to labour in the industry. (Table 14).

Table 14: Total industry impacts on Queensland economy

Parameter	Direct Impact	Total Impact
Gross value of Output (\$mill)	571	1 026
Household Income (\$mill)	53	96
Employment (no.)	1 752*	3 154

Note * - the direct employment is given as that of the mills alone (i.e., excluding contractors and forest management). Employment in these sectors will be a part of the “flow-on” employment assessed.

6 SOCIO-ECONOMIC IMPACTS OF FUTURE SCENARIOS

It is difficult to quantify the impact of future scenarios. While direct socio-economic data are available (from this study), the reality is that there is little or no additional volume available. Industry has essentially relied on the public estate and any moves to secure their own resource, by planting, has been too little too late. This is not surprising, as company ownership of forests has declined sharply over the last decade, with most industrial processors selling part or all of their plantations (i.e CSR, Carter Holt Harvey, Weyerhaeuser, Australian Paper).

In addition to the socio-economic data sought for this report, industry was asked nine questions. While only a percentage of the survey respondents replied to the resource related questions, their responses are informative.

To summarise the response to the questions:

Table 15: Response to questions

Question	Responses (summarised)
Question 1 Expectations for resource availability without any significant change from current arrangements?	Responses ranged from planned closure to non change.
Question 2 If additional resource was to become available?	Responses ranged from no change to expansions.
Question 3 Development/viability implications of continuing at the current level of wood supply?	Responses from no effect to (most responses) declining viability.
Question 4 Impacts of a reduction in resource availability?	Responses essentially mill closure.
Question 5 Importance of State owned resource?	Response essentially total dependence.
Question 6 Further government investment in the plantation estate?	Response reduce government costs to increased government awareness of socio-economic values of the industry.
Question 7 Private investment in the plantation estate?	Response taxation incentives through to government required for long rotation Araucaria

Question 8 – Industry participation in private investment in the plantation resource?	Response no, to maybe to we're already involved.
Question 9 – advantages / disadvantages of corporatisation of the public plantation estate?	Response would reduce costs to complex to remains a monopoly supplier.

Full responses (edited for clarity only) are shown in the following tables.

Table 16: Survey responses to resource questions 1 to 4

Question 1 What are your expectations for resource availability without any significant change from current arrangements?	Question 2 What developments would you consider if additional resource was to become available?	Question 3 Are there any development/viability implications of continuing at the current level of wood supply?	Question 4 What would the impacts of a reduction in resource availability have on your business?
Resource quality & quantity is limiting production and viability at present log cost.	Expanded capacity to reduce unit cost assuming current log cost	Viability is threatened at present quality	Factory closure
Stable, as long as export market continues and no further government intervention to divert woodflows to domestic consumers	Existing operation is currently running at 30% capacity so improved efficiency	Without additional volumes, existing business is not viable long term	Factory closure
Resource exhaustion in 2006 with no replacement volume. Mill closure is planned (now confirmed)	Replacement of current licence volume at economical cost	[unclear response]	Mill closure
No change in pruned butt ply log resource of required quality	Hypothetical question as with 45-50 year growth cycle this is not going to happen	We service numerous small volume niche markets. Whilst consumers are prepared to pay the high costs for specialised product there will remain a viable specialist industry.	We are labour intensive so a reduction in resource would head us towards non-viability.
Occasional spot sales	None	None	Mill closure
No increase	Upgrade to green mill, boilers and kilns, but would need additional 150 000 m ³	We are viable at current levels, but will come under increasing pressure to remain competitive without additional resource	Mill closure

Table 17: Survey responses to resource questions 5 to 9

Question 5 How important is the State owned resource to your current and planned business?	Question 6 What do you think is required to encourage further government investment in the plantation estate?	Question 7 What do you think is required to encourage private investment in the plantation estate?	Question 8 Have you, or would you be interested in supporting private investment in the plantation resource?	Question 9 What do you see as the advantages / disadvantages of corporatisation of the public plantation estate?
Total dependence	Reduced government overheads	Favourable taxation treatment	Subject to 7 - via managed or private funds	Reduced government operating and overhead costs
Significant	True measurement of economic benefit, not just profit grabs. Government investment required to ensure sustainable future for existing industry	Private investment in plantations on government land	Not likely as current business cannot support the capital investment required on a sustainable, long term basis	There would be greater emphasis on making profits as GOC's tend to borrow money from government at higher interest rates Increasing costs
Totally	Awareness of potential benefits for state via plantation pine industry		Company is already engaged in plantation development	Progression to privatisation with both good and bad points
	Adequate returns from an efficient processing industry able to optimize value from the discreet component parts of the resource, species by species	Given Araucaria rotation length, only government can manage this resource		If corporatisation means operating within defined government terms of reference, the result would probably be a more cost efficient management of the public estate
Very				
The state owned resource is currently over 90% of log input, therefore hugely important. This will increase to 100% in the next 3 years		Government subsidies and tax concessions	We are already involved in investing in private plantations	Too hard. Really depends on the corporatisation model. Could cut costs and overheads, but as a monopoly supplier may try to leverage more profit from customers

Clearly, industry is reliant on the public resource. What happens over the short to medium term will have a significant impact on industry, as they do not have a private estate to draw on. Any accelerated planting program will not impact on industry this decade.

Long term planning was required over a decade ago to offset any stabilisation in the public wood supply (i.e. was foreseeable a decade ago). Minimising such an impact required the forest owner and industry to work together over a long period with a sound joint forest owner — processors strategic plan in place. Such initiatives are noticeable absent. To consider such developments now will only impact in 1 to 2 decades.

While this study has not sought to determine the nature of supply, any forced short term supply increase could only occur at the expense of longer term sustainability. Importantly, neither the consultant nor industry is suggesting such a development. However, this is the only means available if an increased volume scenario is to be considered.

6.1 STATUS QUO

Industry has been investing significantly to date. Over the last 10 years, at least \$213 million has been invested with an additional (at least) \$33 million planned for the next few years. Total investment could be greater than \$300 million, including non-surveyed processors. Ongoing investment relies on secure wood supply. This period varies depending on the nature of the expenditure and the type of industry.

Lack of additional resource was consistently reported as a major constraint to further investment. Of note is the lack of significant private source of wood, which has compounded the resource situation. A number of mills are already resource constrained and have chosen to invest elsewhere – i.e. two mills have invested outside Queensland and one mill is considering offshore expansions. Any expansion of this nature invariably requires significant capital.

In Queensland, industry will necessarily stabilise. This can only be a temporary phase, as limited local-expansion opportunities will result in a decline in relative industry-competitiveness. The focus will be on improved efficiency based on the existing resource. This will likely be the nature of any proposed investments.

Survey respondents did not express surprise at this situation.

6.2 INDUSTRIAL EXPANSION

It is difficult to see how industry could expand, given that the majority of available resource appears to be largely allocated and there also appears no prospect for increased volumes. This aside, in the event of a further 0.2 million m³ became available, we make the following assessments:

- Assuming this was all sawlogs, this would allow the existing 'national'-scale mills to approach world scale (which is now over 1 million m³ sawlog intake per year). If this occurred, there would be an additional \$33 million in sales and \$7 million in value-added.
- The flow-on residue could amount to around 100 000 gmt, which could allow any of the residue-using mills to expand, assuming they are not limited by other factors, such as access to water, physical site limitations for example.
- These additional volumes could not support a greenfields world class panel mill.

In the highly unlikely event that 0.5 million m³ became available, this would allow for a major expansion of a sawmill and associated expansion of a residue using mill. Based on the multiplier identified here. This is purely hypothetical.

A world scale pulpmill based on the softwood plantation resource would require at least at least 2 million m³ logs for scope for expansion. This is not possible in Queensland.

6.3 INDUSTRY CONSOLIDATION

Before considering consolidation, industry and forest owners need to consider more optimal utilisation of existing resource. For example, the type and location of resource being processed is important. For example, thinnings are unlikely to be wanted by any of the larger sawmills but may be desired by fibre processors.

Reduction in exotic thinnings

A likely scenario going forward will result from a reduction in the availability of delayed first thinnings in the South East estate. Here, a 1.7 million m³ parcel was allocated to Canterwood, as the anticipated second line at Laminex was not constructed. The backlog will have harvested by June 2006 and there will be a reduction in volume of around 170 000 m³ per year. Canterwood has announced it will cease production in June 2006.

This will have ramifications for the other residue users in the area, i.e. ATP, Laminex and CHH and some other processors. The closure of Canterwood will result in around 60-80 000 gmt residues and a similar volume of roundwood (excluding the thinnings which will cease next year), will be available to industry or for export.

Consolidation of sawmilling sector

As shown in Figure 6, the availability of wood is expected to stabilise at around 2.4 million m³ per year. This is after a steady rise in volume over the last 10 years. To maintain national and international competitiveness, industry will need to expand as well as reduce costs. This will be difficult, in the virtual absence of an alternative wood source in Queensland.

The result will be consolidation of the sawmilling sector.

Consolidation can occur in a number of ways.

- Firstly, by buying volume with associated processing infrastructure and closing that infrastructure. This model will be expensive if the true cost of processing infrastructure is added to the log resource. Valuation of log access rights, where they occur, do point to the likely cost of acquiring other processors' volumes.
- The alternative is to wait until a processor ceases to have a viable resource base. Such an outcome would be the product of poor sector-planning and the costs here will ultimately be borne by the sector as a whole.

7 CONCLUSIONS

The softwood processing industry in Queensland is the major forestry sector in the state as well as a major employer, consumer and contributor to gross domestic product of the state. Without considering normal socio-economic multipliers, the industry contributes around \$572 million to the Queensland economy, based on gross value of sales. In so doing, it spends locally \$346 million, directly employs 1 754 people and another 670 employees in contracting organisations — harvest, haulage, mill-based, finished product transport, rail, ship loading etc.

If normal multipliers are used, the flow on effects of the softwood processing industry in Queensland is in the order of \$1 026 million. Additionally, some 3 154 jobs could be supported (directly and indirectly) as a result of the operations of this industry sector. A total of around \$96 million in household income could be dependant, directly or indirectly, on payments made to labour in the industry.

The industry is approaching a period of significant change associated with stabilisation in overall volume from the forest, change in product assortments from the forest and a change in species mix.

While different resource scenarios are discussed, the reality is there will be no increase in availability from the existing public or private estate — a situation which has been known by industry for some time. In addition, it is unlikely there will any significant expansion of the public or private estate.

A robust forest owner and industry blue-print or plan is required for the next 1-2 decades if an optimal and sustainable industry structure is to result. Both the forest owner and the processors have obligations here, as an efficient and dynamic industry will improve returns to the forest owner.

An Industry Strategic Plan is not a destination — it is a journey. To make optimal use of the resource, a dynamic approach is required to resource supply, harvesting, delivery and merchandising.

References

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Endnotes

- 1 DPIF (2004a) The Queensland Forest Industry – An overview of the commercial growing, management and processing of forest products in Queensland.
- 2 37 243 ha (DPIF 2004a)
- 3 Peter Moore, 27/May/2005.
- 4 Plantation North East 2002 report