

7.0 Maximising the return from plantations

More than 5 million tonnes of plantation timber is expected to be available in Tasmania within ten years (**Section 6.1**). At this point in time there will be about 4x the availability of plantation hardwood than there is currently. With the huge investment in the establishment of hardwood plantations in Tasmania, the time is right to begin positioning for new products and new markets that will ultimately be available for such a significant forecast increase in wood availability.

A strong argument can be made for diversifying away from primarily pulpwood products to capitalise on opportunities for value adding through solid wood production, particularly clearwood and veneers, and engineered products such as LVL (laminated veneer lumber). Growth in reconstituted and glue laminated products favors plantation grown wood, with many of these products incorporating low grade wood and small diameter logs from fast grown, short rotation plantations⁶⁷.

Processing of plantation eucalypt solid wood products is a relatively recent technological advancement. A number of countries around the world have built highly efficient world-scale production units dedicated specifically to converting eucalypt plantation wood into sawn timber, plywood, veneer and laminated veneer lumber products.

7.1 Enhanced opportunities with wiser use of available wood

7.1.1 Increase intensive forest management

Intensive forest management (IFM) is the best way to maximise the output of quality timber aimed at high value markets. Under IFM, special thinning, pruning, fertilising and harvesting techniques are employed to maximise the scale, quality and economic value of plantation resources⁶⁸.

Pine clearwood

Management for the production of pine clearwood is outlined in **Table 16**. Clearwood is the ultimate product for finest grade, knot and blemish-free pine timber for uses such as picture framing, carpentry and furniture. Clearwood is one of the highest value plantation products (**Table 17**). Careful planting, pruning and forest management will create clearwood. The timber also requires skilled milling, drying and storage to ensure a craftsmen-quality final product. Currently around 26% of the public softwood plantation estate is managed under a clearwood regime with thinning and high pruning for veneer log production and projections indicate that the veneer supply from softwood plantations will reach an annual yield of 50,000 m³ by 2010⁶⁹.

⁶⁷ ABARE (1999) Forest plantations on cleared agricultural land in Australia. Research Report 99.11

⁶⁸ Forestry Tasmania Annual Report 2003-03, p18.

⁶⁹ Banks & Clark (1997). Tasmania's plantation processing industry – job opportunities now and in the future.

Table 16: Tasmanian public softwood plantation clearwood management regime and wood yields (m³/ha)

	First commercial thinning at 12 yrs	Second commercial thinning at 20 yrs	Clearfell at age 30	Total wood supply
Veneer log	0	0	162	162
Sawlog	0	20	182	202
Chiplog	40	8	4	52
Total	40	28	348	416

Data source: Banks & Clark (1997). Tasmania's plantation processing industry – job opportunities now and in the future.

Currently Tasmania has the only fully integrated clearwood sawmiller in Australia – TTC. TTC has supply contracts for 32,000 tonnes of pine logs from 2003-2010 and can produce product valued at up to \$1,800/m³. The potential for clearwood manufacturing in the State has not reached its potential, particularly as 129,000 m³ of softwood plantation logs were exported last financial year and 245,000 m³ the year before (**Table 10**).

Hardwood

It is assumed that 15% of hardwood planted on State forest will be high pruned to produce sawlogs (category 3)⁷⁰ and timber suitable for rotary peeling. The proportion of hardwood sawlogs sourced from plantations is expected to increase from 2017 onwards. There is also potential to produce sliced veneers from the highest quality plantation hardwoods and about 10,000 m³ would be required to replace the current supply from native forests⁷¹. Private plantation owners are not obliged to produce high quality sawlog and much of the planting has been specifically focused on the production of short rotation pulpwood⁷².

7.1.2 Aim for high value adding and high value markets

Currently plantation raw materials fetch anything from \$5-30 m³ in royalty and are worth \$65-84 m³ once transported to a point of export (**Table 17**). Manufacturing of the plantation timber locally increases the export value of the plantation product by as much as 20x (**Table 17**).

⁷⁰ Forestry Tasmania (2002). Review of sustainable high quality eucalypt sawlog supply from Tasmanian State Forest.

⁷¹ Banks & Clark (1997). Tasmania's plantation processing industry – job opportunities now and in the future.

⁷² Forestry Tasmania (2002). Review of sustainable high quality eucalypt sawlog supply from Tasmanian State Forest.

Table 17: Current examples of stumpage, mill door (or wharf) value and export value

P = plantation NF = native forest	Stumpage (\$/tonne)(a)	Mill door landed value (MDLV) (\$/m3)(b)	Export (\$/m3)(c)
Raw materials			
P - Roundwood	15	65	65
P - Woodchips (softwood)(d)	5-10	50	65
P - Export softwood logs	10-20	70	70
NF - Export eucalypt peeler log	15	80	80
P - Woodchips (plantation hardwood)(d)	18-30	49	84
Processed materials			
P - Particleboard		50	370
P - MDF		50	395
P - Softwood sawn timber (rough)	20-30	70	440
P - Hardboard		50	500
P + NF - Pulp	5-30	50	700
P - Paper & paperboard		50	850
NF - Hardwood sawn timber (rough)	15-28	70	880
P - Softwood veneer	50-78	90	900
NF - Hardwood veneer	35-70	100	910
NF - Hardwood sawn timber (dressed)	25-45	53-100*	1,000
P + NF - Newsprint			1,050
P - Softwood sawn timber (dressed)	40-65	53-100*	1,090
P + NF - Printing & writing paper			1,160
P + NF - Plywood/LVL		80	1,400
P - Clearwood	50-78	90	up to 1,800

(a) Stumpage prices from: Private Forests Tasmania market information update

(b) Sustainable forest management report 01-02

(c) ABARE - Australian forest and wood product statistics – Sept and Dec quarters 2003

(d) Export woodchip price quoted is for ‘green metric tonnes’

*MDLV depends upon level management and extent of pruning

The current gross export value of Tasmania's plantation products is 1.08 billion (Table 18).

Table 18: Summary of current plantation products and estimated gross export value

	Volume	Value \$/m3	Total \$
Logs			
Hardwood export woodchips (t)	750,000	84	63,000,000
Softwood export pulpwood (t)	300,000	70	21,000,000
Export logs (m3)	129,000	70	9,030,000
Products			
Newsprint (tonnes)(b)	310,000	1,050	325,500,000
Paper (tonnes)(c)	302,000	1,160	350,300,000
Sawn timber & veneer (m ³)	232,000	1,000	232,000,000
MDF (tonnes)	120,000	395	47,400,000
Particleboard/panels (m ³)	42,000	370	15,540,000
Treated pine (m ³)	40,000	500	20,000,000
Total			1,084,000,000

7.1.3 Enhanced value from processing more resource locally

Current (as at December 2003) plantation timber production is approximately 2.5 million tonnes. Current export of plantation based timber currently amounts to an estimated 750,000 tonnes of hardwood pulpwood, 300,000 tonnes of softwood pulpwood and 130,000 m³ of whole logs (softwood). A majority of the hardwood pulpwood is currently sourced from private land although a small proportion is wood that has been grown in conjunction with joint venture partners. The softwood pulp is however owned and managed under joint venture arrangements with established markets.

The following analysis provides examples of how local processing of exported material (not bound by joint venture agreements) could maximise jobs and wealth generation in Tasmania from the plantation estate.

Downstream processing 750,000 tonnes of export pulpwood into MDF

- 750,000 tonnes of pulpwood would enable the capacity for MDF production in the State to more than double to an estimated 300,000 tonnes/yr creating an estimated 265 new jobs for an estimated new investment of \$200 million (refer **Table 20** for analysis).
- Value of the timber as export pulp (**Table 17**) \$63 million
- Value of the timber as export MDF \$119 million
- **Enhanced annual export value.** **\$56 million**

Downstream processing the 130,000 m³ of export logs into LVL or clearwood products

- Local processing of softwood logs currently exported would generate enough resource for establishment of a LVL (laminated veneer lumber) plant creating an estimated 110 jobs (estimated investment \$50 million)(refer **Table 19** for analysis).
- Value of the timber as export logs (**Table 17**) \$9.1 million
- Value of the timber as export LVL
(Assuming a 70% recovery of product) \$127 million
- **Enhanced annual export value. \$118 million**
- Similar returns in terms of revenue and employment may be achieved through processing the export logs into softwood sliced veneers or clearwood sawn timber.

Summary

Processing locally the available plantation resource that is currently exported (and not subject to joint venture agreements) would require and achieve the following:

- new investment \$250 million
- new jobs 375
- **increased annual value \$174 million**

The increased annual value from downstream processing the exported plantation resource would enhance the value of Tasmania's plantation products by 16% from 1.08 billion to 1.26 billion.

7.1.4 Plantation manufacturing options – relative analysis of resource use, jobs and investment

The information presented in **Table 19** provides a picture of the resource consumption, capital expenditure jobs creation potential of several plantation timber downstream processing options. In **Table 20** the options are analysed and ranked according to efficiency of resource use and potential to maximise employment in relation to investment and resource use.

Table 19: Profile of investment, jobs and resource requirement of plantation timber processing plants

	Wood input required (m3/annum)	Capital expenditure (\$ million)	Plantation area required	Jobs created
Veneer mill (softwood & hardwood)	50,000	80	9,000	110
Laminated veneer lumber (LVL) & plywood plant (softwood & hardwood)	120,000	50	12-20,000	110
Sawmill (softwood & hardwood)	400,000	85	35-40,000	240
Engineered strand lumber (ESL) (hardwood)	450,000	170	35-45,000	200
MDF and/or particleboard plant (softwood)	300,000	150	20-35,000	200
Kraft linerboard plant (softwood)	1,200,000	550	80-150,000	150
Pulp mill – closed loop, non-chlorine Kraft (hardwood)	3,000,000	1,100	125-250,000	300

Table 20: Relative analysis of resource, jobs and investment

	Jobs vs resource input	Relative analysis jobs vs resource input	Jobs vs investment	Relative analysis jobs vs investment
Pulp mill – closed loop, non-chlorine Kraft (soft/hardwood)	1.00E-04	1	2.73E-07	1
Kraft linerboard plant (softwood)	1.25E-04	1.25	2.73E-07	1
Elongated strand lumber (ESL) (hardwood)	5.56E-04	5.6	1.47E-06	5.4
Sawmill (softwood/hardwood)	6.00E-04	6.0	2.82E-06	10.3
MDF and/or particleboard plant (softwood/hardwood)	6.67E-04	6.7	1.33E-06	4.9
Laminated veneer lumber (LVL) & plywood plant (softwood/hardwood)	9.17E-04	9.2	2.20E-06	8.1
Veneer mill (softwood/hardwood)	2.2E-03	22	1.38E-06	5.1

Potential for engineered timber products

The information presented in **Table 20** demonstrates that production veneers followed by engineered and manufactured timber products such as MDF, LVL and ESL are the best options for optimising Tasmania's plantation timber resource in terms of employment, investment and resource consumption. Sawn timber ranked as the best option for optimising jobs according to investment. Construction of a pulp mill has the potential to significantly under-value the potential of the State's plantations and would be another example of a resource-hungry, low employment operation that would minimise Tasmania's options to adopt a range of innovative processing plants.

Veneer and rotary peeled veneer for production of LVL (laminated veneer lumber) and plywood are very attractive prospects for maximising the jobs return in relation to resource input and capital investment e.g. LVL will return 9x more jobs per tonne and veneer 22x more jobs per tonne of resource than a pulp mill (**Table 20**). Veneers do however require much more intensive plantation management than does pulp wood production. More information on engineered timber products, including ESL (elongated strand lumber) is given in **Appendix 2**.

LVL production is currently untapped in Tasmania and local processing infrastructure has not been established. Export of softwood plantation logs and native forest regrowth logs for peeling in Korea and China is a market that has increased rapidly in recent years, a move that is undermining Tasmania's resource potential for manufacturing this high value, high employment generating product. It is also arguable that in fostering the development of peeling technology in Asia we are undermining the viability of our own markets should the technology ever be established in the State.

7.2 How much more plantation timber will be available given no further expansion in the estate?

In 2004 the majority of Tasmania's plantation timber was harvested from plantations established up until 1989, a total area of 82,300 ha (**Table 21**). Since 1989 a further 140,400 hectares of plantations has been established, the timber from which will progressively become available from now until 2019. At that time, given no new plantations are established, an estimated 6,640,000 (tonnes + m³) of plantation timber will be produced annually, an increase of 170% on the current volume of 2,520,000 (tonnes + m³)(**Table 21**).

The extra timber available for processing in Tasmania is estimated in **Table 21** and equates to 2.75 million tonnes of hardwood. The analysis assumes that the current level of plantation timber use will be maintained but excludes joint venture wood. Joint venture wood has essentially been grown in partnership with Japanese and American multinational companies and is destined for export, primarily into a pulpwood market. As at 2003, 68% of softwood plantations & 6% of hardwood plantations were under joint venture contracts.

Table 21: Estimated plantation timber availability based upon no net increase in plantation establishment from 2004

	Current Situation 1989 plantation area at full production	Scenario 2004 plantation area at full production (ie 2019)	Increase	Subtract wood grown under joint venture contracts for export pulp	Extra wood available (at total plantation production from 2019)
Plantation area					
Softwood (ha)	42,400	76,100	(33,700) 80%		
Hardwood (ha)	39,900	146,600	(106,700) 270%		
<i>Total (ha)</i>	<i>82,300</i>	<i>222,700</i>	<i>(140,400) 170%</i>		
Annual production					
Softwood (tonnes + m3)	1,400,000	2,520,000	1,120,000	all	nil
Hardwood (tonnes)	1,120,000	4,120,000	3,000,000	250,000	2,750,000
<i>Total (tonnes + m3)</i>	<i>2,520,000</i>	<i>6,640,000</i>	<i>4,120,000</i>		<i>2,750,000</i>
Annual area harvested					
Thinning (ha)	2,240	6,100			
Clearfell (ha)	7,740	21,000			
<i>Total (ha)</i>	<i>10,100</i>	<i>27,100</i>	<i>(17,000) 170%</i>		

*As at 2003 68% of softwood plantations & 6% of hardwood plantations were under joint venture contracts (Table 3)

7.2.1 Local downstream processing options and enhanced value

The options for use of the available plantation timber when the 2004 plantation estate has matured into useable product are extensive. As shown in **Table 21**, by 2019 there will be an estimated 2,750,000 tonnes/yr more plantation hardwood available than in 2004.

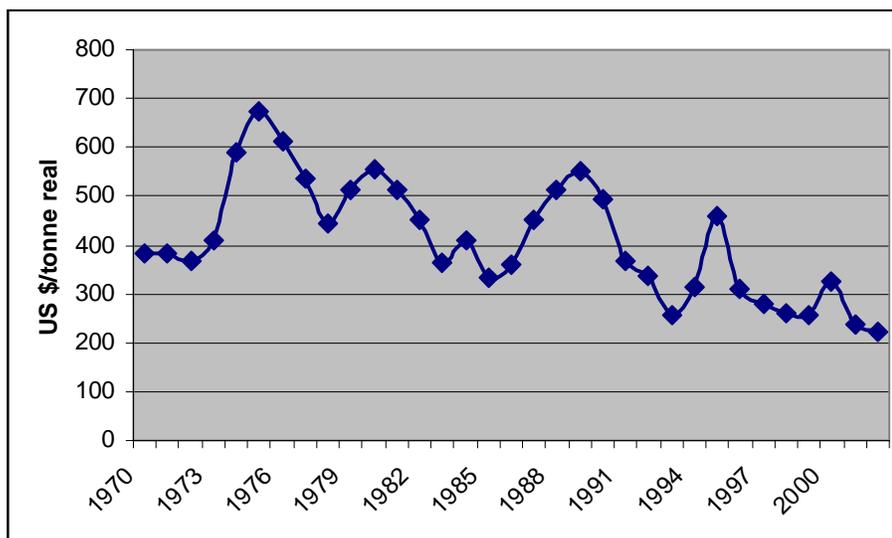
If the available timber was allocated to a new pulp mill it would consume all of this resource (**Table 19 & 22**) and create an estimated 300 new jobs for an investment of \$1.1 billion. Alternatively a diversity of new enterprises including new MDF, LVL, ESL and hardwood sawmilling plants could be established (**Table 22**) for a combined investment of \$770 million. The combined initiatives would require less resource than a pulp mill (2,000,000 tonnes) and create more jobs (an estimated 1,320 new jobs).

Table 22: Potential options for processing additional plantation hardwood resource available in full by 2019

	Wood input required (m3/annum)	Capital expenditure (\$ million)	Jobs created
Option 1 – pulp mill			
Pulp mill – closed loop, non-chlorine Kraft	3,000,000	1,100	300
Total	3,000,000	1,100	300
Option 2 – range of initiatives			
2 x veneer mills	100,000	160	220
2 x laminated veneer lumber (LVL)/plywood plants	240,000	100	220
2 x sawmills	800,000	170	480
2 x engineered strand lumber plants	900,000	340	400
Total	2,040,000	770	1,320

The pulp mill option is made less attractive by the fact that the real world price for chemical wood-pulp is volatile and has been in decline in real terms since 1970 (refer to **Figure 6**).

Figure 6: Real price for world exports of chemical wood-pulp
(Prices deflated by US CPI 1982-84=100)



7.3 Wood availability in 20 years given forecast expansion in plantation estate

Given a continuation of plantation establishment at the current rate the wood availability forecast in 20 years time is (based on data in **Table 15**):

Softwood availability	1,500,000 tonnes/yr
Hardwood availability	6,300,000 tonnes/yr

Under this scenario it would appear that enough plantation hardwood would be available to feed a pulp mill. This however is not a favoured scenario as achieving this level of plantation timber production will come at the expense of further conversion of native forests and at the expense of other processing options that make much greater sense in terms of investment, resource use and employment – as per the previous section.

7.3.1 Farm forestry and plantation expansion

Farm forestry is the term applied to the use of trees on privately owned farms, excluding large industrial forestry activity. Farm forestry plays an important role in land management in Tasmania and is coordinated by Private Forests Tasmania (PFT) a State Government funded authority⁷³.

The ‘Farm Forests Project’ funding under the Commonwealth Natural Heritage Trust, which assisted landowners in farm forest planning, concluded in December 2002. Under this Project, PFT prepared 130 plans in consultation with private landowners to

⁷³ www.abs.gov.au - Statistics Tasmania – Farm Forestry

integrate new plantations with other agricultural activities. Successful implementation of these plans increases long-term sustainability and productivity of native forests and provides additional livestock and crop shelter as well as increasing environmental benefits from integrated plantations. For example, strategic tree planting addresses weed control in 60% of plantation plans as well as salinity (30% of plans) and erosion (10% of plans)⁷⁴.

Under the project, longer rotations associated with sawlog and veneer products were promoted to optimise both environmental benefits (such as weed control, and reduction in salinity and erosion) and potential financial return for the grower. Direct seeding of native species was also actively promoted because of its low cost compared to direct planting of seedlings. It is also suited to situations where a large amount of seed species are readily available and a range of species may need to be inter-planted to mimic natural vegetation communities, especially for shelter and amenity purposes⁷⁵.

Farm forestry obviously has a lot of benefits and can create a win-win scenario if undertaken to enhance the environmental benefits and increase farm productivity, health and cash flow. However caution must be exercised such that tree lots do not adversely affect local water yield, stream flow and arable land productivity.

Although farm forestry has the potential to compliment wood production from plantation forests it is unlikely that it can be conducted on a scale suitable to provide the feedstock for a pulp mill. For a start, a pulp supply option is not attractive to the grower because pulp is a relatively low value product. Small tree lots on farms are a good option for intensive management to produce high value product such as clearwood and veneers. Additionally, plantations grown in consolidated units minimise operational costs through economies of scale. Easy access to infrastructure such as road, rail, port facilities and/or processing plants is a very important consideration. Small tree lots on farms are less convenient than consolidated holdings in terms of their dispersed location and reduced transportation efficiency in respect to maintaining high volume resource flow to a pulp mill.

⁷⁴ Ibid

⁷⁵ Ibid