



*A Manual for Planted Farm Forestry for the  
Northern Inland of New South Wales*

*Appendix E*

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## Appendix E. A description of timber and non-wood products from Northern NSW.

This appendix draws on information provided by market surveys by the Centre for Agriculture and Resource Economics, Greening Australia Hunter and Greening Australia Dorrigo and GA Armidale Master Tree Grower surveys. Other references include Hillis and Brown (1984), Love, Yainshet and Grist (1999), Bird et al (1996) and Boland et al, (1984).

<b>Product</b>	<b>Structural Timber</b>
<b>Description</b>	House frames, building timber, joists, bearers, studs, rafters for the housing industry. Usually 75 x 38 mm to 150 x 50 mm, with larger sizes used in small quantities. Mills of the Northern Inland currently prefer logs 50-60 cm in diameter and 4.5 - 6m long, although this preference is based on logs from native forests. New technology allows the cutting of valuable products from much smaller logs and as plantation resource becomes more common it is anticipated that mills will adopt this new technology to take advantage of smaller, younger wood. This product, particularly with pine, is a high-volume, low-value product.
<b>Specifications</b>	Logs >2.5m (in multiples of 300mm) with diameter 30-70 cm (pref 50-60cm), straight (displacement < 25% s.e.d over 2.4m).
<b>Species currently being used</b>	Stringybark species (silvertop, red, white, yellow) New England blackbutt Ironbark White cypress Messmate Brown barrel Tallowwood Sydney blue gum
<b>Preferred Species</b>	White cypress Silvertop stringybark White stringybark New England blackbutt Radiata pine
<b>Market outlook</b>	This market is dominated by radiata pine throughout Australia, with some competition from steel framing. The use of hardwood species for framing has declined rapidly in recent years with the increasing availability of pine from plantations. The domestic market is strongly linked to the housing market. The softwood market is dominated by large industrial plantations in the Tumut and Oberon regions of NSW, the "green triangle" of South Australia and Victoria and Queensland. There are also significant imports from New Zealand. The pine forests around Walcha are considered to be small stands in the scale of the domestic market! Growers would need to operate at a very large scale to compete in this market.

<b>Product</b>	<b>Flooring and panelling timber</b>
<b>Description</b>	Tongue and groove floor boards (100 x 19 mm, 145 x 19 mm), Interior lining boards (100 x 19 mm, 145 x 19 mm), exterior weatherboards.
<b>Specifications</b>	As for sawlogs, with added requirement for less defect for appearance grade products.
<b>Species currently being used</b>	White gum Mountain gum White cypress Ironbarks Sydney Blue Gum New England Blackbutt Stringy bark, particularly silvertop Tallowwood Brush box Messmate Brown barrel
<b>Preferred Species</b>	White gum White cypress Sydney Blue Gum Tallowwood Brush box
<b>Market outlook</b>	In our region, currently this product is largely dependent on Fennings Mill at Walcha and it's value-adding plant at Gloucester. There may be scope for timber grower's cooperatives to produce blanks for further processing by Fennings. There is a growing export market for this product. This product would fit in to a low-volume, high-value approach as premiums are paid for knot-free boards at the retail end and may provide higher prices for clearwood at the growers end in the future.

<b>Product</b>	<b>Farm fencing timber</b>
<b>Description</b>	Small to medium roundwood, durable in the ground. High structural strength is required for high tension strains. Strainers are 2 - 2.5 m long and >200mm diameter. Stays are usually 3-3.6 m long, 100 - 200 mm diameter. Treated pine posts, >175mm diameter are also used. Timber droppers, 50 x 25 mm sawn are used for electric fencing.
<b>Specifications</b>	Durable species. Log length for strainers is 2 -2.5m or multiples, with diameter 20-40cm. For stays length should be 3-3.6m or multiples, with diameter under bark 100-200mm, with minimal taper over length.
<b>Species currently being used</b>	Yellow Box Ironbarks Stringybarks New England Blackbutt Radiata Pine (treated). White Box Grey Box.
<b>Preferred Species</b>	Ironbark Yellow Box
<b>Market outlook</b>	Strong demand in the region. Increasing demand from owners of semi-rural acreages. Increasing competition from steel and concrete. Market edge is the traditional use of timber for fencing. Advances include post -rammers for smaller diameter posts. Market-share for treated pine is increasing.
<b>Current price</b>	Strainers \$14 - \$32. (Equates to \$223 - \$510 m3 for a 200mm post). Ironbark strainers may fetch higher prices. Stays \$5 - 12 each depending on quantity. Treated pine posts approx \$30 retail, large posts to \$40.

<b>Product</b>	<b>Structural and engineering timber</b>
<b>Description</b>	Girders, bridge timbers, railway sleepers, large span beams.
<b>Specifications</b>	Durable species. Logs should be >6.1m with diameter 40-80cm. There should be no defects which affect strength. Graded F17 or higher.
<b>Species currently being used</b>	Ironbark Yellow Box Tallowwood
<b>Preferred Species</b>	Ironbark
<b>Market outlook</b>	Declining market for bridge timber due to substitution by concrete.
<b>Current price</b>	Variable. Up to \$1000 m3 for sawn timber.

<b>Product</b>	<b>Furniture timber</b>
<b>Description</b>	Mass produced household furniture and furniture frames and components. There is also a small market for high-quality furniture made by skilled artisans. Kitchen cabinets, while increasingly made with carcasses of medium density fibreboard, often use timber for doors and panels.
<b>Specifications</b>	Depends on the end use. Logs of variable length and diameter are used. Clearwood is desirable although “feature grain” such as “birds-eye” or “fiddleback” are desirable. Logs should be > 2m with small end diameter > 20cm.
<b>Species currently being used</b>	Jarrah, river red gum and radiata pine are popular timbers for mass-produced furniture. Spotted gum is increasingly used. For kitchen cabinets, a wide variety of honey-coloured Eucalypt timber is used under the name of “Tasmanian Oak”. Blackwood, jarrah and pine are also widely used for kitchen cabinets. Recycled timbers such as oregon and baltic pine are also used for furniture construction
<b>Preferred Species</b>	A wide range of species are used, including some uncommon ones.
<b>Market outlook</b>	Prospects increasing as tropical timbers decline in availability. More farm foresters are growing Australian timbers for furniture market. Furniture manufacture requires high-quality wood, particularly for timber features in furniture. This market particularly suits the small grower who can turn out clearwood in a range of species, as well as the medium volume grower who can produce wood of consistent quality. Local markets can often be developed in consultation with cabinet makers and furniture makers, providing a high quality product can be produced.

<b>Product</b>	<b>Outdoor furniture</b>
<b>Description</b>	Durable, weather-proof and insect-proof timbers are used for outdoor furniture such as BBQ benches, trolleys and tables, picnic tables and park benches.
<b>Species currently being used</b>	Jarrah, Spotted Gum, Ironbark, Red Gum, treated pine.
<b>Preferred Species</b>	Any strong and durable species
<b>Market outlook</b>	Many small manufacturers produce outdoor furniture in distinctive styles. Local markets can be developed with these manufacturers. There are also large scale markets and export markets for outdoor furniture, which would require a large, consistent supply of timber.

<b>Product</b>	<b>Pegs and stakes</b>
<b>Description</b>	Wooden pegs and stakes are used for garden stakes, trellises, surveying pegs, construction hurdles, tree guard stakes and marker pegs. These can be produced in a wide range of widths and lengths either as blanks or cut to shape.
<b>Species currently being used</b>	Almost any species is used as a by-product of some other product. Durable species that will not split when hammered in to the ground are preferred.
<b>Preferred Species</b>	Most Eucalypts.
<b>Market outlook</b>	Challenge Foundation in Armidale produces a range of stakes and pegs. This will continue to be a small but steady market, with some capacity to utilise plantation thinnings.

<b>Product</b>	<b>Preservative-treated timber</b>
<b>Description</b>	Numerous timber products destined for high exposure to decay, rot or insect damage are treated with chemicals to prevent damage. Poles, outdoor construction timber, fence posts, railway sleepers, garden timber, weatherboards, piles and widow frames often use preservative-treated wood. Preservatives used include CCA, creosote, contact insecticide, oils or pentachlorophenol and are applied by pressure or dipping.
<b>Species currently being used</b>	Radiata pine, some Eucalypts including spotted gum and flooded gum.
<b>Preferred Species</b>	Species with low heartwood density that will easily take up the preservative. Pine is preferred for this reason although fast-grown plantation Eucalypts exhibit similar characteristics.
<b>Market outlook</b>	Preservative-treated softwoods and small diameter Eucalypts are used in products with expanding markets such as domestic fencing and landscaping, outdoor construction and building construction. They are displacing naturally durable hardwood from native forests. Manufacturers of preservative-treated timber products have specific requirements for species, size and wood quality.

<b>Product</b>	<b>Woodchip/pulpwood</b>
<b>Description</b>	Eucalypt logs are used for the production of fibre for use in paper and cardboard manufacture. The logs are processed into woodchips of a specific size, before undergoing a chemical and physical process to extract the fibre.
<b>Specifications</b>	Acceptable species. Chips to be 22mm long measured along the grain and 5mm thick. Chips will have < 1% green weight of bark and 0.2% rotten wood per load. Wood from young, rapidly grown trees is preferred. Small end diameter of logs should be >7cm. Check specifications of individual buyers.
<b>Species currently being used</b>	Species with a low density, low levels of particular extractives and optimum fibre length are preferred. This translates to species of particular wood colour and individual trees of a particular age and size.  Species currently used from native forest include spotted gum, silvertop stringybark, messmate, Sydney blue gum, New England blackbutt, ribbon gum ( <i>E. nobilis</i> and <i>E. viminalis</i> ), brown barrel, white-topped box, forest red gum, rough bark apple. Prohibited species include Ironbarks, white mahogany and tallowwood.
<b>Preferred Species</b>	Current preferred plantation species include Tasmanian blue gum, shining gum, Radiata Pine and flooded gum.
<b>Market outlook</b>	Pulpwood is a low value commodity and therefore does not bear long-distance transport. As there is no pulpmill within economic transport distance of the Northern Inland the prospects for this market are poor. However, woodchips (for paper manufacture) are exported from the ports of both Newcastle and Brisbane, so growers in the extreme south or north of the region may be within range. As pulpwood is a commodity, large volumes would be required to attract a buyer.

<b>Product</b>	<b>Firewood</b>
<b>Description</b>	Firewood is cut from a range of local species in the paddock and sold by the tonne, bag, trailerload, or ute-load. It is cut to a range of lengths to suit different end-uses. It is sold as round log sections or split (usually with a hydraulic splitter). Firewood is often sold by the species or as mixed loads.
<b>Specifications</b>	Length 25- 60cm. Air-dried to low moisture content.
<b>Species currently being used</b>	Ironbark, stringybarks, yellow box, Blakelys red gum, river red gum, pine, white box, other box species,
<b>Preferred Species</b>	Ironbark, Yellow box, white box.  Casuarinas and acacias produce hot and even burning firewood and would suit plantation growth.
<b>Market outlook</b>	Firewood is a steady market in the Northern Inland with many people still depending on wood for heating and a lesser number for cooking and hot water. The most likely limit to the market will be from lack of resource if regulation of environmental impact is introduced. Most firewood is produced unsustainably, from woodlands on the western slopes of the Great Dividing Range. This resource is diminishing as these woodlands grow slowly and much of the accessible areas have been cleared for agriculture. This offers the chance of a major market opening up for sustainably produced plantation-grown firewood. There is also the risk of woodheaters being banned due to concerns over woodsmoke pollution in some regional centres. However, this may be overcome through better wood heater technology to reduce emissions.

<b>Product</b>	<b>Veneer and plywood</b>
<b>Description</b>	<p>Plywood is traditionally produced from high quality, low-defect roundwood, however advances in technology have enabled smaller diameter and lower quality logs to be processed. Either slicing or rotary peeling (more common) of logs produces thin layers of veneer which are dried and glued together with the grain in alternate directions. Plywood is used for construction, concrete formwork, cabinet and furniture construction and marine applications.</p> <p>Veneer is also produced in single thickness sheets to provide an appearance-grade surface layer over timber or particle board in furniture manufacture.</p>
<b>Specifications</b>	Length 2.4 – 6m. Diameter > 30cm s.e.d. Straightness and roundness is very important for rotary-peeled veneer logs.
<b>Species currently being used</b>	Plywood veneer is commonly produced from softwood, although hardwood is used for some high strength products such as form ply or for appearance grade products. Species currently used include radiata pine, Sydney blue gum, stringybarks, New England blackbutt, flooded gum, silver wattle, blackwood, silky oak, coachwood, rosewood, red cedar, blackbutt, hoop pine, white gum, shining gum and blue gums. Many other species are used for decorative veneers.
<b>Preferred Species</b>	Favoured species include <i>Pinus radiata</i> , <i>Eucalyptus grandis</i> , <i>E. saligna</i> , <i>E. andrewsii</i> and <i>E. campanulata</i> .
<b>Market outlook</b>	The closest veneer mill to the Northern Inland at present is Big River Timbers, located at Grafton. It is generally considered that sawlogs produced for veneer can be economically viable to transport by road for distances up to 250 km. This would cover an area of the region bounded by Tenterfield, Armidale, Inverell and Ebor. It may be viable to take logs from further away depending on the species, the log quality and the volume available.

<b>Product</b>	<b>Reconstituted wood products</b>
<b>Description</b>	<p>Hardboard - Also known as masonite. A board product produced from low-grade forest material which is chipped and reconstituted under steam pressure.</p> <p>Medium-density fibreboard or MDF is also a board product made from low grade material which is chipped. MDF is used in casings for furniture cabinets, flooring, panelling and craft.</p> <p>Laminated-veneer lumber or LVL uses veneer from small low strength pine glued together like plywood under pressure with the grain in the same direction to provide a strong, uniform and bendable material. There were some moves to try to attract an LVL manufacturer to the Northern Tablelands to utilise the softwood resource near Walcha.</p> <p>'Scrimber' is produced in a process that crushes, compresses and glues small diameter pine to produce high strength material to be used as timber, particularly for structural beams.</p>
<b>Specifications</b>	Some products require particular species. Length > 2.4m. Diameter 25-65cm (large end diameter) and >10cm s.e.d. Bark removed. Minimum 10cm wood thickness. < 60% heart defect. <1:10 spiral grain. Knots <33% diameter with < one knot per 2m length. (CSR Masonite, 1997)
<b>Species currently being used</b>	<p>Hardboard - Sydney blue gum, brown barrel, white-topped box, yellow box, mountain grey gum, narrow-leaved ironbark, messmate stringybark, manna gum, New England blackbutt, mountain gum and tallowwood (Tablelands species only).</p> <p>MDF - mostly radiata pine.</p> <p>LVL and Scrimber - mostly use radiata pine.</p>
<b>Market outlook</b>	<p>Only one hardboard mill operates in Australia currently, so the outlook for the Northern Inland is poor.</p> <p>MDF, LVL and Scrimber require specialised plants which in turn require a large resource. There may be potential for a manufacturer to establish in the region to utilise the Walcha-Nundle softwood plantations, if a commitment to increase plantations was made by State Forests or a large private resource was established for other purposes. Composite board industries can make use of thinnings and mill waste, which would complement sawlog or other higher value production.</p>
<b>Current price</b>	Variable. Up to \$1000 m3 for sawn timber.

<b>Product</b>	<b>Charcoal</b>
<b>Description</b>	Charcoal is produced by pyrolysis for specialty uses in Australia. It has been used in the past in the iron industry but coal has largely replaced charcoal in this industry. Charcoal is still widely used in areas without coal reserves, such as South America where large plantations of Eucalypts have been established for charcoal production. Currently there is a proposal to establish a charcoal production industry in NSW based on native forests to supply a silicon smelter. Charcoal is also used for barbecue fuel and for smelting of particular metals.
<b>Species currently being used</b>	A wide variety of Eucalypts have been used in the past for charcoal production.
<b>Preferred Species</b>	River Red Gum, Ironbarks, some stringybarks.
<b>Market outlook</b>	Uncertain. There may be some market opportunities for plantation thinnings in the production of barbecue fuel or specialised charcoal uses. As charcoal is generally a low-value product it is not economic to transport raw material over long distances, so a market would only develop if a charcoal plant was established in the region.

<b>Product</b>	<b>Eucalyptus oil</b>
<b>Description</b>	Oil extracted from leaves of Eucalypt species for pharmaceutical, industrial and household use. Oil with high cineole content preferred for medicinal use. Lower grade oil is used as a solvent and a disinfectant.
<b>Species currently being used</b>	<i>Eucalyptus radiata</i> (narrow-leaved peppermint) on the tablelands. <i>Eucalyptus polybracteata</i> and <i>E. viridis</i> are some of the species used elsewhere in Australia that may be suitable for the slopes and plains.
<b>Preferred Species</b>	Selected strains of <i>Eucalyptus radiata</i> (narrow-leaved peppermint) with high oil yields are preferred. NSW south coast selections of <i>E. radiata</i> subsp <i>radiata</i> are used on the Tablelands. Selection work is being undertaken by the University of New England, in consultation with the 'Banalasta' plantation and by CSIRO Forestry and Forest Products.
<b>Market outlook</b>	China currently dominates world production of low-grade Eucalyptus oil produced from <i>Eucalyptus globulus</i> . 'Banalasta' plantation near Bendemeer is aiming to produce large volumes of high-cineole content Eucalyptus oil from <i>E. radiata</i> . Future Tablelands markets will probably depend on the 'Banalasta' plantations need for extra volume. Prospective growers should aim for the high value end of the market.  Western Australia intends to undertake a massive planting of oil-yielding species over the next ten or so years to address it's worsening salinity problem. This may flood world markets with low-grade oil and force prices down.

<b>Product</b>	<b>Aesculin</b>
<b>Description</b>	A pharmaceutical compound used in the manufacture of sunscreens, as a reagent in bacteriological investigations and as a treatment for blood vessel disorders such as haemorrhoids.
<b>Species currently being used</b>	Blackthorn ( <i>Bursaria spinosa</i> ) and European horse-chestnut ( <i>Aesculus hippocastanum</i> )
<b>Preferred Species</b>	Blackthorn ( <i>Bursaria spinosa</i> )
<b>Market outlook</b>	Currently wild harvest only. One processor only. Potential for market expansion due to quality of Northern Tablelands <i>Bursaria</i> .

<b>Product</b>	<b>Rutin</b>
<b>Description</b>	Rutin is a polyphenol (quercetin 3-rutinoside) used in the pharmaceutical industry. (REF)
<b>Species currently being used</b>	<i>E. macrorhyncha</i> , <i>E. youmanii</i> , <i>E. delegatensis</i> .
<b>Preferred Species</b>	<i>E. macrorhyncha</i> and <i>E. youmanii</i> . These two species grow naturally on the Northern Tablelands and North West Slopes and have been successfully grown in plantations.
<b>Market outlook</b>	Rutin depends on a small and specialised market. Australia produces about 60t per year from wild harvest. One producer on the Northern Tablelands has successfully exported rutin to France for several years.

<b>Product</b>	<b>Other non-wood products</b>
<b>Description</b>	Adhesives, Tannin, Biofuels (including ethanol and wood gas),
<b>Species currently being used</b>	<u>Adhesives:</u> Mostly produced from Acacias, although some other species including eucalypts have been used. <u>Tannin:</u> Acacias, principally Black Wattle ( <i>Acacia mearnsii</i> ). <u>Biofuels:</u> Most plant species can be utilised for ethanol production while most hardwoods can be used for the production of wood gas.
<b>Market outlook</b>	Adhesives and tannins could be produced in a small to medium sized industry, providing sufficient resource could be grown. There is potential for growth in the market for these two products. Biofuels were recently identified as the most likely product to provide an economic return in low rainfall areas (Zorzetto and Chudleigh, 1999). The most likely scenario for development of this market is in conjunction with greenhouse-compliance costs for fossil fuels, utilisation of waste from wood production and other industries and the establishment of a large scale wood industry in the region.

<b>Product</b>	<b>Environmental services</b>
<b>Description</b>	Trees grown for timber or other products can also produce environmental services, such as carbon sequestration, salinity control and biodiversity enhancement. These services are then sold separately to the wood product.
<b>Species</b>	Species with a rapid growth rate are preferred for carbon sequestration. Species with a strong ability to take up groundwater in recharge zones, or a high salinity tolerance in discharge zones, are preferred for salinity control. A wide diversity of species in any one planting are required for biodiversity services, with a preference for local native species.
<b>Market outlook</b>	Expanding. The market for ecosystem services is a new and developing one. It puts a value on the environmental benefits of trees and sells these benefits as “credits” to those who have an environmental “debit”. Carbon trading has already taken place to a limited extent in Australia but is dependant on the ratification and implementation of the Kyoto treaty . Experimental systems to trade in salinity and biodiversity credits are currently being established. It is anticipated that ecosystem services would only be economic in conjunction with production of timber or similar products.