

## 8 Wood products

*Box-Ironbark forests are an important source of timber for a variety of national, regional and local uses, from high quality sawn timbers to firewood. This chapter outlines wood production matters, while forest management is discussed further in Chapter 17.*

Box and ironbark timbers have various properties distinguishing them from products from taller, faster-growing forests along the Great Dividing Range. Their density makes them high quality firewood. Their durability makes them resistant to insect (particularly termite) and fungal attack and therefore highly favoured for farm fencing and other in-ground uses. The strong colour, grain and often-interesting figure of kiln-dried box and ironbark timbers make them sought after for furniture manufacture.

In the past box and ironbark timber was sought for:<sup>1,2</sup>

- heavy construction timbers, such as for bridges and pier piles;
- pit props and fuel for mining from the 1850s;
- railway sleepers, particularly during the expansion of railway lines 100 years ago, and the later peak in 1960/61;
- farm fence posts, with peak production in 1953/54;
- firewood, particularly during the 1940s and early 1950s; and
- small volumes of electricity, telephone and farm shed poles.

All those markets have declined and substitutes have become widely available. Firewood had a resurgence in the 1980s and 1990s with the development of wood-burning slow combustion heaters.

### 8.1 Current products

The highest value timber products from Box-Ironbark forests, in terms of contribution to the economy per cubic metre, are sawlogs. NRE's long-term goal in Box-Ironbark forests is to optimise sawlog supplies and maximise value-added products. This strategy will have the added advantage of allowing stands to reach a greater level of maturity than the current forests.

The estimates in Table 8.1 below are based on prices at the firewood, post or sleeper-cutter's yard—effectively a wholesale price. The royalties for different products are:

- sawlogs      \$41 per cubic metre
- sleepers      \$38.70 per cubic metre
- posts          \$32.76 per cubic metre (average for various fencing products), and
- firewood      \$10.30 per cubic metre.

#### *Sawn timber*

Grey box, red and mugga ironbarks, red box and yellow gum produce high quality timbers with decorative grain and a range of colours. These timbers saw, dry, dress and polish well. They are valuable for furniture, mouldings and other value-added products.

Currently, sawlog harvesting and milling is only a small industry, accounting for about 2% of the total cut by volume, 12% by value, and 17% of full-time equivalent timber jobs.<sup>3</sup> As well as the favourable value-adding at the mill in kiln-dried sawn products, this wood can be used for much higher value purposes such as furniture.

Sleepers and sawlogs are cut from the same size and class of log. Some 500 cubic metres per year of sawlog wood was cut for sleepers on average over the period 1993/94 to 1998/99.<sup>3</sup>

The Rushworth sawmill holds the main sawlog licence, cutting 730 cubic metres of the 895 cubic metres total cut in the Box-Ironbark study area. Main species harvested are grey box and red ironbark. About 40% of its output is kiln-dried, dressed and shaped for furniture, flooring and trims. Most of the remainder is used for outdoor furniture and electric fence droppers.

### *Fencing timber*

Sawn or split posts, strainer (large cylindrical) posts, smaller diameter round posts (sometimes treated), and minor products such as rails, power line or shed poles are mainly cut by licensed commercial cutters. Cutters often take firewood timber from the heads of post trees; otherwise it is made available for domestic wood collectors.

### *Firewood*

Firewood is by far the largest timber product by gross volume, and also the largest by total dollar value (see Table 8.1). Licensed commercial cutters take a set amount by chainsaw in the bush, or by carting cut lengths to a sawbench. Commercial cutters take about 60% of the harvest. The balance is taken by domestic cutters who either have a permit to collect their own requirements from already felled trees, or are authorised to cut small trees in designated areas.

In general, firewood is cut from relatively small diameter trees, thinned stems and heads of larger dimension trees cut for sawlogs, sleepers or fencing products. NRE intends that current firewood harvesting from standing trees be managed as a thinning strategy, to encourage growth in retained stems for future sawlog harvesting.

As a general principle, and provided the market is available, all timber should be sold for the highest value product for which it is suitable. Milled sawlog timber is first, then value-added post log products, and then firewood.

Commercial firewood cutting occupies numerous part-time workers and thus makes an economic contribution to a wide spectrum of households.

The North Central Farm Forestry Network, in conjunction with NRE, supports new box and ironbark timber plantations on farms. Agroforestry plantations can provide substitutes for small dimension box and ironbark forest products such as fence posts and firewood, and possibly sawlogs from species such as sugar gum. As well as timber products, these farm plantations can have other benefits such as lowering water tables to reduce salinity, creating windbreaks, and shelter belts for animals and general beautification of properties.

The Network also promotes marketing of high-value wood products including kiln-dried timber from dead paddock trees. Such moves reinforce value-adding and marketing efforts for Box-Ironbark timber.



Cutting a grey box log to size for fence posts.

**Table 8.1** Approximate value of annual timber production from the Box-Ironbark study area

Source: Stage 3 social & economic study<sup>3</sup>

	<b>Sawlogs</b>	<b>Sleepers</b>	<b>Fencing</b>	<b>Firewood</b>	<b>Totals</b>
Total production in cubic metres (m <sup>3</sup> )	895 m <sup>3</sup>	500 m <sup>3</sup>	4 390 m <sup>3</sup>	42 150 m <sup>3</sup>	47 935 m <sup>3</sup>
Value of production	\$0.404 M	\$0.077 M	\$0.69 M	\$2.13 M	\$3.3 M
Value/m <sup>3</sup> produced	\$496	\$129	\$117	\$45 local \$70 Melbourne	\$72 (average)
Jobs – total full and part time	16	4	53	100+	173+
Jobs – full time equivalents (FTE)	13	4	18	43	78
Jobs/000 m <sup>3</sup> produced	14.5	8	4.1	1.7	-

Notes: 1. Production volume for Bendigo FMA is the average for the years 1993/94 to 1998/99; for other FMAs, it is the estimated annual production.

2. Some 300 cutters in Bendigo FMA hold Forest Operator's Licences, of whom about 160 operate in commercial coupes. Numerous others cut small volumes, mainly domestic firewood, for other users.

## 8.2 Industry trends

### *Sawlogs*

The value of sawlogs can be substantially increased with the use of humidity-controlled drying kilns, and by dressing sawn wood for finished products such as furniture, mouldings and flooring. The Rushworth sawmill has significantly increased employment and profitability through value adding. About 40% of the 730 cubic metres timber allocation is dried at present. This is a small, specialist industry with a growing but limited Australian market. Some potential also exists for exporting finished products.

### *Sleepers, poles and heavy construction timbers*

Most of the markets for these products are now met by alternative materials.<sup>4</sup> V-Line had been purchasing fewer box sleepers and was using more concrete and river red gum sleepers. However the recent purchaser of V-Line's freight lines, Freight Australia, has indicated a continuing interest in Box-Ironbark sleepers. When sections of metropolitan railway track are being renewed, concrete sleepers are increasingly being used. Individual wood sleepers are generally replaced with wood.

### *Fencing*

The demand for Box-Ironbark posts has declined over the past decade. Similar products are available from outside the region, including round posts from plantations and agroforestry. Alternatives include concrete products, treated pine posts, creosoted hardwood posts, steel star posts, galvanised-steel end assemblies, and electric fencing. Several post cutters mentioned the reduced demand for Box-Ironbark posts due largely to the lower prices for treated pine, steel and electric fence alternatives. Some post cutters are diversifying into value-added sawn products, utilising their post log allocation. Cutters at Inglewood, Rushworth, and Talbot are sawing post logs into small dimension products such as stakes, pegs and droppers, as well as specialty fencing and construction timbers.

### *Firewood*

About 70% of Box-Ironbark forest firewood is consumed within the study area, and 30% sold in Melbourne. The demand is not expected to change in the short term. Australian Standards for wood-heating appliance emissions are being implemented progressively and newer more efficient appliances

require less fuel. This may marginally reduce demand in the medium term, although this may be counter-balanced by population increases.

About 2% to 5% of Victoria's firewood comes from Box-Ironbark public forests.<sup>3</sup> While Melbourne consumers could shift to firewood from elsewhere, local users will maintain a strong demand for Box-Ironbark firewood. Cartage distance is a real concern to low-income households dependent on firewood. If local supplies became scarcer, consumers within the study area would have to obtain firewood from outside the region. Commercially supplied river red gum from NSW is the main product used in Melbourne's controlled combustion heaters but this would probably be more expensive than local timber for use in the Box-Ironbark region. Relatively local substitutes are necessary to replace local consumption. Quantities of less dense timber are available from other forests in western Victoria.

If firewood collection was reduced or excluded from some areas of public land, an immediate effect might be to increase firewood collection on private land, and hence the pressure on private land habitat could be increased if no other actions were taken.

With a continued shift to highest value products, firewood will increasingly be from thinnings, branch wood and small diameter trunk sections that are not suitable for sawn products. The Box-Ironbark Timber Assessment<sup>4</sup> (BITA) records an average of 499 and up to 780 tree stems per hectare in state forests, suggesting that thinning can produce substantial volumes of firewood.

'Light' or 'common' timbers such as mountain ash and messmate are less dense but have the same relative heat per kilogram of air-dried wood as grey box, which is seen as the best firewood. Light wood is in widespread use by domestic wood collectors, but little is commercially sold.

For Victoria as a whole, alternative supplies of firewood are available from outside the study area. Large volumes of residual wood resources are available from state forests, in western, central and eastern Victorian forests. In the medium term, firewood supplies from outside the region are expected to increase due to the growth in plantations supplying a range of wood products, and of farm forestry.

Extensive areas of farmland around the margins of Box-Ironbark forest blocks are used for low

production dryland grazing. Such land may be well suited to growing trees, particularly for firewood. Plantations can also have benefits for groundwater and salinity control, greenhouse gas abatement, provision of habitat, strengthening the regional industry base and improved economic opportunities. Virtually all of the Box-Ironbark study area is in the Murray–Darling Basin, and much is at risk of developing dryland salinity problems.

The recent ANZECC discussion paper<sup>5</sup> on a national approach to firewood collection and use contains draft strategies to improve firewood use by:

- encouraging and providing incentives from government for farm forestry plantations;
- exploring alternative resources;
- upgrading efficiency of wood heaters; and
- education.

Similar issues are under consideration in the Victorian Government’s Firewood Strategy<sup>6</sup>, which is currently under development by NRE. Transitional subsidies would help get plantations established, with the industry becoming self-funding in the longer term.

New plantations for other products, primarily paper pulp and sawlogs, could be established on some 1.8 million hectares of private land around Benalla and Shepparton, according to a recent study.<sup>7</sup> This land, including irrigated farmland, is within reasonable distance of pulpmills and has been identified as broadly ‘suitable for private forestry’. Additional roundwood would be produced, potentially available for posts and firewood. The Minister for Environment and Conservation recently announced<sup>8</sup> a grant of \$2.4 million for the establishment of wastewater-irrigated plantations on private land, as an alternative timber resource to state forests, in northern Victoria.

Many towns in the study area are now connected to gas pipelines, with Ararat and Stawell recently added. The provision of gas allows the opportunity to replace wood heating with gas.

### **8.3 Resource sustainability**

The wood resource should not be harvested at a rate faster than it is growing. Sustainability is assessed on the basis of forest management areas (FMA). The sustainable yield from an FMA is the rate of annual timber harvest that can be sustained over the long

term. The FMAs affected by the Box-Ironbark investigation were outlined and illustrated in the ECC’s Resources and Issues Report (1997). Bendigo FMA is dominant, accounting for 91.3% of the total state forest area included in the investigation.

Estimations of sustainable harvesting can be made, for most study area forest, from NRE BITA data. The BITA study area is effectively Bendigo FMA plus the Pyrenees. Modelling with these data allows estimation of the expected annual available timber volume from the current land base, and from proposed changes to the land base. NRE’s model<sup>9</sup> (see Appendix 13) uses a multi-age class spreadsheet approach.

Since publication of the ECC’s Draft Report, NRE initiated a review of the model and re-analysed the Box-Ironbark timber resource information. The model, the review and recent changes are discussed in Chapter 17 (State forests and forest management); the revised estimates are included below.

#### ***Sawlogs***

Across the whole Box-Ironbark study area, about 895 cubic metres of sawlogs are cut each year, and another 500 cubic metres of sleepers. The current legislated sustainable yield of sawlogs for the Bendigo FMA is 800 cubic metres net per year.

According to modelling by NRE based on BITA data, there is an additional sawlog resource, over and above that presently cut, which could be sustainably harvested from the currently available state forest. Some 2 920 cubic metres (net) of sawlogs (including sleeper logs) are estimated to be available each year from the BITA study area forests, before the ECC recommendations, according to the yield modelling. This volume only includes wood from high and medium productivity forests, excludes defective wood, allows for tree mortality, and assumes trees 60 cm diameter and larger are excluded from harvesting (which is an effect of current forest management).

Recommendations in this report however reduce the available productive area of state forest by 39%, and also reduce the size of this potential resource.

#### ***Firewood***

NRE has estimated annual available firewood volume from the current land base to be 53 120 cubic metres per year from the BITA study area, according to the yield model. Cuts in the period

from 1993/94 to 1998/99 have averaged 42 150 cubic metres per year from the whole study area. The modelled estimate is for firewood produced from the residue of sawlog and fencing operations and thinning, in high and moderate productivity forests.

Where ecological management operations involving thinning are carried out in parks and reserves, saleable volumes of firewood are likely to be available as a result. The scope and scale of these operations are subject to research, however trials in selected areas are likely to be underway within 18 months of government consideration, if the recommendations are approved. Logistics and details will be determined by the land managers, and operations would be carried out under strict control of the managers. The ECC expects that commercial quantities of firewood will result, and be available for sale, or collection under domestic permit.

For several years, firewood operations have been managed as a heavy thinning, reducing basal area to encourage retained stems to grow faster.

### ***Fencing***

The modelling estimates the annual available volume of fencing products from the BITA study area is 9 895 cubic metres, from the current land base. Cuts in the period 1993/94 to 1998/99 from the whole study area have averaged 4 390 cubic metres. NRE expects that this timber will increasingly be directed to sawn products rather than used for fencing.

## **8.4 Issues**

### ***Sleepers***

Sleepers are cut from sawlog-quality trees. A sleeper (2.7 m x 25 cm x 13 cm) includes about 0.09 cubic metres of timber. While individual sleeper cutters can cut more efficiently, NRE has in the past used an average conversion of 4.5 sleepers per cubic metre of log; at which rate the efficiency (net product volume/log volume) of sleeper cutting is about 39%. In coupes proposed for sleeper cutting in the next few years, NRE estimates that the relatively small log size means a conversion rate of only three sleepers per cubic metre can be achieved (26% efficiency). As sleepers and sawlogs come from the same timber resource, a sawlog committed to sleeper cutting is a log lost to value-added sawn and kiln-dried timber.

### ***Firewood***

The continuation of the firewood industry obtaining large volumes of wood from public Box-Ironbark forests has been strongly questioned. Issues include the perception that operations on public land are subsidised, uneconomic, and that heavy thinning operations adversely affect fauna habitat.

The ECC believes that, in the longer term in these highly fragmented public forests, the community would be best served by shifting firewood production mainly to plantations on freehold land, along with production from coupes within state forest in conjunction with harvesting of higher-value products, such as sawlogs and fencing material. This is already likely to occur to some extent because the current cycle of heavy thinning for firewood in high and medium productivity forests will be completed in about 15 to 20 years. This thinning process should result in increased numbers of coupes yielding higher-value products in the medium to long term. This time frame would allow a sufficient period to establish firewood plantations on private land. Some firewood may also be available in the short and medium term from parks and reserves where thinning may be used as an ecological management tool.

Typically, the Box-Ironbark forests, on public land, are on relatively poor soils in terms of depth, structure, and moisture-holding capacity, and on the better soils common on nearby private land, plantations can produce merchantable firewood in 12 to 15 years. A decision to reduce firewood-only operations from public forests would also encourage investment in private plantations.

Assuming a growth rate of 5 cubic metres per hectare per year, around 800 ha planted each year for 10 years could completely replace the current production of firewood from Box-Ironbark forests.

Recent research has identified potential health problems resulting from wood smoke in certain urban areas and rural towns. In response, the Australian Standard for Woodheaters (AS 4013) was recently tightened. Demand for firewood in Melbourne may change as new air pollution restrictions are imposed. In the United States, burning of reconstituted wood fibre for heating rather than sawn or split wood is now required in some states, in response to air pollution and resource use concerns.

Several issues are linked to domestic firewood collection. Removal of fallen timber and standing dead timber for domestic use can reduce important fauna habitat. Regulation and control over the location of domestic firewood collection, retention of habitat trees, safety and volume taken are difficult to achieve. There has been a reduction in the proportion of wood taken by domestic collectors in recent years relative to the commercial cut.

## 8.5 Community views

An overview of submissions relating primarily to wood products is included here. Matters in submissions relating to forest management are included in Chapter 17.

Some areas proposed as parks or reserves were seen as being important to the timber industry. Timber interests wanted continued access, for timber harvesting, to the Rushworth-Heathcote and Dunolly-Inglewood State Forests, the proposed St Arnaud Range National Park, Kooyoorra and Paddys Ranges State Parks and many proposed nature conservation reserves which were seen as important to the timber industry.

Several submissions expressed the view that Box-Ironbark forests were now adequately managed for maintenance of biodiversity, and supported continued harvesting of firewood and other wood products in specific proposed parks and reserves. Submitters from several towns including St. Arnaud, Tarnagulla, Rushworth and Heathcote were concerned about continued domestic firewood collection.

Several submissions requested that sleeper production continue in the Box-Ironbark forests of the Maryborough area.

Some submissions criticised the timber resource modelling based on the BITA data, saying it overstated available resources. There was clear concern about the potential for job losses in the industry on implementation of the ECC's recommendations.

Detailed matters relating to the economics of native forest harvesting were raised in some submissions.

Conservation of biodiversity in Box-Ironbark forests and removal of activities perceived as detrimental to conservation, were priorities in very many submissions. There was strong support for moving eucalyptus oil, timber and firewood production from

Box-Ironbark forests to plantations on private land or to previously cleared public land, and phasing these industries out of state forests. There were particular calls to reduce firewood harvesting from state forests, including increased restrictions on harvesting and support for establishment of plantations and agroforestry.

Numerous submissions called for protection of large old trees, increased areas in parks and reserves, and protection in general for Box-Ironbark forests and woodlands.

## 8.6 Achieving a balance

The ECC recognises that public land forest areas contain significant timber resources, but they also have biodiversity values of great significance. **The ECC's view is that it cannot provide adequately for biodiversity conservation, and also retain all timber resources available for harvesting.**

The ECC is, however, required to balance the competing demands on the forest and to consider social and economic issues including the likely impacts on those now employed in Box-Ironbark timber industries. The final recommendations are intended to achieve this balance.

The ECC believes biodiversity is best protected through a system of dedicated conservation reserves, coupled with appropriate forest management. Forestry operations will continue in the remaining state forests.

NRE's timber modelling estimates of available resources after implementation of the ECC's recommendations, exceed the present harvests of sawlogs and fencing timbers, and for firewood the estimate is about 14% below the current harvested volume. However for reasons that are explained in Box 8.1, the ECC's social and economic study consultant has decided to assess the effect of the recommendations in terms of a reduction in the current volume cut and the ECC has accepted this view.

Additional firewood resources and possibly some round posts may become available from thinning for ecological management in parks and reserves. Alternative supplies of wood are available from other forest types—additional firewood could in the future be produced from plantations on farms.

As plantations are established, the number of commercial firewood-only coupes will reduce.

Firewood harvesting operations conducted in conjunction with harvesting of higher-value products such as sawlogs and fencing material, would continue. Incentives and this gradual change should encourage investment in plantations on private land, and offer long-term industry security in planting, tending and harvesting plantations, and processing and marketing plantation wood.

Firewood felled in commercial operations prior to establishment of recommended parks and reserves can be allowed to dry out for a reasonable time prior to removal.

The ECC has recommended that sleeper production be phased-out in state forests in favour of higher value use of these logs for kiln-dried timber. This size and quality of wood should be redirected into higher-value sawlogs and converted into kiln-dried products. The fixed dimensions of sleepers mean that there is much wastage from a sawlog-sized tree. Sawing the same timber into dried boards makes more efficient use of logs and adds more value. Available alternatives for sleepers include river red gum and concrete. Post-size timber is increasingly being used for sawn products and the ECC encourages this trend.

### ***Likely social and economic effects***

The likely implications for state forest users are discussed in the Stage 3 social and economic study report (see Appendix 5). The main economic impacts of the ECC's park and reserve recommendations are briefly outlined in Box 8.1.

Domestic firewood supply in parts of the region could be reduced, especially larger dimension wood. Firewood will continue to be available from forest thinning, including ecological thinning where appropriate, from heads of sawlog and post trees and, in future, from plantations. The ECC is aware that its Draft Report proposals would have affected domestic firewood supplies in some towns, particularly Heathcote, St Arnaud, Tarnagulla and Rushworth. The final recommendations have been modified to reduce impacts in these areas.

### ***Industry structural adjustment***

Associated with the Regional Forest Agreement (RFA) process within RFA regions, the Commonwealth may provide funding under the Forest Industry Structural Adjustment Package (FISAP). This funding is to promote development in the native forest timber industry, and assist

businesses and employees in the industry who are directly and adversely affected by the outcomes of the RFA processes. The ECC has been advised that Box-Ironbark industries are able to participate in the Industry Development Assistance component of the program.

In the Box-Ironbark area, the expected reduction in firewood availability, and the effects of the park and reserve recommendations on scheduling of harvesting operations (see Chapter 17), mean that there will be some impacts, particularly on firewood and sleeper cutters, and post cutters in particular locations. In implementing the recommendations, certain communities where timber is an important component of the local economy may be more strongly affected. ECC has recommended strongly that, in considering these recommendations, the Government must take into account the need for industry assistance for individuals adversely affected by the recommendations. In Chapter 17, specific phase-out measures are proposed for certain individuals explicitly affected.

The ECC's view is that comparable treatment should apply for timber industries inside and outside the Box-Ironbark study area (see Recommendation R1 in Chapter 3). If there is a need for industry adjustment arising from implementation of the ECC's recommendations, it would be appropriate for the State Government to undertake such adjustment, according to principles consistent with those applied in RFA regions. Appropriate support should also be provided for affected communities.

The recommendations in this chapter provide the basis for the ECC's approach to timber production from the Box-Ironbark forests. These recommendations have been developed to ensure that a comprehensive, adequate and representative reserve system is created which will protect important natural values while limiting, as far as possible, the impact on current uses of the forest.

## Box 8.1 EFFECTS OF RECOMMENDATIONS ON THE TIMBER INDUSTRY – A REVISED APPROACH

### Approach in Draft Report

The predictions of the social and economic effects of the Draft Report recommendations were based on output from NRE's Box-Ironbark forest management model<sup>9</sup> (see Appendix 13) for the Bendigo FMA state forests. Essentially, the model predicted that even with a 42% reduction in the area of state forest (as was proposed in the Draft Report), there would be negligible effect on timber availability and, therefore, employment. This result was largely due to the NRE management strategy in recent years of setting harvesting rates below the rate of volume increase as a result of tree growth — particularly for sawlogs.

In public consultations after the Draft Report, there was considerable criticism of the model's predictions and, consequently, the estimated social and economic effects. Many in the timber industry did not believe that the predicted timber volumes would be available from the proposed reduced area. Others argued that if the volumes were harvested from the reduced area, forest biodiversity values would be greatly compromised as a result of the increased intensity of harvesting. There was also criticism that the absolute number of people employed in the industry had been under-represented.

As a result of these views, all aspects of the social and economic assessment pertaining to timber were fully reviewed, leading to a new social and economic assessment, as explained below. NRE also reviewed and adjusted the model.

### The adjusted model

Adjustments to the NRE model are detailed in Appendix 13 and Chapter 17. These adjustments—and, of course, the differences between the draft and final recommendations (a 39% reduction in productive state forest area is now recommended, as are additional measures in Recommendations **F** (b), (h), and (j)–(p) to protect natural values)—lead to changes in the magnitude of the predicted effects of the ECC's recommendations. As shown in Table 8.2, the adjusted model again predicted that the volumes which could be sustainably cut from the existing (baseline) state forest area were significantly larger than the actual average annual cut. The net effect is that, compared to current average annual cuts, the new model predicts available sustainable annual cuts equivalent to 43% and 51% increases in sawlog and fencing timber (respectively), and a 14% decrease in firewood after implementation of the ECC's recommendations. The consultants consider that changes in timber availability would translate to similar changes in employment levels.

### The ECC's revised approach

The Stage 3 social and economic assessment takes a different approach (see Appendix 5). In developing this approach, the ECC's consultants have drawn heavily on information and perspectives obtained from:

- numerous discussions, involving the ECC and/or the consultants, with timber workers, Timber Communities Australia, and NRE field and head office staff;
- interviews and questionnaire-based surveys of 27 timber workers (17% of the 160 currently active commercial cutters), with coverage of all product sectors;
- a separate survey of 26 timber workers to determine the number of full-time equivalent jobs in the industry;
- written submissions concerned with wood production, forest management and timber industry employment; and
- review of previous social and economic assessments.

As a result of these new perspectives and information, the consultants concluded that analysis of the effects of ECC's recommendations should be based on a reduction in volume below the current actual cut, rather than below the potential increased cut predicted by the model. This is the key difference between the two approaches (i.e. between the **NRE model (less cautious)** and the **consultants (more cautious)** approach), as shown in comparison in Table 8.2. The consultants were strongly of the view that estimated effects based on the actual cut will prevail over the short to medium term and, accordingly, there will be job losses over that period, rather than the job increases predicted by the model. The modelled estimates may however be reflected in increased production in the longer term.



In summary, then, both the NRE model and the consultants estimated that from the information available, the ECC's recommendations would lead to a reduction in productive forest area, with a proportionate reduction in employment. The two approaches differed in the point where the percentage reduction should apply—the current cut (in the case of the consultants) or the substantially larger baseline modelled volume (in the case of the model). As a result of that difference, the net effect of the consultants' approach is a predicted 39% reduction of the current cut for all products, whereas the outcome from the model predicts that longer term there could be 43% and 51% increases in sawlog and fencing timber availability (respectively), and a 14% decrease in firewood availability, compared to the current cuts.

The ECC has adopted the consultants' **more cautious** approach, and is strongly of the view that **implementation of these final recommendations will result in a reduction in timber industry employment of no more than 30 full-time equivalent jobs.**

#### **Why has the ECC taken the more cautious approach?**

Although the outcomes from the two approaches differ considerably, the ECC is confident in choosing the more cautious approach—that of the consultants—as the more appropriate estimate of the effects of its recommendations on the timber industry. The cautious approach sets an upper limit on the potential effects, with compelling reasons (see below) why the impact is likely to be less than this upper limit. This approach provides a clear and reliable assessment of the likely effects of the recommendations. The model-based assessment is more likely to underestimate the effects, and there is little indication as to the extent of the underestimation. That is, the consequences for the community of implementing the recommendations on the basis of the less cautious (model-based) approach, and then finding that the effects on the timber industry were more severe, would be worse than adopting the more cautious (consultants) approach and finding that the effects were less severe. NRE also advised the ECC to interpret the model results conservatively.

In addition, a key issue with the NRE model for the ECC was that of increased intensity of cutting. That is, while the modelled available volumes may or may not eventuate, harvesting these volumes would inevitably mean cutting significantly more intensively than at the present time. This would be likely to have a negative effect on the biodiversity values of the forests and would be strongly opposed by many stakeholders.

There are several very good reasons to be confident that the actual reduction in employment will be considerably less:

- The ECC has no reason to doubt that, for some years, NRE has maintained timber harvesting at rates below that at which the forest grows. Accordingly, the sustainable cut should be larger than the current cut, even if not as large as the model predicts. However, the very substantial extra volumes predicted by the model strongly support the notion that the effects will be appreciably smaller than the cautious estimate adopted. The consultants included, as their “optimistic” options (see Table 8.2), a 30% reduction in volume and employment after the ECC recommendations, reflecting the modelled volumes.
- In some respects, the NRE model is itself conservative. For example, only high and medium productivity forests were included in the model. About 15 700 ha of low productivity forests, amounting to about 13% of the total recommended state forest estate, will continue to produce some firewood.
- Calculations using the BITA summary data—not using the model analysis—support the model's conclusions. The BITA Report<sup>4</sup> summary lists average standing volumes for sawlogs (1.2 cubic metres/ha) and firewood (10.8 cubic metres/ha). Multiplying these by the net productive area after ECC recommendations (71 040 ha) and dividing by the length of the cutting cycle—50 years for sawlogs and 25 years for firewood—gives raw annual production figures of 1 705 cubic metres for sawlogs and 30 700 cubic metres for firewood. These are similar to the modelled volumes that also allow for increase through growth, and decreases through defect and mortality.
- If sensibly managed, a 39% reduction in sawlog volume should have a markedly lower percentage impact on employment. This is because the predicted reduction (to 780 cubic metres—see Table 8.2) would be sufficient to maintain the current allocation of 730 cubic metres to the Rushworth sawmill. Most of the remaining sawlog material which makes up the current total cut of 1 400 cubic metres is processed as sleepers and employs fewer people. Therefore, if the reduction in sawlog volume is taken from that part of the total volume currently allocated to sleepers, the Rushworth mill would be able to continue operating as at present, leading to a smaller reduction in employment.

- No account has been taken of potential timber production from private land in the study area. Feasibility studies point to a promising future for the large scale establishment of private land woodlots for timber production, and planning is now well advanced.<sup>10,11</sup> The ECC strongly supports this trend (Recommendations R7, R33, R35)—in the long term, wood production and associated employment from private land have the potential to be significantly greater than current Box-Ironbark public land production. If anything, any reduction in public land firewood production resulting from these recommendations should encourage the establishment of private land woodlots to satisfy the increased demand.
- The ECC also strongly supports increased value-adding in the timber industry (Recommendation R30) which, as a general rule, should increase employment without increasing the volume of wood cut. Similarly, using silvicultural thinning to shift the balance of wood production from low-value firewood to high-value sawn timber has been an objective of NRE forest management for many years. The predicted social and economic effects make no allowance for any increased employment as a result of value-adding or higher-value products.
- The predicted effects take no account of the potentially significant employment which may result from thinning for ecological management of parks and reserves (see recommendations in Chapters 4, 15 and 16).

Factors which might increase the impact on the timber industry are difficult to quantify, but are unlikely to be substantial:

- A number of areas planned for cutting over the next few years are now recommended for inclusion in parks or reserves. Consequently, while there may be adequate volumes to sustain the timber industry at the current level in the long term, it may be difficult in some cases to find sufficient areas to schedule harvesting in the short term. This issue was raised by several cutters and NRE staff in discussions with the ECC and its consultants, and has been factored into the consultants' assessments. An important point to note is that scheduling should cause little, if any, problems for firewood harvesting—which accounts for 56% of timber industry employment—because there is more flexibility in the size of material which can be cut.
- Where recommendations reduce the availability of timber for specific products or communities, some additional travel costs are likely to be incurred. These costs are unlikely to be high given that the additional distances would generally be small relative to the distances many commercial cutters now travel.
- Forest management planning will occur across much of the study area after the Box-Ironbark investigation is completed, and is likely to further reduce timber availability as a result of additional measures to protect values such as threatened species and EVCs in state forest. However, because a very high proportion of sensitive values would be protected in the recommended reserve system (see Appendices 3 and 9, for example) or are protected by existing provisions in state forest management, the impact of additional measures on timber availability is likely to be minor.

Finally, three other factors are relevant to the effects on the recommendations on the timber industry:

- NRE advice is that in some areas, for example Maryborough and Heathcote, there are currently more cutters than can be sustained by the volumes of timber currently available. As a result, even without ECC recommendations, there will need to be either a reduction in the number of cutters, a reduction in the volume allocated to each cutter, or some cutters would have to travel further to gain access to timber.
- Again irrespective of the ECC process, there is an agreement by all Australian governments to establish a comprehensive, adequate and representative system of reserves across all forest types to ensure that, as far as practicable, at least 15% of the area of each forest type, as it occurred in 1750, is protected in conservation reserves. Mostly, this has been implemented in Regional Forest Agreements (RFAs). Most of the Box-Ironbark study area was initially included in the West RFA area but was later removed, largely to avoid duplication between the RFA and ECC processes. However, the obligation to protect these areas remains and, in the absence of the ECC, would be carried out as part of the forest management planning process. It is likely that ECC, RFA or forest management planning processes would all produce similar results as the location of the values to be protected does not vary between processes. In the areas of overlap for the North-East and the West RFA, the ECC and the RFA group worked closely together and have produced very similar outcomes.
- Although many people have a long history in the Box-Ironbark timber industry—several generations in some cases—the turnover rate of shorter-term active cutters appears to be a relatively high—around 25% over a recent two-year period. If this pattern continues, it would help to mitigate the effects of the ECC's recommendations on longer-term cutters.

**Table 8.2 Comparison of wood product availability predicted by the revised NRE model and by the ECC's Stage 3 Social and economic assessment.**

<b>Sawlogs (including sleepers) — Current actual cut (average)<sup>1</sup>: 1 280 m<sup>3</sup>/p.a.</b>	
<b>NRE Model</b>	<b>ECC Social and Economic Assessment<sup>2</sup></b>
Modelled sustainable cut <i>before</i> <b>2 920 m<sup>3</sup>/p.a. net</b> <i>ECC</i> recommendations (existing state forest area and management): (128% above current cut)	
Modelled sustainable cut <i>after</i> <i>ECC</i> recommendations: <b>1 830 m<sup>3</sup>/p.a. net</b> (37% reduction from above; 43% above current cut)	Optimistic (30% below current cut): <b>900 m<sup>3</sup>/p.a.</b> <b><u>Conservative (39% below current cut): 780 m<sup>3</sup>/p.a.</u></b> Pessimistic (48% below current cut): <b>670 m<sup>3</sup>/p.a.</b>

<b>Fencing timbers — Current actual cut (average)<sup>1</sup>: 4 100 m<sup>3</sup>/p.a.</b>	
<b>NRE Model</b>	<b>ECC Social and Economic Assessment</b>
Modelled sustainable cut <i>before</i> <b>9 895 m<sup>3</sup>/p.a.</b> <i>ECC</i> recommendations (existing state forest area and management): (141% above current cut)	
Modelled sustainable cut <i>after</i> <i>ECC</i> recommendations: <b>6 195 m<sup>3</sup>/p.a.</b> (37% reduction from above; 51% above current cut)	Optimistic (30% below current cut): <b>2 870 m<sup>3</sup>/p.a.</b> <b><u>Conservative (39% below current cut): 2 500 m<sup>3</sup>/p.a.</u></b> Pessimistic (48% below current cut): <b>2 130 m<sup>3</sup>/p.a.</b>

<b>Firewood — Current actual cut (average)<sup>1</sup>: 39 300 m<sup>3</sup>/p.a.</b>	
<b>NRE Model</b>	<b>ECC Social and Economic Assessment</b>
Modelled sustainable cut <i>before</i> <b>53 120 m<sup>3</sup>/p.a.</b> <i>ECC</i> recommendations (existing state forest area and management): (35% above current cut)	
Modelled sustainable cut <i>after</i> <i>ECC</i> recommendations: <b>33 635 m<sup>3</sup>/p.a.</b> (37% reduction from above; 14% below current cut)	Optimistic (30% below current cut): <b>27 510 m<sup>3</sup>/p.a.</b> <b><u>Conservative (39% below current cut): 23 975 m<sup>3</sup>/p.a.</u></b> Pessimistic (48% below current cut): <b>20 440 m<sup>3</sup>/p.a.</b>

Notes: <sup>1</sup> The current actual cuts are the average of 6 years production from 1993/94 to 1998/99. To enable comparison with the modelled estimates, they are for Bendigo FMA only.

The ECC's social and economic consultants consider their 'conservative' options to be the best estimates of effects. The optimistic and pessimistic options were calculated on the basis of a notional 15% increase in timber volume (optimistic) and 15% decrease (pessimistic) above and below the conservative option. The optimistic view reflects the recent history of undercutting, and the modelled volume. The pessimistic view is a 'worst case', based on individual wood cutters' perceptions after the Draft Report.

**RECOMMENDATIONS**

- R30** Sawlogs be the primary wood product from future timber harvesting in Box-Ironbark state forests, and that value-added kiln drying be encouraged.
- R31** Sleeper cutting be phased out of Box-Ironbark forests, with the timber used instead for sawlogs (see Recommendation F(i)(ii)).
- R32** (a) allocation of coupes in Box-Ironbark state forests solely for commercial or domestic firewood production be progressively reduced in favour of coupes that produce firewood in conjunction with higher value products such as sawlogs and fencing materials.
- R33** (a) establishment of firewood plantations on private land be encouraged;  
 (b) use of waste from logging operations in wetter forest types be investigated for use for firewood;  
 (c) controlled thinning of dense coppicing and regrowth in state forests continue to be applied to improve the growth rate of retained larger trees, and to produce firewood in commercial operations;  
 (d) subject to appropriate research, ecological thinning in parks and reserves, where required for management, be applied to improve the growth rate of retained trees (see note below); and  
 (e) domestic firewood collection continue to be subject to strict controls to reduce theft of wood and avoid cutting of habitat trees, and that forest managers reduce domestic firewood collection in areas with sensitive biological values.
- R34** Comparable treatment regarding industry structural adjustment should apply for timber industries inside and outside the Box-Ironbark study area and Regional Forest Agreement areas.
- R35** An industry plan be prepared which includes a long-term program to encourage Box-Ironbark plantations for sawlogs on private land.

Note: The sole objective of thinning as an ecological management tool is to improve the habitat conditions in parks and reserves by increasing the numbers of large trees. Thinning should be carried out in a manner that best achieves ecological goals. It may differ from silvicultural practices. Production of firewood is not an objective. Where it does occur however, thinning will produce wood as a by-product, which can, where appropriate, be sold as firewood.

**Information Sources**

- <sup>1</sup> Newman (1961).
- <sup>2</sup> Forests Commission, Victoria Annual Reports (various dates).
- <sup>3</sup> Midas Consulting (2001).
- <sup>4</sup> NRE (1998a).
- <sup>5</sup> ANZECC (2000).
- <sup>6</sup> NRE (2001a).
- <sup>7</sup> Plantations North East Inc. (1999).
- <sup>8</sup> Announcement by the Minister for Environment and Conservation of a \$2.4M commitment to private forestry in northern Victoria, utilising irrigation wastewater – Media Release 9 March 2001
- <sup>9</sup> NRE (1999).
- <sup>10</sup> Virtual Consulting Group (1999)
- <sup>11</sup> Grey (2000)