

# Appendix 2

## Economic analysis model for timber production sector

Outlined below are the assumptions to be used in the economic analysis model of the timber industry in the development of the RFA.

The model is based on:

- the current area of public land of wood production (excluding the proposed new reserve areas identified in the 1994-2003 Forest Management Plan) being available for harvest over the life of the RFA;
- log supply over the life of the current management plan being at the maximum sustainable yields, as outlined in that plan;
- estimates of available log supply and utilisation beyond the expiration of the current management plan in 2003; and
- forecasts of the log supply available from both hardwood and softwood plantations.

The analysis is based on a continuation of current access and management arrangements for mineral exploration and mining, tourism, recreation and other forest uses.

The utilisation of the available log supply is based on the estimates of industry development outlined in the BIS Shrapnel study(1997) . Not all of the proposed developments were incorporated in the baseline. The introduction of a paper mill is not expected to be commissioned by the end of the RFA period, and it was considered that further analysis would be required prior to an activated charcoal plant being introduced. Similarly the expansion of charcoal production has not been considered because of uncertainty over the availability of a sufficient supply of logs within an economic haulage distance of the current plant.

The analysis was undertaken up to the point of first sale of wood products. Thus for timber, valuing of secondary processing of wood beyond the dressed timber stage was not undertaken.

On current estimates, the expiration of the 1994-2003 Forest Management Plan indicates substantial reductions in the quantities of existing first and second grade quality jarrah sawlogs. At the same time, the availability of softwood sawlogs and plantation chiplog production (both hardwood and softwood) is forecast to increase over the life of the RFA. The BIS Shrapnel study assumes that there is increased utilisation of lower grade native forest timber sawlogs and increased investment in new milling technologies.

A spreadsheet-based model was developed to enable estimates to be made of the annual value of production based on the allocation of logs among the various end uses identified by the BIS Shrapnel study. A key assumption was that Western Australian

producers were price takers for their products which would be set at the equivalent export (defined as interstate or overseas) parity price. The RFA period was broken up into four five-year periods and it was assumed that performance in each year of a five-year period was the same.

The capacities of the expanded medium density fibreboard (MDF), particleboard and new timber value adding and pulp plants are fixed and it is assumed that these plants operate at full capacity. Various decision rules were adopted for the allocation of logs among end uses. First grade quality sawlogs were initially allocated to the production of the higher value-added end uses of veneer, laminated veneer lumber (LVL) and plywood up to the maximum throughput of these plants. Remaining sawlogs were then used for timber production with the percentage of timber being processed into appearance grade timbers increasing from current levels of around 55% for jarrah and 15% for karri to 85% for both species, over the life of the RFA. It is assumed that any variation in the sawlog availabilities would be reflected in timber production rather than the high value added products.

It is envisaged that a substantial increase in the harvest and milling of lower grade jarrah logs is assumed beyond 2002 to replace the expected reduction in first and second grade jarrah logs. As was outlined in the BIS Shrapnel study, a significant level of investment would be required to accommodate these changes in log quality and for mills to process a greater proportion of logs beyond the rough sawn stage. As a result, the adjustment process that has been a continual feature of the sawmilling industry over the years will continue through the RFA period. The number of sawmills is expected to decline with the overall average mill throughput expected to increase.

It is expected that the domestic demand for native forest chiplog will increase with an expansion in the production of particleboard and MDF. It is also assumed that a bleached hardwood kraft pulp (BHKP) plant will be a viable venture by around the last quarter of the RFA period. The export of native forest timber chips was regarded as a residual market after meeting domestic demands. It is assumed that any variation in marri/karri chiplog availabilities will be reflected first in the woodchip market, then the pulp sector and finally the MDF and particleboard industries.

The model enables estimates to be made of the annual gross value of production and the net value of production for the current period and for each of the four five-year periods of the RFA for all sectors of the industry which were then able to be allocated between hardwood and softwood production. Costs of production have been derived from a number of sources including the BIS Shrapnel report, results from a survey ABARE undertook of sawmills, CALM databases and discussions with industry personnel. Costs are based on an average cost of production and do not take into account any potential savings associated with the scale of production.

Where the proposed options result in the area available for logging declining, this will have an impact on the available annual log supply. As outlined in the CRA, CALM has systems and procedures in place for estimating the contribution that each area of the forest estate contributes towards the annual sustainable yield for the various forest species. Thus, once an area of forest to be removed from log production has been

identified, estimates then can be made of changes in the volume of log production. These new log supply estimates then can be entered into the model and revised estimates of the value of production made. As stated above, changes in the value of production will be reflected principally in the value of native forest timber production and in the value of woodchip exports.