SE1.2

PUBLIC FOREST RESOURCE DESCRIPTION AND INVENTORY

Part B

Other Wood Products

QUEENSLAND CRA/RFA STEERING COMMITTEE

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Other Wood Products

FINAL REPORT

QUEENSLAND CRA/RFA STEERING COMMITTEE

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SUMMARY

This report has been prepared for the joint Commonwealth/State Steering Committee which oversees the Comprehensive Regional Assessment (CRA) of forests in the South East Queensland CRA region.

The Comprehensive Regional Assessment provides the scientific basis on which the State and Commonwealth governments will sign a Regional Forest Agreement (RFA) for the forests of the South East Queensland CRA region. This agreement will determine the future of the region's forests and will define those areas needed to form a comprehensive, adequate and representative (CAR) reserve system and those available for ecologically sustainable commercial use.

This project was undertaken to describe the features of the Other Wood Product industries and to provide sufficient quantitative product volumes and financial data to allow the economic significance of the industry to be described and the opportunity costs of land use changes to be estimated.

The ten Other Wood Products examined in this report represent a subset of a much larger group of Other Forest Products which are sold from Crown native forests. These 10 products were separated as being of 'high' total value (royalties) or of potential to increase to a 'high' total value. The remaining Other Wood Products were considered to be of too small a value to influence the choice of reserve design.

While the first choice would be to estimate the sustainable yields of wood for each of these ten products, this was not possible due to a lack of suitable data. Currently sustainable yield in Queensland is only estimated for sawlogs. The lower value of these products and the opportunistic nature of sales of wood for most of them have not warranted the development of the necessary inventory data, growth and harvesting models and determination of the inter-relationships between the Other Wood Products. The Department of Primary Industries (DPI) – Forestry has recently started to collect inventory data for poles, girders and landscape timbers, however, this is only of limited use at this stage.

Three methods were used to estimate harvestable quantities for the ten products. The individual method used reflected the available data for the product. Information from the Native Forest Inventory (NFI) plots was used to estimate pole and girder quantities. The wood fibre estimate, for the CRA Baseline scenario discussed in part one of this report was used in estimating landscape timbers. Thirty per cent of the wood fibre was used to estimate the harvestable quantity of landscape timbers. The remaining products were assessed using a ratio of average sales of wood for each product over the average sales of wood for sawlogs. The predicted sawlog harvest volumes were then multiplied by this ratio to give the estimated harvestable quantities.

These three methods enabled the estimation of the harvestable quantities for each of the ten products. However, these data do not represent sustainable yield estimates and should only be considered as an indication of available wood per annum for each product. These data are presented below as a total for the SEQ region (made up of 14 allocation zones some of which overlap only part of the SEQ biogeographic region). Posts and sleepers are reported here as end products, which have a 50 per cent recovery rate when sawn. The remaining products are reported as timber input values.

Girders	269 lm	Post	136,504 pcs
Landscape timbers	21,398 m^3	Poles	111,137 lm
Round timbers	44,222 lm	House piles and poles	7,586 lm
Piles	1,134 lm	Sleepers	4,662 pcs

Costs and returns were collected from a limited number of processors. To protect the confidentiality of the processors financial data, the value of Other Wood Products are only reported in total. The average annual turnover and operating profit were estimated at $13.8 million and $1.8 million respectively.

1. INTRODUCTION

1.1 BACKGROUND

While sawlog production is the main product objective from Crown forests, it would be wrong to define the native forest timber industry purely in terms of sawlog production. Many other forest products, ranging from landscape timbers to poles, are cut from the resource. Whilst on a total revenue basis poles and girders do not rival sawlogs, however they are more valuable on a per unit basis. Department of Primary Industries (DPI)–Forestry keeps few records of the standing resource and has no sustainable yield data for these Other Wood Products, hence, in estimating Other Wood Products resources in this project, it was necessary to rely heavily on historical sales.

1.2 OTHER WOOD PRODUCTS PROJECT OBJECTIVE

The objective of this project is to describe the features of the Other Wood Product industries and to provide sufficient quantitative product volumes and financial data to allow the economic significance of the industry to be described and the opportunity costs of land use changes to be estimated. This study will provide base data for the option development phase of the SEQ RFA.

1.3 PROJECT SPECIFICATIONS

The project specifications are available in Appendix 1.1. The project specifications for Other Wood Products were initially placed under SE 4.2, however as work commenced on the project report it was decided that Other Wood Products fitted better with the Public Resource Description and Inventory project SE 1.2. The project report follows the specifications laid out for SE 4.2.

1.4 PROJECT DEFINITIONS

Other Wood Products – includes all timber products other than sawlogs that are removed from native forests. In this report only ten of these products are examined on the basis of economic significance.
Harvestable Quantity – is the term used to describe estimated yields of all Other Wood Products in this report.
Variable Costs – are costs that change as the level of production varies.
Fixed Costs – are costs that within limits do not change as the level of production varies.
Net Present Value – the present value of an incremental cash flow.
Operating Profit – gross income less variable and fixed costs.
MUID – management units that are discrete (but not necessarily contiguous) parcels of land delineated by logical operational boundaries and approximating the area of land which would normally be expected to be logged at one time.

2.0 INDUSTRY DESCRIPTION

2.1 DEFINING THE OTHER WOOD PRODUCTS INDUSTRY

For the purposes of this report, the Other Wood Products industry comprises the growing, harvesting and processing of all timber within SEQ, excluding sawlogs. This report is only concerned with native forest produce grown in State forests, timber reserves and leasehold land where the government has the timber harvest rights. The SEQ region contains very little cypress pine, therefore all products described herein are considered as hardwood products.

The full compliment of other forest products, of which Other Wood Products are part of, are presented in Appendix 2.1. While the Department of Natural Resources recognises that there are a multitude of Other Wood Products, this report focuses upon those that were assessed to be most economically significant. The basis of this assessment is described in section 3.1.1. The following list identifies those product categories that met the criteria for significance. The four letter upper case code that follows the product description is the DPI – Forestry product code.

- poles (POLE) – (generic variety)
- hardwood girders and corbels (GIRD)
- hardwood round timbers (ROUN) – < 9.5m
- hardwood piles (PILE)
- hardwood piles and house poles (STUM)
- railway sleepers (SLEE)
- hardwood posts (POST)
- landscape material hollow dud (HHWD)
- round landscaping timber (RLAN)
- sawn timbers (non-railway) gross (LAND)

Poles and girders are some of the finest quality and highest royalty earning timbers grown in the Crown native forest estate. On a per unit basis, piles are the next most valuable Other Wood Product followed by house poles, piles, railway sleepers, round timbers and a few of the more valuable landscape timbers. Finally, at the lower end of the Other Wood Products scale are posts and the remainder of the landscape timbers. A brief description of these product types follows.

2.1.1 Poles (POLE)

Poles are most commonly used for carrying electricity lines throughout rural and urban SEQ. They must be cylindrical in form, at least 8 metres in length and pass certain strength criteria. While

some species are preferred for poles, royalties charged for the resource increases with length and strength rating only.

Crown pole supply has been regulated to ensure that future sawlog yields destined for established sawmills are not prejudiced. Most demand for this product is from Queensland electricity boards and Telstra. Preferred pole species in Queensland are presented in Table 2.1 in no particular order. Note groupings refer to girders only, with all species in the table used for poles.

Table 2.1 Prefered pole and girder species

Preferred pole only
Darwin Stringybark (*Eucalyptus tetradonta*)
Grey Box (*E. moluccana, E. microcarpa*)
Red Ironbark (*E. sideroxylon*)
Red Mahogany (*E. resinifera, E. pellita*)
Turpentine (*Syncarpia glomulifera*)
Cadaga (*Corymbia torelliana*)
Preferred pole and girder (Group 1)
Broad – Leaved Red Ironbark (*Eucalyptus fibrosa*)
Cooktown Ironwood (*Erythrophleum chlorostachys*)
Grey Ironbark (*E. siderophloia*)
Narrow - Leaved Red Ironbark (*E. crebra*)
Spotted Gum (*C. citriodora*)
Preferred pole and girder (Group 2)
Forest Red Gum (*E. tereticornis*)
Grey Gum (*E. longirostrata, E. propinqua, E. major; E. biturbinata*)
Gympie Messmate (*E. cloeziana*)
Tallowwood (*E. microcorys*)
White Mahogany (*E. acmenoides, E. umbra; E. carnea*)
White Stringybark (*E. eugenioides*)

2.1.2 Girders, Corbels and Related Materials (GIRD)

Girders and corbels constitute valuable bridge building materials. A typical bridge might be held up by poles. Poles on one side of the stream are joined horizontally by corbels, with girders spanning the waterway. Corbels are often smaller in length than girders, however, both are distinguished from poles by their (usually) larger heartwood diameters and shorter length. Their value increases with length and small end diameter size.

Demand for these products is almost exclusively from Main Roads and the Queensland Railway Division of the Department of Transport. While customers have species preferences, the royalty charged is not influenced by species. Girders and corbels are commonly cut from the species listed in Table 2.1. Group 1 species are usually required with a top diameter under sap of 435 mm or 460 mm. Group 2 species must be at least 25 mm greater than the corresponding group 1 species diameters (i.e. 460 to 485 mm).

2.1.3 Piles, House Piles and Poles and Round Timbers (PILE, STUM, ROUN)

Piles are used in shipping wharf construction, where Turpentine has traditionally been preferred because of its resistance to marine borers. House piles and poles have commonly been used in construction and maintenance of the foundations or sub floor of Queenslander style homes. The smaller diameter round timbers (ROUN), while still being a quality product, are used for fence posts, vineyard trellises and other lower value applications. All of these products increase in value with increasing length and small end diameter.

2.1.4 Railway Sleepers (SLEE)

Railway sleeper timber includes railway and tramway sleepers, transoms, crossings, headstocks, braces, sills and turnout timbers. Minimum length for this product is 2.15 m and desirable end cross section dimensions are 100 mm high by 230 mm wide. Their value increases with length and height.

2.1.5 Posts (POST)

Split and sawn posts are at the low value end of the timber market. Included under this product code are rails, landscaping material, slabs, tomato stakes, palings and droppers plus 2nd grade sleepers rejected by Queensland Transport (railways). Their value increases with diameter, which varies from less than 2 cm^2 to greater than 160 cm^2.

2.1.6 Landscape Timber (LAND, HHWD and RLAN)

Landscape material comprises a range of timber including heads of trees, hollow logs, burls, landscape sleepers and bark. The LAND category includes solid timbers for retaining walls and similar uses. RLAN comprises durable round landscaping timber, which can be used for building up garden beds. The bottom end of the timber market consists of the hollow garden log material sold within the HHWD category. The royalties received by DPI–Forestry vary substantially between different types of landscape material and many species are suitable for production, since, for many purposes, species is not important for landscape uses.

2.2 THE CURRENT RESOURCE OF OTHER WOOD PRODUCTS

Sawlogs are the major wood product for which native forests are managed in SEQ. Past and present silvicultural practices reflect this, and very little silviculture is employed in the SEQ RFA region to enhance the yield of Other Wood Products. Consequently, the availability of Other Wood Products is related to the appropriateness of sawlog silviculture to their own production. Some product categories, such as landscape timber and fence posts, are in abundant supply, because their production is not inhibited by sawlog oriented silviculture. On the other hand, supplies of poles could benefit from product specific silviculture.

Pole data are a component of DPI – Forestry timber inventory plots. Data from the inventory plots may be used to forecast availability of poles in the short term. For the remaining Other Wood Products, the best information currently available is the Crown historical sales data, which could be made more useful for extrapolation by accounting for forest type, topography, rainfall and other

indicators. However, due to the opportunistic nature of the harvesting of many Other Wood Products, there are concerns with the use of such data to estimate future yields.

According to Gordon[1] (1998 pers. comm.) the supply of Other Wood Products from private land to processors has certainly been significant in the past. Although there are no records that detail the contribution of private forests to Other Wood Product supplies, as much as 50 per cent of the volumes of some product types processed in SEQ could have been cut from the private resource (Gordon 1998, pers. comm.). Less is known about the future availability of Other Wood Product volumes from private lands than from the Crown resource.

2.3 RAW MATERIAL ACCESS ARRANGEMENTS

The higher value Other Wood Products, including poles and girders, are usually allocated to mills on a 'historical basis'. This 'historical basis' has its origins in Crown timber auction sales earlier this century, where sawmills established 'auction purchase priorities' to Crown timber resources. The allocation of higher value Other Wood Products to a mill is based on the historically established proportion of the sustainable cut in the allocation zone from which the mill draws its timber. This is analogous to sawlog access arrangements. Thus, entry into the pole or girder business requires one to buy out the owner of an existing quota for poles or girders respectively, or draw up a resource transfer arrangement between the businesses. DPI – Forestry does make some competitive sales of Other Wood Products, however, at the high value end they are the exception rather than the rule. DPI – Forestry is not committed to supply a minimum quantity of poles and if excess demand persists, sales of existing supplies will be allocated on a pro rata basis according to 'past performance'. The 'past performance' of a sawmill is an assessment of their purchase of timber that met the appropriate quality specifications and had been allocated to them over a preceding period (usually about five years). The more timber the sawmill bought from the Crown for processing, the better their 'past performance'. Sales of the lower value Other Wood Products, such as fence posts and landscape timbers, are not constrained by historical allocations to the same extent, with competitive sales being common.

DPI–Forestry aims to maximise the royalties earned from each harvested stem. However, Gordon[1] (1998 pers. comm., 15 Oct) commented that given the current outlook for hardwood sawlog availability, DPI–Forestry is currently willing to forego potential revenue from additional pole sales by not selling surplus poles and allowing these to grow on to sawlog size.

2.4 OTHER WOOD PRODUCT HARVESTING

Integrated harvesting operations where sawlogs, poles, landscape timber and others, are extracted during a single operation, are currently rare in SEQ. Where a sale contains predominantly sawlogs, but includes a number of poles and girders and there is pole allocation within the sale area, DPI – Forestry may encourage the sawlog-sawmill contractor to harvest the poles and to arrange a sale to a pole contractor. If this is not possible, the pole and girder trees will be left standing for future harvest by a pole and girder contractor. If there are no pole allocations within the sale area, then the poles and girders will be offered to the sawmill at pole and girder prices. Where a sale area contains a higher density of poles to sawlogs, a pole contractor will harvest these high value products independently and (preferably) prior to a sawlog sale. Pole harvests are performed under the same tree-marking and environmental constraints as a sawlog harvesting operation.

[1] Bill Gordon, Senor Planning Officer – Marketing, DPI - Forestry.

DPI – Forestry recognises the desirability of integrating railway, landscape and fencing timber sales to minimise environmental disturbance. However, the variability of demand for many Other Wood Products and the product type specialisation of harvesting contractors means this is not always possible.

Since Bloodwood species are rarely cut for compulsory mill logs, railway timber cutters may fell any Bloodwood tree they believe suitable for railway sleepers (SLEE) from a sale area. The harvest of low value landscape products, such as burls, galls and overgrowths (LAND and HHWD) is permitted on a salvage basis only, i.e. taken as off-cuts from trees that have been felled for higher value end uses. If the tree species is non-commercial, or has no merchantable potential and is not required for environmental objectives, a contractor may fell it for landscape timber.

The opportunistic nature of the harvest of Other Wood Products in SEQ, where different products are cut from a sale area at different times, may result in to higher extraction costs. A more integrated approach, where harvesting contractors utilise their machinery, labour, and road transportation to extract several products simultaneously to meet the demands of several sawmills, has the potential to lower overall harvesting costs.

2.5 PROCESSING OTHER WOOD PRODUCTS

Processors of Other Wood Products vary from small sole proprietorship operations to large-scale enterprises. The size of each sector within the Other Wood Products industry varies substantially. Many wood product enterprises process more than one type of product, such as girders and poles, or sawlogs, piles and round timber. Many Other Wood Products are processed by sawmills with Crown sawlog allocations. Table 2.2 shows the number of processors of each product taken from Crown sales in 1996/97. Cash sales occur for seven of the 10 products examined in 1996/97, however these are not included in Table 2.2. As can be seen from Table 2.2 only a few processors process one product from the product types examined in this study (including sawlogs). Employment data has not be collected but ranges from one person operations for post processors up to sections of the workforce from large sawmills such as Hyne & Son and Boral.

Table 2.2 Numbers of Other Wood Product processors of Crown native timber in SEQ RFA region (1996/97)

	GIRD	HHWD	LAND	RLAN	PILE	POLE	POST	ROUN	SLEE	STUM
No. of processors*	9	2	3	7	3	7	13	15	3	5
No. of processors who also have a sawlog allocation	5	1	–	3	1	2	1	2	–	2
No. of sole processors#	2	–	1	1	1	–	1	3	–	–
% of sales to sole processors	37% 9%		99%	7%	63%		2%	28% 13% 2%		

*Processors both in and drawing from SEQ RFA region, excludes cash sales
Sole processors are processors only producing one of the above products or sawlogs from Crown native timber

3.0 METHODS

3.1 RESOURCE ASSESSMENT

3.1.1 Separation of Other Wood Products with a 'High' Total Value

Within native forests wood resources are sold for processing into numerous products, such as poles and railway sleepers. Non-wood resources are also sold, such as quarry material. Due to many of these resources being sold irregularly and in low volumes, only those products with high total sales value were evaluated in this report. This ensured that only those products with an economic value likely to influence reserve design were considered. Quarry materials were not examined in this report as they are covered in SE 3.1 Assessment of Mineral and Extractive Resources. Appendix 2.1 presents the list of forest products that are sold from public forests.

Wood sales were assessed for products that reached a total average sales value greater than $50 000 per annum when calculated across all districts within the SEQ RFA region. Also assessed were products where wood sales within a specific district had a total value greater than an average of $20 000 per annum. Due to the expected growth of market demand, two additional landscaping timber categories were included (RLAN and LAND). For the purpose of this calculation, the districts of Dalby and Rockhampton were excluded as they only account for 7.0 and 0.1 per cent of the area respectively of the SEQ RFA region. The whole of Monto district was included as 42 per cent of the district falls within the SEQ RFA region. Table 4.1 in chapter 4 lists the products examined in this report.

Historical sales data were obtained from DPI–Forestry for four financial years (1992/93 – 1995/96). As sales of wood for processing into Other Wood Products can vary considerably from year to year, ideally more than four years' data would have been used. However, DPI–Forestry installed a new sales database in 1992 and comparable data was not available from the earlier system (Mooney, R. 1998, pers. comm.[2]). Averages of these four years' data were used to obtain an average annual sales value for each product.

3.1.2 Harvestable Quantity of Other Wood Products

General Assumptions and Limitations of Data

1. Lack of sustainable yield data – The first task was to estimate the potential resource of wood available for production into Other Wood Products. Although estimated sustainable yields of these products was desirable, no such data are collected by either DPI–Forestry nor DNR.
2. Lack of data on individual Other Wood Product volumes – Standing estimates for poles and girders are the only Other Wood Product categories assessed individually. However, at the high

[2] Bob Mooney, Applications Administration Officer, DPI – Forestry

quality end of sawlogs there is some overlap between poles, girders and piles. The remaining Other Wood Products are harvested on an opportunistic basis and derived from the wood fibre resource detailed in part one of this project. This wood is taken from standing trees that are not of sawlog quality, head material from sawlog trees and from trees within areas not considered productive for sawlog operations. Wood used for posts, for example, is frequently taken from forests with no sawlog operations.

3. Methods employed – Given the general lack of inventory data and the level of volume information on each product, three different methods were applied. The products are grouped according to the methods applied to their estimation.
4. Similarities between estimation methods – Other Wood Product estimates were associated with sawlog outputs on a MUID by MUID basis according to the predicted sawlog yield for the CRA Baseline scenario. All Other Wood Products were assumed to be harvested at the same time as predicted sawlog operations.
5. Relationship between MUIDs and estimated yields – For poles and girders harvestable quantity was proportional to the net area of each MUID. For all remaining Other Wood Products, harvestable quantities were proportional to the predicted sawlog harvest volume.
6. Sawmill Allocation Zones – Harvestable quantities were estimated for all allocation zones that are wholly or partly contained in the SEQ RFA region. When the data is used in FORUM (see section 3.2.1) and options development, only the MUIDs within the SEQ region will be used. MAP 1 shows the placement of the sawmill allocation zones.
7. Limitations of these methods are – There are large areas of forest that contain volumes of Other Wood Products, but are deficient in sawlogs or other high-value end use products. Since no sawlogs are scheduled for harvest from these areas, no resources for Other Wood Products are spatially allocated as coming from these areas. This will lead to all the value of Other Wood Products being apportioned to the productive MUIDs. While this could value the productive MUIDs at a slightly high level, native forests not producing sawlogs but producing Other Wood Products will clearly be undervalued. However, the total product figures in this report represent the harvestable quantity of Other Wood Products for both sawlog productive and non sawlog productive forests.

   Removals of Other Wood Products are allocated as if they occur at the time of sawlog operations. This is frequently not the case, particularly for the low quality products. (Mannes 1998, pers. comm.[3]).

There were significant limitations on data available to estimate yields of Other Wood Products. Collection of more accurate data would require the establishment of an ongoing inventory system that was not an option given the time frame for the comprehensive regional assessment phase. However, wood for these products are of considerably lower total value than wood for sawlogs. Approximately $1.1 million of wood sales (royalties) for Other Wood Products, considered in this report, were sold in 1996/97 compare to approximately $3.9 million of wood sales (royalties) for sawlog were made in the same period.

Poles and Girders

Harvestable quantities of poles and girders were derived from DPI – Forestry Native Forest Inventory (NFI) plot data. Base data were acquired on an allocation zone basis as the mean lineal metres of poles and girders per hectare, subdivided into length classes. These data are shown in Appendix 3.1. The means were then multiplied by the net harvestable area of each MUID to give

[3] Dave Mannes, Senior Project Officer – Resources Information, DPI–Forestry.

the harvestable quantity by MUID and assumed to be harvested on the same schedule as for sawlogs. The underlying assumption being that the resource would grow to the mean harvestable quantity of poles and girders between successive sawlog (and pole) harvests on any MUID. To convert numbers of poles or girders per MUID to lineal metres, they were multiplied by the different length classes. These data were summarised to provide average annual harvestable quantities by allocation zone using 23 years (1998 – 2020) of data.

Landscape Timbers

Landscape timbers are an expanding market and thus of increasing importance to the timber industry (Mannes, D. 1998, per comm.17 March[4]). However, there are difficulties with accurately assessing the available resource.

Landscape timber comes from three main sources (Mannes, D. 1998, pers. comm., 8 April[4]):

1. Standing trees – these are usually small trees that are never going to grow into sawlog quality (through excessive defect, bends etc), dying trees (through overtopping or disease) that are not of sufficient size or quality to make sawlog grade, or larger trees that are below sawlog standard.
2. Head material – the heads of fallen sawlog often contain material suitable for landscape timbers.
3. Optional/dud sawlogs – it should be noted that a substantial overlap exists between 'optional/dud sawlogs' and 'landscape timbers', as both essentially have the same qualities.

DPI – Forestry commenced collecting inventory data on standing trees assessed as providing landscape material in 1994, however this currently leaves many areas unassessed. In addition, these data do not account for the potential volume available in the sawlog head material.

To obtain a comprehensive estimate of landscape timbers, a proportion of projected wood fibre yield was used. It was estimated that approximately 30 per cent of the projected wood fibre yield forecast under the CRA Baseline scenario (refer to part 1 of report), would be suitable for landscape timbers (Bragg, C. 1998, pers. comm. 21 April[5]). Harvestable quantities of landscape timbers were estimated based on the 30 per cent ratio of wood fibre volume for each MUID. As wood fibre is harvested at the same time as sawlogs, landscape timbers are also scheduled for harvest at this time.

House Piles & Poles, Piles, Posts, Round Timber and Sleepers

No inventory data exists for any of the above products. However, with the exception of piles, they are all captured as part of the projected wood fibre yield. The lack of information on these product types led to the necessity of using extrapolated historical sales data to estimate individual product yields. Wood for these products are taken from forests on an opportunistic basis, with sales depending on processor demand derived from market demand.

Sales data for the last four complete financial years (1993/94 – 1996/97) were used to calculate average sales quantities by allocation zone for the five product types as well as sawlogs. A ratio was established based on historical sales data between each product type and sawlog volume for each allocation zone. Harvestable quantities for each product type were then estimated by applying this ratio to the predicted sawlog volumes for all productive MUIDs in the SEQ RFA region. This

[4] Dave Mannes, Senior Project Officer – Resources Information, DPI–Forestry.

[5] Chris Bragg, Manager Resources Branch, DPI–Forestry.

method takes into account the variation in productivity between MUIDs. Note: The post and sleeper volumes reported need to be doubled on the assumption of a 50 per cent recovery rate.

3.1.3 Check on Harvestable Quantities

A check was carried out to ensure that the estimated resource was less than the total available under the CRA Baseline scenario. The estimated quantities of landscape timbers, house piles and poles, posts, sleepers and round timbers (all converted to m^3 of input), were checked to ensure they were less than the total wood fibre estimate. While this check ensured that the estimates were within resource bounds, it did not validate the relative percentages between the products.

3.1.4 Ecologically Sustainable Forest Management (ESFM)

The harvestable quantities of Other Wood Products described in this report as part of the CRA Baseline scenario do not take into account resource impacts as a result of ESFM initiatives. Chapter Five in part one of this project report describes the existing environmental considerations under the CRA Baseline scenario as well as the current and future ESFM initiatives developed as part of the SEQ RFA process. Chapter Five uses the Nerang State Forest, multiple use planning case study, conducted by DNR's Forest Allocation and Use Group as an example of the extent and types of expected impacts on the available timber resources in the area. The case study focuses on sawlog volumes only and as such there are no quantitative data on the resource impacts for the production of Other Wood Products. However, it should be noted that the trend of a reduction in available area and resource, for sawlog production, as indicated by the Nerang study would also be probable in the case of Other Wood Products.

3.2 ECONOMIC ASSESSMENT

3.2.1 Costs and Returns

Costs and returns were collected from processors of Other Wood Products. An attempt was made to collect costs and returns from processors who only produced one product type, due to the difficulty of separating costs for each product when multiple product types are processed. This resulted in only a few processors being surveyed. For all but posts only one processor was surveyed.

The processors variable and fixed costs and returns were used to estimate the operating profit per unit produced i.e. $/piece for posts and $/lineal metre for poles. The operating profit by product type was attributed to each productive MUID using the operating profit per product unit, and the harvestable quantity estimates from the resource assessment. This is only been reported as a cumulative figure for all Other Wood Products to protect processor confidentiality.

FORUM, an economic model developed by the Australian Bureau of Agricultural and Resource Economics (ABARE), will be used to optimise the structure of the sawlog section of the timber industry. In addition to providing summary data on sawlogs, the model has the capability of providing summary data on other industries when appropriate data is input into the model. The operating profit estimates by MUID will form the input into FORUM, allowing calculation of summary data on yearly values and a net present value (NPV) for Other Wood Products over the period of the SEQ RFA. Output from this Model will be used in the SEQ RFA options development process.

Limitations

Both the number of processors in many Other Wood Products categories and the attempt to target processors who only processed one product severely limited the number of cost and return surveys collected. While a larger number of surveys would have been preferred for statistical accuracy, collecting a small number of surveys to reduce the inaccuracies of proportioning costs between products was considered to result in an improved outcome.

4.0 RESOURCE RESULTS AND DISCUSSION

4.1 OTHER WOOD PRODUCTS OF 'HIGH' TOTAL SALES VALUE

Table 4.1 below shows the products that were assessed in this report as either above an average total value of $50 000 over all and/or $20 000 in any one Forestry District in the SEQ RFA region. The product types LAND and RLAN were also included in the assessment due to expectations by DPI – Forestry of a significant increase in market demand for landscaping timbers.

TABLE 4.1 Product selected for resource and economic valuation

Product type
Girders (lm) (GIRD)
Landscape material (tonnes) (HHWD)
Sawn timber (non–railway) (m^3) (LAND)
Hardwood piles (lm) (PILES)
Poles (lm) (POLE)
Hardwood posts (pcs) (POST)
Round landscaping timbers (m^3) (RLAN)
Hardwood round timbers (lm) (ROUN)
Railway sleepers (pcs) (SLEE)
Hardwood piles & house poles (lm) (STUM)

4.2 HISTORICAL SALES OF OTHER WOOD PRODUCTS

The historical annual sales volumes averaged over the four years 1993/94–1996/97 are presented by allocation zone in Table 4.2. Maryborough is the only allocation zone within the SEQ bio-geographic region to have sold all the Other Wood Products examined in this report over the past four years.

TABLE 4.2 Average annual sales volume for other wood products by allocation zone (1993/94 – 1996/97)

Allocation zone	Average annual sales volume									
Product type	**GIRD (lm)**	**HHWD # (tonne)**	**LAND* (m^3)**	**RLAN (m^3)**	**POLE (lm)**	**POST* (pcs)**	**ROUN (lm)**	**PILE (lm)**	**SLEE * (pcs)**	**STUM (lm)**
Builyan–Gladstone	162	2	899	169	844	1 463	692	5	312	5
Bundaberg	24		106	182	6 222	820	1 310		91	2 702
Brisbane & S.E.		27				5 168	1 499			269
Boonah–Warwick						3 289	2 767			
Duaringa – Dingo	25			603		802	7 157			
Eidsvold–Monto	666		18	92	9 236	28 555	848		6 560	106
Gayndah–Mundubberra	245		1 009	333	3 649	5063	1 077			112
Gatton–Toogoolawah	34				226	11 180	6 100	62		26
Gympie	612	2	44		7 173	32 807	21 462	193	768	529
Kilcoy–Woodford	1794		751		6 051	23 412	390	1 204	188	
Maryborough	42	2	1 272	615	43 270	61 991	8 787	338	48	5 089
Murgon–Wondai	288				5 162	4 592	1 160			94
North Coast Zone	147	2 145	10		8 329	10 068	5 018	294		410
Yarraman–Toowoomba	120		4		792	5 941	2 881	6	611	
TOTAL	4 160	2 178	4 112	1 994	90 954	195 149	61 147	2 102	8 578	9 340

Refer to table 4.1 for product abbreviation explanations
* Products that are sawn – hence input volumes are higher than end product volumes reported here. LAND, POST and SLEE all are assumed by DPI–F to have a 50 per cent recovery rate.
# DPI –F assumes a tonne equals a cubic metre for this product.

4.3 HARVESTABLE QUANTITY OF OTHER WOOD PRODUCTS

4.3.1 Poles and Girders

Pole and girder data were estimated over the 23 year period (1998 – 2020) of the SEQ RFA to provide average annual harvestable quantities of poles and girders as presented in Table 4.3.

Maryborough allocation zone was estimated to have the largest number of poles harvestable at an annual rate of 35 298 lineal metres (32 per cent). This is consistent with this zone having the largest number of poles in the historical sales volume data. The remainder of the zones having harvestable quantities of poles varying between none for Duaringa – Dingo to 12 835 lineal metres for the North Coast Zone, considerably less than Maryborough. Girders are only harvested in small quantities

with Maryborough again being the largest at 165 lineal metres. The total annual harvestable quantity of poles and girders was 111 137 and 269 lineal metres respectively.

The lower volume of girders for the estimated harvestable quantities compared to historical sales is due both to girders being a declining resource and the interchangeability of girders and sawlogs (Mannes, D., 1998, pers. comm., 15 June[6]). The harvestable quantity of poles is 0.2 times higher than the past sales figure. This can be explained by the harvestable quantity representing the expected availability of poles, not what will necessarily be sold. Demand for poles will not always match availability and pole quality timber is occasionally sold as sawlogs.

4.3.2 Landscape Timbers

The estimated annual harvestable quantities of landscape timbers are shown in Table 4.3. Maryborough allocation zone had the greatest potential supply of landscape timber at 3813 cubic metres (18 per cent), with the next largest allocation zone quantity being 2 072 cubic metres (10 per cent) for the North Coast Zone. The estimated total harvestable quantity of landscape timber over the fourteen allocation zones was 21 398 cubic metres.

The harvestable volume of landscape timber has been estimated at a much higher level than that current sold (3.4 times higher). The reports from the landscape timber processors to DPF–F, is that they could sell twice as much as they are currently cutting.

TABLE 4.3 Estimated average annual harvestable quantity by allocation zone (1998 – 2020)

	GIRD (lm)	HHWD, LAND & RLAN (m3)	PILE (lm)	POLE (lm)	POST* (pcs)	ROUN (lm)	SLEE* (pcs)	STUM (lm)
Builyan–Gladstone		1 493	3	1 208	877	415	187	3
Bundaberg		1 454		11 171	727	1 162	81	2 395
Brisbane & S.E.		550		1 031	4 635	1 344		242
Boonah–Warwick		225		220	2 207	1 857		
Duaringa – Dingo		969			468	4 175		
Eidsvold–Monto		1 952		8 553	14 800	439	3 400	55
Gayndah–Mundubberra		1 730		8 309	2 461	523		54
Gatton–Toogoolawah	29	677	76	4 057	13 592	7 416		32
Gympie		1 932	100	7 922	16 993	11 117	398	274
Kilcoy–Woodford		1 786	447	6 495	8 693	145	70	
Maryborough	165	3 813	266	35 298	48 841	6 923	38	4 009
Murgon–Wondai		1 953		11 388	9 357	2 364		192
North Coast Zone		2 072	237	12 835	8 106	4 040		330
Yarraman–Toowoomba	75	792	5	2 650	4 747	2 302	488	
TOTAL	269	21 398	1 134	111 137	136 504	44 222	4 662	7 586

Refer to table 4.1 for product abbreviation explanations

* Products that are sawn – hence input volumes are higher than end product volumes reported here. All other products are reported as input volumes.

[6] Dave Mannes, Senior Project Officer – Resources Information, DPI–Forestry.

4.3.3 House Piles & Poles, Piles, Posts, Round Timber and Railway Sleepers

Table 4.3 shows the results of the estimated average annual harvestable quantities for house piles and poles, piles, posts and round timber. Maryborough again had the highest harvestable quantity of house piles and poles and posts, with these amounts being 4 009 lineal metres (53 per cent) and 48 841 pieces (36 per cent) respectively. Bundaberg at 2 395 lineal metres (32 per cent) was the only other allocation zone to have a harvestable quantity of house piles and poles above 330 lineal metres. There was a considerable drop in the quantity of posts available in the next allocation zone after Maryborough, falling to 16 993 pieces (12 per cent) for Gympie.

Kilcoy–Woodford had the highest level of harvestable piles at 447 lineal metres (39 per cent). Gympie allocation zone had the largest harvestable quantity of round timbers at 11 117 lineal metres (25 per cent). Gatton – Toogoolawah and Maryborough had the next largest estimate of round timbers at 7416 and 6923 lineal meters respectively. The allocation zone with the highest level of railway sleepers (3 400 pieces) was Eidsvold – Monto.

All the harvestable quantities for these products are lower than past sales data. This is due to the method used that relates harvestable quantities to expected sawlog harvest volumes for the next 20 years. As the predicted sawlog harvest volumes are falling this is reflected in these Other Wood Products estimated quantities. The reductions are posts 70 per cent, round timbers 72 per cent, piles and sleepers 54 per cent and house piles and poles 81 per cent of past sales volumes.

4.3.4 Check on Harvestable Quantities

The check carried out on the remaining wood fibre estimates after the quantities of landscape timbers, house piles and poles, posts, sleepers and round timbers were removed, resulted in a minimum of 25 per cent of wood fibre remaining in a MUID. The average wood fibre remaining was 60 per cent. In all cases the wood fibre estimates were positive after the product volumes were removed. However, while this check ensures that the estimates are within resource bounds, it does not validate the relative percentages between the products.

5.0 ECONOMIC RESULTS AND DISCUSSION

5.1 COSTS AND RETURNS

Costs and returns were collected from only one processor in each of the product types except posts where two processors were involved. For poles, house poles and piles, round timbers, landscape timbers and railway sleepers costs had to be separated using the percentage of each product produced in the cases of multiple products. Five processors were surveyed, two for posts, one for poles, house piles and poles and round timber, and one for landscape timber and sleepers.

The limited number of surveys per product type meant that to maintain processor confidentiality, costs and returns for individual products have not been presented in this report. The annual average turnover estimate for the ten products examined was $13.8 million, with the average annual operating profit being $1.8 million in 1996/97 dollars. These costs and returns will be used as inputs into the FORUM Economic Model, to produce data that will be used during options development.

6.0 RECOMMENDATIONS FOR FURTHER WORK

One of the main objectives of Part B of this project was to estimate the sustainable yields of Other Wood Products. However, this was not possible due to a lack of suitable inventory data, growth and harvesting models and an adequate understanding of the product relations between many of the Other Wood Products. While the low value of Other Wood Products is unlikely to warrant the establishment of an inventory system to allow development of a function for estimating the sustainable yield of Other Wood Products, a method with a higher degree of accuracy than historical sales ratios is needed.

ESFM is an important issue as regards the harvesting of timber products from Crown native forests in SEQ. At this stage only preliminary work has been conducted into establishing new methodologies and parameters that allow ESFM principles to be incorporated into timber yield estimates. This work needs to be extended to include Other Wood Products.

7.0 CONCLUSIONS

Whilst there are a large number of products sold from Crown native forests, this report concentrated on 10 Other Wood Product categories chosen for their current or expected 'high' total economic value. Other Wood Products that are of a high unit value are poles, girders and piles. While these products are valuable at the unit level the total volumes harvested places them far below sawlogs in overall value. Wood sales (royalties) for the products examined in this report were valued at approximately $1.1 million in 1996/97, while sawlogs wood sales for the same period were approximately $3.9 million. The annual average turnover for the 10 products examined was estimated at $13.8 million, while the average annual operating profit was $1.8 million in 1996/97 dollars.

While one of the objectives of this report was to estimate the sustainable yield of Other Wood Products, this was not possible due to a lack of suitable data. This led to the use of three methods for estimating the harvestable quantities. While these methods have several acknowledged limitations and given that the available data were considered in consultation with DPI – Forestry, the best possible methodologies available at the time of the analysis have been used.

Harvestable quantities of wood by MUID for each product category examined in this report were estimated, with Maryborough allocation zone having the highest volumes for most products.

Due to the difficulties experienced in estimating the harvestable quantities, these estimates should be considered only as a guide and not as absolute figures. The data presented in this report does not represent sustainable yields. Long term studies would be needed to estimate sustainable yields in association with sawlog yields, however the low total value of the products concerned might deter such studies.

APPENDICES

Appendix 1.1

CRA/RFA PROJECT SPECIFICATIONS

PROJECT NAME:	**Forest grazing, apiculture, and other products description and assessments**
PROJECT IDENTIFIER:	**SE 4.2**
LOCATION/EXTENT:	**SEQ**
ORGANISATION/S:	**CRA Unit, DNR** **DPI–Forestry** **BRS**
CONTACT OFFICERS:	**George Antony: Resource Economist (J.R. Peter Hardman) &** **Pauline Stewart: Forest Resources Officer** **Malcolm Taylor: Senior Planning Officer** **Dan Sun: Senior Research Scientist**
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LINKAGES/DEPENDENCIES:	SE 4.4 Incorporation of Other Industries into FORUM development (highly dependent on SE 4.2 for base data sets) PI 5.3 Broad Economic Assessments (linkages from SE 4.4) SE 5.2 Regional Social Profile Analysis (limited linkages) SE 5.3 Social Case Study Area (limited linkages)
TYPE OF STUDY:	**Resource/economic**

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1. OBJECTIVES OF THE PROJECT

To describe the features of the forest grazing, apiculture and other minor forest product industries relevant to CRA, and to provide sufficient quantitative data (product volumes and financial) to allow the economic significance of the industries and to be described and impacts of land use changes estimated.

2. BACKGROUND

Native forests in South East Queensland (SEQ) are a major source of nectar and pollen for the apiculture industry in Queensland. Department of Primary Industries (DPI) maintain records of paid apiary sites and are currently compiling an extensive database of the industry in Queensland. These will form the basis of the apiculture assessment.

Forest grazing has historically been an important sector of the grazing industry in Queensland, with most available forest areas grazed. Databases derived from DPI stock grazing permit and DNR grazing lease information have been compiled and these will form the basis of the forest grazing assessment.

The public forest resource in SEQ is a major source of Other Wood Products for the wood & wood products industry in the region. DPI maintain the sales database of all products sold by DPI on state forests and plantations and this in consultation with DPI–Forestry personnel will form the basis of the assessment of Other Wood Products.

A detailed assessment of the resource with respect to the aforementioned industries will provide base data for the economic analysis and the option development process.

Estimated land use capacity will to the greatest extent possible be based on the principles of ecologically sustainable forest management.

3. SCOPE OF THE PROJECT

Project will detail the nature of the industries, the current situation and any trends in the industries as well as providing data required for analytical purposes.

4. METHODS

- available data sources on the relevant industries to be evaluated and collated.
- compile databases of Stock Grazing Permits and forested Term Leases.
- for forest grazing, available data on stock carrying capacities to be modelled to generate complete coverage of forest grazing potential.
- compile database and Arcview coverage of paid apiary permits.
- compilation of Other Wood Products sales data and derivation of rule of thumb for these products.
- discussion with industry and government experts to identify key features of the industries.
- economic value of industries to be identified on the basis of secondary data from various sources and expert groups.
- analysis of forest types and structure in relation to its significance to the apiary industry.
- inputs include:
    - Stock Grazing Permit, Term Lease and Apiary Site data from DPI and DNR
    - Survey of apiary industry conducted by DPI.
    - Industry description, production features (including current levels, potential and limits) and economic information from peak industry bodies, industry experts and government specialists.
    - Financial data for industries from range of sources; such as literature, industry bodies, ABS, DPI etc.

5. CRITICAL PATH

Outcomes/Outputs

- spatially related databases suitable for input into FORUM and decision–support system for the forest grazing and apiculture industries, detailing:
  - existing use patterns
  - production potential across the forest estate
- report on forest components of the industries detailing:
  - brief description of industries
  - estimate of current and potential use of forested areas for those industries
  - regional dependence on the forest estate
  - contribution of various land tenures
  - where possible, value of broad forest types to each industry
  - cost of production and gross margin data for major producers
  - the economic contribution of these industries to SEQ
  - limitations of methodology

Reporting

Draft project report (grazing & apiculture) to be prepared by end of September 1997.
Progress reports to be prepared monthly.

Milestones and Timetable

Task description	Duration (w,d)	Earliest/ actual start	Actual finish	Task dependencies diagram	Who	Link to payment yes/no amount
Databases of SGP and forested term leases compiled			11–1996		Pauline Stewart	
Cattle numbers on OCL estimated			11–1996		Pauline Stewart	
Compiled database and Arcview coverage of paid apiary permits			11–1996		Pauline Stewart	
Analysis of partly completed Apiary database compiled by DPI			11–1996		Pauline Stewart	
First draft of apiculture and grazing current status reports			2–1997		Pauline Stewart	
Compilation of Other Wood Products & derivation of rule of thumb for these products	2,0	3–1997			Pauline Stewart	
Draft report on other products	1,0	4–1997			Pauline Stewart	
Draft reports refined based on consultation with industry groups	8,0	3–1997			Pauline Stewart	

6. BUDGET DETAILS

Commonwealth Cash	
Commonwealth (in kind)	$ 5,000
Queensland Cash	
Queensland (in kind)	$60,000
TOTAL BUDGET	**$65,000**

8. PERFORMANCE INDICATORS

- the project outcomes are useable
- improvement in the extent and quality of existing information
- the industries are satisfied with their representation in the assessment reports
- completion of the project in a timely manner
- funds are properly acquitted
- information able to be easily incorporated into the economic analysis

9. QUALITY CONTROL

- regular project reporting to Project Manager, CRA Queensland
- submit draft reports to industry for comment
- regular review of data and methodologies by SE Technical Committee

Appendix 2.1

LIST OF OTHER FOREST PRODUCTS

PRODUCT CODE	PRODUCT DESCRIPTION	SALE UNIT	PRODUCT CATEGORY
BULL	Hwd Rails – Bull Oak Brig.&Bel	PCS	Round timber (poles, stumps etc)
EXHP	Export Hardwood Poles	LINM	Round timber (poles, stumps etc)
FPOL	Large Diameter Pole	LINM	Round timber (poles, stumps etc)
GIRD	Hardwood Girders and Corbels	LINM	Round timber (poles, stumps etc)
LANC	Hardwood Lancewood Rails	PCS	Round timber (poles, stumps etc)
PILE	Hardwood Piles	LINM	Round timber (poles, stumps etc)
POLE	Pole – Generic variety	LINM	Round timber (poles, stumps etc)
PPOL	Hwd Poles > 8.0m – Property	LINM	Round timber (poles, stumps etc)
PULP	Pulp Log – Hardwood (Native)	TONN	Round timber (poles, stumps etc)
RLAN	Round Landscaping Timbers	M3	Round timber (poles, stumps etc)
RMIN	Round Mining Timbers	LINM	Round timber (poles, stumps etc)
ROUN	Hardwood Round Timbers <9.5m	LINM	Round timber (poles, stumps etc)
STUM	Hardwood Piles and House Poles	LINM	Round timber (poles, stumps etc)
QMFS	Fine to medium sand	M3	Quarry material
QMGP	Quarry Mat. for Public Use	M3	Quarry material
QMGS	Gravel and coarse sand	M3	Quarry material
QMHC	Hard rock – crushed aggregate	M3	Quarry material
QMHR	Hard rock – road base	M3	Quarry material
QMOB	Overburden, fill	M3	Quarry material
QMOM	Other Quarry Material	M3	Quarry material
QMPB	Pebbles (decorative aggregate)	M3	Quarry material
QMRK	Landscape rock,slate,sandstone	M3	Quarry material
QMSA	Quarry Mat. for Stat. Auth.	M3	Quarry material
ROCK	Quarry Mat. (excl Sand & Grave	M3	Quarry material
ROCT	Quarry Mat.(excl Sand & Gravel	TONN	Quarry material
TMFS	Fine to medium sand	TONN	Quarry material
TMGS	Gravel and coarse sand	TONN	Quarry material
TMHC	Hard rock – crushed aggregate	TONN	Quarry material
TMHR	Hard rock – road base	TONN	Quarry material
TMOB	Overburden, fill	TONN	Quarry material
TMOM	Other Quarry Material	TONN	Quarry material
TMPB	Pebbles (decorative aggregate)	TONN	Quarry material
TMRK	Landscape rock,slate,sandstone	TONN	Quarry material
PEND	Plantation Logs at tender	M3	Plantation timber
PHPL	Plantation Hardwood Poles	LINM	Plantation timber
PLAP	Plantation Poles	M3	Plantation timber
PLYL	Ply Log – Plantation	M3	Plantation timber
PSAW	Plantation Hardwood Sawlog	M3	Plantation timber

PTOP	Pulp Top – Plantation	M3	Plantation timber
PULW	Pulp Log – Plantation	M3	Plantation timber
ROUW	Roundwood – Plantation	M3	Plantation timber
RTOP	Roundwood Top – Plantation	M3	Plantation timber
SAWL	Saw Log – Plantation	M3	Plantation timber
STOP	Sawlog Top – Planataion	M3	Plantation timber
ANTB	Ant Bed	M3	Other forest products
BANK	Banksia Seed Pods	EACH	Other forest products
BARK	Ironbark Bark	M3	Other forest products
BBFL	Blackboy Flowers	PCS	Other forest products
BBOY	Blackboy Plants (Salvage Sale)	EACH	Other forest products
BMAT	Brush Matting	TONN	Other forest products
BNUT	Bunya Nuts	CONE	Other forest products
BOOM	Boomerang Blanks(Black Wattle)	TREE	Other forest products
BURL	Burls	LINC	Other forest products
CANE	Lawyer Cane	TONN	Other forest products
CHAR	Charcoal	M3	Other forest products
CHIP	Wood Chips (Sleeper Waste etc)	TONN	Other forest products
CHOP	Woodchopping Blocks	M3	Other forest products
CLPP	Condemned logs plantation pine	M3	Other forest products
CNUT	Coconuts	EACH	Other forest products
CONE	Pine Cones(In Bush Collection)	M3	Other forest products
CROW	Crow's Nest	EACH	Other forest products
CYAD	Cycad type foliage	KILO	Other forest products
DIDG	Didgeridoo Blanks	PCS	Other forest products
ELKH	Elkhorn	EACH	Other forest products
ERNS	Fern type foliage	KILO	Other forest products
EUCO	Eucalypt Oil	KILO	Other forest products
FERN	Byfield Fern	FRND	Other forest products
FIBR	Fern Fibre –(Epiphytic Plants)	M3	Other forest products
FOLI	Other foliage	KILO	Other forest products
FORK	Dead tree forks	LINM	Other forest products
FUEL	Fuelwood / Firewood	TONN	Other forest products
GASS	Grasstree type foliage	KILO	Other forest products
HHWD	Landscape Material(Hollow Dud)	TONN	Other forest products
HIVE	Bee Hives	HIVE	Other forest products
HOLD	Plant Holders (Hollow Logs)	PCS	Other forest products
HSTU	Condemned Logs Stumps etc Hwd	M3	Other forest products
KING	King Orchid	EACH	Other forest products
KNEE	Boat Knees (Tea Tree)	KNEE	Other forest products
KOAL	Leaves–Euc.– Koala Consumption	KILO	Other forest products
LEAF	Leaf Litter	M3	Other forest products
MULC	Landscaping/Gardening Mulch	M3	Other forest products
MULG	Mulga Wood	TONN	Other forest products
NEED	Pine Needles	M3	Other forest products
ORCH	Other Orchids	EACH	Other forest products

PBAR	Pine Flake	M3	Other forest products
RAFT	Craftwood (Hwd or Cypress)	M3	Other forest products
RESI	Pine Resin	LITR	Other forest products
SAWD	Sawdust	M3	Other forest products
SEDE	Sedge type foliage	KILO	Other forest products
SEED	Seed	KILO	Other forest products
SHIN	Split Shingles (Dud Logs/Tops)	PCS	Other forest products
SPEC	Specialty Timbers	TONN	Other forest products
SSTU	Condemned Logs Stumps etc Swd	M3	Other forest products
STAG	Epiphytic Plants & Ferns	EACH	Other forest products
STEP	Stepping Blocks (Hwd to 10cm)	PCS	Other forest products
STGH	Staghorn	EACH	Other forest products
STIC	Firesticks (Blasting)	PCS	Other forest products
TASS	Tassel Ferns	FRND	Other forest products
TBAR	Tea Tree Bark	M3	Other forest products
TEND	Hwd/Swd sold at tender	M3	Other forest products
TRUB	Tree and shrub foliage	KILO	Other forest products
TURN	Woodturning Timbers	KILO	Other forest products
WATR	Water	KLTR	Other forest products
WILD	Other wildflowers	KILO	Other forest products
XMAS	Christmas Trees	TREE	Other forest products
NSAW	Sawlog – hardwood and softwood	M3	Milling timber (sawlogs)
BRAC	R'way Tbrs. – Braces	PCS	Hewn timber (railway and mining)
CROS	R'way Tbrs. – Crossings	PCS	Hewn timber (railway and mining)
HEAD	R'way Tbrs. – Headstocks	PCS	Hewn timber (railway and mining)
LAND	Sawn Timbers (Non–Rlwy)Gross	M3	Hewn timber (railway and mining)
PMIN	Partly sawn Mining Timbers	LINM	Hewn timber (railway and mining)
POST	Hwd Posts – Split and Sawn	PCS	Hewn timber (railway and mining)
SAWT	Sawn R'way Tbrs – outsized	PCS	Hewn timber (railway and mining)
SLEE	R'way Tbrs. – Sleepers/T'out	PCS	Hewn timber (railway and mining)
SMIN	Fully Sawn Mining Timbers	M3	Hewn timber (railway and mining)
TRAN	R'way Tbrs. – Transoms	PCS	Hewn timber (railway and mining)
SAND	Sandalwood – Dead Stumps	TONN	Aromatic timber (sandalwood)
SANG	Sandalwood – Green Stumps	TONN	Aromatic timber (sandalwood)
SANH	Sandalwood – Dead Heads	TONN	Aromatic timber (sandalwood)
SANL	Sandalwood – Green Logs/Limbs	TONN	Aromatic timber (sandalwood)
SANW	Other Sandalwood Products	TONN	Aromatic timber (sandalwood)

Appendix 3.1

Mean length of harvestable poles and girders per hectare by allocation zone

Mean length of harvestable poles and girders per hectare in B–G allocation zone based on 1587 plots covering 50976.4 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	0.70	1.80	0.30	0.20	0.10	0.00	0.00	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in B–W allocation zone based on 180 plots covering 60220.6 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	1.10	1.00	0.10	0.50	0.60	0.00	0.00	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in BBG allocation zone based on 1221 plots covering 38421.5 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	6.30	5.00	2.90	1.40	0.50	0.10	0.20	0.20	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in BNE allocation zone based on 409 plots covering 87680.3 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	1.80	1.10	0.90	0.70	1.00	0.90	0.50	0.30	0.10	0.10
Harvestable lm/ha	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

girders										

Mean length of harvestable poles and girders per hectare in D–D allocation zone based on 509 plots covering 41029.6 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	0.20	0.10	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in E–M allocation zone based on 1370 plots covering 89420.4 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	2.20	1.60	1.40	1.00	0.40	0.20	0.00	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in G–M allocation zone based on 774 plots covering 100646.7 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	3.50	2.80	2.10	1.90	1.40	0.10	0.10	0.10	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in G–T allocation zone based on 480 plots covering 12154.4 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	4.10	5.00	4.40	4.20	2.80	0.90	1.20	0.30	0.10	0.00
Harvestable lm/ha	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

girders										

Mean length of harvestable poles and girders per hectare in GYM allocation zone based on 2435 plots covering 31658.2 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	5.80	3.30	3.40	2.30	1.20	0.50	0.50	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in K–W allocation zone based on 1539 plots covering 32213.1 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	2.90	3.70	3.90	2.50	1.10	0.60	0.30	0.20	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in M–W allocation zone based on 653 plots covering 29447.0 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	12.90	10.60	2.30	2.00	0.50	1.50	0.00	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in MBR allocation zone based on 4126 plots covering 84518.2 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	6.10	6.00	4.80	5.70	1.50	1.00	1.00	0.30	0.10	0.00
Harvestable lm/ha	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

girders										

Mean length of harvestable poles and girders per hectare in NCZ allocation zone based on 1978 plots covering 14240.6 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	5.80	4.90	7.60	6.00	4.20	2.80	2.40	1.10	0.70	0.80
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Mean length of harvestable poles and girders per hectare in Y–T allocation zone based on 973 plots covering 17115.4 ha

Length (m)	9.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0
Harvestable lm/ha poles	2.60	3.30	1.70	1.70	0.50	0.10	0.00	0.00	0.00	0.00
Harvestable lm/ha girders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ABBRIEVIATIONS

(Q) DPI:	(Queensland) Department of Primary Industries
(Q) DNR:	(Queensland) Department of Natural Resources
POLE:	Poles
GIRD:	Girders and Corbels
ROUN:	Hardwood Round Timbers
PILE:	Hardwood Piles
STUM:	Hardwood House Piles and Poles
SLEE:	Railway Sleepers
POST:	Hardwood Posts
HHWD:	Hollow Hardwood Duds
RLAN:	Round Landscaping Timber
LAND:	Sawn Timbers (non-railway) gross