COMMONWEALTH GRANTS COMMISSION 1967.

NOTES ON THE FOREST PROGRAMME AND THE TIMBER INDUSTRY IN WESTERN AUSTRALIA.

prepared under the direction

of

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1. THE TIMBER INDUSTRY

(a) Timber Production

The production of sawn timber for the year under review, 1966/67, was 16,887,742 cubic feet, a decrease of 2.8% on last year's figure. Distribution was as follows :-

Exports - Overseas	- 2,260,446	cubic feet	(13.4 per cent)
" - Interstate	- 2,637,975	" "	(15.6 " ")
Local Consumption	- 11,989,321	" "	(71.0 " ")

Exports represented 29.0 per cent of total production as compared with 14.0 per cent in 1965/66.

The estimated value of production this year was :-

Sawn Timber	$25,690,000
Other Forest Products	$ 6,711,600
	$32,401,600

(b) Trends in Production and Distribution

The following table illustrates the trends in production and distribution over the last 10 years :-

Year	Total Sawn Production	Total Export	Local Consumption	Sawmills	Monthly average of men employed in sawmills	Dept. Employees & men otherwise engaged in forest.
1957/58	*17,488,315	5,671,712	11,816,603	268	5,227	1,387
1958/59	*17,759,333	6,465,021	11,294,312	260	5,155	1,469
1959/60	16,625,475	6,167,132	10,458,343	265	5,037	1,389
1960/61	15,783,370	5,212,532	10,570,838	238	4,790	1,686
1961/62	15,801,067	5,660,639	10,140,428	236	4,906	1,497
1962/63	15,593,099	5,482,513	10,110,586	221	4,725	1,539
1963/64	16,088,169	5,266,328	10,821,841	214	3,448ø	1,511
1964/65	17,052,025	4,716,296	12,335,729	206	3,615ø	1,604
1965/66	17,377,858	2,432,378	14,945,480	203	3,518ø	1,701
1966/67	16,887,742	4,898,421	11,989,321	202	3,173ø	1,817

* Includes a small quantity of hewn timber.

ø Excludes persons employed in associated timber yards in the Metropolitan Area.

Outstanding features for the year were the marked recovery in the export trade, particularly to overseas markets, and the decline in the local demand for railway sleepers.

Overseas exports of 2.6 million cubic feet were more than three times greater than the 1965-66 figure of 818,000 cubic feet, which was the lowest for 15 years. Railway sleepers accounted for practically the whole of the increase, mainly due to the supply of over 1,000,000 cubic feet to Jordan for the rebuilding of the Hedjaz railway.

Interstate exports rose by 646,000 cubic feet when compared with the previous year. Increases occurred in railway sleepers, karri and jarrah in that order, but exports of karri to South Australia at 616,000 cubic feet were still below the annual average of 800,000 cubic feet supplied during the seven years period of 1958/59 to 1964/65 inclusive. A reduction in home-building activity in South Australia could account for this low figure. It is too early to estimate the effect that the lifting of import tariff on Douglas Fir from New Zealand into Australia will have on exports of karri to South Australia.

Local consumption of timber fell by nearly 3.0 million cubic feet, due largely to a cessation, for the greater part of the year, of supplies of railway sleepers for iron-ore projects in the north-west of the State, and a reduction in the quantity needed for the standard gauge line from Kwinana to Kalgoorlie. However, the Mt. Newman iron-ore project will, in the next 12 months or so, require some 2.7 million cubic feet of sleepers for its 280 miles of railway line.

Imports of timber and wood manufactures, (excluding furniture, which is of <u>any</u> material) were valued at $3,567,000, an increase of $644,000 when compared with the previous year. The largest increase ($421,000) came from particle board from other Commonwealth States. However, the recent completion of a new particle board plant in the Metropolitan area should rectify this situation.

The timber industry continues to aim at improved performance in both the sawmill and the forest. In the past five years, six modern general purpose sawmills have been erected, a further three are programmed, and two existing mills have been upgraded by the installation of up-to-date equipment. A similar trend towards the use of modern logging plant is also noticeable.

(c) <u>Source of Supplies</u>

Nearly 81 per cent of the log production came from State Forest and Crown lands and it is recognised that the balance from private property cannot be maintained and will steadily decrease in the next few years. Sawn production from private property, mainly in the form of railway sleepers for which private areas are better suited, fell slightly as compared with last year.

(d) <u>Future Requirements of the Timber Industry</u>

The eventual loss of supplies from private property will mean that the deficit will have to be made up, if possible, from State Forest. As there is a limit to the productive capacity of our indigenous forests, on a sustained yield basis, the increasing demand for timber as the population rises will have to be met by the establishment of fast growing pine plantations. Timber is Western Australia's fourth industry (after wool, wheat and minerals) and any slump is quickly reflected throughout the whole of the State's economy.

There is a limit to the area of forest which can be permanently dedicated. The reconciliation of this limited forest area with a foreseeable increased future population has received much attention and active steps have been taken towards increasing timber supplies. These include :-

(i) Continuous assessment and air photo studies of all forest areas in order to determine which areas are suitable for addition to State Forest. During the year under review the area of State Forest decreased by 145 acres and now stands at 4,448,682 acres. Some 400,000 acres of forested Crown land have been requested for dedication and are still under review.

(ii) The location of areas suitable for fast growing Pinus radiata and the slower growing Pinus pinaster to supplement indigenous species.

(iii) A forest improvement programme in the northern jarrah forest to bring the cut-over area into a condition of maximum production. The programme includes normal logging, salvage cutting, thinning of pole stands and removal of useless trees.

The Working Plan provides for a permissible annual cut of 40,000,000 cubic feet of logs per annum. Currently local consumption is about 45 cubic feet of logs per head of population (approx. 850,000) and the balance provides export timber.

It is apparent, therefore, that for an envisaged population of 1,350,000 persons in 18 years, the implementation of proposals for extended State Forest and pine plantations must be commenced now to provide for approximately 100 percent increase in total local timber usage, allowing for a continuance of export trade. To the extent that exports remain a desirable feature of our timber trade (special markets) the leeway may have to be made up from imports, or increased pine planting.

Industries such as paper pulp and charcoal iron can be envisaged as obtaining their raw material from waste, from plantation thinnings, and from the use of marri which is not at present being used to any large extent. However, a new mill with a permissible intake of 21,000 loads of marri per annum is nearing completion. It is estimated that there are 4.5 million loads of marri sawlogs available south of the Blackwood River.

Another possible use for unmarketable timber, particularly marri, (and possibly sawmill waste at a later date) is for the production of pulpwood chips. In recent months Japanese firms have shown considerable interest in the availability of large supplies of hardwood chips in this State. In conjunction with local timber firms studies are at present in progress with a view to exporting up to 500,000 tons of these chips per annum to Japan for use in the production of paper pulp. The establishment of such an industry would mean better and more complete utilization of our forest resources.

The particle board industry established in Perth three years ago has recently doubled its capacity and now requires 1,000,000 cubic feet of pine thinnings per annum. Larger quantities could be used if they were available.

2. FINANCIAL POSITION

(a) Revenue

The gross Departmental revenue of $4,568,646 was the highest on record and an increase of $651,428 on last year's peak figure. This reflects higher log royalties which came into effect on 1st July, 1966.

The following tabulation shows a comparison of the two years:

	1966/67	1965/66
	$	$
Timber Royalties	2,986,382	2,442,642
Pine Conversion Sales	724,125	681,292
Hardwood Conversion Sales	245,882	255,344
Other Departmental	519,660	432,849
Recoupable Projects	92,597	105,091
	4,568,646	3,917,218

(b) Royalty Rates

Logs are sold in Western Australia on the basis of loads (of 50 cubic feet) full volume measure.

A comparison of log royalties over a period of years shows a general upward trend, as follows :-

	$
1951/52	0.92 per load.
1955/56	1.92 " "
1961/62	2.40 " "
1965/66	2.76 " "
1966/67	3.61 " "

Reappraisals of royalties in 1955 and 1961 account for the increases in average rates to 1961/62. Further rises in average figures to 1965/66 reflect higher royalties obtained in log sales by auction, and were not due to any reappraisal of royalty on sawmilling permits generally. The increase of 85 cents per load this year is the direct result of increased royalties which became operative on 1st July, 1966.

For comparison with other States selling on the basis of "Nett Hoppus" log measure it may be taken in round figures that $3.61 per load is equivalent to 90 cents per 100 super feet "Nett Hoppus". (This assumes an average 15 per cent defect allowance made in the Eastern States). In Western Australia no percentage allowance is made for defect, but it is recognised in royalty levels.

3. PROGRESS OF THE FOREST PROGRAMME

(a) Forest Management

The general management of State Forests in Western Australia is governed by Working Plans and estimates covering a Scheme of

Expenditure are placed before Parliament each year.

The practice of management is carried on within a framework of 15 Divisions under the management of Divisional Officers who are responsible to Superintendents.

Forest Engineering: During the year, 269 miles of new forest roads, tracks and firelines were constructed and 14 miles of telephone line erected. Construction on an all-weather airstrip capable of handling small twin-engine aircraft, and situated 10 miles north-west of Manjimup, was well advanced at the end of the year. This was a co-operative venture involving the Department, two Local Authorities, and a number of contractors and large timber companies. It is expected the airstrip will become operational in October 1967, and will be used extensively for the Department's 1967 aerial controlled burning programme of 400,000 acres.

Plant and Equipment: The Department's fleet of motor vehicles, bulldozers, graders, etc. now totals 583 automotive units. Other equipment includes stationary engines, power pumpers, power saws and agricultural implements.

Departmental Buildings: Five new houses were erected and one purchased, bringing the total number of Departmental houses to 480. Four houses from the outlying settlement of Gleneagle were transferred to Jarrahdale.

New offices were built at Hamel and Kelmscott and a small pine mill at Margaret River was completed during the year.

A commencement was made on a new research station to be built at Manjimup. This building is designed to cater for the expanding research activities in the southern forest region.

Communications: New Single-Side-Band (S.S.B.) equipment was installed at Kalgoorlie and two mobiles fitted. When fully completed the new system should greatly facilitate the work of field officers in this extensive region where normal lines of communication are few and far between.

Surveys and Mapping: During the year, 133 miles of theodolite control surveys were made and barometric heightings taken at 77 selected control points for subsequent plotting of contours.

Vegetation mapping from air photos covered 2,583,000 acres, about half of which consisted of special maps connected with the location of areas affected by the jarrah 'die-back' disorder. Mapping from aerial photos, in association with field assessment, enables a more accurate determination of the permissible cut to be made. The field work and most of the air photogrammetry is done by staff based on the Harvey and Manjimup Working Plan offices.

(b) Silvicultural Operations

It is the function of the Forests Department to ensure that careful control is exercised on all sawmilling permits within State

Forest, to see that under the silvicultural system in operation the correct trees are removed in the first cutting in such a way as to protect the remaining growing stock and to encourage regeneration. In most cases this control is exercised by the actual branding by an officer of the Department of every tree which is to be felled. After felling, a top disposal and burning operation assists to protect the immature growth and provide both a seed bed and fire protection for the young crop. In 1966/67 51,010 acres of virgin forest and 37,509 acres of forest logged for the second time received this treatment.

In the northern cut-over jarrah forests surplus stems in the form of useless trees and veterans of marginal quality, as well as competing stems in sapling and pole stands are still occupying valuable growing space. Their removal at the earliest possible time is essential if the whole cut-over forest is to be brought into a condition of maximum production. A stand improvement programme is proceeding in these areas and involves normal logging, salvage cutting, thinning and the removal of useless trees.

(c) Afforestation

Finance: The Pine Working Plan has set a goal of 200,000 acres of pine plantations for the State with the aim of satisfying the demand for timber and pulping materials which must occur as the population reaches the proportions envisaged in the Stephenson Plan.

The limitation on the rate at which exotic plantations can be established is chiefly financial. Over the last seven years it has been possible to plant an average of less than 3,000 acres per annum, when 6,000 acres per year would have been preferable. However, the Softwoods Forestry Agreement Act, 1967, passed by the Commonwealth Parliament on 9th May, 1967, has changed the situation. This Act provides financial assistance, for the first five years, to all States to enable them to expand the rate of softwood planting. The long-term nature of forestry and the long period between planting and income-earning production is recognised. The loans will be free of interest and repayment of capital for the first 10 years. Thereafter, repayments are to be effected by 50 equal half-yearly instalments. The term of the loan is consequently 35 years.

In Western Australia the planting rate is expected to be 6,000 acres per annum from 1968 onwards and the target of 200,000 acres of pine plantation should therefore be achieved before the turn of the century - given sufficient suitable planting land.

Plantation Areas: The area planted in 1966/67 amounted to a record 4,074 acres bringing the total area of plantation, including experimental areas, to 48,833 acres.

Planting 1966/67		Total Area at 30.6.67	
P.pinaster	2,364 acs.	P.pinaster	28,126 acs.
P.radiata	1,710 "	P.radiata	20,150 "
Other species	Nil	Other species	557 "
Total:	4,074 acs.		48,833 acs.

Only small plantings were made in the early post-war years, but from 1949/50 onwards a total of 37,326 acres has been established. Areas planted were as follows :-

	Annual Average Acres	Total Area Acres
5 year period, 1949/50-1953/54	1,286	6,430
" " 1954/55-1958/59	1,606	8,029
" " 1959/60-1963/64	2,508	12,541
Year -1964/65	-	3,413
" 1965/66	-	2,839
" 1966/67	-	4,074
		37,326

It is expected that 5,000 acres will be planted in 1967/68, rising to 6,000 acres per annum from 1968/69 onwards.

(d) Forest Protection

The principal destructive agency affecting the forests of Western Australia is fire. Considerable progress has been made in control measures over the years and now 4.4 million acres of State Forest are afforded protection. In addition, some 1.8 million acres of private property and other Crown Land benefit from our protection activities.

Prescribed controlled burning in mild weather provides the most practicable and economic form of protection by reducing the amount of forest fuel. Rotational controlled burning of the whole of State Forest every five years is the objective, and this year 894,000 acres were treated in this way. To properly undertake such a task extensive development of roads and tracks has been necessary and a network of some 16,000 miles exists in the forest today. Many of these roads are used by the general public and in recognition of this, some financial assistance is granted from Main Roads funds. Nevertheless, there are some areas where tracks are sparse and dense scrub makes foot access difficult and dangerous for controlled burning operations. In these areas controlled burning by dropping incendiaries from aircraft has proved successful and 188,000 acres were burnt in this manner during the spring of 1966.

(e) Forest Research

Eleven Departmental officers, assisted by 18 technical assistants, are at present employed on research.

Broadly, the work is covered by the following four main headings :-

(1) Native Hardwood Forests
Jarrah, karri, wandoo, tuart and mallet forests.

(2) Softwood Plantations
Plantations of Pinus pinaster and Pinus radiata.

(3) Tree Establishment
As an amenity in semi-arid farming areas.

(4) Soil Studies and Investigation

(1) In the indigenous hardwood forests work on silvicultural aspects includes investigations into regeneration and stocking problems, thinning trials to ensure maximum increment and studies of methods of logging to determine the most suitable silvicultural system for each forest type. Establishment trials to test the potential of introduced commercial species on areas where jarrah has failed and on treeless and poorly forested sites, continue.

Protection of the forests from fire and harmful plants and insects covers a number of aspects. Studies of fire behaviour have been extended into the karri and mixed jarrah-marri forests of the southern region. Trials of controlled burning by dropping incendiaries from aircraft, in which C.S.I.R.O. and the Aeronautical Research Laboratories co-operated, were continued over a wide area covering open wandoo forest near Mundaring, to dense karri forest near Shannon River. Resulting improved techniques and organisation should permit the area burnt in this way to be doubled in spring, 1967. Investigations into methods of controlling jarrah 'die-back' have been intensified in an endeavour to prevent the spread of this root-rotting fungus. Studies, in co-operation with entomologists from the C.S.I.R.O. and Department of Agriculture, have been initiated on all aspects of the jarrah leaf-miner (a small moth) and its effect on the commercial forests of Western Australia.

Aspects of management and utilization covered were the development of a computer programme for processing hardwood inventory data, and the inspection of preservatised jarrah, karri and marri sleepers laid in railway lines of the wheatbelt 12 years ago.

(2) In the softwood plantations of P.pinaster and P.radiata, silvicultural research is directed towards better nursery technique to provide healthier plants, tree improvement by tree-breeding, thinning trials to ensure maximum increment, and the delineation of future suitable planting land, particularly for P.pinaster in coastal sands north of Perth. A highlight of the tree-breeding programme has been the successful establishment in Western Australia of 1,055 grafts of 78 of the 85 superior or "plus" trees of P.pinaster selected in the world-famous forests of Pinhal de Leiria in Portugal. It is expected that buds for further propagation of these superior trees will be available in 1968.

Research into the protection of pine plantations is mainly concerned with defining suitable prescriptions for controlled burning buffer strips bordering areas of high risk in stands of P.pinaster. So far both fire danger and fuel moisture limits have been prescribed for this operation.

On the management side considerable work has been done on the preparation of volume and yield tables for both P.pinaster and P.radiata, and the first stage of the revised plantation inventory, which will supersede the former site quality system, was implemented.

(3) Tree establishment as a farm amenity in agricultural areas retains its importance. The Forests Department has to date established 56 arboreta or pilot areas where the suitability of a wide range of tree species for the various sites and districts are being tested. These arboreta serve also as demonstration areas where farmers may see trees at first hand and are consequently able to make rational selections of species for their own requirements. The work is carried out in conjunction with individual farmers, Local Government bodies and other Government Departments. A Government grant of $6,600 for this work was made in 1966/67 and the same amount has been allocated for 1967/68.

(4) The soils and nutrition branch carries out routine soil analyses as a guide to the selection of sites for pine establishment and, in addition, performs relevant soil examinations and plant analyses, where required, for all research projects covered by the other three main headings. Much of this work is done in co-operation with the C.S.I.R.O. Division of Soils.