

# The legacy of sustenance

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**ABSTRACT:** The depression years of the 1930s saw the employment of hundreds of men on 'sustenance' or 'relief' work in the forests of Western Australia. This paper describes the social circumstances that led to their employment, the silvicultural work that they did in the jarrah forest and the conditions under which they did it. The paper examines the legacy of that work in terms of the present forest condition, the silvicultural lessons it has provided, and how the resulting forest is seen in the light of changing perceptions of forest values.

## 1 INTRODUCTION

Exploitation of the main forest areas of Western Australia for timber began in the 1870s. Silvicultural work in the forest did not begin for another fifty years when the Forest Act was passed and significant funds for forest management became available and the process of secure dedication of forest areas had begun.

Newly developed silvicultural practices of treemarking, regeneration work and fire control were progressively implemented but the work was dramatically increased during the depression of the 1930s when more than one thousand men were employed on sustenance and relief schemes. The intensive silvicultural work ceased in 1941. By that time a net area of 169,000 ha of jarrah forest had been thinned or regenerated, the largest silvicultural program ever undertaken.

The achievement is all the more extraordinary in that it was planned at short notice, managed by a reduced permanent staff and carried out by a conscripted workforce of largely unskilled men working from small isolated bush camps throughout the forest. The prescription for the silvicultural work was at the time supported by little detailed research but was based on astute observation of the growth habits of the jarrah and marri forest by professionally trained foresters with the support of highly skilled and experienced bushmen.

With the benefit of 70 years of hindsight we are now able to evaluate the work that was done in terms of its effect on forest development, the benefits it has provided in demonstrating the long-term effects of a wide variety of different forest practices and its impact in terms of changed forest values.

## 2 SOCIAL BACKDROP

The worldwide depression of the 1930s began to have its effect in Western Australia in the early part of 1928, when unemployment almost doubled to 9.5% in three months. Wall Street collapsed

in the following year and unemployment in WA continued to climb through to 1933 when it reached a peak of 24%, until finally returning to normal by about 1938 (Bolton 1972, Fox 1982, Snooks 1974).

For those unfortunate enough to lose their jobs, conditions were harsh. The welfare system for unemployed people was rudimentary to say the least and initially there was no assistance for single people. In 1928 a demonstration of angry unemployed men finally prompted government to provide a sustenance wage to unemployed families with a bed allowance for single people (Bolton 1972). The sustenance rate was 70c a week (20c in cash) per person in the family (to a maximum of \$4.90), with single men receiving a bed ticket and two meal tickets a day. To receive sustenance however, the recipient had first to use their savings and sell much of their furniture. The impact on families went further. Only one child over 14 years old was eligible for rations (but no cash payment) – others had to leave home if they were to qualify for independent relief. The wage for a sawmill hand at that time was \$8.80 per week.

Government saw that it had an obligation to the unemployed only after the charitable and municipal resources were exhausted. Payments were managed through local councils who were exhorted by one government minister to concentrate their resources on their own people, and move along anyone who came into the area looking for assistance (Bolton 1972, Snooks 1974). In 1930, the ex-army camp at Blackboy Hill was opened to accommodate up to 1,000 unemployed single men, partly to provide accommodation and but also to keep them out of Perth where they might be inclined to cause trouble. In 1931 Hovea camp was established with 550 men employed cutting firewood in the John Forrest National Park for the people of Perth, working for one and a half days a week for 50c per week and their keep (Bolton 1972).

A major change in policy came in 1931 when government decided to undertake public works schemes, funded by loan funds, to provide employment relief. This work was also to be partly funded by the Commonwealth government. The kind of work most favoured were projects with a high labour content and with an immediate benefit, such as sewage, drainage, jetty and dam construction. Some of the more notable of these projects were the drainage and irrigation of the coastal plain in the Harvey/Myalup area, and the construction of the Waroona, Wellington and Canning dams (Bolton 1972, Snooks 1985).

While these schemes brought the opportunity for work and for extra money on top of their sustenance wage, it also brought the obligation to move to where the (part time) work was, engaging in hard manual labour and camping in primitive conditions. Such a prospect was not universally popular, especially for the urban unemployed. Those who refused to move and take up work that was offered lost sustenance payments for themselves and their families. The government reminded those who protested at the plight of those families that “husbands are responsible for their wives and families” and that it was their obligation to take the offered work.

Recipients of relief work were also required to be a member of a union. Many could ill-afford union dues (\$2.50), and while time payment was accommodated there were no voting rights till dues were fully paid. The unemployed formed their own union, the WA Sustenance Workers Union (WASWU), in 1933 but it was refused affiliation by the ALP who declared that ‘preference for unionists’ applied only to its affiliated unions. Collier’s Labor government complied and a number of WASWU members were sacked as a consequence, creating a great deal of bitterness and division (Premiers Department 1934b). The union had effectively ceased to exist by 1934. In 1933 only 39% of the unemployed were engaged on relief works (Fox 1982).

The unemployed were second class citizens and made to feel it.

### 3 TIMBER INDUSTRY AND THE DEPRESSION

The impact of the depression on the timber industry was equally severe. Local consumption and exports of sawn and hewn timber both fell by 80% from 1926/27 to 1932/33 (Forests Department 1969). Of 68 mills operating in 1927, 17 remained open in 1932, mostly operating on a part-time basis (Robertson 1956). Reduced sales of timber were not the only factor involved. The largest

timber concession, Millars Jarrahdale, expired in December 1929 and from that time they would operate under a permit system, paying royalty for their logs rather than the nominal annual rent for the concession area that had applied to that time. The consequence would be a substantial increase in costs. Their Jarrahdale number 1 mill closed in December 1929, with number 2 mill closing in December 1930. They remained closed until 1935 (Fall 1972).

Reduced sawmilling activity had a direct impact on the Forests Department. Since the passing of the Forests Act, the department had retained 60% of its net revenue, the principal source of which was royalty payments. Departmental income fell from \$172,000 in 1927 to a low of \$36,000 in 1933, mostly as a result of reduced production but also as a consequence of the government's royalty rebates of up to 24% that operated from 1931 to 1942 (Table 1). Ironically the reduction in harvest levels as a result of the depression facilitated the reductions in the permissible cut forest-shaded in the Forest Department's Working Plan, a result that may have been difficult to achieve in normal circumstances (Kessell 1928)

In 1931 the salaries of Forests Department staff were reduced by 20%, the award for forest workers was amended from 44 to 48 hours per week and many were retrenched or employed part-time.

#### 4 SILVICULTURAL WORK IN THE JARRAH FOREST

Exploitation in the main belt of the jarrah forest began in 1872 with the construction of the large Jarrahdale mill and the Lockeville mill near Busselton. By the time the Forests Act was passed in 1918, 198 mills had been established throughout much of the forest area, many of which had closed after cutting out the nearby forest (Heberle 1997). In addition there were hundreds of sleeper hewers operating in the jarrah forest, producing the majority of the export sleepers until World War II. Initially there was little effective control other than the introduction of a 'girth limit' in 1896 and the prevention of hewing in virgin forest from 1914. By 1918 sawmills were operating from Mundaring to Manjimup and most of the high quality jarrah forest had been accessed by a network of bush railway lines (Gunzburg and Austin 1997, Heberle 1997). Most of the cutover forest regenerated naturally from the existing pool of lignotubers but uncontrolled fires later damaged much of the resulting sapling regeneration.

Intensive silvicultural treatment of the jarrah forest began in 1921 when the first working plans were prepared for the Mundaring and Collie areas with the objective for the former of maintaining water quality and producing timber, and for the latter of producing mining timber (Forests Department 1921, Stoate 1923). From 1923 treemarking was progressively introduced throughout the forest, and tops disposal, the removal of debris from the base of retained trees, was introduced throughout the forest where intensive silviculture could not at the time be undertaken.

The practices developed at Mundaring were gradually adopted throughout most of the forest. The program involved the treemarking of individual trees for removal (including felling direction), marking to a 'group selection' system, essentially removing the mature trees and retaining groups or individuals of younger trees. In the 'blanks' (gaps) created by the removal of mature trees a program of 'regeneration cleaning' followed. This involved the 'coppicing' of young but damaged regrowth, the felling of banksia, sheoak and balga, and the ringbarking of larger unwanted trees. Groups of immature trees were left largely untouched. Areas with insufficient existing regeneration were partially ringbarked in an attempt to induce seeding on the parent trees (Forests Department 1927b). Following harvesting the debris was burnt and the new regrowth was then protected from fire. In addition to this, groups of larger saplings or small poles were thinned, and large trees overtopping patches of good sapling regeneration were culled by ringbarking.

The work was organised in 200 ha compartments, around each of which was a 100m 'break' in which no treatment was done. The object was to burn this break every second year as a protection for the treated forest which was to remain unburnt until it was old enough to withstand fire (Forests Department 1927a).

By 1931, treatment was keeping pace with logging. However a backlog of thousands of hectares of previously logged forest existed, much of it damaged by wildfire.

## 5 UNEMPLOYMENT RELIEF

Forest work was originally viewed as unsuitable for unemployment relief because the returns would be long term and some suggested it would never return the investment. However it was also realised that it could be used to employ large numbers of men with wages accounting for 90% of the expenditure. Piecework operations ensured value for money. It also had the advantage that the work would be carried out by small groups of men in isolated bush camps, reducing the likelihood of unrest that had occurred in Perth and at the large Harvey camp.

Sustenance work began in the forest in 1931, when 1000 men were employed in bush camps throughout the jarrah forest. One quarter of the new workforce were skilled bush workers but the remainder came from all walks of life, many of them unused to hard physical work or to the living conditions. The peak employment of 1500 men occurred in 1933. A proposal by the Forests Department to employ 1800 men for three years from 1934 (Premiers Department 1934a) did not eventuate. The working arrangements, described by Kessell (1934), are summarised below.

Single men on rations of 70c per week were given part time work and allowed to earn an additional \$2.52 on relief work (a total of \$3.22), while married men were allowed to earn an additional \$2 per week above their 'sustenance' payment to a maximum total payment of \$24 per month. The men were organised in camps of 20 single men or 10 married men, sharing a two-man tent for which they paid rent. Each man was supplied with tools and a sheet of corrugated iron from which each camp could build a cookhouse. Blankets and cooking utensils were provided if necessary and the cost deducted from their wages along with their union dues. Food could also be paid for by the Department and deducted from wages. In some cases married men took their families to the bush with them. As a concession to married men, their camps were set up in more accessible locations and they were allowed to work out their month's work in a continuous period to allow them time to return home when their work for the period was completed.

The work of mainly 'regeneration cleaning', culling and thinning was carried out on piecework. An overseer marked out 'coupes' sufficient for a fortnight's work and the men drew lots for their coupe. A coupe for a married man was larger, representing his higher earning capacity. An overseer (a permanent employee) marked the trees to be treated, supervised the work and signed off the coupe for payment when completed. Day work crews were employed clearing roads. From 1934, the Department was also required to employ 'B' and 'C' class men. These were men who were physically unfit for heavy work and were employed mainly for the clearing of tracks. It was considered that "the engagement of these men on healthy outdoor work such as can be found is an important step towards their rehabilitation in industry" (Forests Department 1935).

For those used to bush work and bush camps, the relief work was a welcome opportunity to earn extra money. For those who were not, especially those who lived in Perth and had to camp away for extended periods, it was less welcome. However for the most part they accepted the work and the conditions, though there were some disagreements over coupe 'value'. There was one notable strike at Manjimup by a group of well known dissidents (who had been banished to Manjimup after being gaoled for rioting at Parliament House), and some cases of self-harm by men seeking compensation (Harris 1975, Stewart 1969). A number of sustenance men eventually became permanent employees of the Forests Department.

The strain on the reduced number of the permanent workforce was considerable, requiring the supervision of large numbers of unskilled workers. Each forester was responsible for about one hundred men with six overseers. The permanent staff and workforce were also responsible for all of the fire control work.

## 5.1 Funding

The provision in the 1918 Forests Act allowing the Department to retain 60% of the net revenue (mainly from timber royalty), in what was known as the Reforestation Fund, overcame a major problem in forest management by providing adequate funds for management for the first time. From 1927 to 1930 the average annual expenditure on reforestation was matched by income to the fund. In 1931 revenue halved and halved again in 1932 as the sawmilling industry was affected by the depression. With the introduction of sustenance work in 1931 employment in the forest increased to one thousand men, all being funded from the Reforestation Fund. In that year Treasury also removed \$45,000 from the fund to support sustenance payments elsewhere. By the end of the year the Reforestation Fund was virtually empty (Table 1).

From 1932 the government decided to use loan funds for 'relief' work to supplement 'sustenance' funds which were paid from the Reforestation Fund and in 1935 the Commonwealth government began to contribute funds for forest work with additional funds for the employment of 'C' class workers. The result of this injection of funds and labour was a major increase in reforestation work but a substantial legacy of debt. In addition to loan funds for reforestation, substantial funds were also borrowed for pine and mallet plantations. The interest for all of these loans was to come from the Department's revenue before the 60% was calculated. By 1941 the annual interest bill was \$82,000 while the net revenue to the Reforestation fund was \$106,000 (Forests Department Annual Reports). From 1931 to 1939, 6,420 man-years had been devoted to forest development work, representing 8% of the total man-years spent on similar work throughout Australia in the same period (Snooks 1985).

Table 1. Expenditure on reforestation work from 1927 to 1941

Year	No men *	Expenditure on Reforestation					Income 60% net revenue \$,000	Interest \$,000	Balance in Re-for'n fund \$,000
		Re-for'n fund	Loan funds	C'wealth	C class workers	Total			
1927	N/A	31	0	0	0	31	172	0	230
1928	N/A	172	0	0	0	172	176	0	234
1929	N/A	240	0	0	0	240	143	0	153
1930	410	229	0	0	0	229	170	0	110
1931	1,000	143	0	0	0	143	80	0	7
1932	950	42	91	0	0	133	35	0	5
1933	1,500	21	268	0	0	289	36	0	25
1934	1,000	28	283	0	0	311	53	34	56
1935	1,000	28	289	26	0	343	68	46	104
1936	1,000	39	203	160	24	426	84	56	157
1937	625	98	144	100	38	380	93	64	161
1938	485	100	80	50	48	278	109	69	171
1939	400	100	88	** 24	60	272	94	73	171
1940	334	80	103	** 24	39	246	98	78	196
1941	310	115	73	** 24	32	244	106	82	193

Source: Forests Department Annual Reports

1931-1941 were years of unemployment relief work in the forest.

\* Includes some men on other forest tasks. \*\* Federal Aid Road Grant funds

## 5.2 Progress

Substantial progress had been made in regeneration work since 1921, using Departmental staff, but it received a huge impetus during the peak years of unemployment relief from 1931 to 1936 (Table 2). The reduced operations from 1939 were partly due to the fact that the backlog had been largely eliminated but also because employment opportunities improved, especially in the mills. By 1941 staff shortages were occurring as men joined the 2<sup>nd</sup> Forestry Company AIF and the Department's workforce was diminished to the stage where the army was used to assist in fire control.

The net area of silvicultural treatment, excluding tops disposal, that was achieved from 1922 to 1941 is 169,000 ha (source Department of Conservation and Land Management's FMIS database), 90% of it during the period 1931-1941. Intensive silvicultural work was suspended in 1942, the silvicultural system changed to one more closely resembling single tree selection and apart from pole thinning operations, intensive silvicultural operations of this kind did not resume again until the mid 1980s (Bradshaw 1999).

## 6 THE LEGACY

With the advantage of hindsight it is now possible to look back at this work and consider its legacy from several perspectives. These include the effects on the forest itself in terms of its productive as well as its conservation values, what it taught us for application in the future, the effect of the depression on future administration, and how it is seen in the light of changing perceptions of forest values.

Table 2. Silvicultural program from 1922-1941

Year	No men	Silvicultural work achieved ha *					Total excluding tops disposal
		Tops disposal	Regeneration cleaning	Culling	Thinning	Coppice thinning	
1922-26	N/A	37,886	7,933		-		7,933
1927	N/A	17,900	2,926				2,926
1928	N/A	24,199	1,789		833		2,622
1929	N/A	19,283	5,672		2,880		8,552
1930	410	15,378	7,689		10,522		18,211
1931	1,000	9,713	10,927	9,713	6,475		27,115
1932	950	3,157	6,880	10,927	8,903		26,710
1933	1,500	3,578	12,513	2,828	7,518		22,859
1934	1,000	9,106	11,898	132	5,989		18,020
1935	1,000	13,557	18,009		7,471		25,480
1936	1,000	20,154	38,783				38,783
1937	625	20,966	22,819				22,819
1938	485	18,859	15,297		1,198		16,495
1939	400	15,743	10,589		212	1,821	12,623
1940	334	21,654	6,880		89	656	7,624
1941	310	19,830	5,828		130	648	6,605

Source: Forests Department Annual Reports

\* caution is required in adding these figures since there is some overlap of operations within and between years e.g. some areas that were regenerated in one year were thinned in later years.

1931-1941 were years of unemployment relief work in the forest

## 6.1 *Effect on the forest*

The intensive silvicultural work of the depression and the period immediately before it converted a forest that had been subjected to uncontrolled logging and wildfire, into one with a future for ongoing production of timber. The structure that was created varied from ‘blanks’ or gaps containing regeneration of saplings or coppiced saplings, to groups of immature trees and some older veteran trees. Other patches contained thinned saplings or poles. The size of these individual patches varied widely, with ‘blanks’ (gaps) ranging in size from 0.3 ha to contiguous patches of more than 1,000 hectares. 83 % of the treated area was described as pole or sapling stands in the aerial photo mapping of the 1950s and 1960s (Bradshaw et al. 1997).

The coppicing treatment of damaged saplings was highly effective and the slight ‘pistol butt’ of many of the dominant poles of today suggest that this was their origin. The thinning treatment is unlikely to have had much positive impact on growth since coppice from the cut stems, without herbicide treatment, would soon compete with each other (Kimber 1967). Neither was coppice thinning effective in increasing growth rate (Chandler 1939). However both of these treatments improved the average quality of the regrowth stems by removing the poorest and the slowest and promoting the dominance of the better stems.

It is difficult to judge how much of the seeding treatments (partial ringbarking and burning in a seed year) were successful but there is ample evidence of the problems that resulted from an absence of advance growth at the time of harvest. These areas are now dominated by *Banksia grandis* or *Allocasuarina* rather than jarrah regrowth. The observations of Kessell (1931) concerning the relative value of stool coppice, ground coppice, and seedlings as sources of regeneration were well founded.

From a conservation viewpoint, there is no obvious evidence that flora diversity have been adversely impacted by the treatment, though no detailed comparative analysis has been undertaken. Clearly there have been changes in the age classes and proportions of some species but this is a complex issue that is influenced and overlain by normal seral development that follows both harvesting and burning. However there are no known loss of species and these forests are frequently used as benchmark sites to monitor the impacts of current disturbances such as fire, mining and harvesting, though the very concept of ‘benchmark’ in a dynamic system is problematic.

Vertebrate fauna values have dramatically altered since the 1930s due to the coincidence of fox encroachment at this time, affecting not only the treated areas but the full spectrum of forest types, structures and landscapes in the southwest (Christensen et al. 1985). The additional culling of trees over and above that which was removed by harvesting undoubtedly reduced the number of potential habitat trees for hollow dependent fauna. However no evidence has been presented to suggest that habitat in these areas has been reduced below critical levels. While this is difficult to judge for arboreal mammals which have been so badly impacted by foxes, data presented by Abbott (1998), shows that the habitat for large hollow-nesting birds has not been limited by past treatment.

52% of the treated forest is in the zone that has a rainfall of less than 1100 mm per year, a zone which is now known to contain high salt loadings that can be mobilised by vegetation removal (Schofield et al. 1989). Because of the rapidity and density of the regeneration that followed treatment there has been no long-term adverse impact of the treatment on stream salinity and these forest still remain a source of high quality water.

The opportunity to observe the effects of the wide variety of structures that had been developed from this work, together with research that had been conducted in the intervening period, provided the basis for the re-introduction (with some modifications) in the 1980s of essentially the same prescription (Bradshaw 1985, 1986, 1999, CALM 1995, 2004). The critical thing that had been demonstrated by the 1930s treatment was that discrete patches of forest of different age (rather than a fine scale all-aged structure) were by far the most successfully managed for continuous timber production because of better regrowth development and reduced felling damage in subsequent cycles. While the principles adopted in the later prescriptions were the same as that of the 1930s, the following is a summary of the key changes that were introduced: Larger minimum and smaller maximum gap sizes for regeneration were specified; a minimum rate of retention of large hollow

bearing trees (habitat trees) was specified; thinning (of the areas previously regenerated) and culling were carried out with herbicide to prevent unwanted coppice; there was a more deliberate use of ground coppice for regeneration using a better knowledge of its development stages; there was a more formal and deliberate approach to the use of seed in regeneration where it was needed; there was a more cautious approach to harvesting and treatment in areas with saline groundwater; and stream zones and other informal reserves were set aside from harvesting.

The prescription for fire protection of young regrowth remains the same but the key difference is that present day management has the resources to safely undertake the first critical prescribed burn, an almost impossible task for early foresters (Harris 1975).

## 6.2 *Administrative change*

The depression was the impetus for major change in the methods of operation in the forest. By the time the mills re-opened after the depression nearly all of the horse and bullock teams had gone, and tractors began to take their place; cars and motorbikes replaced the horse and bicycle for transport; and the bush telephone replaced the heliograph for communication. The pace of change escalated after the war as tractors became larger and more common, trucks began to replace steam trains in the forest and ex-army high frequency radio became part of the fire protection armoury. The huge increase in road building, including major highway re-construction, unknowingly increased the spread *Phytophthora cinnamomi* through the forest.

The depression also had a profound effect on the attitudes of those who experienced it, instilling in them a conservatism and frugality that they never lost. This was no more evident than in forest administration when the young forestry graduates who supervised much of this work became the Forest Department's senior administrators through to the 1970s. Their attitudes undoubtedly allowed the Department to operate with the smallest of budgets but it might be argued that when conditions improved some opportunities were lost because of it.

The Forests Department continued to receive its revenue from royalties, increasing to 90% in 1954 and the interest on debt, mainly for the establishment of pine plantations, continued to grow. Arrangements changed in 1976 when all revenue was paid to Consolidated Revenue, and the Department was funded by Treasury. Under that system, native forest silviculture was seen to be a capital investment and expenditure again came from borrowed funds with its attendant debt and interest. From 1985 the Department became responsible for the accumulated debt as well as the interest. Further change in 1994 saw 100% of revenue retained by the Department of Conservation and Land Management and later by the Forest Products Commission with a transfer of the debt to that organisation.

## 6.3 *Changing objectives, values and perceptions*

A lot has changed in the forest since the 1930s; not only to the forest itself but also in the way it is perceived. In the light of those changes did the work achieve what it set out to do?

In an immediate sense it did. For those who were unemployed it gave them work, allowed them to survive and gave them at least a measure of dignity. Compared with some of the alternative work, such as digging drainage and irrigation ditches across the coastal plain, it was probably relatively enjoyable. For some it was the start of a new career.

From the point of view of silviculture for timber production, for the most part it achieved exactly what it set out to do, creating a new forest with high potential to meet the then management objectives. Much of its potential is still to be realised because the regeneration is still too young to produce sawlogs, but from about 2040 this regrowth forest will be the primary source of jarrah sawlogs (Ferguson et al. 2003). It is impossible to say with certainty how the yield from these areas would be affected had there been no treatment of the type described above, but a 20 % reduction may not be an unreasonable estimate. Of a more immediate nature, these forests have provided more than one million electricity transmission poles between 1945 and 2000, the development of which was enhanced by the treatments.

The other main objective, the protection of water supplies, was also achieved, the majority of the Perth metropolitan above-ground water supplies coming from treated forest.

In the 1930s the forest was looked upon primarily as a source of timber. This was hardly surprising since it accounted for 7% of export income and sawmilling was the state's largest manufacturing industry. However this is an over-simplified perspective. Conservation of forests at the time was equated to sustained yield for timber and in many ways managing for timber (and water) did conserve other values, and though largely by default, it was nevertheless real. Conserving those values involved reserving it in secure tenure to protect it from clearing for agriculture, and managing it in a way that would ensure its continued productivity. Since the 1930s there have been major changes in the attitude of governments and the public towards forests and there have been significant shifts in land use as a consequence of that (Havel 1989). How can the work described above be viewed in the light of these changed land uses? How much of the treated forest retains its original objective?

Almost all of the treated forest has very high mineral potential, particularly for bauxite (RFA 1998 Map 7). Since the 1960s, bauxite mining has been the priority land use (apart from water) for the forest areas north of Collie with most of it covered by State Agreement Acts that ensure protection of the mining industry. 60% of the treated forest area is potentially subject to bauxite mining. Most of the upland jarrah forest in these areas is likely to be mined at some time in the future though the rate is difficult to determine since this is not influenced by the State's regulatory authorities (Conservation Commission 2004, EPA 2003). At the present rate of mining it is possible that about 45% of the treated forest in the leases will be mined before the regeneration reaches ideal sawlog size and possibly all of it before it reaches the nominal rotation age of 200 years.

Changes to the conservation estate have also impacted on the treated areas. While it is true that the structure of the forest is inevitably different to what it was before it was logged, treated areas continue to provide high recreation and conservation values, at least on those areas not subsequently affected by *Phytophthora cinnamomi* or mining. While these forests are not the same as virgin forest, treated areas are nevertheless highly regarded for their conservation value. Examples are areas such as Serpentine, Lane-Poole, Wellington, Preston and Mullalyup that have been accorded 'icon' conservation status. Did the silvicultural treatment work further enhance or detract from the conservation value of the forest? The answer is that it probably made little difference either way. 20% of the treated forest is now within formal or informal reserves.

The remaining 20% is State forest on which the original objectives of water production and protection, conservation and timber production are still pursued, with the exception of the 3% that is affected by *Phytophthora cinnamomi* or used for public utilities.

## 7 CONCLUSION

The low proportion of forest that will fully achieve its original objective may seem an unsatisfactory result for those who worked so hard to thin and regenerate the forest. However it highlights one of the greatest difficulties of managing forest over very long periods. The technical and operational objectives are relatively easy to accomplish but stability of purpose can be transitory. Perhaps a more appropriate perspective is to consider that they left behind them a forest that was still suited to the wide range of objectives expected from it in the 21<sup>st</sup> century. Those involved in the sustenance program can be proud of such a legacy.

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