

REPORT TO THE HON MINISTER FOR THE ENVIRONMENT

ON

**CALM'S COMPLIANCE WITH MINISTERIAL CONDITIONS
ON THE FOREST MANAGEMENT PLANS 1994-2003**

**A RESPONSE TO THE EPA BULLETIN 912
NOVEMBER 1998**



Department of Conservation and Land Management

PREFACE

CALM is satisfied that on all objective measures its management of the native forests of Western Australia has been carried out in accordance with the principles of ecologically sustainable forest management. The Department has a major commitment to scientifically-based forest management and considers that its operations equate with world's best practice in sustainable and balanced use of those areas of forest available for timber production.

The Department is particularly proud of the fact that its 1992 agreement with the Australian Heritage Commission was the basis for Australia's Regional Forest Agreement process.

CALM has overseen a massive increase in the area of native forest placed in formal and informal conservation reserves such that Western Australia now enjoys a world-class forest reserve system. This guarantees that forest values will be protected in perpetuity today and for future generations.

CALM believes, following close scrutiny by the EPA's expert Advisory Committee, and through the provision of information to support that Committee's functions, that CALM has complied with the Ministerial Conditions placed on this Department in respect of its implementation of the Forest Management Plan 1994-2003.

It is inevitable, given the level of political debate in the community surrounding native forest management and the harvesting of these forests for timber, that a report by the EPA that expresses an opinion on forest management and the forest industries would be controversial no matter what its content. The EPA has made assertions that CALM has not complied with some Ministerial Conditions, including its definition of the Precautionary Principle. CALM categorically disagrees with the EPA's conclusions that CALM has not complied with some Ministerial Conditions and specifically rejects the EPA's interpretation of a precautionary approach.

CALM recognises that the EPA is an independent statutory authority. This report points out errors of fact and logic in the advice that the EPA has provided to the Minister. CALM has taken care in this report to objectively clarify issues that CALM believes have been misinterpreted by the EPA.

CALM is concerned that the EPA, in its report, has ignored many of the conclusions of the expert Advisory Committee the EPA established and which concluded an intensive enquiry over 26 months. It is also of concern that references in the EPA's report to the Advisory Committee's Report appear to be edited or misquoted. It is surprising that the EPA's report appears to have been written in part prior to the completion of the Advisory Committee's Report.

It is of concern that the EPA appears to have reached many of its conclusions on the basis of selective interpretation of a range of scientific documents and previous official, independent reviews of forest management and the forest industries. It is also of concern that the EPA report contains error of fact and the EPA states that it has based, in part, its conclusions on "other information" from sources which have not been cited.

Finally, CALM is concerned that the EPA's report may reinforce a perception that the Department is responsible for formulation of forest management policies. The forest policy under which CALM operates has been determined by successive Governments, representing all major political parties, following comprehensive public consultation for more than 10 years. A fundamental element of successive Governments' forest policies which dates back to the 1987 Regional Forest Management Plans and the Timber Strategy (which was endorsed by the EPA) was that the forest industries, with the support of Government should restructure to enable the utilisation of native forest timbers for high value-added product.

Successive Governments and successive EPA reviews, by their endorsement of forest management plans, recognised that the jarrah forest was being managed sustainably but the sawlog harvest of jarrah logs at current specifications was above the level that could be sustained at those specifications and that the future long-term sustainable level of production from the forest would depend on the level of utilisation of the annual growth increment which could be achieved by the forest industry. Successive Governments recognised (and it was implicitly recognised in EPA determinations) that the forest industry required time to restructure if it was to be able to increase the proportion of the annual growth increment that was utilised, and that this could be done without adversely affecting the sustainability of the forest.

CALM is responsible for implementing policy but was not responsible for determining the quantity of wood harvested from the forest in the 1994 Plan or previous Plans. CALM believes that it has consistently and conscientiously implemented the Government forest policy and it refutes categorically that it has not complied with Ministerial Conditions.

If the Government were to accept the recommendations of the EPA as they relate to the allowable cut for jarrah, it would mean that the previous policy decision to provide the opportunity for the forest industries to restructure would have been reversed. CALM would, of course, adjust its management practices to accommodate that change in policy immediately.

BACKGROUND AND EXECUTIVE SUMMARY

1. The Hon Minister for the Environment has requested CALM's advice (Attachment 1) on those aspects of the EPA Bulletin relating to compliance with Ministerial Conditions created by Minister McGinty dated 24 December 1992 (Attachment 2). It is important to note that the project against which CALM's compliance is being assessed is the Forest Management Plan 1994-2003, a statutory management plan prepared by CALM under the Conservation and Land Management Act for the Lands and Forest Commission. The Definition Statement for the 1997 Progress and Compliance Report prepared by CALM and the EPA Advisory Committee Report state that the Forest Management Plan is the project to which the 1992 Ministerial Conditions apply and this is confirmed by correspondence from and to the Chairman of the EPA (Attachment 3).
2. CALM prepared a Progress and Compliance Report which was submitted to the EPA in December 1997. The compliance report was reviewed by an expert Advisory Committee appointed by the EPA over a period of several months. There was extensive interaction between CALM and the EPA's expert Advisory Committee, and CALM throughout the 26 months that the Committee deliberated, provided detailed written responses to all questions raised by the Committee.

The Committee concluded that there were no Ministerial Conditions which CALM had not complied with. The EPA, in its report, disregards many of the conclusions of the EPA expert Advisory Committee's report and appears to have written its report, in part, prior to the expert Advisory Committee finalising its deliberations. The EPA Report contains a number of selective quotations from the Advisory Committee's Report and other reports, some of which are documented in Attachment 4.

3. At the request of the EPA, senior officers from CALM met with the Authority on 15 October 1998 to discuss the Advisory Committee's recommendations with respect to CALM's compliance with the Ministerial Conditions. A number of issues were discussed (including the ways by which the EPA could interact positively with CALM in the future) but the principal point put to the EPA several times was that CALM noted, with appreciation, that the Advisory Committee had not found CALM in breach of the Ministerial Conditions. No member of the EPA took the opportunity to disagree or express any concern with the conclusions of the EPA's expert Advisory Committee. That is, the EPA did not ask any questions relating to their own Committee's conclusions and specifically raised no concerns with CALM's compliance with the "precautionary approach" or the sustainability of harvesting in the jarrah forest.
4. The EPA report deals with a number of issues which have little relevance to compliance. Many of these issues relate to Government policy and consequently it is not appropriate for CALM to comment on them except where there are comments in the "general" section of the EPA report that are relevant to CALM's compliance.

5. MINISTERIAL CONDITION 2.2

The EPA concludes that CALM has not complied with Condition 2.2 and states this is of "major concern" (EPA Report page i).

The EPA expert Advisory Committee did not conclude that CALM had not complied with the Condition but suggested the Condition should be "clarified for CALM".

Condition 2.2 requires that CALM report changes to the proposal to the EPA to enable the Authority to determine whether or not they are substantial and if so the EPA then advises the Minister.

The EPA claims that CALM has substantially changed the Management Plan by increasing the area of jarrah forest cut over and increasing the proportion of shelterwood cutting (ie, selective cutting) without reference to the EPA.

To require a "substantial" change to have taken place requires that there is a defined base to measure the purported "change". The 1994 Plan does not set any area of harvesting or prescribe the proportions of each silvicultural treatment that will apply. The 1992 proposal document, which is not the document which is being assessed in the EPA's report on compliance, states that it is not possible to predict the proportion of each silviculture treatment that will apply in the future. The EPA selectively quoted from its own 1992 assessment report, Bulletin 652 (see Attachment 4).

The increase in shelterwood cutting that has occurred is an example of CALM's application of the precautionary approach, as it is carried out to ensure that there is adequate regeneration prior to the creation of gaps.

The EPA Report has based its recommendation on errors of fact.

CALM advises the Minister that it has complied with this Condition. CALM disagrees with the EPA's advice and recommends that the Minister refer this issue back to the EPA for reassessment.

6. MINISTERIAL CONDITION 3

The EPA Report, at page 10, has concluded that "CALM appears to be not yet implementing the Forest Management Plans in accordance with the Precautionary Principle".

The EPA's Advisory Committee did not conclude that CALM had not complied with the Precautionary Principle –

"The Advisory Committee found difficulties in addressing the application of the Precautionary Principle to the complexities of forest management despite the information provided in the PCR". The Advisory Committee proposed a new definition of the Precautionary Principle and recommended that "CALM should be actively encouraged

to continue the development of its forest management knowledge base and to progressively modify the Forest Management Plan and related documentation, in response to the information obtained". (Advisory Committee Report pp 18-19).

Most of the elements of this Ministerial Condition are required to be implemented over the period of the Plan. This, together with the uncertainty surrounding what is meant by the terms "Precautionary Principle" or "Precautionary Approach" explains why the EPA's expert Advisory Committee found difficulties in addressing this issue.

CALM believes that it has applied the Precautionary Approach in the implementation of the Forest Management Plan (see Conditions 2, 13 and 14), but the EPA has concluded that "CALM has yet to comply with Conditions 3.1 and 3.2(1) ...". (EPA Report page 4).

The EPA, in addition to making general assertions on the failure of CALM to implement the Management Plan in accordance with the Precautionary Principle, has also specifically stated with respect to the allowable cut of jarrah logs which was determined by Minister Minson on advice from an independent expert committee –

"The figure of 490 000m³ /yr set by Minister Minson for jarrah sawlogs is not regarded by the EPA as being sustainable and should be substantially reduced **as quickly as possible** to a level in the order of 250 000 m³ /yr, subject to this figure being shown to be sustainable in the long term, consistent with the application of the **Precautionary Principle.**" (*Emphasis added*). (EPA Report page iv).

The EPA has said in its discussion of Condition 8 (page 16) –

"...the EPA is of the view that **a precautionary approach** would be to substantially reduce the cut level as quickly as possible to a level in the order of 250 000 m³ /yr ...". (*Emphasis added*).

And in its discussion of Condition 9 (page 16) -

"the EPA is of the view that it would be desirable for the maximum permissible timber harvest to be reduced as **a matter of urgency**". (*Emphasis added*).

The EPA's expert Advisory Committee noted –

"Minister Minson's response to the Meagher Report, of August 1993, accepted the advice from CALM and the Meagher Committee that 'the long term non declining yield of sawlog supply is likely to be around 300 000 m³ /yr, but may be as high as 450 000 m³ /yr, **if utilisation rates increase**' ". (Advisory Committee Report page 26). (*Emphasis added*).

Minister Minson, in his official Determination of Annual Sustainable Timber Resource Available for Allocation under the 1994 Forest Management Plan, determined on 16 August 1993 for the jarrah resource –

“For the period from 1 January 1994 to 31 December 2003 the annual timber resource available for allocation averaged over the 10 year period will be:

Jarrah: 490,000 m³ /yr first grade and second grade jarrah sawlogs.”

He based this determination, in part, on the advice of the Independent Expert Scientific and Administrative Committee he established (the Meagher Committee). This Committee specifically considered the Precautionary Principle as it related to the allowable cut and concluded –

“therefore the level of harvest proposed by this Committee is adequately ‘precautionary’. If the true ‘sustainable yield’ is in the order of 450,000m³ then the effect will be negligible”. (Meagher Report page 25).

CALM has no capacity to vary this condition because it is a Ministerial determination. However, CALM also believes that it is operating in accordance with a precautionary approach.

It must always be noted when sustainability of timber supply is being considered that the current bole increment exceeds the wood harvested. That is, harvesting is less than the annual increment of wood being produced in the jarrah forest. Therefore the jarrah forest is not being over-harvested.

The future long-term yield of sawlogs will be determined by the capacity of the industry to utilise a greater proportion of the bole increment. CALM agrees with the conclusions of the Meagher Committee that the current level of cut in the jarrah forest **over the period 1994-2003** will not have any significant effect on long-term sustainability of sawlogs even if the log specifications and level of utilisation do not change. The EPA has not presented any scientific evidence that the current level of harvest in the jarrah forest for the period 1994-2003 has any deleterious effect on the sustainability of the forest.

The EPA, however, has now determined that to comply with the Precautionary Approach, which is required by Ministerial Condition 3.2(1) to be continuously implemented, the allowable cut of jarrah first and second grade logs must be reduced below 250 000 cubic metres “as a matter of urgency” (EPA report page 16). That is, the EPA has purported to precisely define what is meant by the Precautionary Approach with respect to the level of the jarrah cut.

CALM is concerned that evidence that the EPA used to select the 250 000 cubic metre per annum level is seriously flawed.

CALM notes that the Meagher Committee concluded, in its Executive Summary that –

“On the basis of present utilisation standards of felled timber and inventory data supplied by CALM, the Committee estimates that the sustainable yield of jarrah sawlog is 450,000 cubic metres per year. An alternate calculation based on conservative parameters provided by CALM indicates a sustainable yield of 300,000 cubic metres of sawlogs per year. 450,000 is considered to be the more reliable of the two estimates.” (Meagher Report page 1).

Dr Martin Rayner, CALM’s expert in this area, has confirmed, as is stated in the Meagher Committee report that the FORSCHEID model run that derived 250 000 cubic metres per annum was merely one of a number of simulations which were used to test various assumptions and it is difficult to understand why the EPA selected that particular figure from the Meagher Report. (Note the FORSCHEID model has been significantly upgraded - see Ministerial Condition 8).

In addition, the EPA states, at page 30 of the report –

“However, the EPA considers that the current modelling of forest growth, **focused as it is on estimations of timber yield from a few high productivity areas** rather than reflecting more variation in growth rates to take account of soil, climate and nutrient differences, is an approach that can be misleading, as it does not deal with the complexities of a biological system spread over a range of climatic and environmental conditions”. (*Emphasis added*).

Dr Rayner has confirmed that this statement is incorrect. Dr Rayner, who is recognised as a national expert in this area, briefed the EPA expert Advisory Committee (which included EPA members) for five hours on the methods used by CALM to estimate sustained yield.

CALM (specifically Dr Rayner who briefed EPA members on this issue) cannot understand how the EPA could conclude that the growth data focused only on “estimates of timber yield from a few high productivity areas” given the extensive briefings that the Committee received. This is an error of fact, as appears certainly to be the case, and if this incorrect information was part of the reason why the EPA formulated its views on the application of the Precautionary Principle it is of concern.

In summary –

- **The level of jarrah sawlog cut as determined by Minister Minson complies with the precautionary approach because it “does not lead to irreversible consequences” on the forest because the level of harvest is less than the annual growth increment. That is, less wood is being harvested that is being grown.**
- **At current log specifications the long-term sustainable yield of sawlogs is approximately 300 000 cubic metres per annum.**

- The current level of jarrah sawlog harvest at current specifications exceeds 300 000 cubic metres and is projected to continue at these levels until the end of the current Management Plan in 2003. However, even if future utilisation rates were not to change this would not "lead to an irreversible consequence" because it would have no significant effect on long-term sawlog yields.
- Beyond 2003, the future sustainable levels of jarrah timber production will be determined by the proportion of the annual growth increment that can be utilised by the timber industry.

The Government's determination of the level of harvest of jarrah logs made by Minister Minson, in CALM's opinion, is in compliance with a precautionary approach.

The jarrah level of cut for 1998 already exceeds 250 000 cubic metres. Therefore, if the EPA's determination to comply with the precautionary approach the cut should be reduced to 250 000 cubic metres "as quickly as possible" is maintained, CALM would need to cease harvesting in the jarrah forest. CALM considers that EPA's advice on this matter is incorrect.

7. MINISTERIAL CONDITIONS 5 AND 6

The EPA report appears to require CALM to protect these reserves from fire. For example, the EPA report states –

"Environmental Condition 6-2 requires CALM to protect these areas from forestry-related activities, including fire and roading".

The inclusion of fire in the associated activities that travel road, river and stream reserves and Diverse Ecosystem Areas must be protected from would pose severe management problems if the EPA means that these areas should be protected entirely from fire, including prescribed burning.

If the proposal were required to be implemented it would result in major increases in costs and would seriously restrict the ability of the Department to protect the forest from wildfires, thus increasing risks to life and property. The only way these areas could possibly be protected from fire (assuming that the EPA does not propose the cessation of prescribed burning) would be to surround them with firebreaks. This could also have adverse environmental consequences as fire plays an important role in maintaining forest ecosystems.

CALM concurs with the EPA that CALM has complied with Condition 5.1 and agrees that Conditions 5.2 and 5.3 can be addressed to the extent that it is practical to do so through an EMS but disputes that the EMS can properly be required to be a new Ministerial Condition requirement.

8. MINISTERIAL CONDITION 8 – SUSTAINABLE YIELD ESTIMATES

The EPA has correctly noted that the Minister has made determinations on the allowable cut. But it also states –

“... the EPA is of the view that a precautionary approach would be to substantially reduce the cut level as quickly as possible to a level in the order of 250 000m³ /yr (subject to this figure being shown to be sustainable in the long term), in accordance with the Meagher Committee Report findings that CALM’s FORSCHED model predicted that a yield of ‘somewhere close to 250 000 m³ of (jarrah) sawlogs would be sustainable in perpetuity’ (Meagher, 1993, p.24).” (EPA Report page 16).

“The EPA is of the view that, given the advice in the 1993 Scientific and Administrative Committee Report and the PCP that the sustainable jarrah cut is approximately 300 000m³ /yr (plus or minus 50 000m³ /yr), any shortfall from that harvested during the approved period should not be cut”. (EPA Report page 15).

The EPA’s statement above is an error of fact. The Meagher Report did not **conclude** that the sustainable level of cut was 300 000 cubic metres per year (plus or minus 50 000 cubic metres per year) nor did the Public Consultation Paper make this statement.

CALM notes that in the Meagher Report a range of sustainable yield levels were estimated using different assumptions and models, but in the Executive Summary of that report it is stated –

“On the basis of **present utilisation standards** of felled timber and inventory data supplied by CALM, the Committee estimates that the sustainable yield of jarrah sawlog is 450,000 cubic metres per year. An alternate calculation based on conservative parameters provided by CALM indicates a sustainable yield of 300,000 cubic metres of sawlogs per year. 450,000 is considered to be the more reliable of the two estimates.” (*Emphasis added*).

Minister Minson’s statement noted advice that the long-term non-declining level of sawlog supply **at current specifications** is approximately 300 000 m³ /year but may be as high as 450 000 m³ /year if utilisation rates increase.” (Minson Statement, page 7). (*Emphasis added*).

CALM has advised the EPA that the forest industry has made significant progress towards achieving the restructuring of the industry so that it could increase utilisation which was one of the principal themes of Minister Minson’s statement -

“The first five years of the current forest management plan have therefore seen a revolutionary change in the end-use of jarrah with constant increases in the amount of dried jarrah and a consequent reduction in heavy and structural green sawn output. The recovery of value-added product now exceeds 60 per cent on an industry-wide basis.

What this means for the future is that the current sawlog specification has become irrelevant with the smaller dimension sawn timber now being produced to meet the demands of the furniture and architectural feature markets. Also, given the higher value of the output, it is now possible to

make greater economic use of the remainder of the tree bole.” (CALM Report July 1998).

Current levels of harvest are below the annual total bole increment of jarrah forest and consequently CALM is operating sustainably. This is in accord with internationally accepted definitions of sustainable yield –

“Definition: Sustained Yield

The yield that a forest can produce continuously at a given intensity of management. Sustained yield management implies continuous production so planned as to achieve, at the earliest practical time, a balance between increment and cutting.”

Source: J A Helms (Editor) 1998
The Dictionary of Forestry
The Society of American Foresters and CABI Publishing
ISBN 0-939970-73-2
210 pp

CALM notes the comments on CALM’s inventory and yield control system by one of Australia’s most eminent experts in this area, Dr Brian Turner of the Australian National University, who is selectively cited in the EPA report has actually stated –

“In the course of this review a number of opportunities for improvements to the various systems have been identified, but on the whole it is concluded that the systems and procedures developed by CALM staff for estimating sustainable yields from the jarrah and karri forests of the South-West Forest Region are adequate and appropriate. **They certainly rank among the best in Australia in terms of comprehensiveness of the data base, monitoring arrangements and growth modelling.** The complex computerised systems and production of scenarios for estimating future yields are largely the result of the efforts of a dedicated few and the Department needs to ensure that the skill base is disseminated through documentation, training and transparency of decision procedures.” (Turner, 1998). (*Emphasis added*).

CALM concludes that the comments and conclusions that the EPA has made with respect to sustainable yield estimates are based on selective quotations which ignore the considered findings of expert, independent individuals and organisations.

For example, the 250 000 cubic metres per annum level of cut that the EPA has chosen is based on a figure quoted in the Meagher report that was derived from a series of FORSCHED simulations which, as Meagher has stated, were conservative. It is difficult to understand why the EPA has selected this figure from the Meagher Report when the Meagher committee concluded that the range of sustainable sawlog yield at current specification would range from 300 000 cubic metres to 450 000 cubic meters.

But subsequent to the Meagher report, as part of the RFA process and with the benefit of significantly improved data, the Public Consultation Paper concluded that 300 000 cubic metres per annum was the sustained yield of sawlogs at **current log specifications**. (*Emphasis added*). In addition, the EPA's Advisory Committee (which included members of the EPA) received detailed briefings on the issue by Dr Martin Rayner who is the Department's expert in this area. As noted above, the EPA's statement that CALM's method of modelling of forest growth "... is an approach that can be misleading" (EPA Report page 30), is based on an error of fact.

CALM agrees with the EPA that the Minister has made determinations in accordance with Condition 8.1 and 8.2. CALM asserts that it has properly implemented the Minister's decisions. CALM completely disagrees with the EPA's assertions with respect to the level of sawlog production from the jarrah forest.

9. MINISTERIAL CONDITION 9 – COMMITMENT OF WOOD

CALM notes that the EPA has been unable to determine compliance with Condition 9.1(2).

CALM notes that the EPA expert Advisory Committee stated with respect to this Condition –

"In relation to 9-1(2), CALM advises that industry adjustment is proceeding which will manage the potential decline in saw-logs of the current first and second grade specification in 2004. The adjustment involves the greater economic use of the remainder of the tree, whole bole volume and greater recovery of lower grade logs." (Advisory Committee Report page 28).

It is difficult to understand why the EPA was unable to determine compliance given the extensive briefings that have been provided by CALM on the industry restructuring which is taking place.

CALM considers that it has complied with this Condition and does not believe the EPA could reasonably conclude otherwise. CALM believes that CALM's compliance with the Condition should be acknowledged by the EPA.

CALM recommends that this issue be referred back to the EPA for reassessment.

10. MINISTERIAL CONDITION 11 – JARRAH SILVICULTURE

The EPA has stated that CALM has not complied with Condition 11-1 based on the proposition that the studies that have been implemented in Kingston, Warrup and Winnejup blocks are not representative.

CALM notes –

- The so-called “Kingston Study” is the most comprehensive research project on the effects of disturbance in forests that have ever been undertaken in Australia.
- The preliminary results from this study show no negative impact of forest disturbance on wildlife and confirm the research by CALM that has shown that fox control will result in a major increase in mammal abundance.
- It is incorrect to claim that the only research that has been carried out is restricted to that area of the forest. CALM also has 55 monitoring sites in the northern forests across a range of forest types and disturbance histories. These sites have been monitored intensively over the last four years.
- CALM has at least five years to comply with this condition and on the basis of the results obtained from the Kingston Study and using data compiled during the RFA process, is in the process of extending the monitoring program. It would have been less than intelligent to commence intensive monitoring over the whole forest until research had been undertaken to determine the most appropriate experimental design and the most appropriate measurement techniques.

CALM disagrees with the EPA’s advice on this matter and believes that it has complied with this condition. In any event, this is a Condition that the Minister must set out requirements, not the EPA.

11. MINISTERIAL CONDITION 13

The EPA has stated that CALM has not complied with this condition as the Minister needs to approve the silvicultural guideline whereby CALM increased the number of retained habitat trees from three to four per hectare plus retaining groups of potential habitat trees in jarrah forest cut to gaps.

CALM considers that it is implementing a precautionary approach as required by Ministerial Condition 3 and the EPA by retaining more trees.

CALM notes that the EPA’s Advisory Committee found that CALM had complied with condition 13.1.

CALM also notes that although Environmental Condition 14 (*Banksia grandis* reduction) was not implemented, and that the Minister for the Environment and the EPA were not advised of this decision, that the EPA “formed the view that this may have been an appropriate action.” The EPA’s advice is internally inconsistent.

CALM disagrees with the EPA’s advice. CALM cannot be found to be in non-compliance with the Condition unless CALM has failed to comply with a Ministerial determination made under the Condition. No such determination has been made.

MINISTERIAL CONDITION NO 1
Proponent commitments

1-1 In implementing the proposal, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the proposal and in response to issues raised following public submissions.

Condition 1 is a standard condition applied to all proponents. As noted by the EPA and its expert Advisory Committee it would have been usual practice to develop a detailed list of commitments prior to the Ministerial Conditions being finalised so that the commitments could form part of the Ministerial Conditions.

CALM understands that the Department of Environmental Protection (DEP) usually undertakes this job in consultation with proponents. The DEP did not provide a list of commitments. There were some unusual factors surrounding preparation of the Ministerial Conditions. The Ministerial Conditions were produced on 24 December, 1992 at a time when the announcement of a State Election was imminent. Because of this factor there was an extreme urgency on the part of the then Minister to finalise the conditions and absolutely minimal consultation as to their content. There were also difficulties created by the fact it was difficult to reconcile some of the recommendations of the Barnett Committee, (a Committee established to consider appeals against the EPA's Report and Recommendations in respect of Proposals to Amend the 1987 Forest Management Plans and Timber Strategy and Proposals to Meet Ministerial Conditions on the Regional Plans and WACAP ERMP) with realistic forest management.

The Conditions, while they were drafted in respect of draft proposals document of 1992 which was assessed by the EPA in 1992, are in fact applied to a Forest Management Plan published under the CALM Act in 1994. The peculiarity of having Ministerial Conditions predate the final plan creates a particularly unsatisfactory situation when seeking to schedule the commitments that should apply.

In particular, it should be noted that CALM's Forest Management Plan 1994-2003 was produced after a statutory comment period and takes account of public input made during that period. Inevitably because account was taken of submissions made during preparation of the Management Plan (and in fact there were two public comment periods under the CALM Act and one public comment period under the Environmental Protection Act) the final Forest Management Plan refined the draft proposals originally submitted to the EPA.

CALM agrees that a consolidated list of commitments, based on the final Forest Management Plan, should be prepared by CALM in consultation with the DEP and be made available for public information.

However, CALM does not agree with the EPA's view that the commitments should include –

- a commitment to develop and implement an environmental management system;

- the definition of the precautionary principle used in the inter-governmental agreement on the environment;
- the adoption of the principles of ecologically sustainable forest management.

As the commitments list should have been prepared at the very latest by 1994, when the Forest Management Plan (the project) commenced, it is unreasonable to make CALM comply with commitments that did not exist at the time the project commenced. CALM is preparing an environmental management system (EMS), and will take account of a precautionary principle definition in future plans, and has substantially adopted ESFM principles. However, it is improper to incorporate new conditions created in 1998 into a commitment schedule that should have been finalised in 1994, and then require that CALM be audited against the new commitments when those new commitments have no relationship to the approved 1994 Forest Management Plan. The setting of new commitments which have an impact on individuals, or companies which have undertaken commercial activities in the forest, or based commercial decisions on contracts signed on the basis of the authorised Forest Management Plan and the Ministerial Conditions, would create legal difficulties.

The EPA has also stated that the environmental management system should be developed according to the ISO 14000 series documents and the Montreal Process within one year. It is unreasonable for the EPA to attempt to apply a new requirement of such magnitude under this Ministerial Condition. If this proposal was accepted by the Minister it could result in adverse effects on Western Australian forest industries companies which are exporting timber products. Failure to comply with this proposal in the time-frame prepared by the EPA could be used by overseas or interstate competitors to create market embargoes for Western Australian timber products.

CALM is preparing an EMS in accordance with the ISO 14000 series and Montreal Process. This is a major undertaking that will take several years to develop. CALM is concerned that the EPA, if it considers this work can be carried out in one year, does not have a realistic understanding of the work involved in preparing an EMS for State forests.

The EPA has further noted, in its conclusion on compliance, that the final list of commitments to be prepared by CALM in consultation with the DEP will be subject to the scenario that flows from the finalisation of the RFA. The RFA is still the subject of ongoing discussion between the State and Commonwealth Governments. It is unreasonable to assert that environmental commitments that should have been finalised in 1994 can flow from a process that is still underway.

CALM Advice – Condition 1

CALM recommends that the Minister accept the EPA's advice that CALM, in consultation with the DEP, should prepare a list of commitments. However, CALM recommends that the EPA be informed that it cannot expect a proponent who is midway through implementation of a project to undertake new commitments as part of the conditions under which the project is being implemented. The commitment list must be based on the project which is the Forest Management Plan 1994-2003.

MINISTERIAL CONDITION NO 2

Implementation

2-1 An expert scientific and administrative committee will be established by the Minister for the Environment to review and report on the implementation of this proposal by June 30 1993. The terms of reference of the committee will be to consider:

- reserve recommendations within multiple use forest involving those proposals related to temporary exclusion from timber production and potential reserves to act as wildlife corridors;
- the environmental, economic and social implications of such proposals for:
 - nature conservation in WA's native forests;
 - the maximum sustainable timber supply
 - the existing and future timber industry
- the potential to increase plantation estate on cleared agricultural land to contribute to the production of timber products.

2-2 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where in the course of that detailed implementation, the proponent seeks to change those designs, specifications plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

The EPA has concluded that Condition 2.1 has been complied with. CALM agrees with the EPA's finding but also notes that the Authority apparently does not accept the determination made by the then Minister for the Environment under Ministerial Condition 8.2 following consideration of the Committee's Report in respect of the maximum allowable harvest of timber from the jarrah forest. Further comments on this matter are dealt with under Condition 3 and Condition 8.

The EPA has concluded that CALM has not complied with Condition 2.2. This Condition requires that a proponent must keep to the plan or proposal submitted to the EPA for assessment. There are obvious difficulties with this when the public processes established under the Environmental Protection Act do not mesh with the statutory requirements for preparation of management plans under the Conservation and Land Management Act. CALM and the EPA have agreed that the Forest Management Plan 1994 would be the project against which CALM's Public Compliance Report on the Ministerial Conditions would be prepared for the EPA and public assessment (Attachment 3).

If a proponent wants to change a proposal that the EPA assessed, the proponent must advise the EPA of the change and if the change is considered a major change a full reassessment of the proposal is triggered. The EPA has said that "The changes to the proposal may be significant enough to warrant a new assessment under Section 38". (EPA Report, page 8).

In asserting that CALM has changed its proposal without referring the matter to the EPA, (and thereby allegedly breaching Condition 2.2) the EPA said at page 8 of its report "Examples of such changes are the increase in the use of the shelterwood silvicultural prescription and the increase in the total area of forest harvested". But if there was a substantial change in practice then that change must be measured in relation to a specified level or base. The Forest Management Plans 1994-2003, upon which compliance is being assessed, makes no predictions about the level of harvest or the proportion of shelterwood cutting.

Shelterwood cutting and the area of forest cutover relate to the same issue, because if CALM implements more shelterwood treatments in the jarrah forest a greater forest area will be cut over. Shelterwood is a technical term for selection cutting to provide seed trees for subsequent regeneration, ie, only removing selected trees from the area being harvested rather than "gap creation" where virtually all trees (except habitat trees and potential habitat trees) are removed to allow existing but dormant regrowth to develop.

Obviously if fewer trees are harvested from any area of forest then more of the total forest area will be harvested at the first harvest to meet the total required volume of log timber. The remaining seed trees on shelterwood areas will be harvested subsequently when sufficient regrowth has developed.

To put this even more simply, if CALM had to produce last year's jarrah harvest sawlog volume from gap creation in one area of high quality forest, only 7 900 hectares would be harvested. In contrast to the 18 300 ha that were actually harvested because fewer trees were cut per hectare in the shelterwood harvesting areas.

The logical inference of the EPA's finding is that CALM should use gap harvesting which is far more intensive, and less of the shelterwood system which leaves far more trees after harvesting.

If the jarrah forest were a pine plantation, CALM would harvest it in a consistent manner. However, native forests are not homogeneous because they are uneven in terms of site quality (productive capacity), the density of the forest (the number of trees per hectare), the structure of the forest, and the development of regrowth.

CALM is obliged to regrow every area of forest that is harvested. In the jarrah forest there are two main methods of regenerating the forest – either from lignotubers in mainly high quality forest sites (lignotubers contain dormant shoots that grow when competing trees are harvested) or by a combination of dormant jarrah lignotubers and seed fall in mainly intermediate and lower quality forest sites. To obtain sufficient seed fall, seed trees must be retained. Therefore the selection cut (shelterwood) system is used in mainly intermediate and lower quality forest sites to ensure that the forest can be successfully regrown.

CALM presently has much of its jarrah operation in the intermediate and lower quality jarrah forest sites and therefore it is quite logical and proper that there has been more use of selection (shelterwood) harvesting and more forest area has been covered.

The EPA asserts that CALM in the 1992 proposal stated that it was going to use significantly less shelterwood treatment than it is today and also said that less forest area would be harvested. But the EPA has selectively quoted from CALM's 1992 advice. The EPA states at page 8 of its report – "During assessment in 1992, CALM advised the EPA, in response to a question about the area to be affected by the changed silvicultural prescriptions that 'the area cut over in the future are likely to be similar' to those cut over in the years 1989/90 to 1991/92, which ranged from 14 500 (1989/90) to 10 900 (1991/92) hectares per annum' (EPA 1992)". The full text of CALM's 1992 advice as it appeared on page 38 of EPA Bulletin 652 of October 1992 was –

4.7.1 Application of jarrah silvicultural prescription

One of the means of assisting with the determination of environmental impact relates to both the intensity of change proposed and the area affected by the change. To find out more about these aspects, advice was sought from CALM on the area of jarrah forest that is projected to be subject to the three components of the 1991 jarrah silvicultural prescription (thinning, shelterwood and gap treatment) each year during the period of the new management plan. CALM's response was:

"It is not possible to answer this question because detailed mapping of jarrah forest structure and lignotuber stocking density, the factors which determine the treatment to be applied, is not available. (Emphasis added).

The forest officer in charge of the logging must determine which treatment is applied virtually on a hectare by hectare basis.

Areas cut over (hectares) in the past 3 years have been;

	Northern	Central	Southern	Total
1989/90	2950	7470	4100	14520
1990/91	2570	6710	3190	12470
1991/92	1970	7140	1800	10910

Areas cut over in the future are expected to be of a similar (Emphasis added) order and mapping done during 1991 has shown (1991/92 Annual Report) the following approximate percentages

Thinning 25%
 Gap creation 55%
 Shelterwood 5%
 Single tree selection 13% (marginal forest where it is not possible to create a gap commercially)
 Other (clearing etc.) 2%

At this stage we can only assume the proportions will be similar for the next decade.

The 1991 Jarrah Silvicultural specification indicates that, while no precise rotation length is defined for the various portions of the jarrah

forest, it sets a minimum rotation of 100 years, except for high visibility, high priority sites where a minimum rotation of 200 years is indicated.”

It is obvious that the EPA’s selective quotation misrepresents CALM’s advice. It is quite clear, when the full advice of CALM is noted that CALM told the EPA the sites would either be cut to gaps or shelterwood depending on the outcome of a site survey at the time.

The effect of this selective quoting has been to completely distort CALM’s advice to the EPA to the extent that a third party may conclude, as the Minister is being requested to by the EPA, that CALM has not complied with the proposal that it placed before the EPA in 1992.

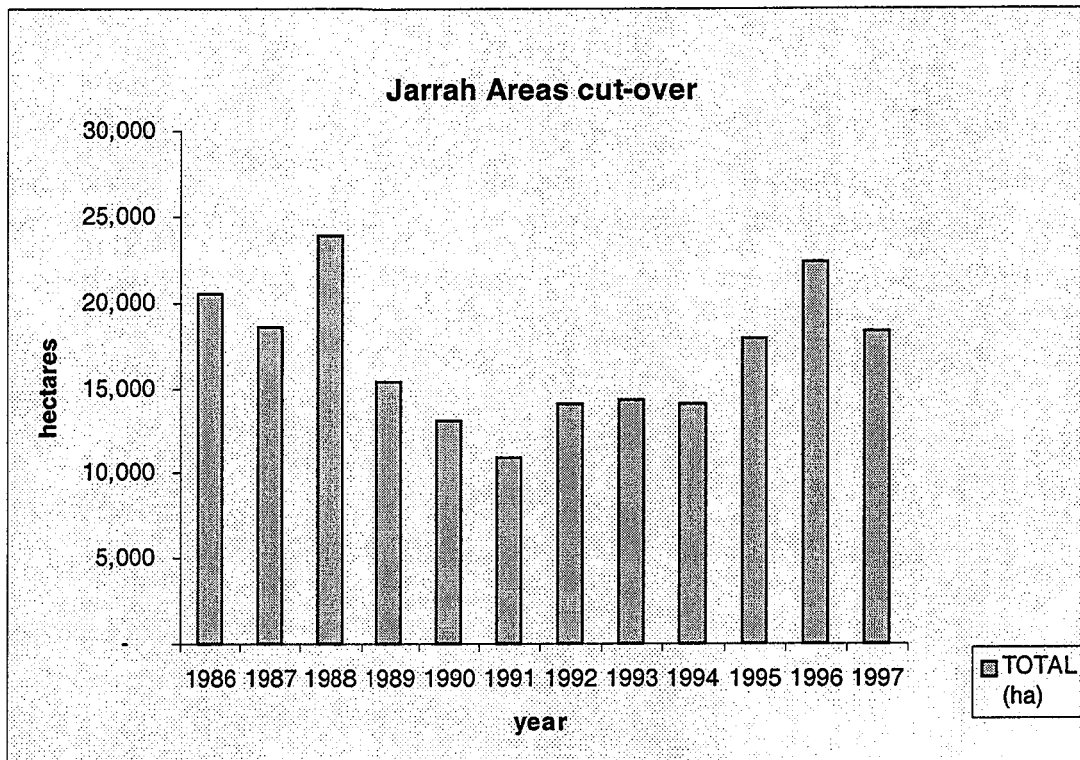
The EPA also states, on page 8 of its report, that “CALM’s annual reports show that application of the jarrah silvicultural prescription over the past five years has seen a significant increase in areas harvested and an increase in the area cut to shelterwood.”

While CALM has explained that the area of forest harvested is directly related to the silvicultural treatment employed (ie more selection cutting means more forest area will be cut over albeit that it will be available for future harvesting), it is interesting to look at the historical trends in the area of the jarrah forest harvest. Table 1 and Figure 1 below show that 1991 had an abnormally low area of harvest and that the current harvest is quite consistent with earlier years where selection cutting was the predominant silvicultural treatment. It is unfortunate that the EPA, in seeking to support its argument that CALM is now harvesting more of the jarrah forest, did not look at the historical trends in jarrah harvesting.

Table 1

Calendar Year	TOTAL (ha)
1986	20,490
1987	18,560
1988	23,890
1989	15,330
1990	13,060
1991	10,910
1992	14,020
1993	14,290
1994	14,100
1995	17,860
1996	22,370
1997	18,300

Figure 1



The EPA suggests that CALM is in breach of a Ministerial Condition because it adopted a precautionary system of harvesting in the lower and intermediate quality sites of the jarrah forest by replacing gap creation in favour of selection harvesting.

CALM has evidenced that the EPA in its report selectively quoted from advice CALM gave to the Authority in 1992, and has consequently misinterpreted CALM's jarrah forest harvesting practice.

CALM is particularly concerned at the inference that may flow from the EPA's comment that more of the jarrah forest is being harvested. The inference is that all of the harvestable trees are being taken from that forest and that future sustainability may be threatened, where clearly that is not the case. Areas that have been selection cut are available to be reharvested as soon as a satisfactory level of regeneration has been achieved.

CALM Advice – Condition 2

CALM agrees with the EPA's finding that Condition 2.1 has been complied with. CALM strongly disputes the EPA's conclusion with respect to Condition 2.2.

The EPA's conclusions are based on errors of fact. CALM has not failed to comply with condition 2.2. CALM has implemented the proposal set out in its Management Plan 1994-2003 and the implementation of the proposal is quite consistent with

information provided to the EPA in 1992. This matter should be referred back to the EPA for reassessment.

MINISTERIAL CONDITION NO 3

Precautionary approach and adaptive management

3-1 The proponent shall manage the karri and karri-marri forest in accordance with a precautionary approach. This approach requires that where there is a significant risk that a particular forest management measure could lead to an irreversible consequence appropriate monitoring and subsequent adjustments to management within an acceptable time frame be carried out”.

3-2 The proponent shall manage the jarrah forest in accordance with the following general principles:

- (1) a precautionary approach
- (2) adaptive and flexible management practices based on research and monitoring of environmental monitoring of operations (see condition 17);
- (3) implementation as a trial, with reassessment by the Environmental Protection Authority after ten years - the period of the Management Plans and the Timber Strategy (see condition 11); and
- (4) no commitment of all of the wood resource in the long term (see conditions 9 & 10).

The EPA has concluded that CALM appears to be not yet implementing the Forest Management Plans in accordance with the precautionary principle. The EPA has suggested a number of remedies to this issue including -

- improving the knowledge base of forest ecosystems through relevant focused research and monitoring;
- addressing the lack of knowledge related to the application of the jarrah silvicultural prescriptions through an increased and focused research program;
- allocating additional resources to ensure adequate implementation and monitoring of post-harvest treatments;
- applying the definition of the precautionary principle provided in the Inter-Governmental Agreement on the Environment;
- using Figure 1 on page 11 of the EPA’s report to assist CALM to determine what degree of precaution to employ in different situations.

In discussion of its concerns, the EPA advises that it has taken account of information provided in CALM’s Progress and Compliance Report, the Advisory Committee Report **and other information** to determine that “the ecological knowledge base of the many complex forest systems upon which the silvicultural prescriptions and the fire regimes are based is insufficient at present to allow confident prediction of ecological outcomes”. (Page 10).(*Emphasis added*).

CALM is unaware of the information that was provided to the EPA that would have caused it to form this view. Since 1968, CALM and its predecessor, the Forests Department, have recruited research scientists to generate new knowledge to underpin forest management. Where necessary, it has supplemented this knowledge with research undertaken by CSIRO scientists and university scientists. Hundreds of scientific papers and two books have been published. While it is acknowledged that knowledge in any sphere can never be complete, CALM rejects the assertion by the EPA that knowledge of forest ecology is insufficient. Much of the forest ecology research sponsored by Government since the late 1960s has been strategic in focus, with emphasis on impacts of fire, dieback disease, insect pests, timber harvesting, and the introduced fox. An equally important element has been strategic planning so that biodiverse components of the forest (eg, riparian habitat, wetlands, monadnocks) are reserved and protected from harvesting.

The EPA has also expressed concern about the way in which some of the post-harvest treatment of harvested areas is being applied and the availability of adequate resources to ensure that this work is carried out according to the most appropriate prescription, taking account of soil, climate, slope, forest types and forest ecosystems.

CALM has not been provided with any background to the EPA's concerns on this matter and it is important that the Authority advise CALM why it is concerned about this issue. CALM has provided extensive office and field briefings on post harvest treatments to the EPA's Advisory Committee. The Chairman of the EPA was also personally briefed on this issue. CALM also provided written clarification on this issue (Appendix EPA report). There was no occasion during one of these briefings that the recipients disagreed with CALM's explanation.

CALM has demonstrated its precautionary approach to implementation of the Forest Management Plans on a number of issues, two of which are dealt with specifically by Ministerial Conditions. The first relates to a decision by the Department to retain additional habitat trees in jarrah forest harvesting. CALMScience indicated that it would be more precautionary to retain four rather than three habitat trees per hectare plus retaining six to eight potential habitat trees per hectare in forest areas that have been harvested according to the gap treatment. CALM implemented that research outcome immediately and in fact is criticised in the EPA's report for adopting that precautionary approach without referring the matter to the Minister.

CALM has also not implemented Condition 14 in respect of *Banksia grandis* reduction after receipt of the following advice from the Dieback Review Panel –

“Ideally a comprehensive approach to management of the problems which the seemingly inexorable advance of *P. cinnamomi* poses for vegetation health would be based on a strategy of three main elements.

These are:

- implementation of practices which ameliorate the damaging effects of *P. cinnamomi* where it has already established;
- containment or retardation of further autonomous spread at the boundaries of existing infestation;

- reduction of the rate of vectored spread and establishment of new centres of infestation.

Very considerable research effort has been directed at all three elements over many years. Despite this endeavour the several lines of research related to elements one and two which *inter alia* included attempts to stimulate the density of *Acacias* and to reduce that of *Banksia* have not led to affordable and practical methods for reduction of disease.

With the sole exception of the promise of phosphonate current approaches to management must remain based almost exclusively on the third or 'hygiene' strategy."

CALM's decision to not implement the *Banksia grandis* strategy was precautionary despite the Ministerial Conditions specifically requiring CALM to undertake that strategy. The EPA has considered that CALM has taken the appropriate action in respect of *Banksia grandis*.

CALM also points to its adoption of the shelterwood jarrah prescription, which preserves the maximum opportunity for successful regeneration of the forest on intermediate and lower quality sites, as a demonstration that it is acting in a precautionary manner in respect of its Forest Management Plan implementation. The EPA has, in its discussion of Condition 11, expressed some concern regarding the success in regenerating shelterwood areas. However, as shelterwood is a targeted selection system of logging where seed trees are retained throughout the forest and are not removed until there has been adequate regeneration it is effectively the most precautionary method of harvesting the jarrah forest.

Most of the elements of this Ministerial Condition are required to be implemented over the period of the Plan. This, together with the uncertainty surrounding what is meant by the terms "Precautionary Principle" or "Precautionary Approach" explains why the EPA's expert Advisory Committee "... found difficulties in addressing the application of the Precautionary Principle to the complexities of forest management despite the information provided in the PCR". (Advisory Committee Report, page 18).

CALM believes that it has applied the Precautionary Approach in the implementation of the Forest Management Plan, but the EPA has concluded that "CALM has yet to comply with Conditions 3.1 and 3.2(1) ...". (EPA Report, page 11).

The EPA, in addition to making general assertions on the failure of CALM to implement the Management Plan in accordance with the Precautionary Principle, has also specifically stated with respect to the allowable cut of jarrah logs which was determined by Minister Minson on advice from an independent expert committee –

"The figure of 490 000m³ /yr set by Minister Minson for jarrah sawlogs is not regarded by the EPA as being sustainable and should be substantially reduced **as quickly as possible** to a level in the order of 250 000 m³ /yr, subject to this figure being shown to be sustainable in the long term, consistent with the application of the **Precautionary Principle.**" (*Emphasis added*). (EPA Report page iv).

The EPA has said in its discussion of Condition 8 (page 16) –

“...the EPA is of the view that a **precautionary approach** would be to substantially reduce the cut level as quickly as possible to a level in the order of 250 000 m³/yr ...”. (*Emphasis added*).

And in its discussion of Condition 9 (page 16) -

“the EPA is of the view that it would be desirable for the maximum permissible timber harvest to be reduced as a **matter of urgency**”. (*Emphasis added*).

The EPA’s expert Advisory Committee noted –

“Minister Minson’s response to the Meagher Report, of August 1993, accepted the advice from CALM and the Meagher Committee that ‘the long term non declining yield of sawlog supply is likely to be around 300 000 m³/yr, but may be as high as 450 000 m³/yr, **if utilisation rates increase**’ ”. (Advisory Committee Report page 26). (*Emphasis added*).

Minister Minson, in his official Determination of Annual Sustainable Timber Resource Available for Allocation under the 1994 Forest Management Plan, determined on 16 August 1993 for the jarrah resource –

“For the period from 1 January 1994 to 31 December 2003 the annual timber resource available for allocation averaged over the 10 year period will be:

Jarrah: 490,000 m³/yr first grade and second grade jarrah sawlogs.”

He based this determination, in part, on the advice of the Independent Expert Scientific and Administrative Committee he established (the Meagher Committee). This Committee specifically considered the Precautionary Principle as it related to the allowable cut and concluded –

“therefore the level of harvest proposed by this Committee is adequately ‘precautionary’. If the true ‘sustainable yield’ is in the order of 450,000m³ then the effect will be negligible”. (Meagher Report page 25).

CALM has no capacity to vary this condition because it is a Ministerial determination. However, CALM also believes that it is operating in accordance with a precautionary approach.

It must always be noted when sustainability of timber supply is being considered that the current bole increment exceeds the wood harvested. That is, harvesting is less than the annual increment of wood being produced in the jarrah forest. Therefore the jarrah forest is not being over-harvested.

The future long-term yield of sawlogs will be determined by the capacity of the industry to utilise a greater proportion of the bole increment. CALM agrees with the conclusions of the Meagher Committee that the current level of cut in the jarrah forest over the period 1994-2003 will not have any significant effect on long-term sustainability of sawlogs even if the log specifications and level of utilisation do not change. The EPA has not presented any scientific evidence that the current level of harvest in the jarrah forest for the period 1994-2003 has any deleterious effect on the sustainability of the forest.

The EPA, however, has now determined that to comply with the Precautionary Approach, which is required by Ministerial Condition 3.2(1) to be continuously implemented, the allowable cut of jarrah first and second grade logs must be reduced below 250 000 cubic metres "as a matter of urgency" (EPA report page 16). That is, the EPA has purported to precisely define what is meant by the Precautionary Approach with respect to the level of the jarrah cut.

CALM is concerned that evidence that the EPA used to select the 250 000 cubic metre per annum level is seriously flawed.

CALM notes that the Meagher Committee concluded, in its Executive Summary that

–

"On the basis of present utilisation standards of felled timber and inventory data supplied by CALM, the Committee estimates that the sustainable yield of jarrah sawlog is 450,000 cubic metres per year. An alternate calculation based on conservative parameters provided by CALM indicates a sustainable yield of 300,000 cubic metres of sawlogs per year. 450,000 is considered to be the more reliable of the two estimates." (Meagher Report page 1).

Dr Martin Rayner, who is CALM's expert in this area, has confirmed, as is stated in the Meagher Committee report, that the FORSCHED model run that derived 250 000 cubic metres per annum was merely one of a number of simulations which were used to test various assumptions and it is difficult to understand why the EPA selected that particular figure from the Meagher Report. (Note the FORSCHED model has been significantly upgraded - see Ministerial Condition 8).

In addition, the EPA states, at page 30 of the report –

"However, the EPA considers that the current modelling of forest growth, **focused as it is on estimations of timber yield from a few high productivity areas** rather than reflecting more variation in growth rates to take account of soil, climate and nutrient differences, is an approach that can be misleading, as it does not deal with the complexities of a biological system spread over a range of climatic and environmental conditions".
(*Emphasis added*).

Dr Rayner has confirmed that this statement is incorrect. Dr Rayner, who is recognised as a national expert in this area, briefed the EPA expert Advisory Committee (which included EPA members) for five hours on the methods used by CALM to estimate sustained yield.

CALM (specifically Dr Rayner who briefed EPA members on this issue) cannot understand how the EPA could conclude that the growth data focused only on “estimates of timber yield from a few high productivity areas” given the extensive briefings that the Committee received. This is an error of fact, as appears certainly to be the case, and if this incorrect information was part of the reason why the EPA formulated its views on the application of the Precautionary Principle it is of concern.

In summary –

- **The level of jarrah sawlog cut as determined by Minister Minson complies with the precautionary approach because it “does not lead to irreversible consequences” on the forest because the level of harvest is less than the annual growth increment. That is, less wood is being harvested than is being grown.**
- At **current log specifications** the long-term sustainable yield of sawlogs is approximately 300 000 cubic metres per annum.
- The current level of jarrah sawlog harvest at current specifications exceeds 300 000 cubic metres and is projected to continue at these levels until the end of the current Management Plan in 2003. However, even if future utilisation rates were not to change this would not “lead to an irreversible consequence” because it would have no significant effect on long-term sawlog yields.
- Beyond 2003, the future sustainable levels of jarrah timber production will be determined by the proportion of the annual growth increment that can be utilised by the timber industry.

The Government’s determination of the level of harvest of jarrah logs made by Minister Minson, in CALM’s opinion, is in compliance with a precautionary approach.

The jarrah level of cut for 1998 already exceeds 250 000 cubic metres. Therefore, if the EPA’s determination to comply with the precautionary approach the cut should be reduced to 250 000 cubic metres “as quickly as possible” is maintained, CALM would need to cease harvesting in the jarrah forest. CALM considers that EPA’s advice on this matter is incorrect.

CALM Advice – Condition 3

CALM disputes the EPA’s conclusion that it has yet to comply with Conditions 3.1 and 3.2(1). CALM considers that it has properly implemented the reasonable requirements of these conditions. CALM also considers that it has complied with Conditions 3.2(2), 3.2(3) and 3.2(4).

CALM recommends that this issue be referred back to the EPA for reconsideration.

MINISTERIAL CONDITION NO 4
Amendments to conservation estate

The proponent shall initiate the Government processes required to implement the proposed amendments to the conservation reserve estate as agreed to by the Minister for the Environment and defined in the approved Forest Management Plans.

Given that CALM's Progress and Compliance Report is a mid term report, the EPA has concluded that CALM has achieved significant progress in respect of this condition in that CALM has actioned all but 42 of the 467 approved amendments under the current Forest Management Plan.

CALM advice – Condition 4

CALM agrees with the EPA's conclusion under this Condition.

MINISTERIAL CONDITION NO 5**Revised travel route, river and stream reserves.**

5-1 The proponent shall implement the revised system of travel route (road), river and stream reserves consistent with condition 15 [should be 16]. It is noted that the minimum combined width (both sides of a first, second or third order stream) of the proposed zones is 60 metres.

5-2 The proponent shall ensure that the travel route (road), river and stream reserves remain unharvested in perpetuity, except for those portions of regrowth forest within road zones where thinning can be undertaken in a manner consistent with, and so as to enhance in the longer term, the defined visual quality objectives.

5-3 The proponent shall monitor the effectiveness of the travel route (road), river and stream reserves for nature conservation and protection of water quality to requirements of Minister for the Environment.

The EPA in discussion has referred to community concern about the adequacy of the protection of road, river and stream zones from fire and the incursions of contractors. The EPA has compared the buffer distances provided in ecosystems in some other areas of the State and used Mt Lesueur as an example to indicate that widths of 400 metres are considered desirable to protect the corridor functions and to prevent degradation from weed incursions and other pressures. Given that the Mt Lesueur National Park is located adjacent to a largely cleared agricultural landscape, it is difficult to understand how this example is relevant. There is no comparison between corridors in an agricultural landscape and corridors that are contiguous with State forest which will be left, except for short periods after harvesting vegetated with native vegetation.

CALM has been engaged in considerable discussions with the Commonwealth during the Regional Forest Agreement process regarding the road, river and stream (informal reserve) system. The Department notes the EPA's views that CALM should provide information on how Conditions 5.2 and 5.3 are to be dealt with under the EMS that the Authority has proposed be added as a departmental commitment under Condition 1. As indicated, CALM does not accept that Condition 1 can be added to in order to require the Department to implement an EMS. However, CALM is working towards the certification of its forest management systems and it would be appropriate to examine this issue in that context and in the context of actions that will flow from the Regional Forest Agreement when it is completed.

Also, with respect to monitoring, CALM will monitor the effectiveness of travel route, river and stream reserves under the monitoring program outlines under CALM's response to Condition 11.

CALM is concerned about the EPA's apparent direction that these reserves should be protected from fire. If this is determined to be a requirement of CALM it will, in the opinion of expert fire control managers have a major impact on the ability of CALM to control wildfire in the forest. On the assumption that the EPA does not propose the cessation of prescribed burning, the only way this requirement could be implemented would be to construct firebreaks around all of these reserves. Apart from the cost, this practice could have significant adverse environmental effects.

CALM Advice – Condition 5

CALM agrees with the EPA's advice that Condition 5.1 has been complied with. CALM does not agree that it is yet to demonstrate compliance with Conditions 5.2 and 5.3. CALM agrees that the requirements of the Conditions can be addressed through an EMS but disagrees that the EMS can be incorporated into Condition 1 as a new commitment. CALM considers that it is currently complying with these Conditions to the extent that they are practically able to be complied with.

This Condition should be referred back to the EPA for reassessment.

MINISTERIAL CONDITION NO 6
Diverse ecotype conservation areas

6-1 Diverse ecotype conservation areas shall be identified by the proponent and those greater than five hectares shall be identified on publicly available maps.

6-2 The proponent shall ensure that Diverse Ecotype Conservation areas remain protected from timber harvesting and associated activities in perpetuity”.

The EPA has concluded that CALM has complied with Condition 6.1 and has suggested that Condition 6.2 be implemented via an environmental management system to be prepared as a new commitment under Condition 1.

As CALM has pointed out, it is not possible to introduce new commitments half-way through the Management Plan implementation. However, the Department is proposing to implement an environmental management system and agrees that this issue be considered in the context of the implementation of the system.

If the EPA requires that these areas be protected from fire there will be significant adverse consequences (see Condition 5).

CALM Advice – Condition 6

CALM agrees with the EPA that CALM has complied with Condition 6.1.

CALM disagrees with the EPA that CALM has yet to demonstrate compliance with Condition 6.2. CALM considers that it is currently complying with the Condition to the extent that it is practically able to be complied with.

CALM agrees that compliance could be demonstrated through preparation of an EMS but does not agree that this is able to be made a requirement of Condition 1.

CALM considers that this advice should be referred back to the EPA.

MINISTERIAL CONDITION NO 7**Old growth karri areas of high social or environmental value**

7-1 The proponent shall identify and protect areas of old growth karri (up to 3200 hectares) with a high aesthetic, social or environmental value. This is to be implemented on a regional basis and with the benefit of public involvement. These areas shall:

- (1) include those trees in Beavis, Carey and Giblett forest blocks protected from clearfelling by environmental conditions related to the Manjimup-Beenup power line proposal (EPA Bulletin 603)
- (2) be identified publicly and progressively from the adoption of the Management Plans, with the proponent reporting to the Minister on progress towards implementation within three years; and
- (3) shall not be harvested, and shall be managed to retain their values (other than timber production).

7-2 The proponent shall report on the implementation and management of these special areas at the next Forest Management Review.

The EPA has concluded that CALM has yet to comply with Conditions 7.1 and 7.2. CALM has advised the EPA that this issue is intertwined with the Regional Forest Agreement process which has as a goal the creation of a comprehensive adequate, and representative forest conservation reserve system in Western Australia.

The Condition requires that areas of old growth karri be considered for reservation and this is occurring under the auspices of the RFA process.

CALM Advice – Condition 7

CALM does not object to the EPA's advice on this matter.

CALM will report further on this Condition in progressive annual compliance reports.

MINISTERIAL CONDITION NO 8
Sustainable yield estimates

8-1 The allocated timber resource for the period ending 30 June 1993, prior to the consideration by the Minister for the Environment of the report of the committee referred to in condition 1 (should be 2) will not exceed the 1993 level described in the 1987 Timber Strategy together with an additional amount of the timber resource that was approved in the 1987 Timber Strategy but remained uncut. This additional amount may be allocated by the proponent with the approval of the Minister for the Environment on a needs basis up to a total level not exceeding that proposed by the proponent in its 1992 proposals.

8-2. Following consideration of the report of the committee referred to in condition 2, the Minister for the Environment shall determine the annual sustainable timber resource available for allocation.

The EPA has stated in its report in its conclusion on compliance that the Minister has made determinations in accordance with Condition 8.1 and 8.2. This effectively means that the EPA does not have a role in this issue as it has been subject to Ministerial determination.

However, the EPA has been critical of the Ministerial determination. The EPA states, at page 15 of its report, "the EPA is concerned about the high cut level approved by the then Minister as it is not an environmentally sustainable figure."

The EPA further states that "it is of the view that as the industry has already been given 10 years in which to re-structure, it would be untenable for the industry to expect any extension of the unsustainable cut level beyond the current 10 year period" (EPA Report, page 16), and

"... the EPA is of the view that a precautionary approach would be to substantially reduce the cut level as quickly as possible to a level in the order of 250 000m³ /yr (subject to this figure being shown to be sustainable in the long term), in accordance with the Meagher Committee Report findings that CALM's FORSCHED model predicted that a yield of 'somewhere close to 250 000 m³ of (jarrah) sawlogs would be sustainable in perpetuity' (Meagher, 1993, p.24).

The EPA is of the view that, given the advice in the 1993 Scientific and Administrative Committee Report and the PCP that the sustainable jarrah cut is approximately 300 000m³ /yr (plus or minus 50 000m³ /yr), any shortfall from that harvested during the approved period should not be cut". (EPA Report, page 15)

CALM notes that in the Meagher Committee Report a range of sustainable yield levels were estimated using different assumptions and models, but in the Executive Summary of that report it is stated –

"On the basis of **present utilisation standards** of felled timber and inventory data supplied by CALM, the Committee estimates that the sustainable yield of jarrah sawlog is 450,000 cubic metres per year. An alternate calculation based on conservative parameters provided by CALM indicates a sustainable yield of 300,000 cubic metres of sawlogs per year.

450,000 is considered to be the more reliable of the two estimates.”
(*Emphasis added*).

Minister Minson’s Statement noted advice “... that the long-term non-declining level of sawlog supply at current specifications is approximately 300 000 m³ /year but may be as high as 450 000 m³ /year if utilisation rates increase”. (Minson Statement, page 5). (*Emphasis added*).

CALM has advised the EPA that the timber industry has made significant progress towards achieving the objective set by Minister Minson –

“The first five years of the current forest management plan have therefore seen a revolutionary change in the end-use of jarrah with constant increases in the amount of dried jarrah and a consequent reduction in heavy and structural green sawn output. The recovery of value-added product now exceeds 60 per cent on an industry-wide basis.

What this means for the future is that the current sawlog specification has become irrelevant with the smaller dimension sawn timber now being produced to meet the demands of the furniture and architectural feature markets. Also, given the higher value of the output, it is now possible to make greater economic use of the remainder of the tree bole.” (CALM Report July 1998 – Attachment 5).

Current levels of harvest are below the annual total bole increment of jarrah forest and consequently CALM is operating sustainably. This is in accord with internationally accepted definitions of sustainable yield –

“Definition: Sustained Yield

The yield that a forest can produce continuously at a given intensity of management. Sustained yield management implies continuous production so planned as to achieve, at the earliest practical time, a balance between increment and cutting.”

Source: J A Helms (Editor) 1998
The Dictionary of Forestry
The Society of American Foresters and CABI Publishing
ISBN 0-939970-73-2
210 pp

CALM notes the comments on CALM’s inventory and yield control system by one of Australia’s most eminent experts in this area, Dr Brian Turner of the Australian National University, who is also selectively cited in the EPA report –

“In the course of this review a number of opportunities for improvements to the various systems have been identified, but on the whole it is concluded that the systems and procedures developed by CALM staff for estimating sustainable yields from the jarrah and karri forests of the South-West Forest Region are adequate and appropriate. **They certainly rank among the best in Australia in terms of comprehensiveness of the data base, monitoring arrangements and growth modelling.** The complex computerised systems

and production of scenarios for estimating future yields are largely the result of the efforts of a dedicated few and the Department needs to ensure that the skill base is disseminated through documentation, training and transparency of decision procedures.” (Turner, 1998). (*Emphasis added*).

CALM concludes that the comments and conclusions that the EPA has made with respect to sustainable yield estimates are based on selective quotations which ignore the considered findings of expert, independent individuals and organisations.

For example, the 250 000 cubic metres per annum level of cut that the EPA has chosen is based on a figure quoted in the Meagher report that was derived from a series of FORSCHED simulations which, as Meagher has stated, were based on certain conservative assumptions. It is difficult to understand why the EPA has selected this figure when the Meagher committee concluded that the range of sustainable sawlog yield at current specification would range from 300 000 cubic metres to 450 000 cubic meters with the latter being considered more relevant.

But subsequent to the Meagher report, as part of the RFA process and with the benefit of significantly improved data, the Public Consultation Paper concluded that 300 000 cubic metres per annum was the sustained yield at current specification standards. In addition, the EPA’s Advisory Committee (which included members of the EPA) received detailed briefings on the issue by Dr Martin Rayner who is the Department’s expert in this area. As noted above, the EPA’s statement that CALM’s method of modelling forest growth “... is an approach that can be misleading” is based on an error of fact.

What CALM has made clear, in numerous briefings and written submissions to the EPA, is that the timber industry, with the assistance of CALM, is managing a transition from the supply of sawlogs of the current specification to a new system of log supply in the jarrah forest to ensure that there is maximum utilisation of every jarrah tree harvested. The system requires that mills purchase whole tree boles rather than the current system of providing first, second and other grade sawlogs to particular specification.

This will then allow the industry to make the further considerable changes necessary in restructuring the sawmills to maximise recovery of whole bole logs into marketable timber products.

In the BIS Shrapnel Forestry Group Report “Review of Value Adding Development Opportunities for the Western Australian Hardwood Industry”, a document produced for the RFA, and released in May 1998. The report establishes realistic targets for industry, such as –

1. 0.2% per annum increase in overall sawlog recovery
2. Increased emphasis on appearance grade timber
3. Increased recoveries of high quality sawn material
4. Increasing use of lower quality logs

The industry needs to find new markets for short length, small dimension products, and increase the use of “feature grade” in manufacturing and downstream processing.

With new and increased markets, the appropriate sawmilling, materials handling and secondary processing technologies can be introduced to convert whole bole logs into marketable timber products. Sawmills have started to introduce thin saw blades and more accurate milling equipment so the amount of sawdust and residue wood is dramatically reduced.

Emerging markets for products like indoor/outdoor furniture, flooring, decking and other appearance type products can more fully utilise components from the whole bole. One example is the outdoor furniture manufacturing sector that uses predominantly small dimension short-length pieces from 0.5 metres to 1.8 metres.

Preliminary whole bole log trials have shown 15-20% more millable log timber can be obtained compared to the current practice of graded sawlogs. Further improvements can be made due to technology changes resulting in a further increase of up to another 5% to 10% over the next 20 years.

The industry has moved from negligible kiln dried products in 1987 to more than 60% kiln dried to June 1998. See CALM Report July 1998 at Attachment 5 which provides details of kiln drying at Deanmill.

It is important to note that the Meagher Committee took account of the social and economic impacts that would flow from its recommendations. CALM is of the view that these factors must always be given appropriate emphasis when public authorities make decisions on matters affecting major resource-based industries such as the timber industry.

It is apparent that the EPA appears to have given no emphasis to the potential social and economic impacts of its recommendations that a precautionary approach would be to substantially reduce the cut level as quickly as possible to a level in the order of 250 000m³/year.

Although Minister Minson set the approved harvest level at 490 000 cubic metres per year CALM has averaged a jarrah harvest of 430 000 cubic metres per year.

CALM in reviewing the EPA's discussion of this matter has had considerable difficulty in reconciling the EPA's statement on page 14 which purports to quote its Advisory Committee's comments with the eight points listed thereunder. The EPA appears to have edited the Advisory Committee's comments to the extent that they may no longer reflect the intent of that Committee. (See Attachment 4).

CALM is also particularly concerned that the advice of the EPA Advisory Committee has not been properly quoted and that the EPA has failed to acknowledge that a proper process in respect of the Ministerial determination of wood supply has taken place. It would be quite unprecedented for the Government to renege on the outcome of a proper process which has resulted in massive industry investment. The timber industry, having responded to the need for restructuring and reinvestment, will expect the Government to honour supply commitments made in the Management Plan.

CALM Advice – Condition 8

CALM agrees with the EPA that the Minister has made determinations in accordance with Condition 8.1 and 8.2. CALM asserts that it has properly implemented the Minister's decisions. CALM completely disagrees with the EPA's assertions with respect to the level of sawlog production from the jarrah forest and considers that CALM's comments under this Condition should be referred back to the EPA to be read in the context of, and in conjunction with, CALM's advice on Condition 3.

MINISTERIAL CONDITION NO 9
Commitment of wood

9-1 Subject to condition 8, in the letting of contracts for wood supply from the jarrah forest, the proponent shall;

- (1) not exceed the annual levels of timber supply defined in condition 8 above; and
- (2) recognise the possibility of the necessity to reduce wood supply beyond 2002 as a result of monitoring and adaptive management following the trial implementation of the jarrah forest silvicultural prescription.

The EPA has determined that CALM has complied with Condition 9.1(1). The EPA has said that it is unable to determine whether CALM has complied with Condition 9.1(2). In its advice to the EPA, the EPA Advisory Committee provided a helpful summary of the status of the industry restructuring that CALM has negotiated under the current Forest Management Plan. The Advisory Committee stated –

“Advisory Committee Comment

CALM has advised that the long term non-declining level of saw log supply at current specifications is approximately 300 000 m³ /yr but may be as high as 450 000 m³ /yr if the proportion of tree volume felled which is converted to sawlog (utilisation rate), increases.

CALM has also advised that the jarrah saw milling industry has undergone remarkable change since 1987. The requirement in CALM's post 1993 timber supply contracts for 50% of the mills' jarrah output to be value added within three years has resulted in large scale investment in value adding equipment, particularly drying kilns and new saw lines, which will make it possible to add value to smaller pieces of timber.

CALM has advised that the recovery of value added product has now reached 60% of output volume, industry wide.

CALM anticipates that the above changes will make the current sawlog specification irrelevant, with smaller dimension timber being processed, making it possible to make greater economic use of the remainder of the tree bole. Harvesting with the objective of utilising the maximum proportion possible of each tree felled, is commonly referred to as 'whole bole logging'.

In his 1993 response to the Meagher Report, the then Minister for the Environment, The Hon Kevin Minson, flagged a proposed change to the utilisation of harvested trees in Western Australia's forests to an approach employing whole bole logging. Since then, CALM has advised that five trials of whole bole logging have been carried out and that while some issues remain to be resolved, there are no insurmountable obstacles to implementation of whole bole logging. Whole bole logging is also more likely to be more readily compatible with the measurement of forest growth and yield using gross bole volume, rather than the current system which works on the basis of availability of first- and second-grade sawlogs.

CALM has advised that the results of the whole bole utilisation studies are ongoing, involve a number of studies and are not currently available.

The adoption of whole bole logging will need to be accepted fully by industry, and issues such as transport, particularly over longer hauls, will need to be resolved if sustainable harvest levels are to be achieved. The RFA Public Consultation Paper (PCP), observes that advice received from consultant BIS Shrapnel, indicates that forcing the timber industry to utilise lower quality material 'could lead to market distortions and consequential inefficiencies both in terms of transport and resource utilisation' (RFA Steering Committee, 1998b)." (Advisory Committee Report, pages 27 and 28).

It is of concern to CALM that the Advisory Committee provided the EPA with detailed advice as to the considerable industry restructuring progress that is underway, yet the EPA appears to have had little regard for that advice when making its recommendations under both Condition 8 and Condition 9.

CALM has not contracted beyond the current management plan and therefore CALM has clearly recognised that a new process of log supply needs to be implemented to address the sustainable jarrah sawlog issue and has provided a report to the EPA to that effect demonstrating that significant resources are being committed by both the forest industries and CALM on measures that are designed to address the "wood supply post 2003" issue.

The EPA has reiterated and reinforced its comments on jarrah sawlog sustainability with the statement -

"The EPA is of the view that it would be desirable for the maximum permissible timber harvest to be reduced as a matter of urgency." (EPA Report, page 16).

This statement indicates that the EPA rejects the fundamental objective of the Government as reflected in Minister Minson's determination. That is, that the industry should be given the opportunity to restructure to accommodate the changes in both quantity and quality of the future jarrah wood resource.

CALM Advice – Condition 9

CALM agrees with the EPA finding that it has complied with Condition 9.1(1).

CALM disputes, on the evidence available to the EPA, that the EPA could properly conclude that it is "unable to determine compliance with Condition 9.1(2)".

CALM is extremely concerned at the consequences of the EPA's recommendation that the maximum permissible timber harvest be reduced as a matter of urgency and recommends that the EPA review its position in the light of CALM's comments in respect of this Condition and Condition 8.

MINISTERIAL CONDITION NO 10
Commitment of new resource to be referred

10-1 Notwithstanding Section 38 of the Environmental Protection Act, the proponent shall refer to the Environmental Protection Authority any proposal to enter into a contract for a substantial portion (as determined by the Minister for the Environment) of forest produce identified as other logs (jarrah) or forest residue (marri) in the revised Timber Strategy (Table 13 of the proposals document).

The EPA has concluded that CALM has complied with Condition 10.1.

CALM Advice – Condition 10

CALM recommends that the EPA's advice that CALM has complied with this Condition be accepted.

MINISTERIAL CONDITION No 11
Jarrah silvicultural trial

11-1 The proponent shall implement the jarrah silvicultural prescription so that monitoring of the environmental impacts on a representative range of treated sites and localities in the forest can be carried out to the requirements of the Minister for the Environment. This shall include long-term monitoring which quantifies the impacts of silvicultural practices on environmental elements and values in the forest and provide bases to adjust management.

11-2 The proponent shall give all necessary assistance to the Monitoring and Research Committee (condition 16) (should be 17) to enable it to have an active and fully informed role in the planning and oversight of the scientific monitoring of this trial period.

11-3 The proponent shall report to the Minister for the Environment on outcomes of this implementation and monitoring and on any modifications to the prescriptions by 2002 as part of the next review of the Forest Management Plans and Timber Strategy.

The EPA has concluded "that CALM has not complied with Condition (11.1) to the extent that the monitoring has only been carried out on one of the trial areas and has proposed actions to enable CALM to achieve compliance as soon as possible". (EPA Report, page 18).

The EPA says "CALM's response to the requirements of the condition has been disappointing, to date. The work on the impact of the jarrah silvicultural trial on other environmental elements in the Kingston, Warrup and Winnejup forest blocks appears to have been of high quality. However, its narrow areal limitation has reduced the overall value, as Condition 11.1 requires work to be carried out on a representative range of treated sites and localities". (EPA Report, pages 17 and 18).

Essentially the EPA has stated that work in Kingston, Warrup and Winnejup forest blocks has been good, but more work on a broader range of forest sites is needed.

To understand this it is valuable to look at the Kingston study which is the most detailed and integrated study of forest disturbance (ie, the impacts of logging and burning) ever undertaken in the jarrah forest.

It is not correct to state that CALM's monitoring is restricted to the Kingston Study. CALM also has 50 monitoring sites in the northern forests across a range of forest types and disturbance histories. These sites have been monitored intensively over the last four years.

The Kingston study was commenced in April 1994 to examine the impact of timber harvesting on jarrah forest ecosystems in the Kingston, Warrup and Winnejup forest blocks, north east of Manjimup. The study is a Before, After, Control, Impact (BACI) experiment and is designed to investigate the impacts of timber harvesting on the vegetation, hollow-bearing trees, small terrestrial vertebrates, invertebrates, medium-sized mammals, birds and soil and is planned to run for at least five years. Sampling is

based on trapping grids and transects at sites within no impact (control) areas and within areas subject to gap creation and shelterwood prescriptions.

The initial focus of the study has been on the impact of logging and associated activities on the medium-sized mammals, many of them threatened and/or arboreal species, which occur in the Kingston area. Results from this component of the study were described in CALM's 1997 Progress and Compliance Report and the first interim report for the study was attached to CALM's report. Briefly, the results indicated that in the short term (up to 12 months post harvesting), timber harvesting in medium rainfall jarrah forest does not impact detrimentally on populations of woylie, quenda, chuditch, brushtail possum and brush-tailed phascogale.

This study is continuing so that population responses over the longer term (five to ten years) and the impacts of post-logging prescription burns can be fully assessed.

When planning the Kingston study (1992-93), it was always intended that a parallel study of the same ecological variables would be undertaken at a broader scale in the jarrah forest. The approach to be used was a retrospective, chronosequence, or space-for-time study. This intention was reported in CALM's 1997 Progress and Compliance Report.

Preliminary planning has now commenced with a much-enhanced GIS for the retrospective study of harvesting/burning impacts on environmental elements and values in a representative range of sites in jarrah forests. This greatly increased database has arisen from projects being undertaken as part of the Regional Forest Agreement (RFA) process. For example, detailed maps of vegetation complexes, prepared by Mattiske and Havel, are now available. The collation and updating of information on the spatial and temporal components of timber harvesting on Crown land in the south-west has also been completed as part of the RFA process. Also, a project to assess the ease of converting CALM's microfiche fire records into a GIS environment has been completed. A pilot study using records from forest near Manjimup demonstrated that this was feasible, and that prescribed burning in the area had resulted in a complex, heterogeneous pattern, more intricate than previously realized.

Use of the logging history and vegetation information in a GIS environment will clearly allow a much more comprehensive broadscale approach to be adopted than was possible in 1993. This retrospective study will address, in particular, the requirements of "representative range of treated sites and localities" and "long-term monitoring" prescribed in Ministerial Condition 11-1.

CALM will involve the Forest Monitoring and Research Committee in the planning phase of the retrospective study, to enable the Committee to have an active and informed role in this monitoring project, as required under Condition 11-2.

The EPA has concluded that CALM has until 2002 to comply with Condition 11.3, which is correct.

CALM Advice – Condition 11

CALM asserts that it has implemented an extensive review of jarrah forest disturbance impacts as required by the condition and that it is completely logical to broaden the research now the design criteria for the initial study have been subject to rigorous scrutiny. CALM is only midway through its management plan implementation. The broadscale retrospective study now underway will address the EPA's concerns regarding the site-specific nature of the Kingston work. CALM considers that the EPA's finding with respect to Condition 11.1 is incorrect as it does not adequately reflect the intent that the Condition be implemented over the 10 years of the project. It must also be noted that there has been no requirement established for Condition 11.1 by the Minister for the Environment and therefore it is not for the EPA to determine compliance with this Condition.

CALM agrees with the EPA's advice with respect to Condition 11.3.

Advice on Condition 11.2 is dealt with under Condition 17.

This matter should be referred back to the EPA.

MINISTERIAL CONDITION NO 12
Phased logging

12-1 The proponent shall ensure that, in all second order catchments in the intermediate and low rainfall zones of the multiple use jarrah forest subject to logging, at least 30 per cent of each second order catchment has a retained basal area of greater than $15 \text{ m}^2\text{ha}^{-1}$ for a period of at least 15 years after harvesting the remainder of the catchment.

12-2 This retained forest shall be selected to enhance wildlife, water resource and visual objectives.

12-3 The proponent shall monitor, to the requirements of the Minister for the Environment, and report by 2002 on the status and effectiveness of these measures to protect nature conservation values and water quality at the time of the next Forest Management Plans and Timber Strategy.

The EPA has concluded that CALM has complied with Condition 12.1 and 12.2 and has until 2002 to comply with Condition 12.3.

CALM Advice – Condition 12

CALM agrees with the EPA's advice that CALM has complied with Conditions 12.1 and 12.2 and has until 2002 to comply with Condition 12.3.

MINISTERIAL CONDITION NO 13
Habitat trees

13-1 The proponent shall ensure that the number, condition and age of trees retained on sites subject to gap treatment is sufficient, as determined by the Minister for the Environment to adequately provide habitat function throughout the cutting cycle of the forest.”

The EPA asserts that CALM has not complied with this condition as the Minister needs to approve the silvicultural guideline whereby CALM increased the number of retained habitat trees from three to four per hectare.

CALM notes that the EPA’s Advisory Committee found that CALM had complied with condition 13.1.

The suggestion by the EPA that CALM has not complied with this Condition is legally incorrect. The EPA is well aware that CALM modified its silvicultural prescription to increase the number of retained habitat trees in clearfelled gaps from three to four per hectare, and to retain groups of potential habitat trees.

CALM considers that it is in fact implementing the precautionary principle as required by Ministerial Condition 3 and the EPA by retaining more trees.

CALM Advice – Condition 13

CALM disputes the EPA’s advice that CALM has not complied with Condition 13.1.

CALM cannot be found to have not complied with a Ministerial Condition if the Condition requires a Ministerial determination that has yet to be made.

MINISTERIAL CONDITION NO 14
Banksia grandis reduction

14-1 The proponent shall concentrate the proposed *Banksia grandis* reduction in specific areas where the environmental circumstances suggest that treatment will have the greatest impact on reducing the spread and intensification of *Phytophthora cinnamomi* in the jarrah forest and where required to establish jarrah and marri regeneration.

14-2 The proponent shall establish a programme, to the requirements of the Minister for the Environment, to identify and evaluate the environmental implications of the proposed reduction and that the results of that evaluation shall be reported on, at or before the time of the next review of the Forest Management Plans by 2002.

The EPA has advised that it accepts that CALM will focus on the recommendations of the Dieback Review Panel as a basis for future dieback management in the forest.

The recommendations of the Dieback Review Panel are being implemented by CALM in consultation with the Dieback Consultative Council established by the Minister.

The Dieback Review Panel recommended in respect of *Banksia grandis* that -

“Ideally a comprehensive approach to management of the problems which the seemingly inexorable advance of *P. cinnamomi* poses for vegetation health would be based on a strategy of three main elements.

These are:

- implementation of practices which ameliorate the damaging effects of *P. cinnamomi* where it has already established;
- containment or retardation of further autonomous spread at the boundaries of existing infestation;
- reduction of the rate of vectored spread and establishment of new centres of infestation.

Very considerable research effort has been directed at all three elements over many years. Despite this endeavour the several lines of research related to elements one and two which *inter alia* included attempts to stimulate the density of *Acacias* and to reduce that of *Banksia* have not led to affordable and practical methods for reduction of disease.

With the sole exception of the promise of phosphonate current approaches to management must remain based almost exclusively on the third or ‘hygiene’ strategy”. (Dieback Review Panel, page 8).

The EPA has recommended that CALM should develop, through a publicly transparent process, improved programs to minimise the spread of *Phytophthora cinnamomi* (the dieback-species with greatest forest impact).

CALM is actively engaged with the Dieback Consultative Council with respect to CALM's future actions on dieback and will implement the findings of the Dieback Review Panel in consultation with the Council.

The EPA has concluded that CALM's decision not to implement *Banksia grandis* reduction may have been appropriate action. CALM agrees with the EPA's conclusion on this matter but notes its inconsistency between this determination, which followed precautionary action by CALM, with the EPA's determination in respect of similar precautionary action relating to habitat trees mentioned under Condition 13, where the EPA in effect says CALM should have obtained the Minister's approval to leave four habitat trees instead of three habitat trees.

CALM Advice – Condition 14

CALM recommends that the Minister make a determination under Condition 14.2.

CALM notes the inconsistency between the EPA's advice under Conditions 13 and 14 where CALM has taken action that is appropriate and precautionary but the EPA has determined technical non-compliance under Condition 13 and concurrence with the action under Condition 14.

CALM considers that it cannot be in non-compliance with Condition 14 if the Minister has yet to set the requirements specified by the Condition.

The practical resolution of Conditions 13 and 14 is to request the Minister to make the determinations required.

MINISTERIAL CONDITION NO 15
Fire management

15-1 The proponent shall ensure that the fire management objectives related to the jarrah forest prescription include the minimisation of air pollution in urban areas, to the requirements of the Minister for the Environment.

15-2 The proponent shall inform the public about its fire management on a regional basis each year in its annual report. This shall include but not be limited to the following:

- (1) occurrences and causes of wildfires
- (2) purposes of burns
- (3) areas burnt under different regimes of season and periodicity
- (4) escapes; and
- (5) the contribution of prescribed burning to reducing wildfire hazard.

15-3 Within 12 months of this proposal being given authority to be implemented the proponent shall initiate a public review of its prescribed burning policy and practices and the wildfire threat analysis. This should be done with the close involvement of the Research and Monitoring Committee. If possible, it should be linked with a review of the provisions of the Bush Fires Act.

The EPA has stated, in its discussion on this Condition, that “the EPA notes the Advisory Committee advice and notes that the review carried out under Condition 15.3 (Fire Review Panel, 1994) appears not to have included any involvement of the Forest Research and Monitoring Committee as required by the Condition” (page 21). CALM advised the EPA, in its 1997 Progress and Compliance Report (page 54), and again in its advice to the EPA which appears at page 3 of Appendix 2 of the EPA report, that the Fire Review Panel did meet with the Forest Research and Monitoring Committee and therefore the EPA’s comment on this matter is incorrect.

The EPA Advisory Committee stated that CALM has complied with Conditions 15.1 and 15.2 and has substantially complied with Condition 15.3, but may not have complied fully with the intent of Condition 15.3. Condition 15.3 refers to the review carried out by the Fire Review Panel appointed by the Minister and says that that review should be carried out with the close involvement of the Forest Monitoring and Research Committee, which is assumed to be the committee established under Section 17. Although the latter committee is chaired by CALM, the Department had no control over the processes adopted by the Fire Review Panel. It is therefore impossible to conclude that CALM may not have complied with the intent of Condition 15.3 when in fact Condition 15.3 is not a condition that is within the province of CALM to deliver. As mentioned above, both the EPA and its Committee appear to have failed to acknowledge CALM’s advice to them that the Fire Review Panel and the Forest Monitoring and Research Committee did meet with respect to this Condition.

CALM Advice – Condition 15

CALM agrees with the EPA’s finding that it has complied with Conditions 15.1 and 15.2.

CALM disagrees with the EPA's finding that CALM may not have complied fully with the intent of Condition 15.3

The EPA should reconsider its advice on this matter and note that, to the extent that it was required by the Condition, CALM has fully complied with the requirements of this Condition.

MINISTERIAL CONDITION NO 16
High salt risk catchments

16-1 Within three years, or such other period as the Minister for the Environment shall nominate, the proponent, on advice from the Water Authority of Western Australia, shall identify second order catchments with a high salt risk.

16-2 Within each catchment identified according to the requirements of condition 16.1, the proponent shall retain additional river and stream buffers and locate areas temporarily reserved during phased logging operations to the requirements of the Water Authority of Western Australia.

The EPA has concluded that CALM has complied with Condition 16.1 and 16.2.

CALM Advice – Condition 16

CALM agrees with the EPA's advice that CALM has complied with Condition 16.1 and 16.2.

MINISTERIAL CONDITION NO 17
Forest Monitoring and Research Committee

17-1 The Minister for the Environment will set up a committee having objectives which include:

- (1) identification, prioritisation and approval of monitoring and research programmes and projects on environmental impacts of forestry management
- (2) the granting of funds towards such monitoring and research
- (3) receipt of progress reports
- (4) reporting to the Minister for the Environment
- (5) publication of results.

17-2 The Committee shall include the heads (or nominees) of the Department of Conservation & Land Management, the Environmental Protection Authority, the Western Australian Forest Industries Federation, the Conservation Council and the Water Authority of Western Australia, and the Chairpersons of the Lands and Forest Commission and National Parks and Nature Conservation Authority.

17-3 The committee shall appoint working groups of scientists to recommend and report to the Committee on the design and funding of research projects, the identification, prioritisation and review of monitoring and research programmes and projects relating to the environmental impacts of forest management.

17-4 The committee shall provide brief annual progress reports to the Minister for the Environment, with major reports in 1997 and 2002, at the time of the next review of the Forest Management Plans and Timber Strategy.

CALM has major concerns with respect to Ministerial Condition 17. The Condition, as drafted, could not be implemented without legislative change. Whilst Condition 17.1 and 17.2 were capable of implementation and were implemented, Condition 17.3 assumed that the Forest Monitoring and Research Committee would be given a separate budget and authority to make appointments. Under the current arrangements for the creation of Departments and Statutory Authorities, this requires legislative change. This can only be achieved by the Government obtaining the agreement of the Parliament.

CALM has a major research division. If the Committee believes there is a deficiency in CALM's forest knowledge, CALM will consider implementing any research recommended by the Committee. No such recommendations have been made to CALM.

In this regard, CALM again reiterates that the forest ecosystems are amongst the most researched in Western Australia. There are many other areas of the State that are subject to greater impacts that are more deserving of priority in terms of available government funding for research.

Consultation with CALM on Condition 17, at the time it was drafted, was very limited. However, CALM officers did advise the persons drafting the Condition that it

would be impossible to implement the Condition as drafted as it went beyond the power of the CALM Act.

The Forest Monitoring Research Committee (FMRC) has appointed a working group of scientists, consisting of two CALM and three external scientists, in compliance with Condition 17.3

CALM agrees that the FMRC, which in accordance with Condition 17.2, consists of representatives from various stakeholders, is not functioning. CALM suggests enhancing the FMRC with a scientific reference group consisting of scientists who have expertise in forest ecology. Given the polarisation of the forest management debate, even within the scientific community, it may be necessary for independent scientists from interstate to be represented on the scientific reference group.

CALM Advice – Condition 17

The EPA has found that Conditions 17.1, 17.2 and 17.3 have been complied with to some extent. The Committee established under Condition 17 is not a CALM Committee. CALM has facilitated the work of the Committee to the extent it has been able. The EPA also has membership of this Committee and therefore, to the extent that the EPA regards the Condition as being partially unfulfilled, that matter is able to be addressed by the EPA through the Committee.

The EPA concludes that Condition 17.4 has not been fully complied with because the Committee did not produce reports in the manner anticipated by the EPA. This is a matter for the EPA to address through its membership of the Committee.

CALM considers that it has implemented this Condition to the extent it has been able, given that CALM provided advice that the Condition as drafted could not be implemented. This matter should be referred back to the EPA.

MINISTERIAL CONDITION NO 18
Reporting on compliance

18-1 The proponent shall prepare "Progress and Compliance Reports", to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority. These shall include brief annual progress reports to the Environmental Protection Authority, and major public reports in 1997 and 2002.

The EPA has concluded that CALM has complied with Condition 18.

CALM Advice – Condition 18

CALM recommends that the EPA's determination that CALM has complied with this Condition be accepted.



**MINISTER FOR THE ENVIRONMENT;
LABOUR RELATIONS**


EXECUTIVE DIRECTOR
DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

**RE: EPA PROGRESS REPORT ON ENVIRONMENTAL PERFORMANCE AND
MID-TERM REPORT ON COMPLIANCE: FOREST MANAGEMENT PLANS
1994-2003**

I refer to the above report from the EPA, which includes a number of issues regarding implementation of the Forest Management Plan 1994-2003.

As you will note, the EPA has concluded that some Ministerial Conditions may not have been complied with fully to date.

Please will you provide me with advice regarding CALM's actions with respect to these conditions.


CHERYL EDWARDES (Mrs) MLA
MINISTER FOR THE ENVIRONMENT

16 NOV 1998



WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

**AMENDMENTS TO THE 1987 FOREST MANAGEMENT PLANS AND TIMBER
STRATEGY AND PROPOSALS TO MEET ENVIRONMENTAL CONDITIONS ON THE
REGIONAL PLANS AND THE WACAP ERMP**

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT (CALM)

This proposal may be implemented subject to the following conditions:

1 Proponent commitments

The proponent has made a number of environmental management commitments in order to protect the environment.

- 1-1 In implementing the proposal, the proponent shall fulfil the commitments (which are not inconsistent with the conditions or procedures contained in this statement) made in the proposal and in response to issues raised following public submissions.

2 Implementation

Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

- 2-1 An expert scientific and administrative committee will be established by the Minister for the Environment to review and report on the implementation of this proposal by 30 June 1993. The terms of reference of the committee will be to consider:

- reserve recommendations within multiple use forest involving those proposals related to temporary exclusion from timber production and potential reserves to act as wildlife corridors;
- the environmental, economic and social implications of such proposals for:
 - nature conservation within WA's native forests,
 - the maximum sustainable timber supply, and
 - the existing and future timber industry;
- the potential to increase the plantation estate on cleared agricultural land to contribute to the production of timber products.

- 2-2 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

Published on
24 December 1992

3 Precautionary approach and adaptive management

- 3-1 The proponent shall manage karri and karri-marri forest in accordance with a precautionary approach. This approach requires that where there is a significant risk that a particular forest management measure could lead to an irreversible consequence appropriate monitoring and subsequent adjustments to management within an acceptable timeframe be carried out.
- 3-2 The proponent shall manage the jarrah forest in accordance with the following general principles:
- (1) a precautionary approach;
 - (2) adaptive and flexible management practices based on research and monitoring of environmental monitoring of operations (see condition 17);
 - (3) implementation as a trial, with a reassessment by the Environmental Protection Authority after ten years - the period of the Management Plans and the Timber Strategy (see condition 11); and
 - (4) no commitment of all of the wood resource in the long term (see conditions 9 & 10).

4 Amendments to conservation estate

- 4-1 The proponent shall initiate the Government processes required to implement the proposed amendments to the conservation reserve estate as agreed to by the Minister for the Environment and defined in the approved Forest Management Plans.

5 Revised travel route, river and stream reserves

- 5-1 The proponent shall implement the revised system of travel route (road), river and stream reserves consistent with condition 15. It is noted that the minimum combined width (both sides of a first, second or third order stream) of the proposed zones is 60 metres.
- 5-2 The proponent shall ensure that the travel route (road), river and stream reserves remain unharvested in perpetuity, except for those portions of regrowth forest within road zones where thinning can be undertaken in a manner consistent with, and so as to enhance in the longer term, the defined visual quality objectives.
- 5-3 The proponent shall monitor the effectiveness of the travel route (road) river and stream reserves for nature conservation and protection of water quality to the requirements of the Minister for the Environment.

6 Diverse ecotype conservation areas

- 6-1 Diverse Ecotype Conservation areas shall be identified by the proponent and those greater than five hectares shall be identified on publicly available maps.
- 6-2 The proponent shall ensure that the Diverse Ecotype Conservation areas remain protected from timber harvesting and associated activities in perpetuity.

7 Old growth karri areas of high social or environmental value

7-1 The proponent shall identify and protect areas of old growth karri (up to 3200 hectares) with a high aesthetic, social or environmental value. This is to be implemented on a regional basis and with the benefit of public involvement. These areas shall:

- (1) include those trees in Beavis, Carey and Giblett forest blocks protected from clearfelling by environmental conditions related to the Manjimup-Beenup power line proposal (EPA Bulletin 603);
- (2) be identified publicly and progressively from the adoption of the Management Plans, with the proponent reporting to the Minister on progress towards implementation within three years; and
- (3) shall not be harvested, and shall be managed to retain their values (other than timber production).

7-2 The proponent shall report on the implementation and management of these special areas at the next Forest Management Review.

8 Sustainable yield estimates

8-1 The allocated timber resource for the period ending 30 June 1993, prior to the consideration by the Minister for the Environment of the report of the committee referred to in condition 1 will not exceed the 1993 level described in the 1987 Timber Strategy together with an additional amount of the timber resource that was approved in the 1987 Timber Strategy but remained uncut. This additional amount may be allocated by the proponent with the approval of the Minister for the Environment on a needs basis up to a total level not exceeding that proposed by the proponent in its 1992 proposals.

8-2 Following consideration of the report of the committee referred to in condition 2, the Minister for the Environment shall determine the annual sustainable timber resource available for allocation.

9 Commitment of wood

9-1 Subject to condition 8, in the letting of contracts for wood supply from the jarrah forest, the proponent shall:

- (1) not exceed the annual levels of timber supply defined in condition 3 above; and
- (2) recognise the possibility of the necessity to reduce wood supply beyond 2002 as a result of monitoring and adaptive management following the trial implementation of the jarrah forest silvicultural prescription.

10 Commitment of new resource to be referred

10-1 Notwithstanding Section 38 of the Environmental Protection Act, the proponent shall refer to the Environmental Protection Authority any proposal to enter into a contract for a substantial portion (as determined by the Minister for the Environment) of forest produce identified as other logs (jarrah) or forest residue (marri) in the revised Timber Strategy (Table 13 of the proposals document).

1.5 Fire management

15-1 The proponent shall ensure that the fire management objectives related to the jarrah forest silvicultural prescription include the minimisation of air pollution in urban areas, to the requirements of the Minister for the Environment.

15-2 The proponent shall inform the public about its fire management on a regional basis each year in its annual report. This shall include but not be limited to the following:

- (1) occurrences and causes of wildfires;
- (2) purposes of burns;
- (3) areas burnt under different regimes of season and periodicity;
- (4) escapes; and
- (5) the contribution of prescribed burning to reducing wildfire hazard.

15-3 Within 12 months of this proposal being given authority to be implemented the proponent shall initiate a public review of its prescribed burning policy and practices and the wildfire threat analysis. This should be done with the close involvement of the Research and Monitoring Committee. If possible it should be linked with a review of the provisions of the Bush Fires Act.

16 High salt risk catchments

16-1 Within three years, or such other period as the Minister for the Environment shall nominate, the proponent, on advice from the Water Authority of Western Australia, shall identify second order catchments with a high salt risk.

16-2 Within each catchment identified according to the requirements of condition 16.1, the proponent shall retain additional river and stream buffers and locate areas temporarily reserved during phased logging operations to the requirements of the Water Authority of Western Australia

17 Forest Monitoring and Research Committee

17-1 The Minister for the Environment will set up a committee having objectives which include:

- (1) identification, prioritisation and approval of monitoring and research programmes and projects on environmental impacts of forestry management.
- (2) the granting of funds towards such monitoring and research.
- (3) receipt of progress reports.
- (4) reporting to the Minister for the Environment and
- (5) publication of results.

17-2 The Committee shall include the heads (or nominees) of the Department of Conservation and Land Management, the Environmental Protection Authority, the Western Australian Forest Industries Federation, the Conservation Council and the Water Authority of Western Australia, and the Chairpersons of the Lands and Forests Commission and the National Parks and Nature Conservation Authority.

17-3 The Committee shall appoint working groups of scientists to recommend and report to the Committee on the design and funding of research projects, the identification, prioritisation and review of monitoring and research programmes and projects relating to the environmental impacts of forest management.

17-4 The Committee shall provide brief annual progress reports to the Minister for the Environment, with major reports in 1997 and 2002, at the time of the next review of the Forest Management Plans and Timber Strategy.

18 Reporting on compliance

18-1 The proponent shall prepare "Progress and Compliance Reports", to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority. These shall include brief annual progress reports to the Environmental Protection Authority, and major public reports in 1997 and 2002.

Note

Wherever the term "jarrah forest" is used in this statement it includes both the jarrah and the jarrah-marri forests.

Procedure

Compliance

The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.

If the Environmental Protection Authority, other government agency or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.

Prior to making determinations as provided for in these conditions the Minister for the Environment may seek advice from the Forest Monitoring and Research Committee.



Jim McGinty, MLA
MINISTER FOR THE ENVIRONMENT

24 December 1992

Environmental Protection Authority

Westralia Square, 141 St Georges Terrace, Perth, Western Australia, 6000
Telephone: (09) 222 7000 Facsimile: (09) 322 1598

EPA ADVISORY COMMITTEE ON FOREST MANAGEMENT PLANS

19 December 1996

Mr D Keene
Director Forests
Department of Conservation and Land Management
Hackett Drive
CRAWLEY WA 6009

Dear Don

Thank you for your letter to Bernard Bowen of 4 December 1996 giving a draft Definition Statement for the CALM 1997 Progress and Compliance Report.

The consultation process between CALM and the EPA (and its Advisory Committee) resulted in a very valuable discussion on Tuesday 10 December 1996. I have attached an extract from the Minutes of the EPA meeting of 11 December 1996 as a result of a verbal report by the Chairman of the EPA Advisory Committee.

You will have been aware from the discussions at the Advisory Committee that the general approach to the Definition Statement was agreed upon. However, the Advisory Committee held the view that there was a need to identify the project referred to in Ministerial Condition 18. Our discussions indicated that the project referred to in Ministerial Condition 18 should be the Forest Management Plan 1994 - 2003. The Committee also saw merit in there be two sections to the report: one which provided information on the major elements of forest management, and one which considered each of the Ministerial Conditions. The Committee recognised that there may be some overlap between the two.

The EPA agrees with the broad views expressed by the Advisory Committee, and I am aware from my presence at the meeting that you would welcome, as part of the consultation process, the EPA's views in writing on the Definition Statement.

I have attached some amendments for your consideration. Part of the amendments attempts to identify the project referred to in Condition 18. You will recall that we agreed that this would need to be considered as to the legal acceptance. I understand you may care to obtain legal advice on this matter.

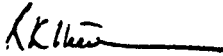
Please note that an additional dot point has been added for your consideration. I am sure that you and your colleagues will have given considerable thought to the best set of dot points to cover the most important aspects of the whole forest management report. Should other dot points be added.

I would be pleased to have your thoughts on my proposed amendments to the definition Statement for the CALM Report.

I would like to have the EPA release the Definition Statement for public comment early in 1997. Accordingly, your early consideration of the proposed amendments would be welcome.

There will need to be an EPA cover sheet to the Definition Statement when it is released. This is being drafted in my office.

Yours sincerely

A handwritten signature in black ink, appearing to read "R K Steedman", followed by a horizontal line.

R K Steedman
(CHAIRMAN)

Extract from EPA meeting 11 December 1996

4.1 EPA Advisory Committee on Forest Management Plans

The Chairman of the Advisory Committee on Forest Management Plans advised that as the last meeting of the Committee was held on 10 December 1996, time did not permit the presentation of a written Briefing Note to this Committee. However he gave an oral briefing and the following advice from the Advisory Committee was NOTED:

- (a) The major item of business of the meeting was a discussion of the draft scoping document prepared by CALM.
- (b) The project referred to in Clause 18 of the 1992 Ministerial Conditions should be the 1994 Forest Management Plan on the basis that this was the Plan approved by the Minister in accord with Clause 2 of the Conditions that "changes which are not substantial may be carried out with the approval of the Minister for the Environment".
- (c) Legal advice should be obtained confirming that the proposal presented in (b) above was appropriate.
- (d) Legal advice be obtained in relation to the requirement or otherwise of the CALM report concerning the 1988 Ministerial Conditions in relation to the 1987 Forest Management Plan and the WACAP proposal.
- (e) The CALM report should cover both elements of :
 - (i) Reporting on the environmental performance of the project; and
 - (ii) Reporting on compliance in relation to the Ministerial Conditions.
- (f) The scoping document should set out that the report will be written in a manner which addresses both (e)(i) and (ii) above..
- (g) One source of advice in relation to compliance could be matters arising from action which the CEO of the DEP is authorised to take pursuant to sections 47 and 48 of the Environmental Act.

Following consideration of the verbal report, the EPA RESOLVED to :

- (a) request the Chairman of the Advisory Committee to draft a letter for the Chairman of the EPA to send to CALM together with a rewording for the introduction to the scoping document to set out the two elements of the CALM report described in (b) and (e) above;
- (b) seek legal advice on the draft rewording of the introduction of the scoping document to ensure that it is appropriate to adopt the Forest Management Plan 1994 as the project referred to in Clause 18 of the 1992 Ministerial Conditions; and
- (c) request the Chairman of the Advisory Committee and the Executive Officer of the EPA to meet with the EEO and relevant staff of the DEP to discuss the operation of sections 47 and 48 of the Environmental Protection Act during the period of time the Advisory Committee is undertaking its work.

Carried: unanimously

Page 1. Delete the first sentence commencing "The Ministerial Conditions of 24 December ..." and insert the following in its place.

On 24 December 1992, the Minister for the Environment released a statement that the proposal submitted by the Department of Conservation and Land Management (CALM) entitled "Proposal to amend the 1987 Forest Management Plans and Timber Strategy and Proposal to meet Ministerial Conditions on the Regional Plans and the WACAP ERMP" to the Environmental Protection Authority (EPA) may be implemented subject to a number of conditions. Condition 18 and the Procedure section of the Ministerial Statement were about compliance and the preparation of reports.

2 Page 1. Insert the following paragraphs between the second last and the last paragraphs, ie. after the paragraph concluding "of the report for 1997".

Reference to a project in Ministerial Condition 18-1 is a reference to the proposal submitted by the CALM to the Environmental Protection Authority (EPA) in February 1992 and approved for implementation by the Minister on 24 December 1992. Also in February 1992, CALM released for public comment a review of the management strategies for the south-west forests of Western Australia. The EPA report on the proposal (EPA Bulletin 652) also reviewed the management strategies document. Accordingly, the EPA report to the Minister, through Bulletin 652, reviewed more than one document.

Ministerial Condition 2 set out that "changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment". Subsequent to the release of the review of the forest management strategies by CALM in February 1992 and the statement by the Minister on 24 December 1994 that the proposal submitted to the EPA may be implemented, the Lands and Forest Commission and CALM produced a document entitled "Forest Management Plan 1994-2003" for consideration by the Minister for the Environment. The Minister for the Environment approved the Forest Management Plan 1994-2003 in accordance with section 60 of the Conservation and Land Management Act 1984. This 1994-2003 Plan has become the principal forest management plan for Western Australia although the 1987 Plan has not been revoked. For the purpose of the Ministerial Condition 18-1, the project is now considered to be the Forest Management Plan 1994-2003.

The 1997 Progress and Compliance Report to be prepared by CALM to "help verify the environmental performance of his project" will focus on the following major elements of forest management:

- silvicultural methods for harvesting and regenerating the forest
- levels of timber harvest
- protection of old growth forests (Note: This one added by the BKB)
- fire management
- dieback management
- protection of water qualities in harvested areas
- amendment to the conservation estate
- areas outside formal reserves receiving special attention

Under the Procedure section of the 1992 Ministerial Statement, the EPA is responsible for verifying compliance with the conditions in the statement. The 1997 CALM Report will provide information on each of the Ministerial Conditions to assist the EPA in its task of verifying compliance. Some of this information will be included in that section of the Report focusing on the major elements of forest management and the remainder will be in a separate section specific to the conditions. However, where the information on conditions is included

in the section on the major elements of forest management, there will be clear reference to the Ministerial Condition being discussed.

3 Ministerial Condition No 1

If the above wording is accepted to form part of the introduction, the wording in 1 needs to be removed. May I suggest that the following wording be inserted in its place.

This Ministerial Condition about commitments is general to all statements made by the Minister for the Environment that a proposal may be implemented. It is the usual practise for the schedule of commitments to be agreed upon between the EPA and the proponent, and then the schedule be attached to the Ministerial Statement. However, this was not undertaken in relation to the forest management project.

The commitments can be found throughout the various documents. It is not intended that the CALM Report endeavour to trace each detail in the documents and report on them individually. Rather, the report provide information on the process which CALM has developed to give effect to its commitments. Additionally, the sections of the report which focuses on the major elements of forest management and the report on the other Ministerial Conditions relate to the commitments.

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Mr Don Keene
(09) 442 0315

Dr R K Steedman
Chairman
Environmental Protection Authority
Westralia Square
141 St George's Terrace
PERTH WA 6000

Dear Dr Steedman

EPA ADVISORY COMMITTEE ON FOREST MANAGEMENT PLANS

Thank you for your letter of 19 December 1996 regarding the outcomes from the meeting of the advisory committee and your suggestions for amendments to the definition statement for CALM's report.

It is pleasing to note your advice that the general approach to the definition statement has been agreed upon, and that "the project" referred to in the conditions should be the Forest Management Plan 1994-2003. For your information, legal opinion obtained from the Crown Solicitor's Office supports this view.

The Advisory Committee's suggestion for two sections in the report is noted but it is felt that this would not only create the overlap which the committee recognised, but would also create unnecessary confusion within the report and an expectation that the report was to be something much larger than a report on progress and compliance as required. The view remains that all of the important forest management issues are covered by Ministerial Conditions and that reporting on the conditions will therefore result in a satisfactory reporting on the "environmental performance" of the implemented Forest Management Plan.

Turning to specific items outlined in the extract from the minutes of the Advisory Committee meeting of 11 December 1996:

(d) CALM has received legal advice from the Crown Solicitor's Office in relation to the reporting requirements contained in Condition 11 of the 1988 WACAP Conditions and Condition 18 of the 1992 CALM Conditions. This advice is that:

- CALM is not legally bound by Condition 11 of the 1988 WACAP Conditions, because it was not the proponent. However, this condition still legally binds WACAP and the legality of WACAP's actions is conditional upon CALM doing those things specified in the 1988 WACAP Conditions, including making reports as required by Condition 11;

- CALM is legally bound by Condition 18 of the 1992 CALM Conditions, because it was the proponent, and it must lodge reports accordingly.

(e) As stated above, it is not felt there will be any benefit in splitting the report into two sections.

Resolution (c) Your advice following the proposed meeting would be appreciated.

With regard to the amendments to the definition statement for the Progress and Compliance Report proposed by the EPA, the following comments are provided:

1. Agree.

2. First two paragraphs. Agree except that the first sentence of the second paragraph is not relevant to the rest of that paragraph.

Third paragraph. It is intended to include protection of oldgrowth in "the areas outside formal reserves receiving special attention", along with riparian and travel route zones and diverse ecotype zones. This is because the 3200 hectares of oldgrowth forest referred to in the Forest Management Plan is primarily designed to provide habitat in between areas of younger-aged regrowth within State forest. It is part of the mosaic within multiple-use forest designed to sustain the variety of forest values and should not be considered alone.

Fourth paragraph. Agree, with the exception of the reference to two sections.

3. Agree with the exception of the last sentence which again refers to two sections.

Attached is an amended definition statement to give effect to these suggestions.

Yours sincerely



Chris Haynes
A/EXECUTIVE DIRECTOR

16 January 1997

039743F2304
Mr Don Keene
(09) 442 0315


Chairman
Environmental Protection Authority

Attention: Dr Bernard Bowen

EPA ADVISORY COMMITTEE ON FOREST MANAGEMENT PLANS

Thank you for your letter of 23 January and your meeting with us together with Dr Steedman today.

Attached is a final definition statement which gives effect to your suggestions.


Don Keene
DIRECTOR OF FORESTS for
Chris Haynes
A/EXECUTIVE DIRECTOR

24 January 1997

FOREST MANAGEMENT PLAN 1994-2003

DEFINITION STATEMENT FOR THE 1997 PROGRESS AND COMPLIANCE REPORT

FINAL
24/1/97

REQUIREMENTS TO REPORT UNDER MINISTERIAL CONDITIONS OF 24 DECEMBER 1992

On 24 December 1992, the Minister for the Environment released a statement that the proposal titled "Proposal to amend the 1987 Forest Management Plans and Timber Strategy and Proposal to meet Ministerial Conditions on the Regional Plans and WACAP ERMP" submitted by the Department of Conservation & Land Management (CALM) to the Environmental Protection Authority (EPA) may be implemented subject to a number of conditions. Condition 18 and the Procedure section of the Ministerial Statement were about compliance and the preparation of reports.

Condition 18-1 Reporting on compliance

The proponent shall prepare "Progress and Compliance Reports", to help verify the environmental performance of this project, in consultation with the Environmental Protection Authority. These shall include brief annual progress reports to the Environmental Protection Authority, and major public reports in 1997 and 2002.

Procedure Compliance

The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.

This statement is one instrument for consultation between the Department of Conservation & Land Management (the proponent) and the Environmental Protection Authority to assist preparation of the report for 1997.

Reference to a project in Ministerial Condition 18-1 is a reference to the proposal submitted by CALM to the EPA in February 1992 and approved by the Minister for the Environment on 24 December 1992. Also in February 1992, CALM released for public comment a review of the management strategies for the south-west forests of Western Australia. The EPA report on the proposal (EPA Bulletin 652) also reviewed the management strategies document. Accordingly the EPA report to the Minister, through Bulletin 652, reviewed more than one document.

Subsequent to the release of the review of the forest management strategies by CALM in February 1992 and the statement by the Minister on 24 December 1992 that the proposal submitted to the EPA may be implemented, the Lands and Forest Commission and CALM produced a document entitled "Forest Management plan 1994-2003" for consideration by the Minister for the Environment. The Minister for the Environment approved the Forest Management Plan 1994-2003 in accordance with section 60 of the Conservation and Land Management Act 1984. This 1994-2003 Plan has become the principal forest management plan for Western Australia although the 1987 Plan has not been revoked. For the purpose of the Ministerial Condition 18-1, the project is now considered to be the Forest Management Plan 1994-2003.

The 1997 Progress and Compliance Report to be prepared by CALM to "help verify the environmental performance of this project" will be structured around the Ministerial Conditions, and in doing so the Report will focus on the following major elements of forest management:

	<u>Condition No.</u>
• amendments to the conservation estate	4
• silvicultural methods for harvesting and regenerating the forest	3,11,13,14
• protection of water quality in harvested areas	12,16
• areas outside formal reserves receiving special protection (including old growth forest)	5,6,7
• fire management	15
• levels of timber harvest.	8,9,10
• dieback management	3

This structure will provide information on each of the Ministerial Conditions, to assist the EPA in its task of verifying compliance, as well as providing information on the environmental performance of the forest management plan.

The EPA has requested that the objectives in implementing each Ministerial Condition be stated so that the environmental performance could be judged against that objective. CALM will work closely with the EPA in an endeavour to achieve the approach requested by the EPA.

Several conditions impose an obligation that the requirements of either the Minister for the Environment or another government agency must be met. Reporting and compliance with these conditions then becomes an issue for the proponent and the nominated Minister or agency. Where applicable, this statement details the requirements of the Minister or agreements reached with relevant agencies.

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

ATTACHMENT 4

EPA DOCUMENT

SUSTAINABLE YIELD IN THE JARRAH FOREST – TURNER B.J. 1998

“Comments by Turner (1998) and in the RFA Public Consultation Paper (RFA, 1998b) point to uncertainties related to CALM’s yield predictions.” (EPA p15)

“This need for better jarrah models to enable longer term predictive capacity has been reinforced by Turner (1998)” (EPA p15)

SOURCE DOCUMENT

“The reliability of the predictions can be evaluated only through consideration of the reliability of the components that go into the prediction. Error estimates are generated at some stages of the process. In other cases errors are either small, known from the regression analysis used to construct the growth models, or unknown. Because of the checks and balances built into the system it is probable that estimates of current growing stock statistics are quite reliable and that karri growth is reliably estimated except perhaps for low site quality or mixed species stands. Jarrah growth estimation in the short term is likely to be fairly reliable but in the long term, less so with the current modelling approaches. Product outturns are again probably reasonably reliable in the short term. Strategic planning outcomes are checked for spatial feasibility.

In the course of this review a number of opportunities for improvements to the various systems have been identified, but on the whole it is concluded that the systems and procedures developed by CALM staff for estimating sustainable yields from the jarrah and karri forests of the South- West Forest Region are adequate and appropriate. They certainly rank among the best in Australia in terms of comprehensiveness of the data base, monitoring arrangements and growth modelling. The complex computerised systems and production of scenarios for estimating future yields are largely the result of the efforts of a dedicated few and the Department needs to ensure that the skill base is disseminated through documentation, training and transparency of decision procedures.” (Turner p10)

“Results indicated that the datasets, models, systems and methodologies used by CALM to assess sustainable yields from the karri and jarrah forests are appropriate, internally consistent and contain adequate safeguards on the quality of the data through the use of competent staff for its collection and analysis, and the incorporation of monitoring and calibrating procedures throughout the system. Areas of forest are accurately mapped to a refined level using the modern technologies of large-scale aerial photography, Global Positioning Systems and a GIS which originated as the first in a forestry organisation in Australia.

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

	<p>The jarrah inventory procedure is an innovative world-acclaimed system, delivering acceptably accurate data and is acceptably monitored and updated. The jarrah growth models are inappropriate for long-term growth projection and currently used silvicultural methods, and new models should be given high priority.</p>
	<p>Estimates of the karri forest resource derive from an inventory completed in 1984 and although the data are updated through a sophisticated tracking and feedback system, a new inventory should be under consideration since the data will soon be 20 years old.</p>
	<p>Growth data are collected from re-measurements of over 1000 permanent plots, and growth models developed for the estimation of future growth of regrowth stands appear to deliver reliable forecasts under current management strategies.</p>
	<p>Computerised systems are used to investigate a large number of future (100-200 years) scenarios in order to produce recommendations of sustainable yield from the two forest types. The interpretation of these scenarios requires experience and comprehensive understanding of the forest. Despite this there is a need for a more transparent explanation of this part of the process. The management feasibility of these scenarios is checked through a new computerised tool which translates the strategic solutions into maps of the future forest condition. It is noteworthy that most of the systems have been documented as technical reports at least at the user level, and many of the components are the result of PhD research and have been subjected to international scrutiny through examination and refereed journals.</p>
	<p>It is concluded that the systems and procedures developed by CALM staff for estimating sustainable yields from the jarrah and karri forests of the South-West Forest Region are adequate and appropriate and certainly rank among the best in Australia in terms of comprehensiveness of the data base, monitoring arrangements and growth modelling. The complex computerised systems and production of scenarios for estimating future yields are largely the result of the efforts of a dedicated few and the Department needs to ensure that the skill base is disseminated through documentation, training and transparency of decision procedures." (Turner p31 and 32).</p>

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

DETERMINATION OF SUSTAINABLE HARVEST LEVELS

<p>“The EPA is aware that the current permitted harvest volume of jarrah sawlogs approved by Government (which is based on the current specification of 1st and 2nd grade sawlogs), exceeds the long-term non-declining level as estimated from CALM’s forest yield predictions. This is expected to lead to a substantial overall reduction in the yield of sawlogs of the current specification and may result in a substantial reduction in the overall mean age of trees in the South West forests within the next 30 years, unless the permitted volume harvested reduces after 2003 or economic conditions limit the market for jarrah sawlogs (RFA, 1998b).” (RFA 1998b) (EPA p28).</p>	<p>This quote does not come from the RFA Public Consultation Paper</p>
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SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

DETERMINATION OF SUSTAINABLE HARVEST LEVELS

<p>“A review of the data and methods used to calculate these sustainable yields was conducted as part of the Comprehensive Regional Assessment. This included examination of CALM’s timber scheduling program (FORSCHEID) for the determination of long-term sustainable yield. As noted in the Meagher Report, under current log specifications, harvesting practices and conversion technologies, the long-term non-declining level of 1st and 2nd grade jarrah sawlogs is approximately 300 000m³/yr” (RFA, 1998b) (EPA p29).</p>	<p>A review of the data and methods used to calculate these sustainable yields was conducted as part of the CRA assessment. This included examination of CALM’s timber scheduling program (FORSCHEID) for the determination of long-term sustainable yield. As noted in the Meagher Report (1993), under current log specifications, harvesting practices and conversion technologies, the long-term non-declining level of first and second grade jarrah sawlogs is approximately 300,000m³ per annum.</p> <p>The level of harvest set by the Western Australian Minister for the Environment represented an allowable harvest which took into consideration the need to maintain industry and social stability and provide for reinvestment for value adding while adjusting for the reduced area available for timber harvesting arising from the creation of new reserves.</p> <p>FORSCHEID simulations indicate that while the level of first and second grade jarrah sawlog harvest could be maintained at higher than 300,000m³ per annum from the year 2004, this would lead to a substantial decline in these sawlogs by the year 2030.</p> <p>It is anticipated, however, that the forecast decline in availability of first and second grade jarrah sawlogs may be partially offset by an increase in the uptake of lower grade jarrah logs and the future adoption of whole tree-hole logging methods, together with the further refinement of sawing technologies to enable lower grade logs to be sawn.” (RFA p17).</p>
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SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

FOREST YIELD ESTIMATION	
<p>“However, the EPA considers that the current modelling of forest growth, focused as it is on estimations of timber yield from a few high productivity areas rather than reflecting more variation in growth rates to take account of soil, climate and nutrient differences, is an approach that can be misleading, as it does not deal with the complexities of a biological system spread over a range of climatic and environmental conditions. The sensitivity of model predictions to linkages and changes within ecosystems is important. Some of the factors which can result in variations include:...” (EPA p30)</p> <p>CONDITION 2.2 IN REGARD TO “DESIGNS, SPECIFICATIONS, PLANS” (EPA p8)</p> <p>The EPA is of the view that significant modifications to the approved proposal have been implemented by CALM and stated the following:</p> <p>“During the assessment in 1992, CALM advised the EPA, in response to a question about the area to be affected by the changed silvicultural prescriptions, that “ the areas cut over in the future are likely to be similar: to those cut over in the years 1989/90 to 1991/92, which ranged from 14 500 (1989/90) to 10 900 (1991/92) hectares per annum.: (EPA, 1992)</p> <p>CALM also advised that the proportions of the various silvicultural treatments (including harvest methods) would be similar to those shown in the 1991/92 annual report. These proportions were as follows, where the balance of 2% is “other” including clearing:</p> <ul style="list-style-type: none"> • thinning – 25% • gap creation – 55% • shelterwood – 5% • single tree selection – 13%” 	<p>Dr Martin Rayner, Acting Manager of Forest Management Branch of CALM has advised that this is a total misrepresentation of the manner in which CALM’s modelling is carried out.</p> <p>The full text of CALM’s 1992 advice as it appeared on page 38 of EPA Bulletin 652 of October 1992 was –</p> <p>“4.7.1 Application of jarrah silvicultural prescription</p> <p>One of the means of assisting with the determination of environmental impact relates to both the intensity of change proposed and the area affected by the change. To find out more about these aspects, advice was sought from CALM on the area of jarrah forest that is projected to be subject to the three components of the 1991 jarrah silvicultural prescription (thinning, shelterwood and gap treatment) each year during the period of the new management plan. CALM’s response was:</p> <p>“It is not possible to answer this question because detailed mapping of jarrah forest structure and lignotuber stocking density, the factors which determine the treatment to be applied, is not available. (Emphasis added).</p> <p>The forest officer in charge of the logging must determine which treatment is applied virtually on a hectare by hectare basis.</p>

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

Areas cut over (hectares) in the past 3 years have been;

	Northern	Central	Southern
Total			
1989/90	2950	7470	4100
	14520		
1990/91	2570	6710	3190
	12470		
1991/92	1970	7140	1800
	10910		

Areas cut over in the future are expected to be of a similar (*Emphasis added*) order and mapping done during 1991 has shown (1991/92 Annual Report) the following approximate percentages

- Thinning 25%
- Gap creation 55%
- Shelterwood 5%
- Single tree selection 13% (*marginal forest where it is not possible to create a gap commercially*)
- Other (clearing etc.) 2%

At this stage we can only assume the proportions will be similar for the next decade.

The 1991 Jarrah Silvicultural specification indicates that, while no precise rotation length is defined for the various portions of the jarrah forest, it sets a minimum rotation of 100 years, except for high visibility, high priority sites where a minimum rotation of 200 years is indicated."

(EPA 1992 p38)

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

STRUCTURAL GOAL IN THE JARRAH FOREST

“The EPA believes that many members of the general public would prefer to know what proportion of the various forest age classes (0-50 years old, 50-100, 100-150 etc) will exist now in the future and how these will be distributed by forest region. Statements such as “*the structural goal for the jarrah forest is to maintain the existing distribution of size classes in a multi aged structure.*” (CALM, 1992a) do little to assist understanding in the public domain.” (EPA p30)

Had the EPA looked at the Forest Management Plan 1994-2003 (the project) it may have better understood the jarrah structural goal. It is disingenuous of the EPA to suggest CALM has not provided this information. The Forest Management Plan in describing the strategies for the sustainable management of native forests included a section on forest structure. To quote from the Forest Management Plan

“Forest structure is a key determinant of biophysical complexity and therefore of ecological diversity. In Western Australian forests, the structure can be managed through land use decisions, silvicultural decisions and rotation length decisions. The structure of the understorey (in the absence of dieback disease caused by *Phytophthora*) is largely determined by the frequency, season and intensity of fire.” (FMP p8)

The Forest Management Plan went on to describe jarrah forest structure “The jarrah forest is largely uneven aged. Its structure may be represented by a frequency distribution of size classes per unit area rather than areas of stands of even aged trees. Age can be inferred from size, however, small suppressed trees can be as old as the dominant largest trees, giving the impression of an uneven aged forest.

To sustain a tree of the maximum size that occurs in the forest, there need to be successively larger numbers of trees in each preceding size or age class. The result in distribution of trees follows a general form known as the de Liocourt distribution.

While the distribution of trees of different size classes in uneven aged stands is similar, it varies between (and in) forests according to a number of factors such as species, site and the frequency of natural disturbances such as wildfire.

The existing structure of the jarrah forest reserved for multiple purpose management, which includes timber harvesting, falls within the range of structures found in virgin jarrah forest stands.” (FMP p9)

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

	<p>The Forest Management Plan then goes on to describe in some detail the strategies which will be employed to maintain the jarrah forest structural goal as follows</p> <p>“Jarrah Forest Structural Strategies</p> <p>The forest can be stratified into four broad classes and structural goals related to the goals of management and the degree of acceptable disturbance. The four classes are:</p> <ol style="list-style-type: none"> 1. <i>Minimal disturbance</i> <p>Areas which will remain at a minimal level of disturbance include forest in the tenure categories nature reserve, national park, conservation park and some section 5g reserves. Although some of these areas have been disturbed in the past they represent forest to be kept in the least disturbed condition, although they must cater for recreation and include management for fire protection.</p> <p>Structural goal: to maintain at least 25 percent of the area of the total jarrah forest managed by CALM in the minimal disturbance category. Management will use natural processes to restore forest structure to that of a mature stand.</p> <ol style="list-style-type: none"> 2. <i>Low disturbance</i> <p>These areas will be disturbed to a low level by being set aside from high levels of productive use. They exist primarily to maintain natural processes at the local level and to protect specific values in forest managed at moderate/high levels of disturbance. They will include areas such as riparian zones, exclusion zones for visual resource management and rare flora sites.</p>
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SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

Structural goal: to maintain a minimum of five percent of the total jarrah forest managed by CALM in the low disturbance category. Management will maintain or develop a forest structure which best achieves the values present. In all instances so far envisaged, this will be similar to that for areas of minimal disturbance.

3. *Moderate disturbance*

These areas will be disturbed by the productive use of the forest which may change its structure. The degree of change at any particular site will vary depending on the existing structure and the values other than timber present at the site and the forest structure which best suits them.

Structural goal: at the broad level, the goal is to convert no more than an average of one percent of the multiple purpose jarrah forest to the establishment phase per year. In time, this will ensure forty percent of this disturbance class is dominated by mature and senescent stages of development, forty percent by the immature stage, 15 percent by the juvenile stage and five percent by the establishment stage.

Forest structure will be developed in uniform patches varying from one to about 10 hectares, and in any one compartment, patches of the three developmental stages will be present.

4. *High disturbance*

Where forest values are subordinated to other uses, such as surface mining, there is a complete loss of native forest and limited sensitivity to biological values. In these cases the immediate structural goal is of lesser importance that the value sought by the disturbing activity.

Structural goal: wherever possible maximise the retention of late development stages and seek early and rapid regeneration of as much of the pre-existing ecosystem as possible.

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

	<p>The structural goals for the minimal, low, moderate and high disturbance classes will be adopted and implemented as described above. All of these goals may be over-ridden in a particular area by the chance occurrence of high intensity fire, by wind damage, or by infection by dieback disease." (FMP p10 and 11)</p>
<p>STATEMENTS IN THE EPA REPORT REGARDING CONDITION 8 THAT THE EPA ATTRIBUTE TO THE ADVISORY COMMITTEE</p>	
<p>The EPA report in reference to sustainable yield estimates lists eight separate dot points that the EPA attributes to the Advisory Committee. As shown below there is some discrepancy between references by the EPA to the Committee and what the Committee actually stated in its report. (EPA pages 14 and 15)</p>	
<p>Dot point 1. Deals with importance of growth rates as an input to model.</p>	<p>References in the Committee's report are on p.25 and are accurately referenced except for the final sentence of the EPA's dot point which refers to "a 33% recovery of 1st grade saw logs" whereas the Committee's report refers to "a 33% conversion rate to first and second grade saw logs."</p>
<p>Dot point 2. Deals with the response of the Minister to the Meagher Report.</p>	<p>References in the Committee's report are on pp.25-7 and p.49 and are accurately referenced except for:</p> <p>(a) the definition of utilisation rate where the EPA use the words "the ability to use a greater percentage of timber already felled" whereas the Committee actually says "the proportion of tree volume felled which is converted to sawlog."</p> <p>(b) The reference in the last sentence quoting the Minister's reason for approving 490000 m³ until 2003 as "to provide sufficient time for industry re-structuring to occur to accommodate a lower level of cut at the end of the period" whereas the Committee referred to "a higher level of cut be allowed until 2003 to allow time for the industry to restructure or invest in equipment for improved utilisation of lower quality logs." (p.49)</p>
<p>Dot point 3. Refers to statements in the consultation paper for the RFA</p>	<p>References in the Committee's report are on p.26 and are accurately referenced except that the EPA quotes "if the current level of cut is maintained beyond 2004, a substantial decline in sustainable yield is likely by the year 2030" whereas the Committee said "if the level of cut is maintained above 300,000 m³ per year beyond 2004,..."</p>

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

<p>Dot point 4. Refers to the conversion of useable product from the total tree volume felled.</p>	<p>The first sentence is correctly referenced to p.26. The second and third sentences are not: The EPA stated " CALM also expects that the development of seasoned jarrah production by the mills would open up markets for dried jarrah. CALM sees this development as providing new opportunities for the production, marketing and use of smaller dimension timber and an approach that could make the present current sawlog specification irrelevant in the future".</p> <p>What the Committee actually said (p.27) was "CALM has also advised that the jarrah saw milling industry has undergone remarkable change since 1987. The requirements in CALM's post 1993 timber supply contracts for 50% of the mills' jarrah output to be value added within three years has resulted in large scale investment in value adding equipment, particularly drying kilns and new saw lines, which will make it possible to add value to smaller pieces of timber. CALM has advised that the recovery of value added product has now reached 60% of output volume, industry wide. CALM anticipates that the above changes will make the current sawlog specification irrelevant, with smaller dimension timber being processed, making it possible to make greater economic use of the remainder of the tree bole".</p>
<p>Dot point 5. Refers to CALM's models.</p>	<p>The first EPA sentence states "The issue of sustainable forest yield is a very significant issue in the public debate on future forest allocation and management. " No such statement can be found in the Committee's report.</p> <p>The second sentence states "While CALM has developed a sophisticated set of models to enable it to predict sustainable yield, they are mathematical models inherently dependent on a range of inputs and assumptions which may not accurately reflect the overall forest but rather the sampled forest." This is very different to the relevant statements of the Committee:</p> <p>"CALM is to be commended on the development of a large number of mathematical models which have been used to provide estimates of wood resources and yields for the south west forest region of the State. The methods and data used by CALM have been reviewed by Dr Brian Turner as part of the RFA.</p> <p>As with all production models, the reliability of the predictions depends on the assumptions made and the quality of data available. This requires continuous review and an on-going research program to ensure continuous</p>

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

improvement in the outcomes available to decision-makers, the industry and the public. An important assumption behind the predictions is that the silvicultural treatments are being carried out according to the schedule defined as appropriate for the success of the modelling work, and that the outcomes of the silvicultural treatments will be as predicted. Those treatments also need continuous review to take into account changing circumstances which may result from physical or biological change, the requirements of the industry or changes in the expectations of the community in relation to forest management.

The sensitivity of model predictions to changes in forest growth parameters is also important. Some of the factors which can result in variations are changes in soil productivity, post-harvest treatment of areas logged, disease spread or intensification, insect damage, waterlogging and long-term climatic change."

"On-going dedicated research is a necessary part of the modelling approach so that the information-base, on which the estimates of sustainable yield are so heavily dependent, is continually being improved and made available for public information. For instance, Dr Turner has pointed to a 'shortage of long term plots' (for estimating growth) in areas which are representative of forests treated using the current silvicultural regimes".

The third sentence states "Since CALM's 1992 estimations of sustainable jarrah yield were made, scientific review has highlighted the optimism of the yield forecasts and recommended lower, more conservative levels of sustainable jarrah harvesting." No such statement can be found in the Committee's report.

The fourth sentence reads "Comments by Turner (1998) and in the RFA Public Consultation Paper (RFA, 1998b) point to uncertainties related to CALM's yield predictions."

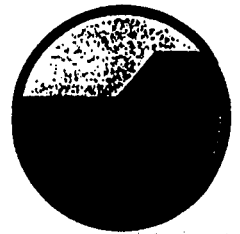
The quote in the Committee's report from Turner says "Because of the checks and balances built into the system it is probable that estimators of current growing stock statistics are quite reliable and that karri growth is reliably estimated, except perhaps for low site quality or mixed species stands. Jarrah growth estimations in the short term are likely to be fairly reliable but in the long term, less so with the current modelling approaches". Although the Committee's report makes several references to the PCP report, none "point to uncertainties related to CALM's yield predictions".

SCHEDULE OF PARTIAL REFERENCES AND QUOTATIONS

<p>Dot point 6. Refers to the 490000 m3/yr being an average.</p>	<p>The EPA said, "CALM's annual reports indicate that the demand for 1st and 2nd grade has been below the approved jarrah cut". The Committee said on p.48 "The RFA CRA report (p.51) indicates that in 1996-97, 453000 m3/yr of first and second grade jarrah sawlogs were cut". The second EPA sentence accurately reflects the Committee's comments on p.49. The third sentence does not accurately reflect the Committee's comments. The EPA said "Therefore, it would be possible, if the demand increased, for CALM to cut at a rate greater than 490000m3/yr for the remainder of the period". The Committee actually said on p.49 "However, the total cut must not exceed the volumes committed for the life of the management plan. Noting that the current cut of jarrah sawlogs is higher than the long-term sustainable level recommended by the Meagher Committee, such accrual of any uncut allowance from year to year should be reconsidered". The EPA references accurately reflect statements by the Committee on p.26.</p>
<p>Dot point 7. Refers to Meagher Report findings on karri and marri harvest levels.</p>	<p>The EPA said "As a result of the 1993 Scientific and Administrative Committee report, the then Minister for the Environment determined the harvest levels that would meet compliance with Conditions 8.1 and 8.2." What the Committee actually said was "Minister Minson's response to the Meagher Report, of August 1993, accepted the advice from CALM and the Meagher Committee that 'the long term non declining yield of sawlog supply is likely to be around 300000 m3/yr, but may be as high as 450000 m3/yr, if utilisation rates increase.'" "The Minister approved a level of cut of 490000 m3/yr for the period 1 January 1994 to 31 December 2003." On compliance, the Committee said, "Compliance with Conditions 8.1 and 8.2 has been achieved. It is doubtful that this Ministerial Condition serves any useful future purpose, because cut levels have been determined until the timing of the next Forest Management Review."</p>
<p>Dot point 8. Refers to Ministerial determinations.</p>	<p></p>

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ATTACHMENT 5

┌ Mr Bernard Bowen ┐
 Chairman
 Environmental Protection Authority
 Westralia Square
 141 St George's Tce
 └ PERTH WA 6000 ┘

Dear Bernard

CALM'S COMPLIANCE REPORT

I refer to your letter dated 13 July 1998 requesting information on two questions to assist the EPA Advisory Committee. The following information is provided:

1. Research

- (a) Your comment that the 1993-95 Triennial Report indicates a substantial reduction in research funding in the forest management area appears not to take account of the full amount of funding available for research in CALM.

I assume that your comment is based on page 135 of the Triennial Report. Page 136 of the same report shows that external funding for total research for the same period rose from \$1.56 million to \$2.9 million. Obviously when balancing an overall departmental budget, account must be taken of the full amount of funding available to the research division.

You should also note that not all of CALM's research expenditure is in the Science Division budget. CALM's forest inventory and forest dieback interpretation functions are within the Forest Management Branch. The 1998/99 budget for these functions is \$1.3 million.

CALM's research into wood properties and timber products is undertaken by CALM Timber Technology. The 1998/99 budget of the branch is \$917 000.

The following table details expenditure by CALM Science's, Forests and Tree Crops Group and Biodiversity Conservation Group on research carried out within or directly relevant to State forest for the period 1992 to 1998. Research on tree crops and sandalwood is excluded.

Year	Total budget
*97-98	2656
*96-97	2651
95-96	2746
94-95	2790
93-94	2735
92-93	1923

(*excludes RFA projects)

Most importantly, recognition must be given to the research projects undertaken under the auspices of the Regional Forest Agreement (RFA). Attached at Appendix 1 is a schedule of these projects which shows that \$7.5 million has been spent since November 1996. CALM estimates that well over \$1 million has been spent by CALM in additional in-kind science contributions to the RFA, not including administrative costs.

- (b) Your suggestion that an industry supported independently administered R & D fund be created to support research into forest management is noted. You advise that the rationale for this suggestion is to isolate the research and development function from "the effects of periodic Government economics". However, you should be aware that CALM operates on a net appropriation agreement with the Government under which all revenue, including that received from native forest operations, is retained by the Department to fund CALM's commercial activities, with a substantial surplus applied to CALM's other programs.

The royalty and in-forest charges, applied to forest produce by CALM, meet the costs of commercial activities including forest management research.

Given the extraordinary level of research undertaken as part of the RFA project and the guaranteed funding as part of CALM's net appropriation agreement, it would be very difficult to justify increased funding for forest research, particularly when deficiencies in the knowledge of other ecosystems are considered.

You will recall that CALM's compliance report in respect of Ministerial Condition 17 referred to the establishment of a working group of five scientists to review current forest research and monitoring programs and identify any gaps in current research and monitoring programs. The working group includes two CALM scientists and Drs Bernie Dell, Libby Matiske and Owen Nicholls. The report of the working group should be finalised in the next month. CALM will have regard to any research gaps identified by the working group.

It is important to recognise that within CALM there is a detailed triennial prioritisation of science projects and the overall direction of scientific research. In the case of forest-related research, this involves interaction of the Science Management Council (the policy-making body of CALM Science Division) with the Directors of Nature Conservation, Forests and Regional Services. The final decision on the allocation of budgets to proposals put forward by CALM scientists rests with the Science Management Council.

Your suggestion for the industry supported R & D fund, administered by an expert committee, be established, appears to be outside of issues to be addressed in CALM's Compliance Report, and as indicated above, the justification for the proposal appears to be based on a false premise.

2. Resource sustainability

- (a) You have asked whether current estimates of growth rates taken from growth plots support the estimates of long-term sustainable sawlog supply from jarrah forest.

The short answer to your question is that the wood resource yields for the forests have been examined as part of the RFA project. A report by Dr Brian Turner of the Australian National University has supported CALM's current estimates of yield.

However, your question raises a number of issues that warrant detailed examination and explanation (see below).

- (b) You have asked whether there are plans to reduce the allowable cut of jarrah after 2003. CALM's view is that the harvest of the jarrah forest should not exceed the growth increment of that forest currently estimated to be 1 360 000 m³/year.

The following statement should assist your Committee to understand the migration of the jarrah sawmilling industry from use of sawlogs of current specifications to whole bole sawmilling. While this matter does not impact on the current forest management plan and CALM's compliance with Ministerial conditions, it is important that the Committee have an understanding of the new directions in jarrah sawmilling that have occurred under the current forest management plan.

LONG-TERM SUSTAINABILITY OF JARRAH SAWLOG YIELD

There has been considerable recent interest in the issue of the long-term sustainability of jarrah sawlog yield.

It is impossible to consider this issue without understanding the background to the establishment of the present jarrah sawlog harvest of 490 000 cubic metres of 1st and 2nd grade sawlogs. The background is set out in considerable detail in the Ministerial Statement entitled "Native Forest Management and the Future for the Native Hardwood Timber Industry" made to Parliament by the Hon Kevin Minson MLA on 5 August 1993 (Attachment 2).

As set out in the Ministerial Statement the key factors in considering long-term sustainable sawlog supply are the average jarrah increment (ie, the growth of the jarrah forest) and the percentage of that increment that can be converted to sawlog.

The Minson Statement advises that the likely range of jarrah growth is:

Average jarrah increment m ³ /ha/yr	Total annual growth of jarrah on Crown land available for harvesting (m ³)
1.1	1 221 100
1.2	1 332 000
1.3	1 443 000
1.4	1 554 000

Mr Minson was advised by an independent scientific committee that he appointed (the Meagher Committee) that it was reasonable to consider that the annual growth of jarrah is 1 360 000 m³/year.

CALM's estimation of resource yields for the jarrah forest has been independently verified and supported by Dr Brian Turner in his report "An Appraisal of Methods and Data Used by CALM to Estimate Wood Resource Yields for the South West Forest Region of Western Australia" (May 1998) produced for the WA Regional Forest Agreement process. Dr Turner has recommended that modelling be adjusted to take account of the trial of new jarrah silvicultural specifications to ensure that long-term yield estimates remain accurate. CALM is also establishing new growth plots in regrowth jarrah stands to complement the 650 permanent growth plots measured by the Department every 3-10 years.

Having established that the estimated annual increment on the jarrah forest of 1 360 000 m³/year is reasonable, the issue becomes the sustainability of sawlog supply from that growth on the forest.

This issue was also dealt with very clearly by the Minson Statement. The following quote is pertinent:

"Working from the total annual growth of 1 360 000 m³, the question is what will that mean in terms of sawlog production? Again this is variable depending on the size class distribution of the trees in the forest and for those large enough to yield sawlogs, their inherent quality i.e. straightness or defect level. For example, if the forest was composed entirely of trees below sawlog size, even though the annual growth was 1 360 000 m³ the yield of sawlogs would be nil because they would all be too small. On the other hand if the forest was comprised entirely of trees with no defects which were all above sawlog size, the yield of sawlogs would equal the annual growth of 1 360 000 m³."

Therefore, the sawlog yields that are possible depend on the amount of the total jarrah increment that can be converted to sawlogs of the required specifications.

Minister Minson determined that 490 000 m³ of 1st and 2nd grade jarrah sawlogs of **the current specification** would be the allowable sawlog harvest. This equated to a 36 per cent yield from the gross bole increment available. CALM has had a long-term program to increase the utilisation of the felled bole. For example, if utilisation is increased from 36 per cent to 40 per cent the sawlog yield increases from 490 000 m³ to 544 000 m³.

However, the other issue to be considered in sawlog supply is whether the forest can sustain the sawlog specification being supplied.

CALM has advised that the long-term non-declining level of sawlog supply at current specifications is approximately 300 000 m³/year but may be as high as 450 000 m³/year if utilisation rates increase (Minson Statement, page 5). It should be remembered that this is at the current specification for 1st grade sawlogs which must have greater than 50 per cent millable wood on the worst end face, a small end diameter of at least 200 mm and a minimum length of 2.1 m. The current specification for 2nd grade sawlogs is as for 1st grade logs but the worst end face must have greater than 30 per cent millable wood, with a minimum diameter of 250 mm.

These specifications were established to supply an industry that was predominantly producing green structural and heavy section output.

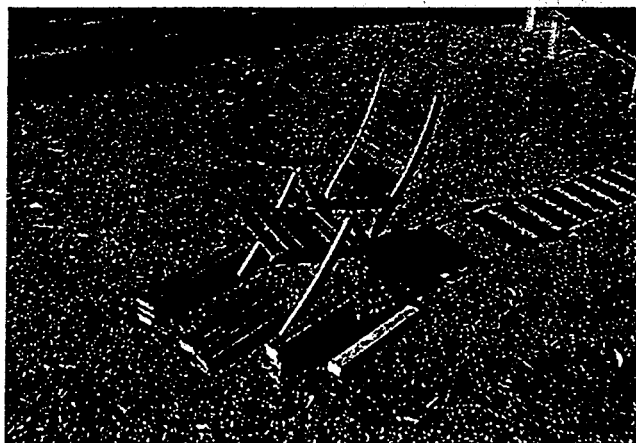
However, the jarrah sawmilling industry has undergone a remarkable change since CALM's 1987 Timber Strategy. CALM's contracts for sawlog supply, which followed Minister Minson's Statement, required that 50 per cent of the mills' jarrah output be value-added within three years. The secure 10-year supply contracts, based on the current forest management plan, have seen large-scale investment in value-adding equipment, specifically drying kilns and new sawlines to provide timber for furniture and architectural feature uses rather than the predominance of heavy and structural sections that were produced prior to the 1987 Timber Strategy.

The change in product output is clearly demonstrated at Attachments 3 and 4 which show that Bunnings product mix has changed from an historical average of 72 per cent green sawn with only 28 per cent value-added, to its current Deanmill Mill output of 11 per cent green sawn and 89 per cent value-added.

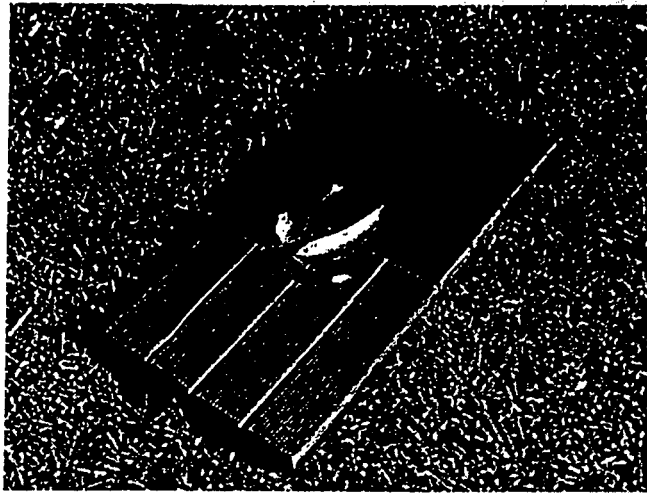
The first five years of the current forest management plan have therefore seen a revolutionary change in the end-use of jarrah with constant increases in the amount of dried jarrah and a consequent reduction in heavy and structural green sawn output. The recovery of value-added product now exceeds 60 per cent on an industry-wide basis.

What this means for the future is that the current sawlog specification has become irrelevant with the smaller dimension sawn timber now being produced to meet the demands of the furniture and architectural feature markets. Also, given the higher value of the output, it is now possible to make greater economic use of the remainder of the tree bole.

This can be seen in the photograph below which shows an outdoor chair that is currently manufactured by Clarecraft. There is no component of the chair that is over 900 mm in length. The components are displayed in front of the chair.



Another example of high value output from seasoned jarrah is illustrated by the photograph below.



These interlocking jarrah flooring tiles are used as outdoor decking. They are produced by Bushmills Timbers for the export market. The maximum length of the timber used in the tiles is 300 mm.

The change in the seasoned output of mills has also seen a dramatic opening of opportunities for downstream manufacturing. The Western Australian hardwood outdoor furniture and feature grade furniture sectors were recently studied by BIS Shrapnel for the Regional Forest Agreement process. The consultants found that both sectors had grown rapidly over the last five years – the outdoor hardwood furniture industry at 18 per cent and the natural feature furniture industry at 17 per cent per annum between 1993 and 1998. Growth predictions for the industries for the next five years are 9 per cent and 17 per cent per annum respectively, far outstripping most other manufacturing growth.

As the industry is export driven there is potential for new entrants, in which case the consultants consider that growth rates could be well above these projections.

Importantly, the sectors have created direct and indirect employment of approximately 2 500, most of which has occurred over the last five years. Obviously, future employment projections are tied to growth rates. However, if the planned investment by current industry operators of 60 per cent over the next five years is realised, these sectors have the potential to be significant employment generators.

A good deal of this employment could be based in the south-west as evidenced by a recent proposal by Jensen Jarrah, an outdoor jarrah furniture manufacturer, to extend their current operation at Busselton by opening a new plant in the Manjimup-Bridgetown area.

Following the successful implementation of jarrah seasoning technology into mills and the development of markets for the dried jarrah, CALM and the timber industry are now addressing the change to whole bole log supply.

Five trials of whole bole logging and sawing have now been carried out. Issues to be resolved include the need for some improvements in sawmill processes, determination of the specifications of the whole boles to be supplied, and the royalty and other charges applicable.

As a result of the trials to date, CALM is confident that there is no insurmountable obstacle to the implementation of whole bole logging. A CALM/Timber Industry working group is addressing outstanding issues with the expectation that all fundamental issues will be resolved soon after the completion of the Regional Forest Agreement for Western Australia.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Syd Shea', with a stylized flourish at the end.

Syd Shea
EXECUTIVE DIRECTOR

17 July 1998