

*National Estate Values
in the
Southern Forest Region
of South-West Western Australia*

1

- Volume One -

DRAFT REPORT

*National Estate Values
in the Southern Forest Region,
South-West Western Australia*

AUSTRALIAN
HERITAGE
COMMISSION




*Department of Conservation
and Land Management*

**NATIONAL ESTATE VALUES
IN THE SOUTHERN FOREST REGION,
SOUTH-WEST WESTERN AUSTRALIA**

Volume One

Joint Report by
the Australian Heritage Commission
and the Department of Conservation and Land Management, WA

February 1992

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NATIONAL ESTATE VALUES IN THE SOUTHERN FOREST REGION, SOUTH-WEST WESTERN AUSTRALIA

DRAFT REPORT

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FOREWORD

This joint report by the Australian Heritage Commission and the Department of Conservation and Land Management (CALM) is the result of a cooperative venture by both organisations. We have jointly assessed the National Estate values of the Southern Forest Region of south-west Western Australia, and have arrived at an agreed basis for their conservation and management.

The joint assessment has involved three processes:

- systematic review of the region to reach agreement on the location of all areas of both natural and cultural national estate significance;
- analysis of the degree to which the identified national estate values are protected within the existing nature conservation reserve system within each region; and
- discussion about management practices in national estate areas outside the reserve system, to reach agreement on means of minimising adverse impacts on national estate values within the region.

As a result of this, the Commission and CALM have arrived at a Memorandum of Understanding on the listing of principles for management of national estate areas in the Southern Forest Region of Western Australia.

This report outlines the results of the project. Both organizations recognize that the project has been a great step forward, with significant advantages for both the conservation of national estate values, and the effective and efficient integrated management of the forests.

The report was jointly produced. Appendices 1, 2, 3 and 4 were largely written by the Australian Heritage Commission while Appendix 5 was written by CALM. The Commission has confined itself to an assessment of the national estate values of the Region and to general comments on their conservation, including their representation in the present and proposed reserve system. CALM has developed prescriptions on the protection of national estate values throughout the region, including the creation of new reserves.

The report and appendices are being released with a draft Forest Strategy, produced by CALM, and the Memorandum of Understanding between the Commission and CALM.

Both CALM and the Australian Heritage Commission would like to acknowledge the outstanding contribution of their technical and management staff in the successful conclusion of the project, and in the production of this report.

The report is released in draft, and comments from interested parties are welcomed. At the conclusion of a three month period the Commission and CALM will consider any comments and will finalise the report.

Any comments should be forwarded to either:

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7th January 1992

OVERVIEW

1.1 The reason for the study

The Australian Heritage Commission is responsible for identifying and providing advice to the Commonwealth, about Australia's National Estate.

There are significant areas of forest listed on the Register of the National Estate. Much of this forest is used for multiple purposes, including timber production. Commonwealth Government decisions (such as export licences) must take national estate issues into consideration. These decisions are a prerequisite for particular industry activities of the State governments and primary industries. There has been increasing general debate in Australia about woodchipping, the sustainable use of forests, the adequacy of nature conservation reserves and the appropriateness of various logging procedures. Because many forests designated for timber production are listed in the Register of the National Estate, national estate forests have increasingly become the focus for this more general debate.

One result has been an undifferentiated perception by the general public that areas of national estate forests should not be logged; regardless of the values for which they are listed, or their management regime.

The forest areas listed by the Commission in the Register of the National Estate to date are undoubtedly significant, and the advice given by the Commission has been instrumental in the protection of their values. However, there has been no systematic, cooperative regional assessment of forest areas for national estate values, because of lack of resources and the unavailability of data. This has led to a lack of a regional perspective in listing and in advice under section 30 of the *Australian Heritage Commission Act 1975*. Another consequence has been uncertainty in the industry and at State government level about what areas will be listed next, and what advice about their conservation will be forthcoming.

The combination of the general level of debate about the National Estate and the lack of systematic cooperative surveys has led to a situation where neither the conservation of the forests, nor the needs of development and industry were being met in the most effective manner.

In recognition of the above problems, the Commission proposed in October 1990, in a detailed submission to the Resource Assessment Commission inquiry into Australia's Forest and Timber Resources, a methodology for helping to address national estate issues. This methodology focused on systematic surveys to identify areas of national estate significance coupled with appropriate management to protect identified values, using a regional framework as the basis for decision making.

In Western Australia, the forests are managed by an integrated land management agency, the Department of Conservation and Land Management (CALM). Commercial forests occur in the south-west of the State, where the public lands consist of 2.5 million hectares managed for conservation, recreation and wood production and including significant nature conservation reserves. A woodchip export industry has been developed in this area. The Commission had by 1990, a large number of listings and extensive nominations which it had not considered. There was intense public debate about the management of the forest. This level of debate, and the uncertainty surrounding future listings, created a very difficult situation for both agencies and for the effective management of the forests and their values.

1.2 The study

Following a Commission tour of the WA forests, the Commission and CALM agreed to begin joint work in the assessment of the national estate values of the South Eastern Forests. The process has three main aspects.

- (a) joint identification of all areas in the region of national estate significance, for all national estate values;
- (b) joint analysis of the extent to which identified national estate values in the region are protected within existing nature conservation reserves; and
- (c) joint discussion about management options in non-reserved areas for the protection of identified values.

The Commission's criteria were used as the basis for analysis of national estate values. The Southern Forest Region was selected as the initial region for study, as it was the area in which the Commission had a large number of nominations, many of which related to undisturbed Karri forest. In order to provide a comprehensive analysis of national estate values in the Region, the Commission and CALM decided that both forested and non-forested areas would be included in the analyses. It was also agreed that existing places in the Register and on the Interim List would be reviewed as part of the study.

It was agreed that the two organizations would exchange all data relevant to the assessment of national estate values in the Southern Forest Region in a form appropriate for assessment against the Commission's criteria. It was recognized that while CALM would be a primary source of data, all other relevant data sources should be sought for the analyses.

It was agreed that areas assessed as meeting the national estate criteria and the threshold for significance would be put to the Australian Heritage Commission for formal consideration for listing on the Register and that a joint report on the results would be prepared, which would be used by the Commission as the basis for its advice to the Commonwealth on future referrals under the *Australian Heritage Commission Act 1975*. It was accepted by both parties that regional conservation of the National Estate was to be managed along with other values.

1.3 Identification of places of national estate significance

The report and appendices give extensive details of the data and methodology employed to assess the region's national estate significance. The assessment was carried out using all the information available in CALM's database and consulting with all available experts and other known sources of information.

To do this work, a steering group of senior CALM and Heritage Commission staff was set up and, with the help of Australian Heritage Commission and CALM technical officers, this group examined all the available data and assessed the south-west of the Southern Forest Region for national estate values.

All this information was assessed against the Commission's criteria for national estate significance, to determine which places qualified for national estate listing. A place only has to meet the threshold of significance for one criterion before being entered in the Register, although most forested areas meet several criteria.

Data for each national estate value was considered separately across the Region and all areas where various attributes were located were identified. The size and condition of these and surrounding areas was looked at and then a decision was made on which areas met a threshold of national estate significance.

In some cases the level of information available was such that it was insufficient to either determine the presence of a value or to establish a threshold of significance. This was the case for cultural values (Aboriginal and European historic) and for some natural values. In these cases further research will be conducted. In most cases however sufficient data was available for a full assessment. The study was conducted across all tenure classifications in the Region and ignoring current national estate status.

Forty four places in the Region meet the threshold of significance for a range of national estate values and will be considered for listing in the Register. Another 40 sites significant for their floral species, will also be considered for listing. These places range in size from the Blackbutt Nature Reserve (around half a square kilometre) to the whole of the D'Entrecasteaux National Park, and include lands in all tenure classifications, conservation reserves, multiple use forests and private lands.

An analysis of places currently listed in the Register or on the Interim List indicated that the majority of these areas lie within the 44 places identified in the regional survey as meeting the threshold of national estate significance. The regional assessment thus confirms the value of these areas and the Australian Heritage Commission's previous assessment of them. In most instances, it has also provided greater clarification of the values present.

Many of the 44 places proposed for listing also coincide with areas in the Region which were nominated for listing prior to the commencement of the regional study. However, the boundaries of areas found to meet the threshold for significance from the regional assessment usually differ substantially from the nominations. The national estate values in parts of several areas currently listed in the Register have been found to fall below the threshold for significance and are outside the new areas identified as having national estate values in this regional assessment. These areas will be recommended for removal from the Register.

The places proposed for listing include the majority of the existing and pre-1991 proposed nature conservation reserves, with some exceptions. The report provides detail on these areas.

Cases where it was agreed that insufficient data exists to allow either a determination of potential areas and/or an assessment of national estate significance have been identified. The collection of this data may result in the identification of new places of significance for these attributes.

Areas where further data would allow a more detailed assessment of national estate values have also been identified. It is anticipated that such data would contribute to a more focussed description of national estate values, rather than lead to the identification of new areas for listing.

A priority work program designed to address these data gaps is being developed by the Commission and CALM. Despite the lack of data on some values, the Commission and CALM are satisfied that the joint work has identified all natural environment values of national estate significance which are extensive in area, and the Commission proposes to use the joint report as the basis for listings in the Register of the National Estate. Additionally, the Commission will rely on the results of this study as a first assessment of any further nominations.

A major ancillary result of the assessment work has been the refining of the methodology of assessment. The regional approach has allowed the direct comparison of occurrences of the same value across the Region, and has enabled the

firmer and more accurate assessment of thresholds of significance. The identification of values and their occurrences have been described and quantified in much more detail than previously. This in turn means that advice on adverse effect on these values can be much better targeted, more precise, and more useful to managers.

1.4 Protection of identified national estate values in the Southern Forest Region

The national estate values identified in the Southern Forest Region range from extensive values which are widespread over the landscape to localised and site specific values. All national estate values vary in their sensitivity and resilience to particular forms of land use, and thus the most appropriate measures for their protection will also vary.

The Commission considers that protection of national estate values in the Region should be based on the following principles:

- (a) protection should be focussed on the regional occurrence of each value, taking into account its abundance, spatial and temporal distribution, spatial characteristics, variation, and condition, rather than on individual locations of the value in isolation;
- (b) for sensitive national estate values, the highest level of protection is obtained through reservation;
- (c) all sensitive national estate values should have adequate representation in nature conservation reserves; and
- (d) management outside nature conservation reserves should be aimed at minimising the adverse impacts of management operations on national estate values which may be sensitive to disturbance.

As outlined in its Draft Forest Strategy, CALM acknowledges national estate values in the Region as specific values which need to be taken into account in the management of the Region. The Commission acknowledges that CALM is managing for a wider range of values in the Region than just national estate values.

The Commission has examined the extent to which identified national estate values are protected within the existing reserve system in the Region, including proposed reserves not yet gazetted, and within the new reserves proposed in the Draft Forest Strategy.

It is evident that the majority of the national estate values identified within the Southern Forest region is well protected by the nature conservation reserve system.

Part of CALM's 1992 Draft Forest Strategy recommends the creation of new reserves totalling some 94 875 hectares. The extent of protection for many values is significantly extended by these reserves.

There is a minority of values, as outlined in the Report, not well represented in the reserve system. This is usually because of their low overall occurrence. Outside the reserve system the most appropriate form of protection will vary with each value. The following principles will assist:

- (a) regional planning should take account of the extent to which each sensitive national estate value is protected in the Nature Conservation Reserve System;

- (b) the location and timing of timber production and associated activities in the Region should take account of the specific characteristics of each national estate value, including sensitivity to disturbance and the time required for the value to re-establish itself;
- (c) the location and timing of timber production and associated activities in the Region should take account of the range of national estate values present in listed areas lying outside nature conservation reserves; and
- (d) in listed places, appropriate management practices should be implemented at the local forest block level to minimise adverse impacts on the identified national estate values.

The most appropriate consideration of national estate values for regional planning and local management will vary with the characteristics of each value. The Commission has prepared guidelines to help implement the above principles in a manner appropriate for each national estate value. These guidelines relate to the conservation of national estate values; they are not land use prescriptions, nor are they intended to be. The provision of these guidelines is consistent with the Commission's statutory role to provide advice on the mitigation of adverse impacts on the National Estate.

In light of further research and operational experience, CALM has reviewed its forest management practices, and proposes a variety of changes appropriate to the full range of values found in the forests. Many of the revised practices proposed for implementation are designed to integrate national estate considerations with timber production operations in the Southern Forest Region at a local level. These practices are outlined in Appendix 5 of the report.

The assessment of the representation of national estate values in the Nature Conservation Reserve System, the Australian Heritage Commission's guidelines and CALM's revised practices for the management of national estate values outside the reserve system, provide the first integrated regional management planning for the conservation of national estate values, in conjunction with other values in a forest area.

The assessment of management of national estate values at a regional level has many advantages. Because the major values and their occurrences are all identified and described in detail, it is possible to identify the particular areas where there is direct conflict between the particular value and a proposed practice, having firstly assessed the representation of the value in the region and its protection in the reserve system. It is then possible for CALM to concentrate on conservation of the particular value and on the mitigation of adverse effect on it. In turn, because a regional perspective is available, it is easier for CALM to manage for the conservation of values at a regional level.

1.5 The Memorandum of Understanding

The Commission and CALM agree that application of the results described in this report for the Southern Forest Region, including the regional assessment of national estate values, and guidelines and management practices to protect identified values, is fundamental to the protection of these values in the Region. The Commission and CALM have therefore developed a Memorandum of Understanding (MOU) to provide an agreed basis for applying the results of the joint work, and ongoing cooperation to this end, with respect to CALM management of the Region and to future section 30 referrals for timber production operations in the Region. The MOU has been published as a separate document.

In the MOU, the Australian Heritage Commission states that:

- it considers the joint work to be an adequate assessment of those values listed in the Report; and
- it considers the joint work to be a suitable framework for Commonwealth consideration under section 30 of the *Australian Heritage Commission Act 1975* of timber production proposals for the Region.

This does not legally obviate the need for future section 30 referrals, but the Commission agrees to rely on the principles detailed in the Report and summarized in the MOU, to advise on future section 30 referrals.

CALM states that it will protect national estate values on CALM land in the Southern Forest Region, within the context of maintaining timber volumes to industry as specified in the 1987 Timber Strategy, and maintaining other values as specified in the 1991 Draft Forest Strategy.

CALM considers that the results of the joint work provide an appropriate, and the best available basis for CALM's management of national estate values in the Region, including consideration of feasible and prudent alternatives and measures to minimise adverse impacts. Both organizations agree to provide the report and MOU to relevant ministers and to use it as the basis for future exchange of information and planning.

Both organisations also agree to further research on values not yet assessed and to review the research and operation of the MOU at regular intervals. Both organisations will also carry out similar joint work in the remaining forest areas of the south-west of Western Australia and will promote the understanding of the National Estate and its management in the Region.

1.6 Conclusion

The Commission and CALM are satisfied with work to date, and hope that it will serve as a useful model. Both organisations will welcome comment, discussion and suggestions for its improvement and refinement.

2. THE NATIONAL ESTATE AND THE NATIONAL FOREST SCENE.

The Australian Heritage Commission ("the Commission") was set up in 1976 with a legislative responsibility to identify and provide advice on Australia's National Estate, that is,

"... those places, being components of the natural environment of Australia or the cultural environment of Australia, that have aesthetic, historic, scientific or social significance or other special value for future generations as well as for the present community."

Places determined by the Commission to be significant are listed in the Register of the National Estate ("the Register") after rigorous analysis and consideration of any objections. The *Australian Heritage Commission Act 1975* requires the Commonwealth Government to consider the impact of proposed activities on national estate values and seek to minimise adverse effects on values where no prudent and feasible alternatives exist. Such consideration of prudent and feasible alternatives by action Ministers is usually routine and in itself only prudent. The operation of the statute has often resulted in proper consideration of national estate values, and in variations to projects and proposals which protect the National Estate or mitigate the impact of development on it.

Although the Act applies only to the Commonwealth Government, increasingly State and Local Government, and other organisations, are seeking the advice of the Commission and, through National Estate Grants and other funding, are actively involved in the conservation of the National Estate.

On the other hand, listings in the Register have, on occasion, caused concern to State governments and industry groups where Commonwealth decisions are a prerequisite for proposed activities. In these cases, it is perceived that land use decisions at a state or local level may be adversely affected by listing in the Register.

Such indirect effects have been relevant with respect to Australia's woodchip export industry, where State government controlled logging operations for the extraction of chip logs is contingent on a Commonwealth export licence. Where forest operations requiring no Commonwealth decision, such as saw log extraction, are carried out as part of integrated operations including chip logs, these purely State operations may also be affected by Commonwealth decisions about woodchip export licences. These indirect effects of listing forest areas in the Register have often resulted in concern by State governments and industry groups.

Within Australia, woodchip export has been a major industry in Western Australia, Tasmania and New South Wales since the early 1970's. The use of timber for woodchips, and the increased intensity of forest harvesting associated with the woodchip industry in eastern Australia, sparked widespread community debate, particularly over old growth forests, which are a prime source of timber and also have high conservation values.

The forest debate has largely revolved around issues such as sustainable uses of the forest, the adequacy of nature conservation reserves, value-adding in the industry, and the appropriateness of various logging practices. However, because many forests designated for timber production are listed in the Register of the National Estate, national estate forests have often become the focus for this more general debate.

Campaigns by both industry and conservation groups over the use of Australia's forests, including national estate forests, have received wide media coverage. Because of Commonwealth obligations under the Australian Heritage Commission Act to protect the National Estate, disputes between industry, conservationists and State governments over the use of national estate forests have often resulted in special negotiations between relevant Commonwealth and State government Ministers to resolve the issues.

In Tasmania, a Memorandum of Understanding signed in 1986 between the Commonwealth and Tasmanian governments, requiring all individual logging activities for woodchips in national estate forests to be approved by the Commonwealth, often resulted in delays in the commencement of

planned logging. Decisions in 1990 concerning national estate forests in the Eden region of NSW and in East Gippsland, Victoria, arising from Commonwealth-State negotiations after intense public debate, resulted in some national estate forests being included in national parks with a resultant reduction in timber resources for industry.

One result of the above conflict has been an undifferentiated perception by the general public that no forests listed in the Register of the National Estate forests can, or should be logged, regardless of the values for which they are listed.

The debate about the use of national estate forests has been exacerbated because of the generally ad hoc way in which forest areas have been nominated to the Register, and with the listing of places subsequent to Commonwealth decisions (e.g. after the issuing of export licences). A lack of detailed knowledge about forest areas, whether listed in the Register or not, has also hampered the ability of the Commission to provide advice to Government about the protection of listed areas. It has thus been difficult both for the Commission to provide effective, regionally based advice, and for State government managers to carry out activities planned under State legislation in crown forests listed in the Register.

These factors, together with the involvement of the Commonwealth in decisions about the use of national estate forests, and the outcome of such decisions, have also been a major cause of concern to conservationists, State governments and industry groups, and have highlighted the need for improved mechanisms for resolving national estate forest issues.

In recognition of the above problems, the Commission proposed in October 1990, in a detailed submission to the Resource Assessment Commission inquiry into Australian Forest and Timber Resources, a methodology for helping to address national estate issues. This methodology focused on systematic survey to identify areas of national estate significance coupled with appropriate management to protect identified values, using a regional framework as the basis for decision-making.

3. THE FOREST SCENE IN WESTERN AUSTRALIA

In Western Australia, temperate forests are restricted to the south-west of the State, with the public land estate totalling approximately 2.5 million hectares. The forests are managed by an integrated land management agency, the Department of Conservation and Land Management (CALM), formed in 1985 following the amalgamation of the former National Parks Authority, Forests Department and Wildlife section of the Fisheries and Wildlife Department. The first forests listed in the Register were nominated by State government authorities and were located in national parks and other areas designated for nature conservation priority.

Following the passage of legislation (*Woodchipping Industry Agreement 1969*) through State Parliament, a woodchip export industry was developed by the WA Chip and Pulp Company (WACAP) in the south-west forests in 1975, centred on the Southern Forest Region. Although based primarily on Marri (*Eucalyptus calophylla*), approximately 15% of chip logs were derived from Karri (*Eucalyptus diversicolor*) in 1989-90. In early 1987 CALM commenced preparation of management plans for the Northern, Central and Southern forest regions in the south-west, and preparation of a timber strategy for the forests in these regions. At the same time, environmental assessment of the impact of the woodchip industry in relation to the renewal of the long-term WACAP woodchip export licence was also commenced. This included assessment under both WA and Commonwealth government legislation, with the preparation of the Environmental Review and Management Programme (ERMP) and Environmental Impact Statement (EIS).

The Commission received a large number of nominations for forests in the south-west, particularly areas of old growth Karri forest located in the Southern Forest Region, prompted by the above activities. The WACAP ERMP/EIS for the long-term renewal of the woodchip export licence included consideration of national estate places, both listed areas and new nominations. Because of the activities relating to the ERMP/EIS, and the development of management plans and a timber strategy, CALM requested, and the Commission agreed, to defer any consideration of the forest

nominations until the management plans for the Northern, Central and Southern forest regions had been finalised.

Major conservation reviews of the Southern Forest Region had been carried out in the 1970's, by the Forests Department and by the Environmental Protection Authority through its Conservation Through Reserves Committee. These reviews, together with initiatives of private groups, resulted in the identification of a network of areas within the three regions to be managed primarily for nature conservation. The network was located within areas of State Forest managed for multiple purposes including nature conservation and timber supply.

The final Regional Management Plan for the Southern Forest Region, developed after widespread public consultation and released in December 1987, included proposals for new national parks and other conservation reserves, and revised administrative provisions to ensure greater security of purpose. At the same time, the Timber Strategy was released which guaranteed minimum timber volumes to industry, for both sawlogs and chip logs, for the 10 year period of the Strategy. As at November 1991, about half of the conservation reserve proposals had been gazetted. The remaining areas are being managed as if they are conservation reserves, pending completion of the parliamentary process for their gazettal.

In December 1988 the Commonwealth Minister for Resources renewed the WACAP export licence until 1998, following completion of the Commonwealth's environmental impact assessment in April 1988 by the Minister for the Arts, Sport, the Environment, Tourism and Territories (ASETT). Based on the recommendation of the ASETT Minister, the Minister for Resources indicated that protection of national estate values would be ensured through a Commonwealth/ State consultative mechanism. Development of the proposed Forests Agreement between the Commonwealth and WA governments, to formalise the consultative arrangements, was deferred pending the outcome of Commonwealth initiatives on forests, including the Resource Assessment Commission forest inquiry, the Ecologically Sustainable Development forestry working group and the development of a National Forests Policy.

State government approval for renewal of the long-term woodchip export licence had been granted in September 1988. One of the Ministerial conditions for this approval, in recognition of national estate values, was that CALM should identify additional areas of high value old growth forest and areas of exceptional scenic and faunal value, and prepare and implement appropriate management for these special areas.

The environmental lobby in WA and nationally continued to oppose the woodchip industry in general as well as logging in national estate forests.

The intense land use conflict over timber production in State Forests listed in the Register, evident both in public debate and government negotiations and decisions in eastern Australia (as described in section 2 above) and in public comments about the WACAP ERMP/EIS and the draft Southern Forest Region Management Plan in WA, was a source of great concern to the WA government. It therefore argued strongly, both to the Commonwealth Government and to the Commission, that only those areas set aside under State legislation as national parks or other nature conservation reserves should be listed in the Register in order to avoid conflict and allow implementation of State government management strategies.

The Commission advised CALM that this proposal could not be adopted, as it would be contrary to the Commission's fundamental requirements to list places only on the basis of national estate values and to develop a comprehensive Register. Any restriction of listings in the Register to nature conservation reserves would result in a selection of places being included rather than all places of significance. The development of national parks and other reserves is also based on land use planning, in which many factors other than national estate significance are taken into account.

Whilst understanding the reason for the CALM request, and advising on its unacceptability, the Commission also recognised that in order to process the outstanding nominations in the south-west forests, it needed contextual data to provide a suitable framework for assessment of national estate values. In 1988 the Commission thus funded a consultancy for a preliminary study

focussing on old growth forests in the Southern Forest Region. Although discussions continued between the Commission and CALM about the outstanding nominations, little progress was made because of the irreconcilability of the two stated positions for listing places in the Register.

In September 1990 the 80th meeting of the Australian Heritage Commission was held in Perth. The Commissioners, senior Commission staff, and representatives of major environmental groups were taken on a tour of the Southern Forest Region by CALM, to provide the Commission with a greater understanding of forest management and national estate issues in the Region. Following the two days intensive discussions which ensued, the Commission and CALM agreed that they would work together to resolve the outstanding national estate forest issues in the region. This was announced publicly in Perth on 14 September 1990.

4. AHC-CALM AGREEMENT ON JOINT FOREST ASSESSMENT

Following initial discussions by senior staff of both agencies, the process agreed by the Commission and CALM for the joint work was based on the methodology proposed by the Commission in its submission to the Resource Assessment Commission forest inquiry, noted in section 2 above. The process, outlined schematically in Figure 1, has three main aspects:

- (a) joint identification of all areas in the region of national estate significance, for all national estate values;
- (b) joint analysis of the extent to which identified national estate values in the region are protected within existing nature conservation reserves;
- (c) joint discussion about management options in non-reserved areas for the protection of identified values.

The Commission's criteria (Table 1) were used as the basis for analysis of national estate values; the guidelines used by CALM for selecting nature conservation reserves include similar concepts.

The Southern Forest Region was selected as the initial region for study, as it was the area in which the Commission had a large number of nominations, many of which related to old growth Karri forest. The Region contains the majority of Karri forests in the south-west of WA, and thus was the most appropriate to provide a context for assessing these nominations. CALM's computerised data based also contained a good array of mapped attributes relevant to the national estate analysis. Because of the listed national estate places in the Region, and ongoing Commonwealth involvement through the annual renewal of woodchip export licences, the Commission also had a continuing responsibility to provide advice on the protection of national estate forests in the Region.

Although the Southern Forest Region contains Karri forests, the forests are largely dominated by one or a mixture of Karri, Marri and Jarrah (*Eucalyptus marginata*). A variety of other vegetation types, including woodlands, heathlands and herblands are also present in the Region, often intermingled with the forests, forming a complex mosaic. In order to provide a comprehensive analysis of national estate values in the Region, the Commission and CALM decided that both forested and non-forested areas would be included in the analyses. It was also agreed that existing places in the Register and on the Interim List would be reviewed as part of the study.

It was agreed that the two organisations would exchange all data relevant to the assessment of national estate values in the Southern Forest Region in a form appropriate for assessment against the Commission's criteria. It was recognised that while CALM would be a primary source of data, all other relevant data sources should be sought for the analyses.

Following completion of aspects (a) to (c), it was agreed that a joint report on the results of the work would be prepared, and that this report would be used by the Commission as the basis for

Joint Agreement by CALM and AHC for the Identification and Management of the National Estate Forests of Western Australia

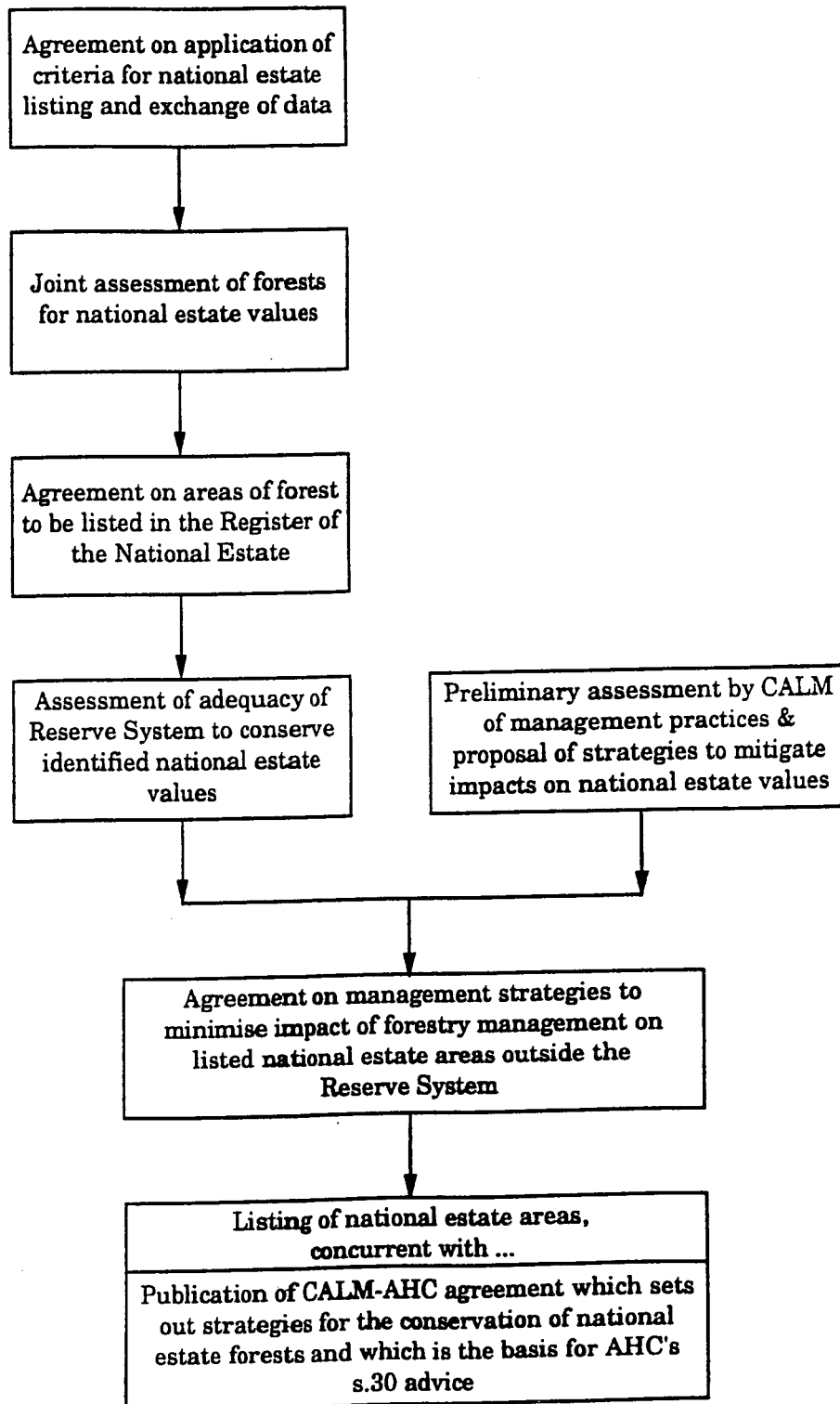


Figure 1: Joint Agreement by CALM and AHC for the Identification and Management of the National Estate Forests of Western Australia.

Table 1. Criteria for the Register of the National Estate

CRITERION A: Importance in the course, or pattern, of Australia's natural or cultural history

- A.1 Importance in the evolution of Australian flora, fauna, landscapes or climate.
- A.2 Importance in maintaining existing processes or natural systems at the regional or national scale.
- A.3 Importance in exhibiting unusual richness or diversity of flora, fauna, landscapes or cultural features.
- A.4 Importance for association with events, developments or cultural phases which have had a significant role in the human occupation and evolution of the nation, state, region or community.

CRITERION B: Possession of uncommon, rare or endangered aspects of Australia's natural or cultural history

- B.1 Importance for rare, endangered or uncommon flora, fauna, communities, ecosystems, natural landscapes or phenomena, or as wilderness.
- B.2 Importance in demonstrating a distinctive way of life, custom, process, land use, function or design no longer practised, in danger of being lost, or of exceptional interest.

CRITERION C: Potential to yield information that will contribute to an understanding of Australia's natural or cultural history

- C.1 Importance for information contributing to a wider understanding of Australian natural history, by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
- C.2 Importance for information contributing to a wider understanding of the history of human occupation of Australia.

CRITERION D: Importance in demonstrating the principal characteristics of: (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments

- D.1 Importance in demonstrating the principal characteristics of the range of landscapes, environments or ecosystems, the attributes of which identify them as being characteristic of their class.
- D.2 Importance in demonstrating the principal characteristics of the range of human activities in the Australian environment (including way of life, custom, process, land use, function, design or technique).

CRITERION E: Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group

- E.1 Importance for a community for aesthetic characteristics held in high esteem or otherwise valued by the community.

CRITERION F: Importance in demonstrating a high degree of creative or technical achievement at a particular period

- F.1 Importance for its technical, creative, design or artistic excellence, innovation or achievement.

CRITERION G: Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons

- G.1 Importance as a place highly valued by a community for reasons of religious, spiritual, symbolic, cultural, educational, or social associations.
-

Table 1 contd

CRITERION H: Special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history

H.1 Importance for close associations with individuals whose activities have been significant within the history of the nation, state or region.

preparing its advice to the Commonwealth on future referrals under the Australian Heritage Commission Act (section 30 referrals) for timber production projects in the Southern Forest Region, and that CALM would utilise the detailed information in the report for regional management to protect the identified national estate values.

5. IDENTIFICATION OF PLACES OF NATIONAL ESTATE SIGNIFICANCE

Forests form a continuum over the landscape, and all forests have a range of values, including national estate values, timber values, water catchment values, recreational values etc. The Commission is required to list in the Register of the National Estate all those areas reaching a threshold level of significance for their cultural or natural attributes. Areas in the Southern Forest Region proposed for listing in the Register thus represent those forests or other areas with a high level of national estate significance.

A decision about whether to list a place or not is made solely on the basis of national estate significance. Areas are listed in the Register only by the decision of, after formal consideration by, the Australian Heritage Commission, and subsequent gazettal in the Commonwealth Gazette and public notices. The results of the work carried out jointly between the Commission and CALM staff thus required formal consideration at a meeting of the Australian Heritage Commission, for a decision on all recommendations.

5.1 Methodology

The following sections contain a general summary of the methodology adopted for identifying places of national estate significance in the Southern Forest Region. Details of the methodology are provided in Appendix 1.

5.1.1 Data sources

An outline of general types of data relevant to the various national estate criteria was prepared by the Commission and CALM; this is summarised in Table 2. CALM then reviewed all relevant sources of data available within the organisation. Although there was a large body of digitised data held in CALM's geographic information system (GIS), these data were not relevant to all criteria. Where no GIS or other formal databases were available, data were sought from published and unpublished records, and professional opinions obtained from relevant scientific experts within and outside CALM. Major voluntary conservation organisations in Perth were also asked to provide a list of relevant experts, all of whom were then contacted and invited to contribute to the study.

Although a range of experts provided information, CALM was the main source of relevant data. A summary of major types of data sources used for all attributes examined as part of the national estate analysis is provided in Table 3.

Table 2. Attributes relevant for assessment of national estate significance

| AHC Criterion | Relevant attributes |
|--|---|
| A.1 (past processes - natural) | <ul style="list-style-type: none"> • Flora and fauna species at limits of range • Relic or disjunct populations of species • Natural refugia for flora/fauna • Gondwanic species of flora or fauna • Endemic species of flora and fauna • Geomorphological features which are evidence of past landform processes • Fossil sites |
| A.2 (existing processes/natural systems) | <ul style="list-style-type: none"> • Undisturbed catchments/subcatchments • Wetlands which are habitat to migratory faunal species • Habitat important for maintenance of faunal species • Ecosystems little affected by human disturbance and which function in a natural or near-natural manner • Areas where geomorphological processes are functioning in a natural or near-natural manner |
| A.3 (richness or diversity) | <ul style="list-style-type: none"> • Natural vegetation types (structural classification) • Natural vegetation types (floristic classification) • Landforms/land systems • Flora or fauna species • Cultural features |
| A.4 (human occupation/cultural evolution) | <ul style="list-style-type: none"> • Archaeological sites • Historic sites - forest industry • Historic sites - group settlement • Historic sites - coastal exploration |
| B.1 (rare, endangered or uncommon - natural) | <ul style="list-style-type: none"> • Flora species (higher plants) • Fauna species (vertebrates and invertebrates) • Natural vegetation communities • Undisturbed forests and woodlands • Geomorphological/landform features • Wilderness |
| B.2 (rare or threatened - cultural) | <ul style="list-style-type: none"> • Prehistoric sites • Historic sites - forest industry • Historic sites - group settlement |
| C.1 (research potential - natural) | <ul style="list-style-type: none"> • Type localities faunal species • Type localities rare flora species • Research sites • Undisturbed ecosystems |
| C.2 (research potential - cultural) | <ul style="list-style-type: none"> • Archaeological sites • Historic sites |
| D.1 (representativeness - natural) | <ul style="list-style-type: none"> • Natural vegetation types (structural classification) • Natural vegetation types (floristic classification) • Natural vegetation assemblages • Faunal habitat • Landforms • Geomorphological features |

Table 2 contd

| AHC Criterion | Relevant attributes |
|---|---|
| D.2 (representativeness - cultural) | <ul style="list-style-type: none"> • Archaeological sites • Historic sites - forest industry • Historic sites - group settlement |
| E.1 (aesthetic value) | <ul style="list-style-type: none"> • Rivers • Undisturbed forest • Landscape diversity |
| F.1 (creative, technical achievement) | <ul style="list-style-type: none"> • Historic sites |
| H.1 (association with people) | <ul style="list-style-type: none"> • Association with early explorers |

Table 3. General types of data sources for attributes relevant to the national estate assessment

| Attribute | Criteria | Data source* |
|--|--|--|
| Aboriginal archaeological sites | A.3, A.4, B.2, C.2, D.2, G.1 | WA Museum site records; published reports |
| Catchments | A.2 | CALM Geographic Information System; 1:50 000 topographic maps |
| Coastal landforms | A.1, A.2, D.1 | Churchward, McArthur, Sewell & Bartle (1988); Churchward (1990); other published reports; 1989 Landsat |
| Disturbance | Relevant to criteria A.1, A.2, A.3, B.1, D.1 | CALM Geographic Information System (logging history); CALM officers pers. comm. (logging, roading, grazing, burning, <i>Phytophthora</i>); 1989 Landsat |
| Fauna species (vertebrates) | A.1 A.2, A.3, B.1, D.1 | Published reports; CALM unpublished data; CALM officers pers. comm. (mammals, birds, amphibia); other scientific experts pers. comm. (amphibia, fish). |
| Faunal species (Gondwanic invertebrates) | A.1, A.2, B.1 | Main & Main (1991) and pers. comm. |
| Flora species (rare, endemic) | A.1, A.3, B.1 | CALM Geographic Information System; CALM unpublished data; CALM officers pers. comm.; published reports |
| Geomorphology | A.1, A.2, B.1, D.1 | CALM Geographic Information System; 1:50 000 topographic maps; 1989 Landsat; published reports |

Table 3 contd

| Attribute | Criteria | Data source* |
|----------------|---|--|
| Historic sites | B.2, D.2, F.1 | CALM officers pers. comm. |
| Landforms | A.3; also relevant for assessment of other attributes under A.2, A.3, D.1 | Churchward, McArthur, Sewell & Bartle (1988); Churchward (1990); Churchward pers. comm.; Finkl & Churchward (1973) |
| Rivers | A.2, E.1 | CALM Geographic Information System; CALM officers pers. comm.; published reports |
| Soil | A.3; also relevant to D.1 | Churchward, McArthur, Sewell & Bartle (1988); Churchward (1990) |
| Vegetation | A.2, A.3, B.1, D.1 | CALM Geographic Information System (dominant forest species; structure); Smith (1972; community structure & dominant species); Beard (1979, 1980, 1981; regional vegetation assemblages); Churchward, McArthur, Sewell & Bartle (1988) and Churchward (1990) (indicators of community types); Christensen (1991); CALM officers pers. comm.; published reports |
| Wetlands | A.1, A.2, A.3, D.1 | CALM Geographic Information System; CALM officers pers. comm.; Smith (1972); Churchward, McArthur, Sewell & Bartle (1988); Churchward (1990); 1:50 000 topographic maps |
| Wilderness | B.1; also relevant to assessment under A.2 | Lesslie pers. comm. (general methodology); CALM unpublished data |

* Full details of the names of scientists consulted are provided in Appendix 1, and details of all published material in Appendix 2. Only those publications which were a major source of information for a particular attribute/attributes across the Region are indicated above.

5.1.2 Analytical methods

The identification of places of national estate significance involves two separate processes. The first is the compilation of information relevant to each national estate criterion. Once this has been completed, an assessment of significance is then carried out.

(a) Compilation of relevant information. For each attribute relevant for analysis against the national estate criteria, a decision was first made on whether adequate information was available to allow analysis. For a number of attributes, it was agreed that there was insufficient data to allow meaningful analysis. Options for obtaining this information were considered, and programs either set in place to obtain the information within the time frame of the study (e.g. information on Gondwanic invertebrate fauna in the Region and their habitats), or agreement reached for work to be carried out in the future. In general, detailed and/or systematic information was not available for most cultural values in the Region, and for some aspects of natural values.

Where it was agreed that sufficient data were available, for each attribute, a spatial analysis was implemented to show where the attribute was located in the Region, and the 'condition' of each occurrence of the particular attribute. An assessment of condition included consideration of the physical extent of the attribute in any one area and generally within the Region and the degree of naturalness, based on the known history of disturbance.

The raw data and/or GIS data were available at a range of scales, with most CALM GIS data taken up at 1:25 000 or 1:50 000. Information for the national estate analyses was compiled at a scale most appropriate to the natural scale of occurrence of the attribute. Thus for values widespread in the Region ("extensive" values), e.g. wilderness, representative ecosystem types, a scale of 1:250 000 was felt to be most appropriate for the regional analysis. For site specific values, e.g. rare vegetation types, rare plant species, data was also collated at 1:250 000, but specific site information was retained for reference.

All databases were interrogated after detailed discussion to determine the most appropriate way for data to be aggregated, synthesized and displayed for later analysis under each criterion. This was often an iterative process, as the analyses required for the study were frequently different to those routinely carried out by CALM for its own work. Where relevant data was not present in the GIS, agreement was reached on the most appropriate way to obtain and display data after detailed discussion of all options.

The data for various attributes were collated on separate maps at the appropriate scale, providing a series of maps for the Region. For each map, detailed descriptions of the attribute were also compiled in a Hypercard Stack on Macintosh computer. The Commission carried out an initial analysis of each attribute map to determine potential areas of interest. Some of these areas were inspected in the field by CALM and Commission officers to help clarify the areas of interest. The boundaries of all potential areas were discussed until agreement was reached that the areas outlined on the maps accurately represented the presence of the attribute in question, in a condition suitable for assessment of national estate value.

For a small number of attributes where expert opinion was the main source of information, it was agreed after examining the compiled information that there was insufficient systematic data to make an informed decision on potential areas. These attributes were thus included as subjects for further research.

(b) Assessment for national estate significance. Each occurrence of an attribute relevant to a national estate criterion can be assigned a level of significance. In general, for values related to biological attributes, highest value is assigned to places which are the most "natural", i.e. have been the least affected by human disturbance. This is a widely accepted principle in nature conservation disciplines. For rare biological attributes, disturbed areas may have a high level of significance if no undisturbed areas remain. For physical ecosystem attributes such as surface geomorphological features (sand dunes, lakes etc.), the highest level of significance is usually also assigned to the least disturbed areas. However, for attributes such as land forms, the level of significance is frequently independent of the associated biological features, irrespective of their condition.

For each attribute, only those occurrences with a higher level of significance are listed in the Register. In order to determine the "threshold" of significance, i.e. the level above which places are of sufficient value to warrant listing, an appropriate context must be determined for assessing significance. The context for each attribute depends on the abundance, natural distribution pattern and homogeneity of the attribute within the region. Although relatively simple to determine for rare attributes, the context for extensive attributes is more difficult to determine.

For each extensive attribute considered in the Southern Forest Region, the most appropriate context was determined using the following general guidelines:

- only like attributes can be compared to determine a threshold of significance;
- the context must be appropriate to the level of knowledge about the attribute and the accuracy of the data used to compile the attribute map;
- for natural values, the context must make ecological sense and be based on sound ecological principles.

These guidelines accord with general principles for the assessment of national estate values which were approved by the Commission in 1990, and outlined in the paper *Future directions in assessing national estate significance* (AHC, 1990).

Using these guidelines, the context for assessing the level of significance for extensive values varied from the entire Southern Forest Region, e.g. for old growth forest, to sub-regions based on mapped land systems and climatic zones, e.g. for representative vegetation types, ecosystem processes. Details of the context used for assessing the extensive attributes are provided in Appendix 1.

Once the context for each attribute had been agreed for each relevant criterion, each value was assessed within this context, and a decision made about whether each occurrence of the attribute shown on the map was above or below the threshold level of significance for each relevant criterion. For some attributes in the Region, a relative level of significance was assigned to each individual area on the map and/or to sub-areas within large individual areas. The boundaries of individual areas were then adjusted so that the map represented only those areas meeting the threshold for national estate significance for each criterion. The descriptive information in the Hypercard Stack relating to each area was revised as necessary based on these analyses.

After each attribute map had been finalised, all the maps were overlaid to determine the indicative boundaries of areas recommended for listing in the Register, taking account of the overlap of attributes in many areas. The boundary of each national estate area so determined represented the summation of attributes reaching the threshold level of significance. An evaluation of each national estate area was then carried out to determine any value related to the juxtaposition of significant attributes previously considered in isolation, and the descriptive information in the Hypercard Stack was updated accordingly.

The indicative boundaries of national estate areas on the 1:250 000 maps were then finalised at 1:50 000 scale, using where possible, as surrogates for the boundaries, features easily distinguished on the ground, i.e. roads, tracks, rivers, tenure boundaries etc. These boundaries have been digitised and stored by CALM in its GIS.

5.1.3 Evaluation of existing listings and nominations

After completion of the systematic assessment of national estate values in the Region described in 5.1.2, the boundaries of the identified national estate areas were compared with the boundaries of all existing nominations, listed and interim-listed places in the Region.

Nominated, listed or interim-listed areas or parts of such areas located outside the boundaries determined in 5.1.2, do not have national estate values reaching a threshold level of significance for the attributes analysed during the study.

5.2 Results

5.2.1 Places of national estate significance in the Southern Forest Region

Forty-four places in the Region meet the threshold of significance for a range of national estate values, while an additional 40 sites are significant due to the presence of rare or endemic species. All these places have been recommended for listing in the Register. At the 87th meeting of the Australian Heritage Commission in Canberra on 21 November 1991, the Commissioners decided that these areas should form the basis for places to be entered in the Interim List of the Register of the National Estate in the first half of 1992. The Commissioners made this decision after detailed consideration of the regional assessment methodology, and the large body of documentation relating to the process and the values of individual places. The Commissioners had also been informed regularly of progress on the regional assessment work throughout the period of the joint study. The final boundaries of areas to be entered in the Interim List will be determined at a Commission meeting.

The name and location of all individual places proposed to be placed on the Interim List in 1992, with the exception of the 40 sites of significance for rare or endemic species, are shown in Figure 2. (The latter sites are not specified as State legislation prevents CALM from publicising the location of such sites.) Details of the boundary and national estate values of each place are provided in Appendix 2, and a summary of the national estate values provided in Table 4.

**Table 4. General values above threshold of significance
in areas proposed for listing**

(+ indicates presence of value; - indicates absence of value;
blank indicates value unable to be assessed)

| Criterion and value | Place number * | | | | | | | | | |
|-----------------------------|----------------|---|---|---|---|---|---|---|---|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A.1 | | | | | | | | | | |
| Endemic flora/fauna | | | | | | + | | | | + |
| Geomorphology | | | | | | | | | | |
| Gondwanic fauna | | | | | + | + | | | | + |
| Range limits flora/fauna | | | | | | + | | | | |
| Refugia flora/fauna | | | | | | | | | | |
| Relict communities/species | | | | | | | | | | |
| A.2 | | | | | | | | | | |
| Biotic ecosystem processes | - | + | - | + | - | + | - | + | + | - |
| Abiotic ecosystem processes | - | - | - | - | - | - | - | - | - | - |
| Coastal geomorphology | - | - | - | - | - | - | - | - | - | - |
| A.3 | | | | | | | | | | |
| Fauna | | | | | | | | | | |
| Flora | | | | | | | | | | |
| Landforms/soils | - | - | - | - | - | + | - | - | - | - |
| Vegetation communities | - | - | - | - | - | + | - | + | - | + |
| Archaeological | | | | | | | | | | |
| B.1 | | | | | | | | | | |
| Fauna | | | | | + | + | | | | + |
| Flora/vegetation | + | + | | | | + | | | + | |
| Lakes/wetlands | | | | | | | | | | |
| Monadnocks | - | - | - | - | - | + | - | + | - | - |
| Undisturbed vegetation | - | - | + | - | - | + | + | + | - | - |
| Wilderness | - | - | - | - | - | - | - | - | - | - |
| B.2 | | | | | | | | | | |
| Historical | | | | | | | | | | |
| C.1 | | | | | | | | | | |
| Biological | | | | | | | | | | |
| D.1 | | | | | | | | | | |
| Fauna | | | | | | | | | | |
| Geomorphology | | | | | | | | | | |
| Lakes/wetlands | | | | | | | | | | |
| Vegetation assemblages | - | - | - | - | - | + | + | + | - | - |
| Vegetation communities | - | - | + | - | + | + | + | + | - | + |
| E.1 | | | | | | | | | | |
| Landscape | | | | | + | | | | | |

* Key to place names

| | | | |
|---|-------------------------------|----|--------------------------|
| 1 | Blackbutt Reserve | 6 | Bow River |
| 2 | Blue Gum Creek Nature Reserve | 7 | Challar |
| 3 | Bolbelup East | 8 | Chitelup |
| 4 | Bolbelup Nature Reserve | 9 | Chorkarup Nature Reserve |
| 5 | Boorara | 10 | Crowea |

Table 4 contd

(+ indicates presence of value; - indicates absence of value;
blank indicates value unable to be assessed)

| Criterion and value | Place number * | | | | | | | | | |
|-----------------------------|----------------|----|----|----|----|----|----|----|----|----|
| | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| A.1 | | | | | | | | | | |
| Endemic flora/fauna | + | | + | + | + | | | | + | + |
| Geomorphology | + | | + | | | | | | | |
| Gondwanic fauna | + | | + | + | | | + | + | + | + |
| Range limits flora/fauna | + | | | + | | | | | | |
| Refugia flora/fauna | + | | | + | | | | | | |
| Relict communities/species | + | | + | | | | | | | |
| A.2 | | | | | | | | | | |
| Biotic ecosystem processes | + | - | + | + | + | - | - | - | + | + |
| Abiotic ecosystem processes | + | - | + | + | + | - | - | - | + | + |
| Coastal geomorphology | + | - | - | - | - | - | - | - | - | - |
| A.3 | | | | | | | | | | |
| Fauna | + | | | + | + | | | | | |
| Flora | | | | | | | | | | |
| Landforms/soils | + | + | + | + | + | - | - | - | + | + |
| Vegetation communities | + | - | + | + | + | - | - | - | + | + |
| Archaeological | | | | | | | | | | |
| B.1 | | | | | | | | | | |
| Fauna | + | | + | + | + | | + | + | + | + |
| Flora/vegetation | + | | + | + | + | | | + | + | + |
| Lakes/wetlands | + | | | | | | | | | |
| Monadnocks | + | - | + | + | + | - | - | - | + | - |
| Undisturbed vegetation | + | - | + | + | + | - | - | - | + | + |
| Wilderness | + | - | - | + | + | - | - | - | + | - |
| B.2 | | | | | | | | | | |
| Historical | + | | | | | | | | | |
| C.1 | | | | | | | | | | |
| Biological | | | | | | | | | + | |
| D.1 | | | | | | | | | | |
| Fauna | | | | + | | | | | | |
| Geomorphology | + | | | + | | | | | | |
| Lakes/wetlands | + | | | | | | | | | |
| Vegetation assemblages | + | - | + | + | + | - | - | - | + | + |
| Vegetation communities | + | - | + | + | + | + | + | - | + | + |
| E.1 | | | | | | | | | | |
| Landscape | + | | + | + | | + | + | + | + | + |

* Key to place names

| | | | |
|----|-----------------|----|---------------|
| 11 | D'Entrecasteaux | 16 | Dickson |
| 12 | Darling | 17 | Dingup |
| 13 | Deep | 18 | Eastbrook |
| 14 | Denbarker | 19 | Frankland |
| 15 | Denmark | 20 | Giblett Hawke |

Table 4 contd

(+ indicates presence of value; - indicates absence of value;
blank indicates value unable to be assessed)

| Criterion and value | Place number * | | | | | | | | | |
|-----------------------------|----------------|----|----|----|----|----|----|----|----|----|
| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| A.1 | | | | | | | | | | |
| Endemic flora/fauna | + | | | | | | | + | | |
| Geomorphology | | | | | | | | | | |
| Gondwanic fauna | | + | | | | | | | | |
| Range limits flora/fauna | | + | | | | | | | | |
| Refugia flora/fauna | | | | | | | | | | |
| Relict communities/species | | | | | | | | | | |
| A.2 | | | | | | | | | | |
| Biotic ecosystem processes | - | - | + | + | + | - | + | - | + | + |
| Abiotic ecosystem processes | - | - | - | - | + | - | - | - | - | - |
| Coastal geomorphology | - | - | - | - | - | - | - | - | - | - |
| A.3 | | | | | | | | | | |
| Fauna | | | | | + | | | | | |
| Flora | | | | | | | | | | |
| Landforms/soils | + | - | - | - | - | - | - | + | - | - |
| Vegetation communities | - | - | - | - | - | - | - | - | - | - |
| Archaeological | | | | | | | | | | |
| B.1 | | | | | | | | | | |
| Fauna | + | + | | | + | + | | | | |
| Flora/vegetation | | + | | | + | + | | | | |
| Lakes/wetlands | | | | | + | | + | | | + |
| Monadnocks | - | - | - | - | - | + | - | - | - | - |
| Undisturbed vegetation | + | - | + | - | + | - | - | - | + | - |
| Wilderness | - | - | - | - | - | - | - | - | - | - |
| B.2 | | | | | | | | | | |
| Historical | | | | | | | | | | |
| C.1 | | | | | | | | | | |
| Biological | | | | | | | | | | |
| D.1 | | | | | | | | | | |
| Fauna | | | | | | | | | | |
| Geomorphology | | | | | | | | | | |
| Lakes/wetlands | | | | | | + | | | | |
| Vegetation assemblages | - | - | - | - | + | - | - | - | - | - |
| Vegetation communities | + | - | + | - | + | + | - | - | - | - |
| E.1 | | | | | | | | | | |
| Landscape | | | | | + | + | | | | |

* Key to place names

| | | | |
|----|---------------------------------|----|------------------------------|
| 21 | Gully | 26 | Muirillup |
| 22 | Jamieson Hill | 27 | Onerup Lagoon Nature Reserve |
| 23 | Kwornicup | 28 | Parryville |
| 24 | Lake Barnes Road Nature Reserve | 29 | Randall River Nature Reserve |
| 25 | Lake Muir | 30 | Redmond Road Nature Reserve |

Table 4 contd

(+ indicates presence of value; - indicates absence of value;
blank indicates value unable to be assessed)

| Criterion and value | Place number * | | | | | | | | | |
|-----------------------------|----------------|----|----|----|----|----|----|----|----|----|
| | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| A.1 | | | | | | | | | | |
| Endemic flora/fauna | + | | + | | + | + | | + | + | + |
| Geomorphology | | | | + | | | | | | + |
| Gondwanic fauna | | | | + | | | | | | |
| Range limits flora/fauna | | | + | | | | | | | |
| Refugia flora/fauna | | | | | | | | | | |
| Relict communities/species | | | | + | | | | | | |
| A.2 | | | | | | | | | | |
| Biotic ecosystem processes | + | - | + | - | - | + | - | + | + | + |
| Abiotic ecosystem processes | + | - | + | - | - | - | - | - | - | + |
| Coastal geomorphology | - | - | - | - | - | - | - | - | - | + |
| A.3 | | | | | | | | | | |
| Fauna | | | + | | | | | + | | + |
| Flora | | | + | | | | | | | |
| Landforms/soils | + | - | + | - | - | + | - | - | - | + |
| Vegetation communities | + | - | + | - | - | - | - | - | - | + |
| Archaeological | | | | | | | | | | |
| B.1 | | | | | | | | | | |
| Fauna | + | | + | | | + | | + | + | + |
| Flora/vegetation | + | + | + | | | + | | | | + |
| Lakes/wetlands | | | | | | | | | | |
| Monadnocks | + | - | + | - | - | - | - | - | - | + |
| Undisturbed vegetation | + | - | + | + | - | + | + | + | - | + |
| Wilderness | + | - | + | - | - | - | - | - | - | - |
| B.2 | | | | | | | | | | |
| Historical | | | | | | | | | | |
| C.1 | | | | | | | | | | |
| Biological | | | | | | | | + | | + |
| D.1 | | | | | | | | | | |
| Fauna | | | | | | | | + | | |
| Geomorphology | | | | | | | | | | |
| Lakes/wetlands | | | | | | | | | | |
| Vegetation assemblages | + | - | + | - | - | - | - | - | - | + |
| Vegetation communities | + | - | + | + | + | + | + | + | - | + |
| E.1 | | | | | | | | | | |
| Landscape | | | + | | | | | + | | + |

* Key to place names

| | | | |
|----|------------------------------|----|----------------------------|
| 31 | Roe | 36 | Thornton |
| 32 | Shadforth | 37 | Tone River |
| 33 | Shannon | 38 | Tone-Perup |
| 34 | Sleeman Creek Nature Reserve | 39 | Tootanellup Nature Reserve |
| 35 | Smith Brook | 40 | Walpole-Nornalup |

Table 4 contd

(+ indicates presence of value; - indicates absence of value;
blank indicates value unable to be assessed)

| Criterion and value | Place number * | | | |
|-----------------------------|----------------|----|----|----|
| A.1 | 41 | 42 | 43 | 44 |
| Endemic flora/fauna | + | | | |
| Geomorphology | | | | |
| Gondwanic fauna | | | | |
| Range limits flora/fauna | | | | + |
| Refugia flora/fauna | | | | |
| Relict communities/species | | | | |
| A.2 | | | | |
| Biotic ecosystem processes | + | - | - | - |
| Abiotic ecosystem processes | - | - | - | - |
| Coastal geomorphology | - | - | - | - |
| A.3 | | | | |
| Fauna | | | | |
| Flora | | | | |
| Landforms/soils | - | + | - | + |
| Vegetation communities | - | - | - | - |
| Archaeological | | | | |
| B.1 | | | | |
| Fauna | | + | | - |
| Flora/vegetation | | + | | |
| Lakes/wetlands | | | | + |
| Monadnocks | - | - | + | - |
| Undisturbed vegetation | - | - | + | - |
| Wilderness | - | - | + | - |
| B.2 | | | | |
| Historical | | | | |
| C.1 | | | | |
| Biological | | | | |
| D.1 | | | | |
| Fauna | | | | |
| Geomorphology | | | | |
| Lakes/wetlands | | | | |
| Vegetation assemblages | - | - | - | - |
| Vegetation communities | + | - | + | - |
| E.1 | | | | |
| Landscape | | | | |

* Key to place names

| | | | |
|----|--------------------------|----|---------|
| 41 | Wamballup Nature Reserve | 43 | Wilmott |
| 42 | Warrup | 44 | Yeticup |

It is important to note that the national estate values shown in Table 4 generally do not occur uniformly throughout each place proposed for listing. The broad distribution of values within each place are indicated in Appendix 2.

An analysis of places currently listed in the Register or on the Interim List (see Figure 3) indicated that the majority of these places lie within the above 44 places meeting the threshold of national estate significance. The regional assessment thus confirms the values of these areas, and in most instances has provided greater clarification of the values present. Many of the 44 places proposed for listing also coincide with areas in the region which had been nominated for listing prior to the commencement of the regional study (see Figure 3). However, the boundaries of areas found to meet the threshold for significance from the regional assessment usually differ substantially from the nominations.

Part of several areas currently listed in the Register or the Interim List fall outside the areas proposed for listing from the regional assessment. When considered in the regional context, the values of these areas were considered to fall below the threshold level of significance. These areas will be recommended for removal from the Register and Interim List (respectively). A final decision on this will be made at a Commission meeting in 1992.

The places proposed for listing in the Register include the majority of existing and pre-1991 proposed national parks, conservation parks and nature reserves in the Region (see Figure 4). However, some small parts of these conservation areas, e.g. Shannon National Park, Mt Lindesay National Park, One Tree Bridge Conservation Park, lie outside the identified national estate areas. These areas were not considered to meet the threshold level of significance at present for the attributes considered in this study. In this respect, it should be noted that reserve boundaries (unlike national estate boundaries) are determined on both conservation values and factors relevant to appropriate management. Given the management of these areas for conservation purposes, it is likely that they will meet the threshold of significance for some attributes in the future. It is also likely that all parts of national parks have a high level of social significance to the community (criterion G.1; see Table 1). However, social significance was not considered in the study because of a lack of appropriate data.

5.2.2 Regional overview of identified national estate values in the Southern Forest Region

The Southern Forest Region contains a wide range of national estate natural environment values related to the biological and geomorphological features in the Region. They include values related to the forest, woodland and other vegetation communities, flora and fauna species, rivers and wetlands, and landforms. Some individual cultural features have also been determined to be significant during this study. However, further research and survey will be required to allow a systematic analysis of cultural features in the Region (see section 5.2.3).

A general description of the major national estate values in the Region for various national estate criteria follows. Individual places meeting specific criteria above the threshold level can be determined from Table 4, although as noted above, each value generally does not occur uniformly throughout each place. It is also evident from Table 4 that many places proposed for listing meet the threshold for significance for a number of criteria, and thus exhibit a range of national estate values.

Criterion A.1

The Southern Forest Region contains areas which are of biogeographic significance for the information they provide about the evolution of the Australian biota. These include habitats for Gondwanic fauna, i.e. species which have evolved from the ancient continent Gondwana of which Australia was once a part. Important Gondwanic fauna in the Region include species of caddis flies, spiders, land snails, frogs and fish, many of which have restricted distributions in the Region. Twelve places proposed for listing in the Region contain significant habitat for Gondwanic fauna.

**COMPARISON OF
PLACES PROPOSED FOR LISTING IN THE REGISTER
AND
CURRENT NATIONAL ESTATE CLASSIFICATION**

NATIONAL ESTATE CLASSIFICATION (AS AT JULY 1991)

- In following order of overriding dominance and based on descriptions from the A.H.C. database

- 1 Registered
- 2 Interim - objection outstanding
- 3 Nominated - awaiting evaluation

NATIONAL ESTATE PLACE

DEEP

C.A.L.M. REGION

Southern Forest Region boundary

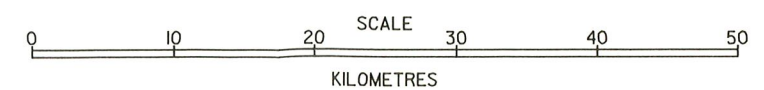
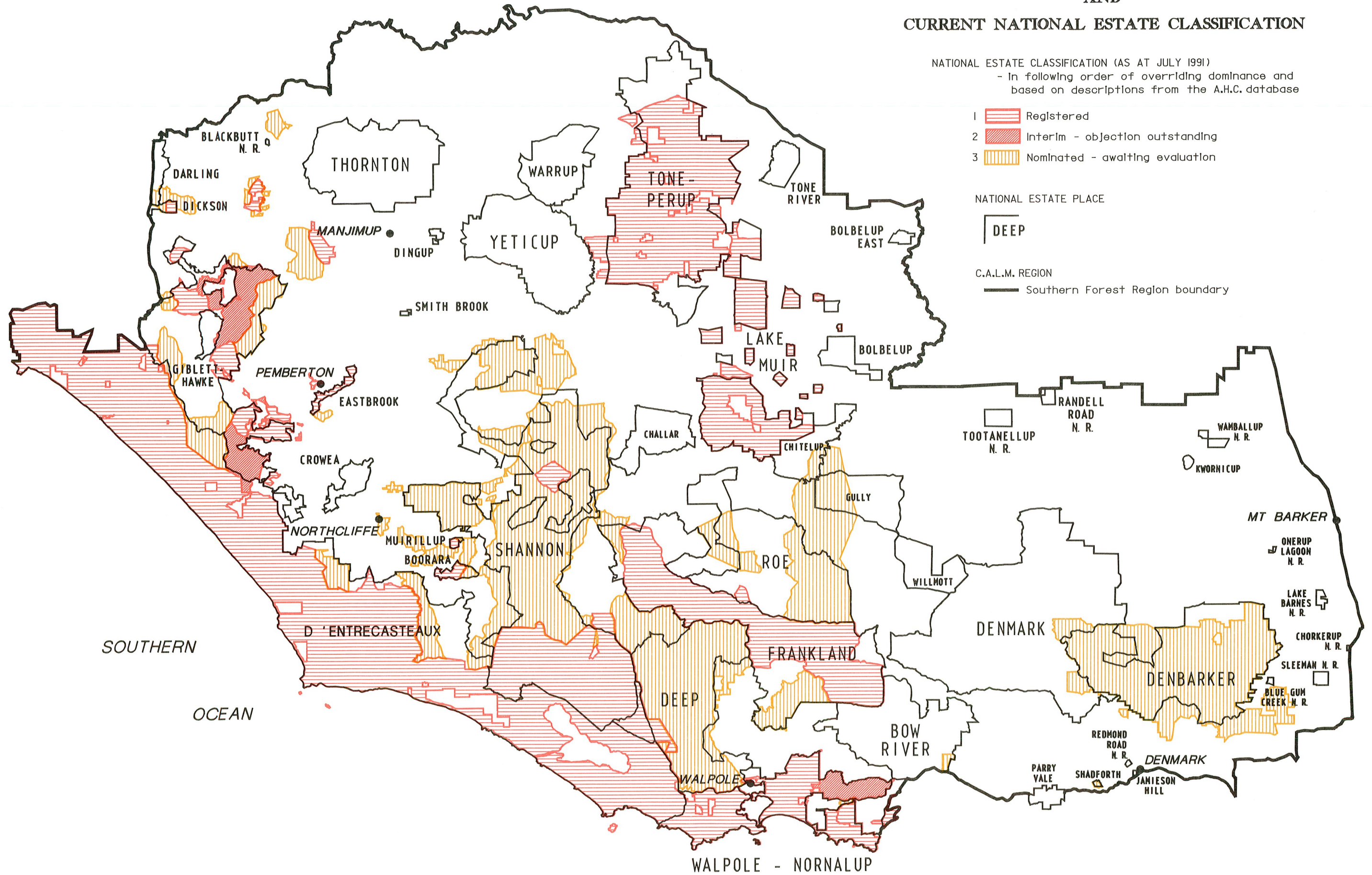
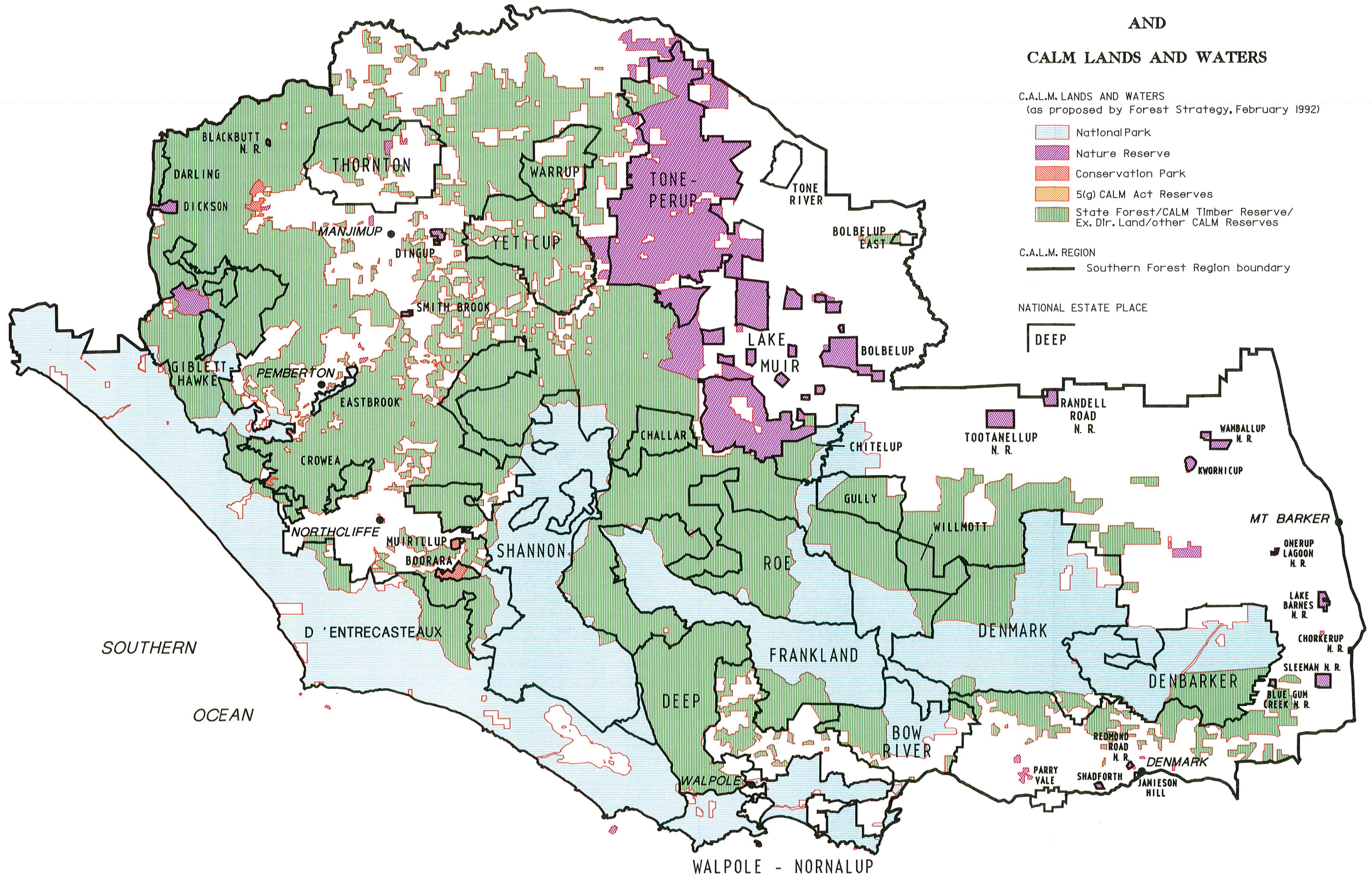


Figure 3

PLACES PROPOSED FOR LISTING IN THE REGISTER OF THE NATIONAL ESTATE AND CALM LANDS AND WATERS



C.A.L.M. LANDS AND WATERS
(as proposed by Forest Strategy, February 1992)

- National Park
- Nature Reserve
- Conservation Park
- 5(g) CALM Act Reserves
- State Forest/CALM Timber Reserve/Ex. Dir. Land/other CALM Reserves

C.A.L.M. REGION
— Southern Forest Region boundary

NATIONAL ESTATE PLACE
DEEP

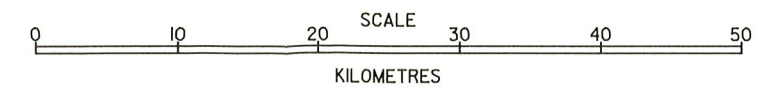


Figure 4

Twenty-seven areas proposed for listing in the Region are of biogeographic significance for their endemic flora or fauna, many of which also have restricted distributions in the Region, or because they represent the known limits of distribution of some flora and fauna species, or because they contain relict habitats for species, e.g. the remnant islands of Karri forest and acid peat flats in parts of the D'Entrecasteaux area. An additional 15 sites significant solely due to the presence of endemic species have also been identified.

The Region also contains features which provide important evidence for the evolution of the Australian coastal landscape. These include lithified dune systems which illustrate former prograding coastlines, which are also located in parts of the D'Entrecasteaux area.

Criterion A.2

The Southern Forest Region contains areas which have been largely unaffected by human activities. Such areas are significant for the maintenance of natural ecosystem processes. These include abiotic processes, e.g. those related to hydrological and nutrient cycles, and biotic processes, i.e. those related to the life cycles and interdependence of plant and animal species in the forests, woodlands, heathlands, sedgelands, swamps and wetlands. Twenty-four places proposed for listing are significant for the maintenance of biological ecosystem processes, and ten for abiotic ecosystem processes.

Many parts of the D'Entrecasteaux area are also important for the maintenance of existing coastal landform processes related to dune fields and wetlands.

Criterion A.3

Sixteen places proposed for listing in the Region are significant because they include areas with a high diversity of landforms/soil types. Thirteen areas are significant for their high diversity of vegetation types. They include areas with a high diversity of communities dominated by different tree species, a high diversity of understorey vegetation communities and/or a high diversity of natural vegetation structure. Seven areas are also significant for their high diversity of faunal species.

Criterion B.1

Many areas in the Southern Forest Region are significant as they contain populations of plant and animal species which are naturally rare, endangered or uncommon in the Region. Most of these species are endemic to the Region or to the south-west of WA. The plant species include trees such as the Red Flowering Gum (*Eucalyptus ficifolia*), Rates Tingle (*E. brevistylis*), Yellow Tingle (*E. guilfoylei*) and Red Tingle (*E. jacksonii*), and shrubs such as *Banksia verticillata* and *Gastrolobium brownii*. Because the plant populations are often localised in extent, they are often located in larger areas significant for a range of other values. Twenty areas proposed for listing contain populations of rare, endangered or uncommon plant species, and an additional 25 sites significant solely due to the presence of rare species have also been identified. Rare, endangered or uncommon fauna in parts of the Region include Gondwanic invertebrates, and mammals such as the Numbat (*Myrmecobius fasciatus*), Mardo (*Antechinus flavipes*), Chuditch (*Dasyurus geoffroi*) and Woylie (*Bettongia peniculata*). Twenty-two areas proposed for listing have faunal significance under this criterion.

Undisturbed forest, woodland and other communities within the Region are also rare. Half the places in the Region proposed for listing in the Register contain areas of undisturbed communities above the threshold for significance.

Wilderness in forested areas of Australia is a rare phenomenon. Within the Southern Forest Region, areas with high wilderness characteristics were considered significant, even though some of these areas are relatively small in extent. Seven discrete forest, woodland and coastal areas in the Region have significant wilderness characteristics above the threshold. They are located in parts of the D'Entrecasteaux, Denbarker, Denmark, Frankland, Roe, Shannon and Wilmott areas proposed for listing.

Within the whole Southern Forest Region, granite outcrops (called monadnocks) are an uncommon landform type, even though in specific places individual outcrops may be relatively common. The monadnocks provide important habitat for many plant and animal species. Part of the value of some twelve areas proposed for listing is related to the presence of monadnocks.

Criterion D.1

Twenty-eight areas meet the threshold for significant for their representative vegetation communities. These include tall open forest, open forest and woodland communities variously dominated by one or a mixture of Karri, Marri, Jarrah, Red Tingle, Yellow Tingle, Paperbark (*Melaleuca*), Peppermint (*Agonis*), Wandoo (*Eucalyptus wandoo*) etc and associated with a range of landforms and soil types across the Region. Thirteen areas also include significant vegetation assemblages, i.e. areas where the pattern of vegetation communities are characteristic of various parts of the Region.

Criterion E.1

Fourteen areas proposed for listing in the Region were recognised as having high landscape values. These include areas of old growth forests, coastal landforms, river valleys, waterfalls, lakes, etc.

5.2.3 Ongoing research

Areas for which it was agreed that insufficient data exists to allow either a determination of potential areas and/or an assessment of national estate significance are summarised in Table 5. The collection of this data may result in the identification of new places of significance for these attributes.

Areas where further data would allow a more detailed assessment of national estate values are also indicated in Table 5. It is anticipated that such data would contribute to a more focussed description of national estate values, rather than lead to the identification of new areas for listing.

A priority work program designed to address these data gaps is being developed by the Commission and CALM; preliminary priorities and action are indicated in Table 5.

Table 5. Ongoing research for national estate values in the Southern Forest Region

| Attribute | Possible Criteria | Preliminary Action |
|---|------------------------------|--|
| Aboriginal attributes, including archaeological and anthropological aspects | A.4, B.2, C.2, D.2, F.1, G.1 | Consultation with relevant groups; development of research/survey proposal for funding under NEGP* and/or AHRP** |
| Forest communities on private land | A.2, B.1, D.1 | Priority and options being discussed |
| Forest communities based on understorey: classification and mapping for detailed assessment | A.3, D.1 | Priority and options being discussed |
| Forest communities: impact of timber harvesting on structure and floristics | A.3, D.1 | High priority; options being determined |
| Forest fauna (non-rare vertebrate species) | A.2, A.3, D.1 | Low priority |

**Table 5
contd**

| Attribute | Possible Criteria | Preliminary Action |
|---|--------------------------|---|
| Historic attributes, including historical places related to the timber industry | A.4, B.2, C.2, D.2, F.1 | Development of research/survey proposal for funding under NEGP* and/or AHRP** |
| Landscape assessment | E.1 | Project being considered for funding under NEGP* |
| Non-timbered vegetation types (heathlands, peatlands etc): classification and mapping for detailed assessment | A.2, A.3, B.1, D.1 | Priority and options being discussed |
| Woodland communities: classification and mapping in eastern part of Region for detailed assessment | A.3, D.1 | Low priority |

* NEGP National Estate Grants Program
 ** AHRP Australian Heritage Research Program

6. PROTECTION OF IDENTIFIED NATIONAL ESTATE VALUES IN THE SOUTHERN FOREST REGION

The national estate values identified in the Southern Forest Region range from extensive values which are widespread over the landscape to localised and site specific values. All national estate values vary in their sensitivity and resilience to particular forms of land use, and thus the most appropriate measures for their protection will also vary.

At the local level, logging and associated activities related to timber production operations may have no adverse impact on some national estate values, for example those relating specifically to landforms. Management activities related to timber production do have the potential to adversely impact most national estate values relating to biological or ecological attributes, at least in the short-term, depending on the nature of the activities and the characteristics of the value in question. However, management practices can be implemented to minimise the initial level of impact, and appropriate ongoing management implemented to help such values re-establish in the future.

For values which are sensitive to disturbance from timber production (or other) activities, the highest level of protection would be obtained at the local level by excluding logging and other operations in national estate places with these values. However, the Commission recognises that CALM is managing the Southern Forest Region for a wide range of values, including those related to timber production, and thus it is neither realistic nor possible to exclude logging and associated activities from every national estate place in the Region. However, the intent of the *Australian Heritage Commission Act 1975* is that consideration be given to national estate values when decisions are being made about activities likely to adversely affect listed places.

The Commission considers that protection of national estate values in the Region should be based on the following principles:

- (a) protection should be focussed on the regional occurrence of each value, taking into account its abundance, spatial and temporal distribution, spatial characteristics, variation, and condition, rather than on individual locations of the value in isolation.
- (b) for sensitive national estate values, the highest level of protection is obtained through reservation;

- (c) all sensitive national estate values should have adequate representation in nature conservation reserves;
- (d) management outside nature conservation reserves should be aimed at minimising the adverse impacts of management operations on national estate values which may be sensitive to disturbance.

As outlined in its Draft Forest Strategy, CALM acknowledges national estate values in the Region as specific values which need to be taken into account in the management of the Region. The Commission acknowledges that CALM is managing for a wider range of values in the Region than just national estate values.

6.1 Protection of national estate values within the Nature Conservation Reserve System

CALM has an extensive nature conservation reserve network in the Southern Forest Region formalised in the 1987 Regional Management Plan (see Figure 4). The network has been reviewed during the development of the 1991 Draft Forest Strategy. This review has taken into account national estate values identified in this report, and new reserves proposed by CALM in the Draft Forest Strategy (see Figure 4 and Appendix 5) have been based in part on consideration of national estate values in the Region.

The Commission has examined the extent to which identified national estate values are protected within the existing reserve system in the Region, including proposed reserves not yet gazetted, and within the new reserves proposed in the Draft Forest Strategy. The results of this analysis are detailed in Appendix 3 and summarised in Table 6.

It is evident from Table 6 that the majority of the national estate values identified within the Southern Forest region are well protected by the nature conservation reserve system. In most instances, more than half the expressions of value (i.e. individual areas where a value is present) assessed as being above the threshold of significance are located in whole or part within the reserves. The extent of protection of many values is improved by the proposed new reserves, particularly for extensive values such as forest and woodland with wilderness characteristics, areas significant for general biotic and abiotic processes, areas with a high diversity of plant communities types, undisturbed forests and woodlands and areas with good examples of particular vegetation assemblages.

For the majority of extensive values, at least one expression is reserved within every sub-region in which the values occur when the proposed new reserves are taken into account. For many types of value more than one expression is reserved (detailed in Appendix 3). Three types of value (vegetation diversity - dominant species; undisturbed forest; representative vegetation - community structure) are not reserved in every sub-region in which the value is found; in each case, only one expression of value above threshold is located in the sub-region.

6.2 Protection of national estate values outside the Nature Conservation Reserve System

The most appropriate form of management to protect national estate values outside nature conservation reserves will vary with each value. The Commission considers that management to protect national estate values in areas utilised for a wide range of values should be based on the following principles:

- (a) regional planning should take account of the extent to which each sensitive national estate value is protected in the Nature Conservation Reserve System;
- (b) the location and timing of timber production and associated activities in the Region should take account of the specific characteristics of each national estate value, including their sensitivity to disturbance and the time required for the value to re-establish;

(c) the location and timing of timber production and associated activities in the Region should take account of the range of national estate values present in listed areas lying outside nature conservation reserves;

(d) in listed places, appropriate management practises should be implemented at the local forest block level to minimise adverse impacts on the identified national estate values.

Table 6. Representation¹ of national estate values in the existing² and proposed new³ nature conservation reserves in the Southern Forest Region

| Identified National Estate Value | Total number of expressions identified above threshold | % of expressions in existing reserves | % of expressions in existing and proposed new reserves |
|---|--|---------------------------------------|--|
| Criterion A.1 | | | |
| Endemic fauna | 30 | 67 | 77 |
| Endemic flora | 24 | 63 | 71 |
| Gondwanic fauna | 31 | 65 | 68 |
| Biogeographic range, fauna | 3 | 100 | 100 |
| Biogeographic range, flora | 4 | 50 | 75 |
| Refugia, fauna | 2 | 100 | 100 |
| Refugia, flora | 4 | 100 | 100 |
| Relict species | 5 | 80 | 80 |
| Relict communities | 3 | 100 | 100 |
| Geomorphological sites ⁴ | 13 | 92 | 92 |
| Criterion A.2 | | | |
| Abiotic processes - coastal | 7 | 100 | 100 |
| Abiotic processes - non-coastal | 22 | 64 | 71 |
| Biotic processes - vegetation | 42 | 74 | 83 |
| Biotic processes - fauna | 41 | 78 | 83 |
| Criterion A.3 | | | |
| Diversity of landforms/soils | 36 | 67 | 83 |
| Faunal/faunal habitat diversity | 17 | 76 | 88 |
| Vegetation diversity - dominant species | 27 | 52 | 52 |
| Vegetation diversity - community structure | 21 | 57 | 57 |
| Vegetation diversity - community type | 27 | 48 | 74 |
| Criterion B.1 | | | |
| Rare, endangered or uncommon fauna | 56 | 55 | 71 |
| Rare, endangered or uncommon flora | 39 | 64 | 72 |
| Lakes & wetlands | 4 | 100 | 100 |
| Monadnocks | 22 | 59 | 86 |
| Undisturbed forest (old growth forest) | 61 | 46 | 56 |
| Undisturbed woodland | 19 | 53 | 63 |
| Undisturbed heathlands, swamps, wetlands | 42 | 40 | 52 |
| Forest with wilderness characteristics | 13 | 69 | 92 |
| Woodland with wilderness characteristics | 10 | 40 | 90 |
| Coastal areas with wilderness characteristics | 3 | 100 | 100 |
| Criterion C.1 | | | |
| Research sites | 3 | 100 | 100 |

Table 6 contd

| Identified National Estate Value | Total number of expressions identified above threshold | % of expressions in existing reserves | % of expressions in existing and proposed new reserves |
|----------------------------------|--|---------------------------------------|--|
| Criterion D.1 | | | |
| Fauna/faunal habitats | 3 | 67 | 67 |
| Geomorphological sites | 9 | 100 | 100 |
| Lakes & wetlands | 6 | 100 | 100 |
| Vegetation assemblages | 39 | 59 | 74 |
| Vegetation - community structure | 254 | 52 | 58 |
| Vegetation - community type | 108 | 44 | 46 |
| Criterion E.1 | | | |
| Landscape values | 35 | 77 | 86 |

- 1 The representation has been determined from the percentage of 'expressions' of each type of value located in indicative areas. A single value is rarely above threshold throughout an entire Indicative Area; the individual occurrences of the value are termed 'expressions'. Within the table, those values which were not assessed systematically throughout the Region are shown in *italics*.
- 2 Includes gazetted reserves and areas proposed for reservation in 1987 Regional Management Plan
- 3 Includes new reserves proposed in CALM's 1991 Draft Forest Strategy
- 4 Although the majority of geomorphological values identified were based on systematic assessment, some values were not.

The most appropriate consideration of national estate values for regional planning and local management will vary with the characteristics of each value. The Commission has prepared guidelines to help implement the above principles in a manner appropriate for each national estate value. These guidelines relate to the conservation of national estate values; they are not land use prescriptions, nor are they intended to be. The guidelines, which are detailed in Appendix 4, provide a series of options which may help decision-makers, when planning timber production activities in the Region, to minimise the adverse impacts of the activities. The guidelines also indicate, where relevant/possible, minimum requirements for protection of national estate values which the Commission considers are desirable at a regional level. The provision of these guidelines is consistent with the Commission's statutory role to provide advice on mitigating adverse impacts on the national estate.

In light of further research and operational experience, CALM has reviewed its forest management practices, and proposes a variety of changes appropriate to the full range of values in the south-west of WA. Many of the revised practices proposed for implementation are designed to integrate national estate considerations with timber production operations in the Southern Forest Region at a local level; these practices are outlined in Appendix 5.

7. APPLICATION OF THE JOINT WORK IN THE SOUTHERN FOREST REGION

The listing of places in the Register of the National Estate is not a land use decision. However, once a place is listed in the Register or placed on the Interim List, Commonwealth Ministers, departments and authorities are required to minimise adverse impacts on the places, as far as possible, from any action which they take. Where the Commonwealth is involved in actions which may affect a listed place, section 30 of the *Australian Heritage Commission Act 1975* requires the following:

- the Minister, Department or authority is required not to take any actions that adversely affect a place that is in the Register unless there is no feasible and prudent alternative to the proposed action;
- if there is no alternative, the Minister, Department or authority is required to take all reasonable measures to minimise the adverse effects;
- where an action affects a place that is in the Register to a significant extent, the Minister, Department or authority is required to inform the Commission and allow the Commission to comment on the proposed action.

The actions of State and Local government, industry and private owners are not directly constrained by listings in the Register, although, as noted in section 2 of this report, indirect constraints may result from actions with Commonwealth involvement. Because listing gives public recognition to places with national estate values, it alerts owners and managers of listed places of the need to take national estate values into account when making management decisions affecting the places.

The majority of national estate places identified in the Southern Forest Region coincide with land managed by CALM, although some places coincide with private property. As the major land manager of national estate places in the Region, CALM recognises that it has a key role in protecting national estate values.

In the Southern Forest Region, both CALM and the Commission are involved in referrals of any timber production operation requiring a Commonwealth decision, where the operation may affect a national estate place. As the land manager, CALM provides the Commonwealth action Minister (the Minister for Resources) with details of the proposed operations. The Commission provides advice to the action Minister on the impact of the proposed operations on the national estate under section 30 of the Australian Heritage Commission Act.

The Commission and CALM agree that application of the results described in this report for the Southern Forest Region, including the regional assessment of national estate values, and guidelines and management practices to protect identified values, is fundamental to the protection of those values in the Region. The Commission and CALM have therefore developed a Memorandum of Understanding (MOU) to provide an agreed basis for applying the results of the joint work, and ongoing cooperation to this end, with respect to CALM management of the Region and to future section 30 referrals for timber production operations in the Region. The MOU has been published as a separate document.

In the MOU, the Commission states that:

- it considers the joint work to be an adequate assessment of those national estate values listed in this report; and
- it considers the joint work to be a suitable framework for Commonwealth consideration of export woodchip licences under section 30 of the *Australian Heritage Commission Act 1975*.

This does not legally obviate the need for future section 30 referrals, but the Commission agrees to rely on the principles detailed in this report, and summarised in the MOU, to advise on future section 30 referrals.

In the MOU, CALM states that it will protect the national estate values on CALM land within the Southern Forest Region, within the context of maintaining timber volumes to industry as specified in the 1987 Timber Strategy, and maintaining other values as specified in the 1991 Draft Forest Strategy.

CALM considers that the results of the joint work provide an appropriate, and the best available, basis for CALM's management of national estate values in the Region, including consideration of prudent and feasible alternatives and measures to minimise adverse impacts.

Both organisations have agreed to provide the Report, and the MOU, to relevant Ministers, and to use it as the basis for future exchanges of information, and planning. Both organisations have also agreed to carry out further research on values not yet assessed, and to renew the agreement contained in the MOU, and the study, at regular intervals. Additional further joint work in the remaining areas of the south-west forest, and on values not adequately assessed in this study, has been agreed.

Although the MOU covers only timber production operations, the results of the joint work will also provide an effective basis for the consideration of other activities in the Region which may impact on national estate places.

8. READING LIST

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Management Strategies for the southwest forests of Western Australia. A review. Draft. Department of Conservation and Land Management, December 1991.

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A Nature Conservation Strategy conserving biological diversity in Western Australia. Draft. Department of Conservation and Land Management, 1991.

Regional Land Management Plan 1987-1997: Southern Forest Region. Department of Conservation and Land Management, December 1987.

The karri forest region: its conservation significance and management, by P.E.S. Christensen. Draft report, Department of Conservation and Land Management, 1991 (in press).

Timber Production in Western Australia. A strategy to take WA's south-west Forests into the 21st century. Department of Conservation and Land Management, December 1987.

9. GLOSSARY

AHC: Australian Heritage Commission

attribute: specific features/components of the natural or cultural environment which may be analysed for national estate significance, e.g. vegetation communities, species of plants and animals, wetlands, archaeological sites, historic sites etc (see Table 2)

CALM: WA Department of Conservation and Land Management

EIS: Environmental Impact Statement

ERMP: Environmental Review and Management Program

extensive national estate values: national estate values which are widespread over the landscape, e.g. wilderness, representative forest types

GIS: Geographic Information System

identified national estate value: refers to national estate values identified as part of the regional assessment in the Southern Forest Region

listed place: refers to any place which will be listed in the Register of the National Estate as a result of the joint regional assessment work

nature conservation reserves: refers to national parks, conservation reserves and nature reserves as described in the *Conservation and Land Management Act 1984* and 1991 Amendments

results of the joint work: the results of the joint work refers to the analysis of national estate values and their level of protection in the Region (summarised in chapters 5 and 6, and detailed in appendices 2 and 3 of this report), the AHC principles for protection of identified national estate values in the Region (principles in chapter 6 and guidelines in Appendix 4 of this report) and CALM management practices (detailed in Appendix 5 of this report)

section 30 referral: actions of Commonwealth Ministers, departments or authorities which may have a significant effect on places listed in the Register of the National Estate or its Interim List must be referred to the Australian Heritage Commission for advice under section 30 of the *Australian Heritage Commission Act 1975*

the Region: refers to the Southern Forest Region

the report: refers to this report (*National estate values in the Southern Forest Region, south-west Western Australia*) containing the results of the joint work by AHC and CALM