

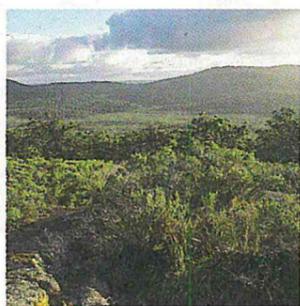
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FOREST STRATEGY

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT



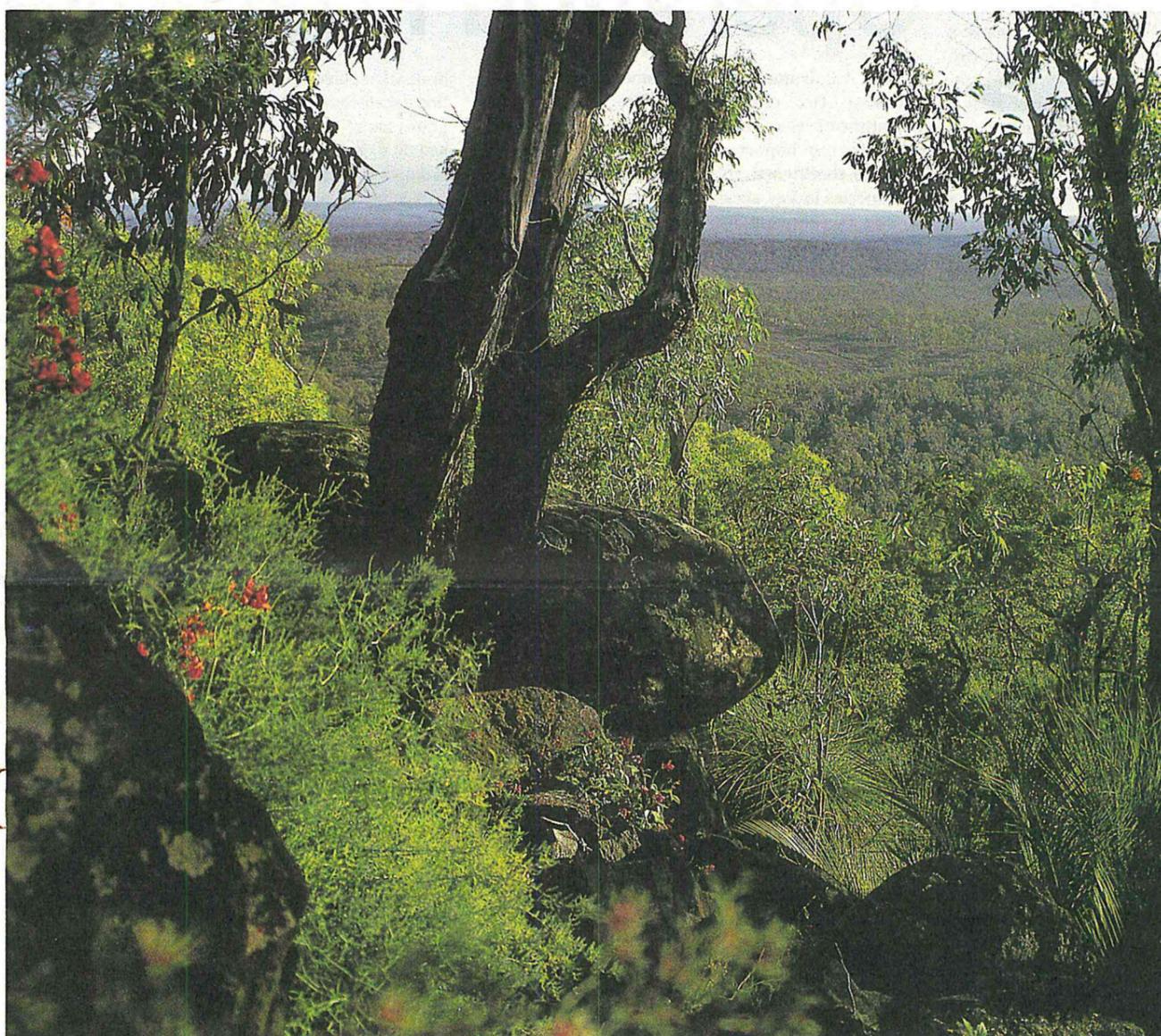
- New national park proposed and 124 000 hectares added to reserves in WA forests - page 3
- Colour map of proposed reserve system



- Timber supplies ensured forever - page 3
- Road, river and stream reserves extended through the whole forest - page 4



- Changes to timber harvesting techniques are planned - page 4
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A comprehensive inventory was completed in WA's jarrah forests, using space-age technology. Photo by Otto Prause.

Forest review released

A MAJOR review of native forest management in Western Australia has been released.

It capitalises on increased knowledge about the forest ecosystem and improved technology.

The strategy for managing WA's publicly owned native forests has been evolving since scientific forest management was introduced in 1919.

The strategy was last formally updated in 1987, when management plans for the forest regions and a Timber Strategy were adopted by the Government after extensive public participation.

Investment

The plans and the Timber Strategy led to major increases in the forest conservation estate and stimulated investment in WA's forest industries.

They were scheduled for review in 1997 but it was decided to update existing plans and forest management to take advantage of advances which resulted from the implementation of the strategy and plan.

In addition, the Minister for the Environment, in response to the EPA report on the 1987 Forest Region Management Plan and the WA Chip and Pulp Environmental Review, required CALM to:

- evaluate the effect of jarrah silviculture on water quality;
- review road, river and stream reserves in the southern forests; and
- identify areas of special significance in the forest and plan for their future management.

The subsequent review incorporated the results of a comprehensive inventory

of the jarrah forest that was completed in mid-1991 (see 'Technology counts in totting up trees' on page 2).

At the same time, CALM and the Australian Heritage Commission undertook a cooperative study of national estate values in WA's southern forests.

Agreement

The resulting agreement with the Heritage Commission has broken new ground and will now be put forward as a model for other states (see page 2), and the approach will be applied to the rest of WA forests.

The review of native forest management summarises the current knowledge of WA's forest ecosystems, analyses the community's requirements from the forests, establishes forest management principles that provide ecologically sustainable development and proposes appropriate strategies.

It is based on a comprehensive review of scientific research which is summarised in two books, 'The Karri Forest' by Per Christensen and 'The Jarrah Forest', by Dell, Havel and Malajczuk.

The review should be read together with:

- proposed amendments to the Regional Forest Management Plans and the Timber Strategy, which flow from the recommendations contained in the review; and
- the Australian Heritage Commission/CALM joint study - "National Estate Values in the Southern Forest Region, South West Western Australia";
- the Nature Conservation Strategy.

The review is open for public comment for three months.

Caring for and sharing our native forests

WESTERN Australia's native forests have been managed according to the principles of sustained yield and multi-purpose use. But sustainability has been focused on wood yield, and as demands on the forest have increased, different forest uses have been accommodated by "compartmentalising" the forest.

The review of forest management retains the

concepts of sustainability and multi-purpose use but broadens them and emphasises the importance of integrating uses with the natural forest cycle.

Perpetuity

Forests are dynamic ecosystems and can be used in perpetuity, provided the ecological processes that sustain them are not impaired.

Consequently, the review makes the maintenance

of the physical and biological processes (including biodiversity) that sustain the forest ecosystem the first priority of forest management.

It also recommends that the forest should be managed so that it has a balanced structure; that is, the forests should always have each stage of forest development, including the old growth stage, represented.

This means that the level at which the forest is used, for whatever purpose, is determined firstly by the natural forest processes, not by the demand for that use.

Uses

The review also recognises that all forest use must be sustainable and that no individual forest use should prevent other uses.

This means that no single use can be maximised, because to do so could endanger the forest and would deprive other forest users of the values they enjoy.

Integrated forest management is a way of ensuring the forest is sustained forever and all uses are catered for; that is, simply, caring for forests and sharing their use.

Submissions to the review should be forwarded to Forest Strategy submissions, c/o CALM 50 Hayman Road, Como.

Heritage agreement a landmark

AN HISTORIC agreement between CALM and the Australian Heritage Commission is expected to be a model for similar agreements throughout Australia.

The two agencies have worked closely to assess WA's southern forest for heritage values worthy of listing in the Register of the National Estate, a national inventory of significant places in Australia's cultural and natural history.

The State and Commonwealth governments both have legislative requirements for the protection of WA's native forests, but their different procedures have led to conflict and confusion in the past.

Many of Australia's forest areas are already listed in the Register, on both public and private land - national estate areas are not the same as national parks.

Listing a place in the Register doesn't directly affect the way it's managed, unless a Commonwealth decision is involved, such as granting an export licence.

The Commonwealth mustn't take any action which adversely affects a national estate area, unless there is no feasible and prudent alternative.

Places can be added to the Register at any time provided they meet detailed

criteria establishing their significance, such as habitat for endangered species, wilderness and Aboriginal or historic values.

The Heritage Commission isn't required to consider the economic and social impacts of listing a place in the Register - a key difference between it and State land managers.

A memorandum of understanding between CALM and the Heritage Commission allows both to meet their responsibilities.

The approach was to look at national estate values and forest management across a whole region, starting with WA's southern forests. This resolved previous problems of ad hoc listings caused by considering individual places in isolation.

A steering group of CALM and Heritage Commission staff examined data for more than a million hectares of WA forest.

Information came from a range of sources, including CALM's forest inventory and geographic information system, which has computerised data under more than 70 headings, including vegetation types, land forms and logging history.

Assessing this data against the Heritage Commission's detailed informa-

tion on national estate criteria, the steering group identified 44 areas with national estate significance.

A large proportion was already in WA's conservation reserve system, but some national estate values, such as wilderness, weren't well represented.

A review of forest reserves by CALM took this into account and the Department recommended an increase of 124 000 hectares, nearly a third of which is virgin forest.

Some areas with heritage values remain outside the reserve system and will eventually be harvested, but each will be represented locally by similar areas in conservation reserves.

Guidelines to protect national estate values are set out in a draft report. These will be used by the Commission when preparing advice for Commonwealth decisions on forest operations and by CALM when planning and implementing its operations.

Additions to the Register of the National Estate and advice to government are no longer based on partial information, but on a comprehensive regional review. This recognises that forests are dynamic ecosystems and emphasises the importance of the whole natural system and not just the highlights.



Senior members of CALM and the Heritage Commission reviewing national estate areas.

Operation Foxglove

CALM will dramatically increase fox control throughout the State, providing an important boost to threatened animal species in key areas.

The Government has provided increased funding for fox control and research on the fox problem in an initiative known as 'Operation Foxglove'.

The aim is to make at least 20 per cent of the forest fox-free by the end of 2003.

Research undertaken by CALM has shown conclusively that the introduced fox is the most serious cause of small mammal decline in forest areas and the fox is arguably the greatest threat to conservation and biological diversity of the forest fauna.

The introduction of the fox probably caused dozens of mammal species to

become extinct or disappear from large areas of Australia.

It is also endangering the survival of many other species, such as the tamar wallaby and western swamp tortoise, that still survive in small pockets.

Research

CALM research has also shown that if fox populations are controlled, large numbers of small and medium-sized native mammals will rapidly recolonise suitable habitats. For instance, the woylie population at Dryandra forest rose 400 per cent after two years of predator control.

The baits contain 1080 poison, to which native birds and animals are largely resistant.

While the research trials from fox control programs have been relatively

dramatic, current operational scale fox control programs are relatively small and there is no overall co-ordination of the program with adjacent landholders.

CALM will involve other agencies in the program. Funds will be sought from the private sector.

By taking a co-ordinated and comprehensive approach to fox control, CALM will ensure that efforts to control foxes are directed at the most needed areas and carried out in the most efficient manner.

For instance, baiting that is not targeted directly at protecting threatened species would be a low priority.

An experiment will be set up in the jarrah and wandoo forests to test current baiting methods and to research whether methods developed in semi-arid areas will work in forested

areas without harming native carnivores such as the chuditch.

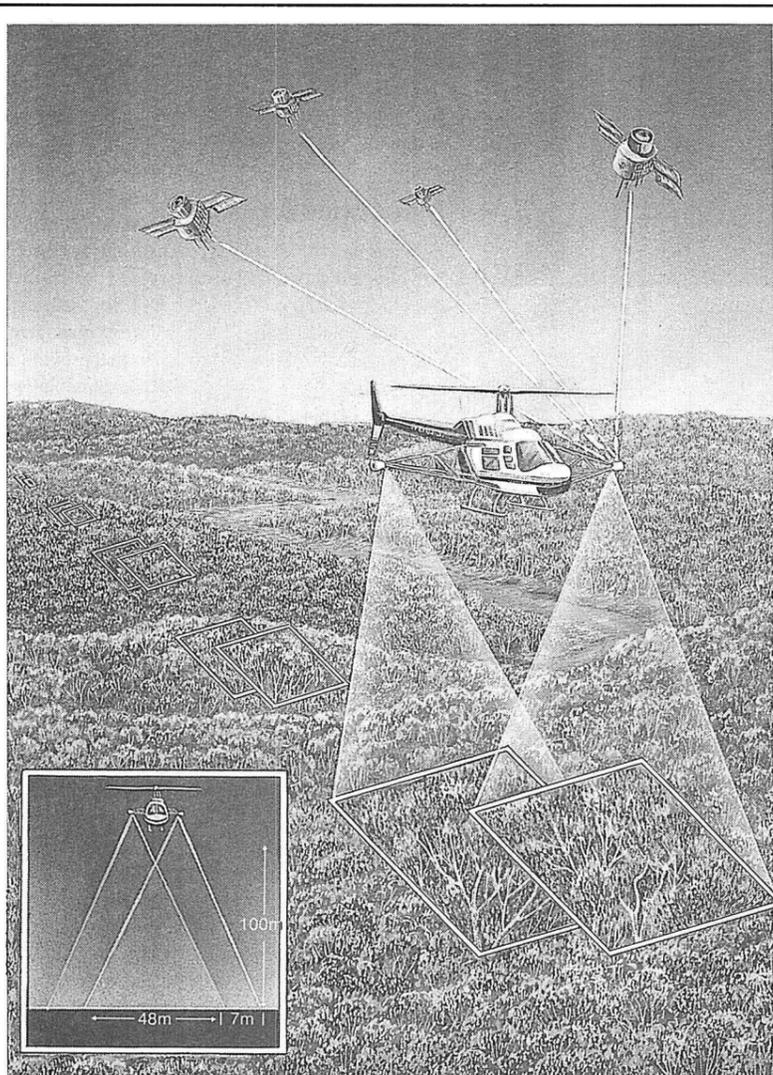
Other research will answer questions about the potency of 1080 poison baits and help to refine baiting techniques.

As well as boosting existing fox control projects, funds will be directed to several new areas considered to be a high priority.

For instance, researchers are keen to target foxes in a reserve in the northern jarrah forest, such as Lane Poole, where chuditch, quokkas, brush wallabies, bandicoots and possums all occur.

Efforts to educate the public about the benefits of fox control will also be important.

A fox control co-ordinator will be appointed within CALM to oversee Operation Foxglove.



A satellite navigation system was used to pinpoint each photographic sample
INSET: Overlapping photographs were taken from 100 metres above the trees and covered a 48 metre square.

Technology counts in toting up trees

FOREST scientists have just completed a count of WA's 308 million jarrah trees using a technology that could help to resolve conflict over the logging of the nation's timber resources.

Researchers from the Department of Conservation and Land Management and Melbourne University have devised a solution to the greatest problem of managing vast forest reserves: how to see the wood for the trees.

In the process, they have developed a tool for sustainable management of forests that will help governments and forests managers to arbitrate the conflict between conservation and use of timber resources.

Using pinpoint satellite navigation, a helicopter equipped with stereo cameras and a sophisticated computer program, they have developed what is regarded as the most advanced method for evalu-

ating forest resources in the world, recognised in a recent international award.

The system reveals how much timber exists in the forest, what kinds of tree, how tall they are and what kinds of changes are taking place in the resource and its environment.

Helicopter

Guided by the satellite-based Global Positioning System, a specially equipped helicopter flies along a strict flight-path over the forest, its twin cameras taking pictures every 500 m.

To position itself accurately, the helicopter has simultaneous contact with at least four United States NAVSTAR navigation satellites.

The two overlapping photographs provide a stereoscopic image of the forest below, which skilled analysts can interpret to measure the height of the trees and the mix of species. Samples of their work are tested

on the ground for accuracy.

From this information it was possible to calculate how much timber was available, its maturity and likely uses, CALM forest scientist Paul Biggs said.

It was also possible to keep track of tree diseases, pests and changes in the forest environment, monitor the progress of regeneration and maintain a watch on forest diversity.

In the case of a forest with multiple uses, such as logging, conservation and recreation, the information could be used to strike a balance among different uses, or to compare the impact of various forest strategies.

This would reveal, for example, the impact on timber supplies of a decision to set aside a certain area for ecological or other reason, or provide a developer with advice on whether an area could be logged or cleared.

The system has just

completed the largest stocktake in Australian history - measuring the timber resources of WA's 1.4 million hectare jarrah forest - one of the largest and most sensitive forestry assets in Australia.

From no fewer than 24 000 paired photographs, it established there were 308 million trees, the most accurate assessment ever made.

It scanned for 28 species of trees and measured their wood for bends, kinks, termite or fire damage and 26 other factors affecting timber quality.

The computer program then helped to decide which products could be cut from each sampled tree.

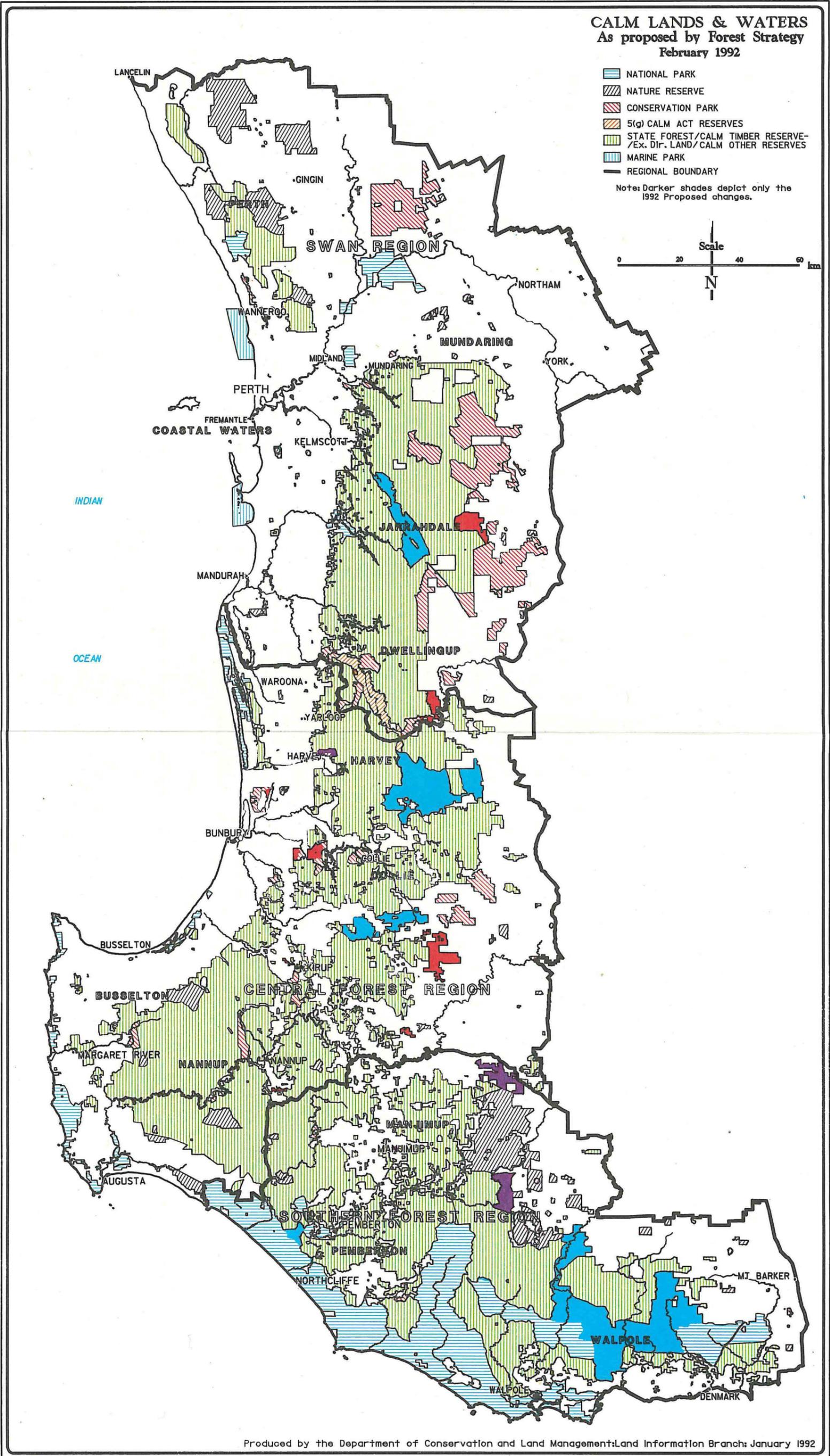
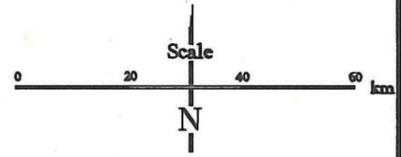
To complete such a task on foot - the normal way - would require at least 10 times the manpower and time and would cost 10 times as much.

Reprinted from an article in *The Australian* by Julian Cribb

CALM LANDS & 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/CALM OTHER RESERVES
-  MARINE PARK
-  REGIONAL BOUNDARY

Note: Darker shades depict only the 1992 Proposed changes.



Major expansion proposed to WA forest reserves

An 80 000 hectare national park is one of 18 new conservation reserves proposed in south-west forests.

The national park will stretch from the Frankland River to the Denmark River, linking the Mt Frankland and proposed Mt Lindesay National Parks and the Lake Muir Nature Reserve.

If the proposals are accepted, they will result in a great sweep of parks, from the beaches of D'Entrecasteaux to the karri of Mt Lindesay.

It contains 32 000 hectares of virgin jarrah, karri and tingle forests, and the highest quality wilderness values in the south-west.

The new reserves will put the "icing on the cake" of the nature conservation reserve system in south-west forests.

In total, 124 000 hectares of forest and woodland will be added to na-

tional parks, conservation parks and nature reserves under the proposals in the forest management review.

Another new 14 000 hectare national park in the Preston River valley will be created by adding 3 100 hectares to link three conservation parks at Noggerup, Preston and Goonac.

Outstanding

This park is significant because of its outstanding jarrah forests, and because the vegetation communities within it are currently not well represented in reserves.

Several vegetation communities were poorly represented in parks because past agricultural clearing reduced them to scattered remnants within State forest.

The new reserves will provide a solid foundation for forest conservation and management in

the south-west.

In another highlight, 13 000 hectares of virgin wandoo and jarrah forests will be added to the Perup Nature Reserve, east of Manjimup, which is home to six threatened animals including the woylie, tamar, chuditch, southern brown bandicoot, ring-tail possum and numbat.

An area of 2 500 hectares will link the D'Entrecasteaux and Warren National Parks. This area contains virgin jarrah and karri forest, lakes, wetlands and the moving front of the huge Yeagarup mobile sand dune.

In the northern jarrah forest, parts of Gibbs, George and Stene State forest blocks will add 9 000 hectares of wandoo and jarrah forest to the expanded network of conservation parks.

Other conservation parks at Clarke, Gervasse, Lennard, Ryall and

Beaton will add vegetation typical of the Darling Scarp forests, which have mostly been cleared for agriculture, into the reserve system.

If the reserves proposals are accepted, 24.8 per cent of the jarrah forest and 30.4 per cent of the karri forest will be in formal conservation reserves.

If road, river and stream reserves and other areas managed primarily for conservation are included, 32.6 per cent of the jarrah forest and 46.4 per cent of the karri forest will be in reserves.

These proposals will ensure that all major forest ecotypes will be represented in secure reserves.

The forest management review also confirmed the value of an extra 283 000 hectares of forest which is now proposed to become State forest.



Timber supplies guaranteed

THERE is good news for the timber industry and for people who use products made from WA timber.

Despite the massive additions to the forest conservation estate and the reduction in wood production potential caused by maintaining the forest structure (see 'Balancing forest structure' below), existing levels of wood yield from the forest can be sustained in perpetuity.

Estimates of the sustainable level of wood production from the jarrah and karri forests in the 1987 Timber Strategy were conservative because the data available on the volumes of wood in the jarrah forest was imprecise.

Even though the growth of the forest exceeded wood harvest levels, the original Timber Strategy foreshadowed reductions in sawlog yield in the future because a shortage of logs of suitable size to process as sawn timber was projected.

In the five years since the 1987 Strategy, a

number of major developments have made it possible to develop precise estimates of the standing volume of wood, the size class distribution and the growth rates of the forest.

For instance, the sustainable yield of the jarrah forest was calculated using several sophisticated computer technologies and models: the jarrah inventory technology, Geographic Information System technology and mathematical models to simulate the growth and harvesting of the jarrah forest.

The level of sustainable wood harvest in perpetuity from the karri and jarrah forest is 1 360 000 cubic metres of jarrah, 417 000 cubic metres of karri and 559 000 cubic metres of marri.

In actual fact the poten-

tial sustainable yield from WA forests is much higher.

For instance, if the jarrah forest was managed for wood production alone, the sustained yield of jarrah logs would be 2.5 million cubic metres each year.

The review of forest management uses gross bole volume to describe sustainable levels of harvesting rather than traditional product categories such as sawlogs.

This is because specifications for products such as sawlogs are changing rapidly due to technology and markets.

It is likely that in the future, due to advances in technology, even more usable wood will be recovered from the sustainable volumes that have been established.



Public provides big input to draft plans

HUNDREDS of people have attended workshops and provided CALM with valuable feedback during the drafting of the department's new Nature Conservation Strategy and review of forest management.

Seminars, workshops and field trips have provided many opportunities for interest groups and the general community to help formulate approaches to key issues addressed by the strategies.

The workshops have been sponsored by the National Parks and Nature Conservation Authority and the Lands and Forest Commission.

In April this year more than 100 people attended a workshop on jarrah forest conservation and values. Workshop participants listed the most important issues for conserving and managing the jarrah forest.

Field day

Another 80 people attended a jarrah forest field day at Dwellingup.

Subsequent seminars and workshops focussed on topics such as:

- ❖ biological diversity and ecological sustainability;
- ❖ principles for selecting nature conservation reserves;
- ❖ managing road, river

and stream zones in forest areas;

- ❖ endangered species management; and
- ❖ multiple purpose management in State forest.

The workshops have proved to be an excellent way of sharing ideas and opinions, and often help

to resolve difficult problems.

The Lands and Forest Commission, National Parks and Nature Conservation Authority and CALM are committed to an ongoing process of public involvement in forest and nature conservation management.

Balancing forest structure

THE principal objective of forest managers is to sustain the forest.

This means that the fundamental ecological processes which drive forest ecosystems - the water, natural and carbon cycles - must be maintained.

The review emphasises the importance of maintaining a balanced forest structure, that is, ensuring that all stages of forest development are represented.

Dynamic

The forest is constantly changing. The cycle of forest growth is dynamic: forests naturally regenerate, mature, die, then regenerate once more.

To sustain old growth forest, all preceding stages of development must be represented.

Maintaining the full spectrum of develop-

ment stages, including at least a proportion of each major habitat type as old growth, is important in conserving the full suite of species and the major ecological processes.

Forest giants

Today's forest giants will eventually die of old age and new giants will be admired.

The key is to manage the forest so that, at any time, each stage of development is represented sufficiently throughout the WA forests.

No single forest condition is optimum for all the wildlife species present in the forest - each has specific habitat requirements and a complex relationship with the environment.

As a result, each stage of forest development has its own suite

of plants and animals associated with it.

The review of forest management examined the existing forest structure in the jarrah and karri forests.

The review proposed that the existing forest

structure should remain the same in the jarrah forest, where the range of size classes closely approximates the virgin forest.

In the karri forest, the minimum proportion of the forest represented by

the oldest stage of development will be 40 per cent.

This will ensure that the complete range of size classes in the forest today will always exist and that all values are sustained indefinitely.

New visitor sites

FORESTS help to improve the quality of life of all Western Australians.

More than 2.7 million people visited tourist sites in WA forests last year, demonstrating the recreational value of forests.

Tourism investment in the south-west at June 1991 was \$947 million, and much of this depends on the attractions of the forest.

The review of forest management recognises that forest are important for recreation, tourism and education and recommends

that more than 100 day use visitor sites in the forest regions be redeveloped or upgraded over the next 10 years.

Improved site design and facilities will provide additional visitor capacity and enhance visitor satisfaction without increasing the potential for environmental degradation.

At least 10 new campsites in forest areas will also be developed to cater for increased demand for small and large group camping over the next 10 years.

The review also recognises that it is vital to develop community awareness and understanding of WA's forests and forest management.

Two additional field study centres - based on the successful centre at Perup near Manjimup - are proposed to be established at Dwellingup and Mundaring.

The department will also develop five demonstration forests throughout the south-west to improve community awareness and understanding of forests and forest management.

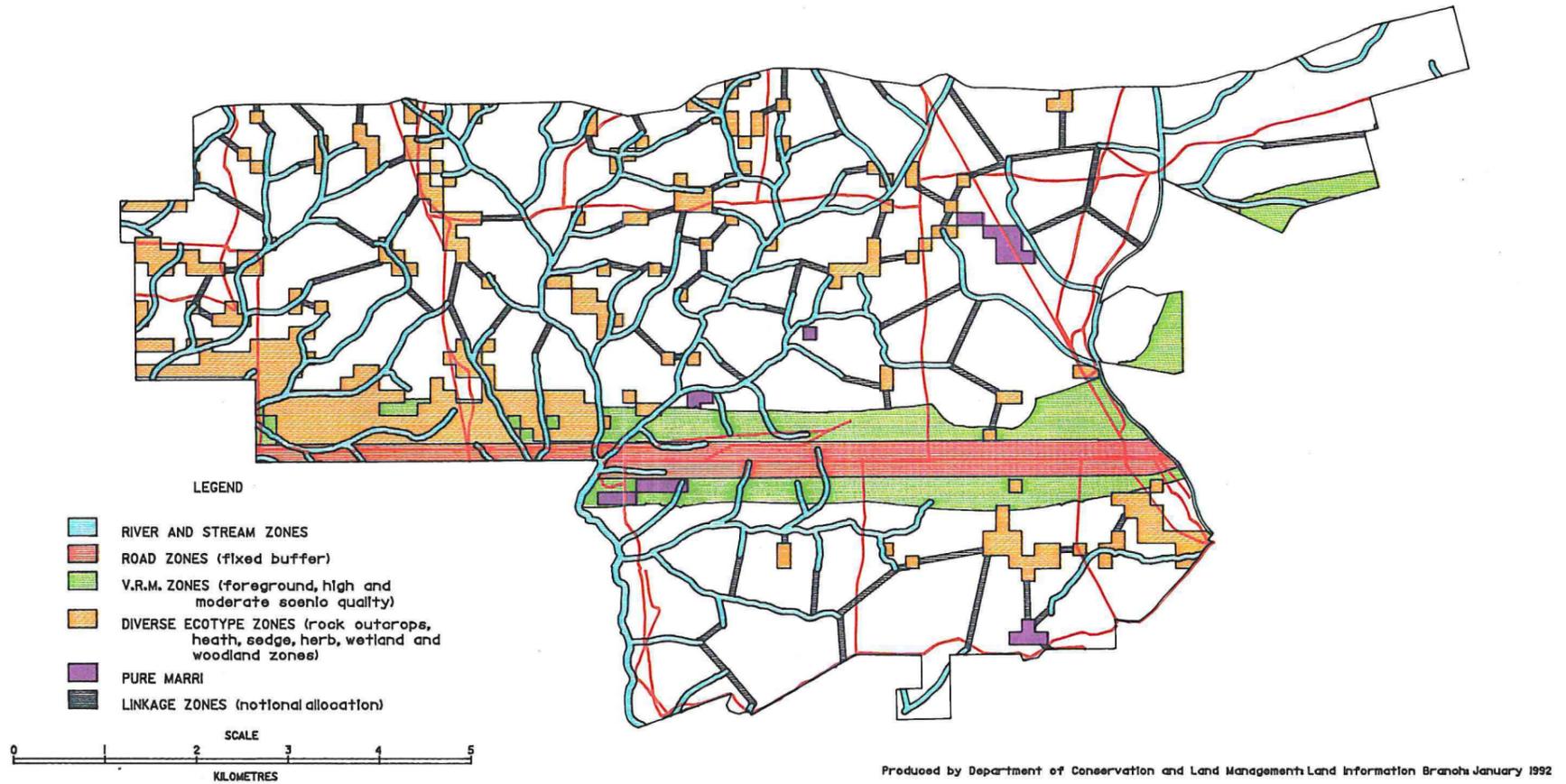
How to have your say

The review of forest management will be open for public submissions for three months.

Viewing copies are available at public libraries and all CALM offices. Copies can be purchased for \$10 each from most CALM offices.

Submissions should be forwarded to Forest Strategy Submissions, c/o CALM, 50 Hayman Road, COMO.

Proposed distribution of road, river, stream and other zones Jane Forest block, Pemberton District



Jane Block, in the Southern Forest region, showing the significant areas to receive special protection: river and stream zones, road zones, pure marri and diverse ecotype zones, visual resource management zones and linkage zones.

Forest sites to receive special protection

Much more than maps

RIVER and stream zones, where timber harvesting is excluded, will be extended through the whole forest, if the review of forest management recommendations are accepted.

Other sites with cultural, aesthetic and conservation significance will be given the same protection.

Research has shown that zones along streams, rivers and wetlands are especially important for nature conservation, water and landscape values.

Moist sites

Species of birds, mammals and amphibians are richest in these zones.

The review of forest management recommends that all streams throughout the forest, including valley headwaters and seepage areas, be protected by river and stream zones.

63 100 hectares in the Southern Forest and 91 400 hectares in the Central Forest and Swan regions will be allocated to river and stream zones - a total of 154 500 hectares.

Currently, 30 800 hectares are allocated to stream and river zones in the Southern Forest and there are no formal zones in the other regions.

The review recommends a variable width of river and stream zones, depending on soil type, slope, type of harvesting, rainfall zone and the width and importance of

streams. Ecological features would be used to select river and stream zone boundaries.

River and stream zones provide corridors for fauna movement, and because of their web-like pattern they automatically provide diversity in forest structure which promotes wildlife and aesthetic values.

Streamside zones in timber harvesting areas will protect water quality by filtering sediment and controlling saline groundwater.

The forest management review also recognises the significance of the mosaic of heath, sedge, herb and woodland formations, rock outcrops, swamps and wetlands throughout the forest.

These sites and transition zones between major

landscape features (ecotones) are important for wildlife conservation. It is proposed to protect 203 000 hectares of diverse ecotype zones from disturbance.

Corridors

Movement corridors and patches of mature forest will be set aside to link river and stream zones, aesthetic zones and diverse ecotype zones. Linkage zones will be chosen using ecological and landscape criteria to optimise the mosaic pattern of undisturbed forest.

It is proposed to allocate 3 200 hectares of mature karri forest as linkage corridors, ensuring that the maximum distance between patches of retained forest is about 400 metres.

The review of forest management has proposed that visual landscape values be evaluated and integrated into all forest management operations. All landscape types in the forest will be identified and classified into visual landscape management zones.

Roads, trails and tramways through the forest are also earmarked for special protection.

A 200 metre zone on either side of major travel routes and a 100 metre zone on either side of minor travel routes will be left undisturbed in the Southern Forest region.

A total of 63 roads, trails and tramways in the Southern Forest region will have zones allocated to them

under the new system. Altogether 17 000 hectares will be allocated to road zones under the new strategy, compared with 41 000 hectares allocated to only 38 roads under the current system.

The reduction in area has been made deliberately to favour increases in stream and river zones and allocation of retained patches of mature forest distributed throughout the multiple purpose forest. However, the redistribution has been made without compromising the region's aesthetic values.

Visual landscape management will ensure that visual landscape values are evaluated and integrated into all forest management operations.

CALM's Land Information Branch played a key role in formulating the review of forest management.

When CALM needed to thoroughly assess more than 750 000 hectares of forest in WA's south west, the department obviously needed good data.

For example, CALM had to decide where to leave habitat corridors and scenic strips along forest roads, rivers, and streams, and how wide these should be.

Managers need good information to weigh up the various options, so officers from Land Information became an important part of the Forest Strategy team.

GIS data

The Geographical Information System (GIS), a computerised data system, was used to generate vital information.

CALM pioneered the GIS for forest management in the 1970s. Information about vegetation types, timber volumes, landforms, roads, water tables, past fires and so on was fed into computers.

The system can produce data in any combination, enabling Land Information Branch to develop map information on possible rearrangements of road, river and stream zones and the impact of those changes on timber availability.

The original road, river and stream zones only applied to selected major roads and streams.

Under the new system,

the zones will be applied to all rivers, streams, lakes and swamps in the forest and joined in some places, to provide habitat corridors. However, the width of the zones will vary according to the importance of the stream.

To do this, Land Information analysed all streams in the southern forest to gauge the impact of redefining the zones.

Visual resource categories were also reproduced on the computer-generated (digitised) maps, so as to provide forest planners with information about the impact of likely activities within each of those zones.

This will allow forest managers to preserve the scenic quality of the forest and different landscape types, by varying the intensity, timing and distribution of harvesting.

The new system will apply to the whole of the southern forest region, where the review is subject to formal assessment by the EPA, and will also be extended to the northern and central forest regions.

CALM has combined the results of its three year inventory of the jarrah forest with GIS. The inventory measured 1.5 million hectares using aerial photography directed by satellites.

Regional planning officers will now have instant access to computer mapped databases for preparation of integrated resource plans.

Changes to harvesting

THE review of forest management has recommended changes to timber harvesting operations in WA forests.

Forest harvesting will be designed to mimic the natural patterns in the forest and forest management will be tailored to sustain all forest values.

Old trees will be retained throughout the forest, smaller and more dispersed sites will be cut, and harvesting will follow natural vegetation lines to minimise visual

impact.

In the karri forest, coupe sizes will be reduced. They will vary from eight to 80 hectares, with an average size of 30 hectares (coupes were previously up to 200 hectares).

Ecotones

The shape of coupes will follow the edges of natural features and avoid biological ecotones (transition zones between two vegetation communities). Such areas will be dis-

persed to reduce their impact on water, wildlife and aesthetic values.

Edges of coupes will be modified (feathered) where necessary to minimise aesthetic impacts, and patches of trees, understorey vegetation and old logs will be retained to provide diverse habitat within coupes.

Patches of old growth forest will be retained, and these will be linked to other zones, such as stream zones.

Harvest methods, and season of logging will also be varied according to aesthetic, water and wildlife values.

In the jarrah forest, coupe size will be varied according to aesthetic zones (0.25 - 10 hectares) and there will be up to three harvest stages in the first cutting cycle to minimise visual impact.

In harvested areas, habitat trees and old trees will be retained in groups to optimise structural diversity.