

TOWARDS AN EDEN REGIONAL FOREST AGREEMENT

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PREFACE

Eden is the first forest region in New South Wales for which comprehensive assessments have been completed. This report outlines the results of the assessments and considers a number of scenarios for forest conservation and management in Eden.

The report is the result not only of the accumulation and analysis of a great deal of scientific data, but also of an open and cooperative approach to the future management of the State's forests.

This approach included the close involvement of major stakeholders in the design and implementation of the assessment projects and finally in the preparation of some of the scenarios presented in this report.

The participation of local community representatives was facilitated through the Eden Regional Forest Forum which provided a forum for individuals and groups to make their views known to the participating government agencies and for information to be more readily provided to the community as the process developed.

The Eden Regional Forest Agreement – indeed the whole assessment process that New South Wales is undergoing – is based on the dual aim of creating a national reserve system of forests while building up *strong, internationally competitive and ecologically sustainable* forest industries.

This report outlines the background and implications of both national and State forest policy in New South Wales and summarises the scientific, social, economic and cultural assessments which have been completed for Eden.

The report includes three reserve design scenarios prepared by industry and conservation stakeholders and State agencies during an options development exercise in October and November 1997. A fourth scenario was developed subsequently by the Commonwealth. This additional scenario does not represent a preferred Commonwealth position rather it has been included, without prejudice, to ensure that the scenarios presented in the report cover an appropriate range of possible outcomes.

Both Governments invite further submissions from interested individuals and groups before a final determination of a regional forest agreement outcome that satisfactorily integrates conservation requirements with social and economic considerations.

1. BACKGROUND

1.1 INTRODUCTION

During 1997 and 1998 the Commonwealth and New South Wales Governments have been conducting comprehensive regional assessments (CRAs) of New South Wales forest regions. These assessments covered the range of environmental, biological, economic, social and cultural values of forests. The results of these assessments will be used by Governments to determine forest conservation and use over the next twenty years.

The assessments for the Eden CRA/RFA Region are now completed and the results are summarised in this report. The report provides:

- background information on the Commonwealth/State process in New South Wales;
- background information on the Eden assessments;
- a number of possible scenarios for the future management of Eden's forests; and
- information on the next steps in the process.

Summaries of projects undertaken in the Eden CRA Region are provided in *Eden CRA Project Summaries* (NSW and Commonwealth Governments 1998) which accompanies this report. Detailed scientific or technical working papers will be available for many of these assessments.

1.1.1 How to comment on this report

Your views on the scenarios for Eden will be taken into account before the Regional Forest Agreement (RFA) between the State and Commonwealth Governments is finalised. Please send written submissions to:

CRA/RFA Steering Committee
c/- Resource and Conservation Division
Dept of Urban Affairs and Planning
GPO Box 3927
SYDNEY NSW 2000

Closing date for submissions is Friday June 26 1998.

1.2 THE FOREST PROCESS: TOWARDS AN RFA

The forest debate – in New South Wales as in other Australian states – has in recent decades been a controversial and often unconstructive one, with neither conservationists nor industry being satisfied with the decisions which have been taken to resolve disputes.

In response, the Commonwealth and State Governments have developed a process to overcome the impasses in the debate and move it forward into the next century in a way which is constructive and beneficial for all parties involved and for the broader community.

1.2.1 National Forest Policy Statement

The 1992 National Forest Policy Statement (NFPS), an agreement signed by the Commonwealth and State and Territory Governments, sets out broad environmental and economic goals for the conservation and management of Australia's forests. These major goals include:

- to maintain an extensive and permanent native forest estate in Australia;
- to manage that estate in an ecologically sustainable manner so as to conserve the suite of values that forests can provide for future generations;

- to develop internationally competitive and ecologically sustainable forest-based industries that maximise value-adding opportunities and efficient use of resources.

The NFPS also outlined a national basis for satisfying the long-term requirements of conservation and industry. A vital element of the Statement was that joint Commonwealth-State comprehensive regional assessments of the environmental, heritage, economic and social values of Australia's forests would be undertaken. These assessments would form the basis for negotiation of RFAs between the Commonwealth and individual State or Territory governments.

1.2.2 The Scoping Agreement

The Scoping Agreement between the Commonwealth and State Governments was signed on 25 January 1996. The agreement confirms the intention of the two governments to proceed to negotiation of RFAs and to establish processes and timetables for their completion. It specifies the broad objectives of the RFA process as ensuring:

- the protection of conservation values;
- the basis for long term ecologically sustainable management of forests;
- the basis for an internationally competitive forest products industry; and
- the effective use of other economic and social resources of the regions.

1.2.3 The NSW and Commonwealth Regional Forest Agreement

More than two years of scientific assessment in Eden will culminate in the signing of the first RFA for New South Wales.

The agreement between the Commonwealth and NSW Government will determine the future management of Eden's forests: providing both for a system of conservation reserves and a viable, competitive, ecologically sustainable use of timber and other forest resources.

1.3 POLICY CONTEXT

1.3.1 The 1994 Eden EIS

An Environmental Impact Statement (EIS) was prepared for the Eden Management Area in 1994 under the State *Environment Planning and Assessment Act 1979*. The EIS involved a detailed assessment of the Region, which has provided some base data for the Eden CRAs. The NSW Minister for Planning made a determination in 1996 specifying in detail environmental conditions under which timber harvesting is proceeding in the Region during the period the EIS is in place.

1.3.2 Deferred Forest Agreement

Following the Commonwealth's Deferred Forest Areas report of December 1995, the Commonwealth and State governments signed an agreement covering commercial timber harvesting in New South Wales until 30 June 1996.

1.3.3 Interim Forest Assessment

The Interim Forest Assessment (IFA) of NSW forest regions was undertaken in 1995/96 by the NSW Government. Its purpose was to identify, on a regional basis, those forests that needed to be set aside from logging for possible inclusion in the comprehensive, adequate and representative reserve system of high conservation value forests.

The NSW Government deferred a total of 816 000 hectares of State forest across New South Wales from timber production and reduced sawlog quotas while guaranteeing the security of sawlog supply for ten years through term agreements with sawmillers.

Interim Forest Assessment: Eden outcomes

In its decision for Eden, the NSW Government created a South East Forests National Park package, to be introduced in two stages. To a reserve system of 50 000 hectares previously agreed to between the Hawke and Greiner Governments, it added a further 46 000 hectares.

Stage 2 of the package included 36 000 hectares of State forest which was deferred from timber harvesting pending completion of the RFA. An additional area was deferred at the request of the Commonwealth, and the combined deferred areas will be protected from timber harvesting until an RFA is completed for Eden.

The NSW Government also decided that quota grade sawlog supply for Eden would be 26 000 m³ until the completion of the RFA.

1.3.4 Criteria and statutory requirements

The RFA must be consistent with relevant Commonwealth and State policies and legislation, including:

JANIS Criteria (see box following section 1.6)

Following the signing of the NFPS, in 1993 an inter-governmental technical working group on reserve criteria was established under JANIS¹. This working group drafted criteria which have now been adopted for the CRA process.

The JANIS reserve criteria provide for a comprehensive, adequate and representative (CAR) reserve system made up of the following four elements:

- dedicated or formal reserves
- informal reserves
- values protected by prescription
- private land

JANIS notes the primacy of the formal reserve system.

Both Governments agreed to use the nationally agreed criteria in the JANIS Report as a guide for developing the comprehensive, adequate and representative reserve system for forests.

As stated in the JANIS report, these criteria for biodiversity, old growth and wilderness values are targets. It is recognised, however, that there may need to be flexible application to develop optimal and acceptable economic and social outcomes.

Moreover, the application of the criteria targets must take account of different regional circumstances.

Other policies

The RFA will be developed in a way which is consistent with other relevant policies including the:

- National Strategy for Ecologically Sustainable Development
- Intergovernmental Agreement on the Environment

1.3.5 Legislation

A range of Commonwealth and State legislative requirements are relevant to forests. The major acts which were taken into consideration in developing RFAs are listed below:

- Commonwealth:
 - *Environment Protection (Impact of Proposals) Act 1974*
 - *Australian Heritage Commission Act 1975*
 - *Endangered Species Protection Act 1992*
 - *World Heritage Properties Conservation Act 1983*
 - *Export Control Act 1982*
 - *Native Title Act 1993*
 - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- New South Wales:
 - *Environmental Planning and Assessment Act 1979*
 - *Heritage Act 1977*
 - *NSW Native Title Act 1994*
 - *NSW Aboriginal Land Rights Act 1983*
 - *National Parks and Wildlife Act 1974*
 - *National Parks and Wildlife Amendment (Aboriginal Ownership) Act 1996*
 - *Wilderness Act 1987*
 - *Timber Industry (Interim Protection) Act 1992*
 - *Threatened Species Conservation Act 1995*
 - *Clean Waters Act 1970*

¹ The Joint Australian and New Zealand Environment and Conservation Council (ANZECC)/Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA) NFPS Implementation Sub Committee.

The likely operation of these acts in relation to the RFA is described in chapter 12.

1.4 CRAs AND THE NATIVE TITLE ACT 1993

Under the *Native Title Act 1993* the Commonwealth has obligations relating to the protection of native title rights and interests. It is not intended that the RFA will in any way influence any native title claims that may arise: if any Government action to implement the Agreement might affect native title, that action will be taken in accordance with the Native Title Act.

At this stage of the CRA/RFA process for Eden there is in existence one claimant application pursuant to the Native Title Act which overlaps with the Eden CRA Region.

1.5 PUBLIC PARTICIPATION IN THE NSW PROCESS

In responding to the National Forest Policy Statement, the NSW Government was mindful of past failures to reach balanced and lasting outcomes in the State's forests. In 1995 it therefore adopted a forest policy which incorporated the establishment of an open and transparent process of consultation and stakeholder participation throughout the CRA/RFA process.

This participatory approach characterises the forest assessments in New South Wales. Involved

in the current joint process are representatives of the State and Commonwealth government, timber and other forest industries, the union, conservation groups and the Aboriginal community. These groups were represented on:

- the joint Commonwealth/State Steering Committee which oversees the process in New South Wales;
- the technical committees and working groups which oversee the assessments; and
- the regional forest forums which advise the Steering Committee on regional issues.

1.6 THE EDEN CRA REGION

The Eden CRA Region totals about 800 000 hectares and extends, in broad terms, from Bermagui and Nimmitabel in the north to Delegate and Cape Howe in the south.

About two thirds of the area is forested and most of the forest is on Crown lands – either as State forest (25% of the total area) or national park (32%). Other Crown-timber lands are a minor proportion of the total area (about 2%). Privately owned timbered land is limited in extent, especially in the north east and north west of the Region. National parks and State forest total 452 000 hectares.

THE JANIS RESERVE CRITERIA

The JANIS reserve criteria are nationally agreed criteria for the establishment of a comprehensive, adequate and representative reserve system for forests in Australia. The criteria were developed by the Joint ANZECC–MCFFA National Forest Policy Statement Implementation Subcommittee.

Regional conservation strategies

Conservation objectives will be best achieved through the development of integrated regional conservation strategies that provide for the establishment and effective management of conservation reserves (the CAR reserve system) and complementary management of adjoining forest areas.

IBRA

The Interim Bioregionalisation of Australia should be used as a basis for nature conservation planning, especially to comply with the principles of representativeness.

Components of the comprehensive, adequate and representative reserve system

All reasonable efforts should be made to provide for biodiversity, old-growth and wilderness conservation in the dedicated reserve system on public land. The components of the CAR system are dedicated reserves, informal reserves, and values protected by prescription on public land as well as conservation arrangements on private land.

Biodiversity criteria

- (1) As a general criterion, 15 per cent of the pre-1750 distribution of each forest ecosystem should be protected in the CAR reserve system, with flexibility applied according to regional circumstances and recognising that as far as possible and practicable the proportion of dedicated reserves should be maximised.
- (2) Where forest systems are recognised as vulnerable, at least 60 per cent of their remaining extent should be reserves.
- (3) As far as is practicable, all remaining occurrences of rare and endangered forest ecosystems should be reserved or protected by other means.
- (4) Reserved areas should be replicated across the geographic range of the forest ecosystem.
- (5) Wherever practicable, the reserve system should seek to maximise the area of high-quality habitat for all known elements of biodiversity.
- (6) Reserves should be large enough to sustain the viability, quality and integrity of populations.
- (7) To ensure representativeness, the reserve system should, as far as possible, sample the full range of biological variation within each forest ecosystem.
- (8) In fragmented landscapes, remnants that contribute to sampling the full range of biodiversity are vital parts of a forest reserve system.

Old-growth forest criteria

It is necessary to approach old growth in a flexible manner according to regional circumstances. Wherever possible, areas of old growth requiring protection should be included in the area identified to meet biodiversity criteria.

- (1) Where old-growth forest is rare or depleted (generally less than 10 per cent of the extant distribution) within a forest ecosystem, all viable examples should be protected, wherever possible.
- (2) For other forest ecosystems, 60 per cent of the old-growth forest identified at the time of assessment should be protected, consistent with a flexible approach, where appropriate increasing to the levels of protection necessary to achieve conservation, recreation and tourism objectives.

Wilderness criteria

Ninety per cent, or more if practicable, of the area of high-quality wilderness that meets minimum-area requirements should be protected in reserves.

Application of the criteria

Flexibility in the application of reserve criteria is needed in consideration of differing regional circumstances. Where different configurations of reserves are identified as meeting the criteria, the option which imposes the least cost on the community should be adopted.

PROTECTING BIODIVERSITY USING RESERVATION PRINCIPLES

The JANIS biodiversity criteria provide a basis for establishing a forest reserve system that satisfies the reservation principles specified in the *National Forest Policy Statement* (NFPS), namely comprehensiveness, adequacy and representativeness.

The principle of **comprehensiveness**, as defined in the NFPS and the JANIS reserve criteria report, adopts forest communities or forest ecosystems as a general surrogate for all elements of biodiversity. By mapping forest ecosystems, and then ensuring that all ecosystems are appropriately included in the reserve system, it is presumed that other elements of biodiversity (eg. species, genetic diversity) will also be protected.

The **adequacy** principle addresses the issue of the viability and integrity of reserves. While the principles of comprehensiveness and representativeness are applied to maximise the extent to which a reserve system samples the full range of biological variation in a region, the principle of adequacy is applied to ensure that the reserve system will maintain long-term viability and integrity of communities and populations of species contained within. Two of the JANIS biodiversity criteria deal specifically with the adequacy principle. Criterion 6 specifies that reserves should be large enough to sustain the viability, quality and integrity of populations. Criterion 4 specifies that reserved areas should be replicated across the geographic range of forest ecosystems to guard against the impact of chance events.

The principle of **representativeness** addresses shortcomings inherent in the use of forest ecosystems as a general surrogate for all elements of biodiversity and is applied to ensure that the diversity *within* each broad forest ecosystem is represented in the reserve system. Even though all forest ecosystems may be reserved under the principle of comprehensiveness, there will still be biological variations across geographical, environmental and disturbance gradients for each ecosystem type. Furthermore, many species will have distributions that are not well correlated with forest ecosystems and hence there will be differences in the suite of species present between examples of the same ecosystem type. This means that all variations of a given forest ecosystem are unlikely to be sampled within a single patch. Therefore, as far as possible, several examples of each forest ecosystem should be protected across its geographical and environmental range to ensure a representative reserve system.

1.7 THE EDEN COMPREHENSIVE REGIONAL ASSESSMENTS

The Eden comprehensive regional assessments were carried out through the joint Commonwealth/State Steering Committee and its various technical committees.

1.7.1 Assessment Streams and Eden Projects

There are four broad CRA assessment streams:

- environment and heritage
- economic and social
- ecologically sustainable forest management
- Forest Resource and Management Systems (FRAMES)

Technical committees were established to manage the assessments. These committees review existing data, identify data gaps, develop and implement projects, monitor progress, and ensure appropriate standards of information gathering.

As described in the introduction, summaries of projects completed for Eden are provided separately.

Environment and heritage technical assessments

These were managed by the Environment and Heritage Technical Committee and included a range of projects relating to:

- biodiversity
- old growth
- wilderness
- endangered species
- National Estate values
- Indigenous heritage

World heritage was considered under a national process, as outlined in the Environment and Heritage Overview.

See chapter 2 for more detail.

Economic and social assessments

These assessments, which were managed by the Economic and Social Technical Committee, included:

- resource and economic assessment of native forests, plantations and timber industries;
- resource and economic assessment of current non-timber uses such as water, tourism, grazing, minerals, apiary, etc.;
- identifying hardwood and softwood industry development opportunities;
- identifying the potential for plantation establishment, both hardwood and softwood;
- building a detailed social profile of local communities;
- identifying social attitudes and values of forests;
- reviewing structural adjustment and mitigation measures;
- identifying impacts of forest industry expenditure; and
- assessing economic and social values of Indigenous communities.

See chapter 3 for more detail.

Ecologically Sustainable Forest Management (ESFM) assessments

These assessments, managed by the ESFM Technical Committee, included:

- an independent assessment of existing forest management systems;
- management approaches to assist, for example, in the protection of endangered species and species sensitive to forest operations;
- the range of uses and intensity of use in timber production forests and reserves;
- the impact and contribution of forest uses other than wood production; and
- tenure (private or public land) and land use purpose (conservation reserve or State Forest).

See chapter 4 for more detail.

Forest Resource and Management Systems (FRAMES)

A FRAMES Technical Committee was established to oversee the assessments necessary to determine the currently available wood resources in Eden's forests, and the yields which can be expected to be sustained over time. The FRAMES projects for Eden were:

- a review of existing data;
- an inventory of retained trees;
- an assessment of the net area available for harvesting under current controls;
- a site productivity index;
- development of growth models - regrowth;
- an assessment of species sawlog mix; and
- yield estimating and scheduling.

See chapter 5 for more detail.

1.8 STRUCTURE OF THIS REPORT

This chapter provides background to the Eden CRA, outlining the forest debate in its national and State context, and the steps towards resolution of that debate which have been adopted here in New South Wales.

Chapters 2 to 5 discuss the assessments which have been completed in Eden. These chapters summarise the projects, outlining methodology, results and interpretations of those results. Major issues arising from the assessments which need to be addressed in the decision-making process are also considered.

Chapter 6 describes the role of the Eden Regional Forest Forum, including the work it undertook and its contribution to the CRA process. It outlines the regional issues which the forum has formally raised with the Steering Committee.

Chapter 7 and 8 provide the background and context to the development of scenarios for Eden. Chapter 7 gives an introduction to the general issues which were considered, while chapters 8 details the two reference points which were used to focus and guide the development of scenarios.

Chapter 9 describes four scenarios for the future management of Eden's forests. This chapter details the major features of each scenario, and describes their social, economic, conservation and heritage implications.

Chapter 10 outlines the regional Aboriginal community's position on the Eden CRA/RFA, and describes a preferred Aboriginal outcome which is consistent with each scenario proposed in Chapter 9.

Chapter 11 deals with two other matters which relate to all scenarios – firstly, a number of issues raised by the Eden Regional Forest Forum and, secondly, options for industry development in the region.

The final chapter outlines the subsequent steps which will lead to the signing of the Eden Regional Forest Agreement.

2. ENVIRONMENT AND HERITAGE ASSESSMENTS OVERVIEW

2.1 BACKGROUND

The environment and heritage assessments in the New South Wales CRA process are overseen by a technical committee made up of Commonwealth and State Government officials and non-Government stakeholders. The major themes which these assessments consider are:

- biodiversity
- old growth
- wilderness
- endangered species
- Indigenous heritage
- non-Indigenous cultural heritage
- national estate
- World Heritage

The criteria used for these assessments were drawn primarily from the New South Wales CRA/RFA Scoping Agreement, but also from:

- nationally agreed reserve criteria (JANIS 1997); and
- other key documents listed in table 2a.

The JANIS reserve criteria address issues of biodiversity, old growth, wilderness and reserve design. A summary of the criteria is provided in chapter 1.

TABLE 2A: ENVIRONMENT AND HERITAGE ASSESSMENT THEMES AND PRIMARY SOURCE DOCUMENTS

Assessment theme	Primary source of assessment criteria
Biodiversity	JANIS reserve criteria report
Old growth	JANIS reserve criteria report
Wilderness	JANIS reserve criteria report <i>NSW Wilderness Act 1987</i> <i>National Wilderness Inventory</i>
Endangered species	<i>Commonwealth Endangered Species Protection Act 1992</i> <i>NSW Threatened Species Conservation Act 1995</i>
Indigenous heritage	<i>Native Title Act 1993</i> <i>Australian Heritage Commission Act 1975</i> <i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i> <i>NSW Native Title Act 1994</i> <i>NSW Aboriginal Land Rights Act 1983</i> <i>NSW National Parks and Wildlife Act 1974</i> <i>NSW Heritage Act 1977</i> <i>NSW NPWS Amendment (Aboriginal Ownership) Act 1996</i> <i>Australian Heritage Commission Act 1975</i>
Non-Indigenous cultural heritage	<i>Australian Heritage Commission Act 1975</i> <i>NSW Heritage Act 1977</i> <i>NSW National Parks and Wildlife Act 1974</i> <i>NSW Environmental Planning and Assessment Act 1979</i>
National Estate values	<i>Australian Heritage Commission Act 1975</i>
World Heritage values	<i>World Heritage Properties Conservation Act 1983</i>

Summaries of the projects undertaken in the Eden CRA Region, and further detail on the results presented in this chapter, are provided in the report, *Eden CRA Project Summaries*. These projects produced information on the Region's natural and cultural features. This information related not only to the spatial distribution of those features requiring protection, but also to information which would identify the appropriate levels and types of protection (including formal reservation, informal reservation and protection of values by prescription).

2.2 BIODIVERSITY

The environment and heritage projects for the Eden CRA Region:

- identified biodiversity at both the species and ecosystem level; and
- reviewed key disturbances and threatening processes (for example, fire, feral animals and weeds).

The findings from these projects were used in the process of developing scenarios for a comprehensive, adequate and representative (CAR) reserve system. The information from these projects is also fundamental to the development of ecologically sustainable forest management practices in forests.

The biodiversity assessment conforms with the requirements of *The National Strategy for the Conservation of Australia's Biological Diversity* (1996) and, where appropriate and feasible, the *Draft NSW Biodiversity Strategy* (February 1997). The JANIS reserve criteria report defines biodiversity as:

'the variety of all life-forms, the genes they contain, and the ecosystems of which they are a part. Biodiversity is generally considered at three levels: genetic diversity, species diversity and ecosystem diversity. It is sometimes considered at the landscape diversity level'.

A number of broad groups of organisms constitute biodiversity: vascular plants, non-vascular plants, vertebrate fauna, invertebrate fauna, fungi and micro-organisms. Because of time constraints, for the Eden CRA Region

priority was given to those elements of biodiversity – vertebrate fauna and vascular plants – for which most scientific information is available.

To ensure that biodiversity criteria would be addressed rigorously in the development of reserve system scenarios, information was produced to cover two main fields of interest:

- forest ecosystems, which serve as a broad surrogate for biodiversity; and
- species and other known aspects of biodiversity that warrant special consideration (including rare, vulnerable or endangered species, areas of high species diversity, natural refugia for flora and fauna, and centres of endemism).

The information generated for these includes:

- data on the spatial distribution of features (forest ecosystem, species or other particular aspects of biodiversity); and
- information on the conservation requirements of each feature, including types of reservation and/or mechanisms for protection appropriate for each feature.

A data audit and review process was undertaken to summarise available information on species, ecosystems/communities and threatening processes. The audit also identified gaps where additional data collection was required. In addition, field surveys were undertaken to collect:

- point location habitat data and selected habitat data for fauna; and
- site attributes for defining forest ecosystems and communities.

The subsequent data were analysed to produce descriptions of forest ecosystems and communities, and to model distributions of flora and fauna species with the purpose of identifying conservation requirements and developing reserve system scenarios.

2.2.1 Forest ecosystems

A total of 72 ecosystems were recognised in the Eden CRA Region, of which 49 are dominated by eucalypts. A list of the ecosystem types is provided in the tables included in the front pocket of this report.

Of the 72 ecosystem types, 35 already meet the national reserve criteria that 15% of their extent before 1750 be represented in the comprehensive, adequate and representative reserve system (this includes adjusted criteria for some ecosystem types on the basis of rarity and vulnerability). Therefore, 37 ecosystem types are under-represented in the existing dedicated reserve system. A further four forest ecosystems meet their targets on available public land if considered separately from other land tenures.

Twenty-three forest ecosystems are not dominated by eucalypts and generally include swamp, rainforest, grassland, heath, bog, wetland, scrub, riparian and riverine ecosystems. Of these, 19 are under-represented in the existing dedicated reserve system. The remaining 18 ecosystem types which are under-represented in the existing dedicated reserve system are dominated by eucalypts.

2.2.2 Fauna and flora

A total of 55 priority (endangered, threatened and/or forest dependent) fauna species were assessed for the Eden CRA Region, including the *Petauroides volans* (greater glider), *Potorous longipes* (long-footed potoroo) and *Mixophyes balbus* (stuttering barred frog). Areal targets were determined for 27 species and considered in greater detail during the development of scenarios (outlined in chapter 7). A list of these species is provided at appendix 2.1. An expert review did not consider that adequate models were available for the remaining 28 species: these were therefore not assigned areal or spatial targets but given management recommendations only.

A large proportion of the work focused on determining the distributions, and minimum area (target) and patch size needed by priority species to maintain a viable population. To maintain the geographic spread of species and to minimise the risk of catastrophes to populations, the target was split into patches and applied in multiple areas across the region. Areas were identified where the target was to be applied. Further ecological data was collected for these species during the biodiversity assessments to help identify critical habitat and threatening processes, and assist with the development of recovery plans, threat abatement plans and additional research.

Over 150 flora species were assessed for the Eden CRA Region, including vulnerable species such as *Genoplesium rhyoliticum*, *Grevillea acanthifolia ssp paludosa* and *Zieria formosa*. A more detailed list is provided at appendix 2.2. These species were selected on the basis of their national, State and regional vulnerability and assessed by expert reviewers observed by stakeholders in the Eden CRA process. Examples of regional vulnerability include species that are isolated, at the northern or southern extent of their ranges, and/or serve as core habitat for other important species.

The New South Wales CRA/RFA Scoping Agreement specifies the need to consider endangered species according to the requirements of relevant State and Commonwealth statutory obligations. Work to be undertaken for endangered species is outlined in Chapter 12.

2.3 OLD GROWTH

The *National Forest Policy Statement* (NFPS) defines old growth forest as:

‘forest that is ecologically mature and has been subjected to negligible unnatural disturbance such as logging, roading, and clearing.’

The definition focuses on forest in which the upper stratum or overstorey is dominated by the late mature to overmature growth phases. In the JANIS reserve criteria this has been interpreted for operational purposes as ecologically mature forest where the effects of disturbances are now negligible.

In the Eden CRA Region, this was applied using the following principles:

- ecological maturity is defined by the characteristics of the older growth stages present;
- if data are available on the structural, floristic and functional qualities that would be expected to characterise an ecologically mature forest ecosystem, these data should be used in assessing the significance of disturbance effects; and

- negligible disturbance effects will be evident in most forests that have a significant proportion of trees with age-related features and that have a species composition characteristic of the ecologically mature forest ecosystem.

So that the JANIS old growth criteria could be applied, the area of candidate old growth was mapped for the Eden CRA Region, along with vegetation communities, forest successional stages and classes of disturbance. A description of what is meant by ‘candidate’ old growth can be found in the summary of the old growth assessment in the report, *Eden CRA Project Summaries* (NSW and Commonwealth Governments 1998). The categories of forest successional stage mapped (and respective land areas) were:

- candidate² old growth (106 536 hectares)
- disturbed old forest (7555 hectares)
- mature forest (171 489 hectares)
- disturbed mature forest (22 969 hectares)
- young forest (124 855 hectares)
- recently disturbed forest (44 551 hectares)
- rainforest (11 154 hectares)

Much of the candidate old growth forest that was mapped has a fragmented distribution within the Eden CRA Region, with most stands occurring in a complex mosaic of mature and younger forest.

Of the 72 ecosystems recognised for the Eden CRA Region, 47 have old growth elements which have to be specifically considered under the JANIS reserve criteria. Eighteen old growth forest types were identified as requiring 100% reservation with 29 requiring 60% reservation. Eighteen of the old growth forest types have met their reservation targets within the existing dedicated reserve system whilst another 26 could

² Old growth forest ecosystems are referred to as “candidate” old growth because time constraints and availability of datasets did not allow for the full assessment of values characteristic of old growth forest (eg some structural, compositional, functional characteristics and aesthetic values). Candidate old growth forest was identified primarily by Aerial Photographic Interpretation and information on disturbance from logging and fire.

be met, or partially met, from other public land. Reservation targets for three forest types cannot be met from public land.

2.4 WILDERNESS

As specified in the New South Wales CRA/RFA Scoping Agreement, assessment of wilderness is to include those areas identified as wilderness under the provisions of the New South Wales *Wilderness Act 1987* in addition to the *National Wilderness Inventory* analysis of wilderness in the region. The JANIS reserve criteria specify that 90% (or more if practicable) of the area of high quality wilderness that meets minimum area requirements should be protected in reserves.

Within the Eden CRA Region, three areas (Brogo, Nadgee and Genoa) were found to meet the JANIS reserve criteria for defining “high quality wilderness” (minimum National Wilderness Inventory rating of 12 and a minimum size of 8000 hectares. This is later referred to as NWI_{≥12}). Ninety six per cent of these areas, totalling 87 142 hectares, is already within the existing dedicated reserve system. Of this total, 56 982 hectares has been declared (or approved for declaration) under the NSW Wilderness Act 1987. This is made up of the existing Brogo (31 997 hectares), Nadgee (18 885 hectares) and Genoa (6 100 hectares) wilderness areas. Although Genoa fell below the minimum size threshold, because it adjoins a wilderness area in the adjacent East Gippsland region of Victoria it was accepted as wilderness in accordance with the JANIS reserve criteria.

Of the three areas above, nominated additions to the existing Brogo wilderness were the only ones not already assessed under the provisions of the New South Wales *Wilderness Act 1987* and this was undertaken as part of the Eden comprehensive regional assessments. An area of approximately 44,067 hectares in the Eden CRA Region has been identified as being capable of meeting the requirements for wilderness under the New South Wales *Wilderness Act 1987*. Further refinement to take into account tenure considerations and produce practical, manageable boundaries indicates that the maximum area that can possibly be declared as wilderness is 42 172 hectares. These potential additions to the Brogo Wilderness would produce a combined total of

about 74 169 hectares (including the existing 31 997 hectares of Brogo Wilderness).

The New South Wales National Parks and Wildlife Service will be seeking to formally identify the Brogo Wilderness additions and release an assessment report on Brogo concurrently with this report.

2.5 NATIONAL ESTATE

The National Estate assessments in Eden are based on the Commonwealth/State Scoping Agreement. This includes the identification, assessment and documentation of National Estate values.

The National Estate is defined in the *Australian Heritage Commission Act 1975* as:

‘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.’

The Australian Heritage Commission’s responsibility is to identify the National Estate and, under section 30 of the Act, to advise the Commonwealth Government on the conservation of National Estate places and the potential impact on National Estate values of proposals relating to those places. The act also requires the establishment of the Register of the National Estate. The Register includes places of importance at a local, regional or national level. The identification and assessment of places for listing in the Register is guided by the National Estate Criteria (see appendix 2.3).

In a regional context, assessment of the National Estate requires a comparative appraisal of the significance of places identified as having one or more attributes or values. The values are derived from the National Estate Criteria. The development of thresholds to establish National Estate significance vary depending on the level of current knowledge about the nature and extent of National Estate values and their distribution in the landscape at a local, regional or national level. A threshold is developed specifically for each National Estate value.

National Estate assessments for the Eden CRA were undertaken, where possible, in conjunction with other projects addressing the JANIS reserve criteria, including old growth, wilderness and biodiversity. Separate assessments were undertaken for other National Estate values, including endemic flora and fauna species, and social heritage values.

The assessment work undertaken in the Eden CRA process has identified areas as having potential National Estate value and will form the basis of the determination by the Australian Heritage Commission as to which places are entered onto the Register of the National Estate.

2.6 CULTURAL HERITAGE

The cultural heritage assessments of Eden are based on the Commonwealth/State Scoping Agreement. It requires both Governments to address heritage issues consistent with State and Commonwealth legislation. This includes the identification, assessment and documentation of National Estate and State cultural heritage values, to satisfy Commonwealth obligations under the *Australian Heritage Commission Act 1975*, and State obligations under the *NSW Heritage Act 1977* and the *National Parks and Wildlife Act 1974*. The Scoping Agreement also specifies that the assessment of Indigenous heritage will identify Indigenous cultural heritage values within forested areas of the CRA regions. The term ‘cultural heritage’ generally refers to places of historic, social, aesthetic or scientific value (cultural heritage values). A cultural heritage place can be a site, area, landscape, building or other work, group of buildings or other works, together with associated contents and surroundings, that is significant for its historic, social, aesthetic or scientific value. A place of cultural heritage is determined by its significance according to a set of criteria which reflect the values outlined above. In the forest environment these values can, for example, exist:

- in the tangible fabric of an archaeological or historic site;
- intangibly, through spiritual associations with particular places; or

- within a landscape which combines tangible and intangible elements.

The assessment of cultural heritage values in the Eden CRA Region was undertaken within separate Indigenous and non-Indigenous strands under the guidance of the Cultural Heritage Working Group. This group is made up of Commonwealth and State Government officials and non-Government stakeholders and reports to the Environment and Heritage Technical Committee. Indigenous assessments were also guided by the Eden Region Aboriginal Management Committee which is coordinated by the NSW Aboriginal Land Council and includes representatives of:

- Eden Local Aboriginal Land Council
- Bega Local Aboriginal Land Council
- Merrimans Local Aboriginal Land Council

Consultation over the representation of Aboriginal traditional owner groups is continuing.

In addition to the Eden cultural heritage assessments a Statewide project is examining the protection and management of Indigenous and non-Indigenous cultural heritage values and places. The aim of this project is to produce a workable set of principles and guidelines for forest land managers to ensure the protection of cultural heritage values through Regional Forest Agreements.

2.6.1 Indigenous cultural heritage

The assessment of Indigenous cultural heritage values in Eden was guided by the Eden Region Aboriginal Management Committee. It focused on:

- documentation by Aboriginal communities of Aboriginal interests and places of significance;
- identification of areas of land requiring special management prescriptions or reservation as Aboriginal protected places; and
- identification of Aboriginal community concerns relating to land management practices.

Information on projects relating to these issues is contained in the *Eden CRA Project Summaries* booklet accompanying this report.

Aboriginal interests in the Eden CRA Region are diverse, and include not only areas of cultural significance but also areas of economic and social importance. Areas which have been identified as of significance to the Aboriginal community include Mumbulla Mountain, Brown Mountain, and Fisheries Creek Flat. In addition, the assessment has identified a number of aspirations which the Aboriginal community want to see considered in the CRA process. These include:

- Aboriginal ownership and joint management of significant cultural areas;
- greater involvement in the day-to-day management and protection of Aboriginal sites;
- the protection and management of Aboriginal cultural and intellectual property rights; and
- economic, cultural and social development opportunities for Aboriginal communities in the Eden CRA Region.

For more detail on the preferred Aboriginal outcome for the Eden Region see chapter 10.

2.6.2 Non-Indigenous cultural heritage

The Cultural Heritage Working Group developed a series of projects to identify, assess and document non-Indigenous cultural heritage values in the Eden CRA Region. These projects, making up the Eden Forest History and Heritage Assessment included:

- a data audit of existing cultural heritage data;
- a thematic history;
- a community heritage assessment;
- an assessment of historic places; and
- an assessment of the aesthetic values of the region.

More information on these projects is contained in the *Eden CRA Project Summaries* booklet accompanying this report. The Eden CRA Region has a rich and diverse cultural history. The region's forests have been the focus of many activities including forestry, mining, defence and pastoralism. These activities have left their mark on the landscape with sawmills, sleeper cutter sites, gold mines, tank traps, and bullock tracks. The Eden forest history and heritage assessment, in tracing the history of these activities, identified

31 sites that are potentially of National Estate and State significance. The sites include:

- a sleeper cutter camp which represents the historic use of forest resources;
- the Cow Bail Trail, which represents the moving of goods and people; and
- the Yambulla goldfields and township which represent mining and the consequent development and settlement of the Region.

In addition, as part of the forest history and heritage assessment, seven community heritage workshops were held at locations within the Eden CRA Region to identify places the local community felt were of special value to them. Places identified ranged from natural landscapes to historic gold mining sites. Twenty of the places identified were considered to be of National Estate and State heritage significance for social value. These places include Myrtle Mountain Lookout, Rockton Falls, the Pambula Goldfields, and the Six Mile Creek Travelling Stock Reserve.

The assessment of aesthetic values used information from the community heritage workshops and State agency land managers in the Eden CRA Region to determine areas of aesthetic significance. Forty-three of the areas identified were considered to be of National Estate and State heritage value. These areas include Newtons Crossing Camping Area, Jingera Rock, Pheasant's Peak, and Nethercote Falls.

2.7 WORLD HERITAGE

In accordance with the New South Wales CRA/RFA Scoping Agreement and the Commonwealth's obligations under the World Heritage Convention, there is a commitment by both Governments to identify and assess World Heritage values in the Eden CRA Region as part of the Regional Forest Agreement process.

Places on the World Heritage List are defined as those which have outstanding universal value. The methodology used in the Regional Forest Agreement process to identify and assess places which are the most outstanding of their kind in the world is based on a thematic approach being applied to forested areas. The methodology assesses significance by developing themes of

outstanding universal value, and then testing places against these themes by working through a series of steps. This approach is only one of those being used by the Commonwealth to ensure the protection of Australia's World Heritage.

The thematic methodology involves the use of a panel of experts and provides a systematic means of identifying a list of places that meet the criteria and operational guidelines of the World Heritage Convention. The first step (step A) of the thematic methodology involves the panel of experts providing advice to Governments on themes of outstanding universal value relevant to Australia. These themes are then used in the second step (step B) to develop a list of places that might include those that best represent the identified themes in a global context.

These potential places are then further examined against the Operational Guidelines for the World Heritage Convention to determine whether they have World Heritage value. They are tested using a series of sieves where the places identified at step B are assessed for authenticity and integrity (step C), and adequacy of management and legal protection (step D), prior to formal assessment against the World Heritage criteria in the final step (step E). Places that do not meet the required criteria are eliminated at each step of the assessment process.

The panel of experts met in October 1997 to undertake steps A and B of the methodology for New South Wales, including the Eden CRA Region. Two of the sub-themes identified by the Expert Panel are potentially relevant to the Eden Region: eucalyptus-dominated vegetation and Aboriginal dreaming sites.

The panel noted that a potential nomination focused on eucalyptus evolution and diversity would include a series of places across the continent, most of which could be expected to already have protected area status, rather than a single contiguous area. The panel identified the natural forest areas extending from the sea to the alps and inland slopes in south-east NSW (also eastern Victoria and ACT) as a potential forested area of relevance to this theme.

The panel considered its discussion and consideration of the Aboriginal dreaming sites sub-theme to be tentative and that this theme

would require a comparative, continent-wide study of sites of possible religious significance, including dreaming tracks. The Biamanga (Mumbulla) and Gullunga-Nadjanuag (Mt Dromedary-Little Dromedary) mountains were tentatively identified as warranting further investigation.

3. ECONOMIC AND SOCIAL ASSESSMENTS OVERVIEW

3.1 BACKGROUND

Economic and social considerations are among the key goals of the National Forest Policy Statement. The nationally agreed criteria for a CAR reserve system, JANIS, state that in assessing CAR reserve options, the principle of least cost to the community should be used.

The CRA economic and social assessments for Eden were overseen by the Economic and Social Technical Committee, made up of Commonwealth and State Government officials and non-Government stakeholders.

In broad terms the economic and social assessments were undertaken to

- firstly, establish the nature of industry and the social structure, resources and linkages of the Eden CRA Region; and
- secondly, as neither the regional economy nor the communities within it are static, to provide the basis for assessing possible developments (including the direct impact of any proposed changes to forest land allocation and management).

The economic and social assessments did not have nationally agreed criteria on which to base targets and objectives. This required the development of approaches to the assessments to ensure they appropriately reflect the nature of the Eden CRA Region.

The following broad objectives were adopted by the Economic and Social Technical Committee to guide the development of the economic and social assessments:

- social equity
- economic efficiency
- maximise value adding
- maximise employment of the existing workforce
- minimise disadvantages of dislocation of the workforce

The framework under which the economic and social assessments were undertaken is represented by figure 3a. This figure summarises the linkages between economic and social assessment projects as well as linkages with ESFM, FRAMES and environment and heritage assessments.

3.2 ECONOMIC ASSESSMENT

The economic assessment placed emphasis on the forest industry and forest-related industries but also included the economy of the Eden Region as a whole. Further, it placed forest-based industries in the context of the broader economy of New South Wales. In addition to the timber processing industry the assessments included the following other forest uses:

- apiary;
- grazing;

- minerals exploration, mining and quarrying;
- other forest products such as firewood, craftwood, poles and seeds;
- plantations, both hardwood and softwood, including the potential for plantation establishment;
- tourism and recreation; and
- water.

Information derived from these assessments provided a basis for evaluation of the economic and social implications of various land use, forest management and industry development scenarios in the Eden CRA Region. Some of these assessments used information supplied from projects undertaken by the FRAMES, ESFM and Environment and Heritage Technical Committees.

3.2.1 Timber industry development

Consultants were engaged to examine, in consultation with industry, the development opportunities for the wood-based industry of southern New South Wales (consisting of the Southern CRA and Eden CRA Regions).

**DEVELOPMENT OPTIONS
IDENTIFIED BY THE TIMBER
INDUSTRY DEVELOPMENT
PROJECT:**

- a new hardwood ‘recovery’ sawmill based at Eden, initially processing a maximum of 40 000 cubic metres a year of sawlogs and pulplogs;
- mobile mills processing up to 3000 cubic metres of hardwood a year;
- a softwood sawmill with production commencing in 2002 at 300 000 cubic metres a year capacity and expanding to 400 000 cubic metres and 550 000 cubic metres a year in 2010 and 2020, respectively;
- a plywood/laminated veneer lumber plant at Bombala of 120 000 cubic metres a year softwood sawlog capacity, commencing in 2020; and,
- by 2010 a medium density fibreboard (MDF) plant with an intake of 250 000 to 300 000 cubic metres a year, expanded to around 500 000 cubic metres by 2020. The plant would be predominantly based on softwood but would also draw some hardwood.

The consultants developed two wood flow scenarios as an indication of resource availability as at 2010 and 2020. While the Eden CRA Region was not separately identified, it is included in the ‘coastal’ resource and some of the development options (as set out in the box) are specific to the Eden Region.

These development options, together with the existing industry structure, form the basis for predicting the direct impact on the timber industry of the different resource scenarios.

3.2.2 FORUM

The Forest Resource Use Model (FORUM) was used to analyse the timber industry and product implications of land allocation scenarios. FORUM enabled estimates to be made of the direct economic impacts to wood based industries resulting from changes to wood resource availability (and/or quality), industry structure and market outlook. FORUM takes these variables and optimises land rent³ under different industry options.

The model was adapted to simulate the wood-based forest industries using resources from the Eden CRA Region.

The time frame for the analysis is 1997 to 2020, reflecting the intended duration of the Eden RFA.

ABARE surveyed hardwood processing mills for information such as physical capacity, employment and cost profiles, using 1995-96 as the base year. Data have been adjusted, where necessary, to reflect changes to key variables, such as the reduced number of sawmills operating in the Region since 1995-96.

3.2.3 Regional economic impact

The Regional Economic Impact Assessment entailed building an economic data base of the Region, with details of the financial transactions among all sectors in the Region for a selected base year (1996-97). This data base was then used

³ Land Rent: an estimate of the value of the wood on stump and represents the inclusive price that would be received by the grower for the sale of the standing resource.

to construct an input-output model for the regional economy, reflecting the inter-industry relationships for all sectors in the regional economy.

The primary aims in building and applying the input-output model in the economic assessments were to:

- identify the current status of the timber industry and its contribution to the regional economy;
- assess the regional economic impacts of land management scenarios; and
- assess the contribution of development options in other industry sectors for the regional economy.

Input-output models were particularly useful in simulating the flow-on effects of direct changes in the industry structure (such as may be anticipated for the timber industry).

Part of the flow-on effect depended on production linkages within the Region— referred to as “production induced” effects. Other flow-on effects are related to changes in income and consumption expenditure within the Region, described as “consumption induced” effects. The impact of consumption effects reaches a maximum when people leave the Region, but when they remain, the full impact is reduced, as some consumption expenditure is maintained.

The sum of direct, production-induced and consumption-induced effects is referred to as the “total effect” of any change in the industry structure of the region.

3.2.4 Economic assessment models

The FORUM and regional input-output models should not be interpreted as a prediction of what will actually occur, but simply as an indication of the possible effects on timber processing activities in the CRA Region for different levels of log supplies. The industry structure that actually emerges will depend on the investment and production decisions of firms engaged in the industry. Indications of feasible opportunities for different processing activities have been made as part of the economic assessments, but there will always remain some doubt about their commercial viability and there is no guarantee

that the activities assumed under any scenario will eventuate.

The economic analysis further focuses on the significance of changes in the native hardwood resource, at the same time recognising that developments may take place in other sectors of the timber industry (including the softwood sector as well as plantations). Indeed, the economic future of the Region may be influenced by developments outside the timber industry, such as tourism.

The results from FORUM and the input-output modelling are not directly comparable. There are several differences between the assumptions and outputs of the two models:

- the input-output model simulates the industry structure within the region, including imported resources, whereas FORUM simulates the extent of timber industry utilisation of the Eden resource, regardless of the mill/processing centre location.
- a detailed time profile of simulated changes in the timber industry is provided in FORUM, whereas the input-output model takes a medium-term view, based on estimates of the average availability of sawlogs and pulplogs.
- FORUM is capable of using a range of simulated reference points for the base situation, whereas the input-output model uses an historical base year (1996-97).

3.2.5 Threshold values analysis

This study assessed the opportunity costs or threshold values of land management scenarios, with particular focus on the foregone net values of timber production.

The study was commissioned because of the difficulties involved in deriving monetary estimates for conservation and non-commercial uses of forests that are considered to be incompatible with timber production.

Instead of assessing these non-market values directly, the threshold value model put the question: is the present value of the benefits of protecting the forests under a particular scenario worth more than the value of the timber production foregone? By projecting potential rates of change in population, income,

environmental preferences and technology in the timber industry, it is possible to convert this estimate to a yearly payment (in current dollar terms).

3.3 KEY ECONOMIC ASSESSMENT FINDINGS

Working papers of the economic projects undertaken will be released separately. The following summarises some of the findings of these assessments. It should be noted these findings only relate to the CRA, not to the analysis of the scenarios which is summarised in chapter 9.

3.3.1 Timber industry

In 1995-96 there were 13 hardwood mills sourcing logs from the Eden CRA Region, some located outside the region. Of these, five received logs from State forests, six received logs from private forests and two from both sources.

Three sawmills closed during 1996, including the former Boral mill at Eden. Currently, only two sawmills, located in Cooma and Bombala, are utilising resource from State forests within the Eden CRA Region. There are also several small sawmills operating in the Eden area which do not have access to quota quality logs.

The export woodchip processing mill near Eden is by far the largest hardwood processing operation in the region. It sources pulplogs predominantly from State forests but also receives inputs from private hardwood forests, plantation establishments and sawmill residues from elsewhere in New South Wales and from the Gippsland region of Victoria.

In 1995-96 approximately 78 percent of the mill's input was sourced from the Eden CRA Region.

The woodchips are exported to Japan for the production of pulp and paper products. In 1995-96 woodchip exports from the Eden CRA Region accounted for almost ten percent of total Australian woodchip exports.

It is estimated that, of a total of 77 jobs at the Eden processing mill in 1995/96, 60 were based on pulpwood and sawmill residues from the Eden

CRA Region. (The balance of employment at the mill was attributable to resource sourced from areas outside the Eden Region).

An extensive summary of the Eden CRA Region's forest resources is contained in the Eden CRA economic working papers (Native Forest Wood Resources and Wood Based Industries NE05/ES). A summary of this project is included in the *Eden CRA Project Summaries* booklet accompanying this report.

In 1995-96 two softwood mills operated in the Region, employing 49 people and processing approximately 80,000 m³ of logs.

The input-output model for the Eden Region indicates that in 1996-97 the Gross Value of Output by the hardwood timber industry amounted to \$64.5 million of which \$8.4 million was earned in forestry management, \$9.5 million in logging operations and \$46.5 million in milling operations. Value added (ie. the contribution to Gross Regional Product) consisted of \$28.9 million of which \$6.3 million was earned in forestry management, \$5.7 million in logging operations and \$16.9 million in milling.

Employment in the hardwood timber industry in the Region in 1996-97 was 301 persons, made up of 46 in forestry management, 152 in logging and 103 in milling (both sawmill and pulpmill).

Estimates of the flow-on effects of the hardwood industry within the Region indicate that flow-on effects would increase the direct impacts by about 38% for the Gross Value of Output, by 50% for Value Added and by 100% for employment.

TABLE 3A: ECONOMIC DATA FOR THE EDEN REGION IN 1996-97

DIRECT ECONOMIC EFFECT - HARDWOOD TIMBER INDUSTRY		INDIRECT ON THE REGIONAL ECONOMY		
		Production induced	Consumption induced	Total
Gross output (\$m)	64.490	11.958	11.727	88.175
Value added (\$m)	28.938	6.979	6.913	42.829
Household income (\$m)	9.061	4.139	3.711	16.912
Employment (no)	301	147	162	610

The sum of direct, production-induced and consumption-induced effects is referred to as the 'total effect' of any change in the industry structure of the region.

3.3.2 Apiary

A consultancy study, undertaken as part of a Statewide study of the NSW apiary industry, found the Eden apiary industry is characterised by its mobility, its eucalypt dependency, the variability of production and its relative importance during drought in other New South Wales regions.

The Region, on average, supplied honey, wax and other products with a wholesale value of \$272 000 per annum, but the key value of the industry in the Eden Region to the New South Wales industry is:

- its value for resting bees prior to their use in pollination;
- its capacity as a drought reserve; and
- its capacity as an alternative source of eucalypt and non-eucalypt resources from other regions.

Loss of access to State forest areas within the Region is expected to have a limited impact on the immediate viability of the apiarists operating in the Region.

3.3.3 Grazing

Grazing in the State forest areas of the Eden Region is conducted under either grazing leases or occupation permits issued by State Forests of NSW (SFNSW). SFNSW records show the level of grazing activity in the Region in 1996/97 was minor, with six occupation permits and 24 long standing leases, covering 5266 hectares with a capacity of 728 cattle.

3.3.4 Minerals and mining

There are 13 quarries involved in the extraction of construction materials, including hard rock, sand, silica and pyrophyllite currently in operation in the region.

Minerals potential was assessed by determining the types of mineral deposits likely to be found under the geological conditions known or believed to exist in the Region.

While the geology of parts of the Eden CRA Region, particularly in heavily forested areas, is still poorly known, the basic conclusions of the study was that there is potential for future discoveries of epithermal gold-silver, slate-belt gold and granite hosted gold deposits. No quantitative assessment of actual mineral resources was undertaken for the Region.

3.3.5 Tourism and recreation

The majority of forest-based recreation sites in the Eden CRA Region are managed by the NSW National Parks and Wildlife Service and State Forests of NSW.

Accurate measurement of tourism and recreation attributable to forest values is problematic. NSW NPWS estimate that there are in the order of 506,000 visitors per year to coastal and inland National Parks in the Eden Region. State Forests of NSW conservatively estimate 16,100 visitors per year to State forests in the Region.

In terms of visitation to the Eden Region, it is considered that the majority of recreational visitors are beach-goers and, for most of these

visitors, forest areas may represent a supplementary part of the recreation experience.

Expenditure in the Region associated with beach and forest-based recreation and tourism was estimated to be in the range of \$10-15 million per year, and to result in the equivalent of between 208 and 364 (direct and indirect) jobs. Visitation levels to the Eden Region are forecast to increase by over two percent per annum.

The assessments of recreation and tourism potential for the region revealed several key sites for development of these activities, including an Old Growth Visitor Centre at Brown Mountain.

3.3.6 Minor forest products

Firewood accounts for the largest value of minor forest produce in the Eden CRA. Other products include fencing materials, poles and posts, landscape timber and eucalypt seed. State Forest royalties from these activities have not exceeded \$14 000 in total in recent years. There are, however, insufficient data to determine the current value of production.

3.3.7 Plantations potential

There are 35 510 hectares of commercial plantations in the Eden CRA Region, of which 1070 hectares are hardwood (including 300 hectares of farm forestry woodlots) and 34,390 hectares are softwood species concentrated in the Bombala SFNSW Management Area. The current (1997) harvest from this resource is 50 000 cubic metres of sawlog and 35 000 tonnes of pulpwood per year.

A study was undertaken by the Bureau of Resource Sciences (BRS) to examine capability and suitability for plantation development of cleared private land. The results were used to estimate wood flows from potential plantation developments in the region.

Capability refers to the physical capacity of the land to establish a plantation. Suitability takes into account the economic feasibility of such a plantation. Two species, one hardwood (*Eucalyptus nitens*) and one softwood (*Pinus radiata*) were selected for appraisal.

Outputs of the study included a series of GIS layers indicating existing plantations and

potential plantation sites by capability class within the Region. The following table shows the total areas capable of growing plantations (table 3b).

TABLE 3B: PLANTATION CAPABILITY AREAS FOR *EUCALYPTUS NITENS* AND *PINUS RADIATA* (AREA NEAREST 100 HECTARES)

Productivity	<i>E. nitens</i>	<i>P. radiata</i>
low	61,000	24,000
medium	5,200	171,000
high	600	3,300

Economic analysis undertaken compared the estimated existing agricultural land values with the estimated values of plantation development under three product price and three productivity scenarios. These scenarios were, in turn, applied to the following management regimes: sawlog and pulp for *P. radiata* and pulplog for *E. nitens*.

The economic analysis indicated that there are significant areas of the Eden Region where the potential land values from plantations are greater than the existing estimated land values. However, it was found that these returns were sensitive to changes in the market price for plantation products and the yields associated with plantation management regimes.

Many of the areas capable of growing plantations are currently being used for high value dairying. It should be noted that economics alone does not always determine land-use decisions, as land holders have certain preferences and farm management requirements.

3.3.8 Water

The water resources assessment described the hydrological setting in the Region and examined the relationship between land use and catchment water values. However, limited data are available on which to base detailed economic assessments of possible changes to water supply associated with changed land management in the Region.

The Bega and Towamba catchments have agricultural production reliant on irrigation from rivers within the region. Impacts of harvesting on

available water within these catchments are difficult to determine. Typically, there is an increase in water availability within the first few years following harvesting, then an overall decrease, but this effect is masked at the catchment level. Any impacts are likely only in times of drought, and at a sub-catchment level.

The water resources assessment indicated that siltation in the Mallacoota inlet appears to be associated primarily with the 1971 flood and past land clearing for agriculture and pine plantations.

3.4 SOCIAL ASSESSMENT

3.4.1 Introduction

Social assessment and impact assessment aims to build a picture of the types of changes which may occur at the community level as a result of changes to land use and management.

For the Eden CRA, the social assessment focused on communities which may be affected by changes in forest resource use and management.

3.4.2 Scope of social assessment

The following is a list of the social assessment projects undertaken in the Eden CRA:

- Post impact analysis
- Regional profile
- Social values of forests
 - community workshops
 - surveys of occupational communities
 - community attitudes survey
- Review of recent structural adjustment and mitigation
- Locational business impacts
- Aboriginal values

3.4.3 Methodological approach

A number of methods have been employed in order to access the information required for the social assessment. The social assessment methodology was considered by an independent panel of experts to be adequate to describe the

SOCIAL ASSESSMENT METHODOLOGY

Post impact analysis

Desktop study of previous social impact and related studies.

Regional profile

Desktop analysis of population and housing, labour force, industry and social infrastructure data and trends.

Social values of forests

i) Community workshops: Workshops were held in 8 case study towns and participants from the local community representing the timber industries, local government, environmental groups, small business, Aboriginal communities, education and health workers, voluntary organisations and other landholders were invited to attend. The workshops provided a forum for participants to raise issues relating to forest use in their area.

ii) Surveys of occupational communities: Surveys of harvesting and haulage contractors, mills, forest management agencies, tourist operators, other forest users such as graziers and apiarists were undertaken. These surveys covered demography, employment characteristics, community residence and attitudes towards forest use and management.

iii) Community attitudes survey: A random telephone survey was conducted to gain a sample of the wider community views in relation to forest use.

Review of recent structural adjustment and mitigating processes

A survey of workers and business owners was carried out to determine the nature and extent of structural change and mitigative measures accessed in the Eden region. Case studies were also undertaken to explore individual experiences.

Locational business impacts

A detailed survey of mills and their suppliers and desktop research were used to assess the local impacts of native hardwood industry expenditures in the Eden region.

Aboriginal values

In consultation with the three Local Land Councils, community meetings were held to gather views of Indigenous communities on forest uses and values in the Eden region. The project documents the Aboriginal communities: social significance of forests, historical association with forest based industries, and views on current and future forest use values and management.

present social conditions within the region, and particularly those communities which may be more sensitive to changes in forest use and management.

3.4.4 Social indicators

Key social indicators (see Social Indicators box below) have been used to define the sensitivity of communities to changes in forest use. These indicators are based upon the Social Indicators Workshop Outcomes agreed at the November 1996 Montreal Process National Conference, which involved national stakeholders.

The measures include a range of both quantitative data from published sources and surveys and qualitative data collected for this assessment. In the social assessment projects, data was designed to identify sensitive communities and describe the likely impact of forest use and management scenarios on those communities.

SOCIAL INDICATORS

- Socio-demographic structure of communities
- Economic structure of communities
- Employment and labour force characteristics
- Community services and infrastructure
- Additional qualitative stressors
- Community vitality
- Social well being
- Mitigative change factors
- Community attitudes

3.5 KEY SOCIAL ASSESSMENT FINDINGS

3.5.1 Post impact analysis

For the purpose of post impact analysis, significant environmental, economic and social studies have been conducted in the Region since the early 1970s. The most significant studies regarding the social context have been the numerous environmental impact statements between 1986 and 1994, the reports associated

with the 1995 Woodchip Export Licences decision, and the NSW Interim Forest Assessment Report 1996.

All of these studies show declining employment in the timber industry over the last ten years.

For example, the 1986 EIS estimated that over 590 people were employed directly in the forest-based industry in the region, with a further 150 sawmill employees. The 1994 EIS indicated 427 people directly employed, with a further 70 sawmill employees.

Caution is necessary when comparing these estimates with estimates in the economic modelling work as the definitions of the hardwood industry vary, and the numbers cited may not refer to the same entities. For example, employees of State Forests of NSW are included in some of the estimates but excluded from others. Similarly, hauliers and other forest workers may or may not be included in the estimates.

3.5.2 Regional profile

The Eden CRA Region is made up of the whole of the Bega Valley Shire, Bombala township, and the south eastern corner of the Cooma-Monaro local government area. The largest land use in Bega Valley Shire is national parks, State forest and State recreational areas. In 1996, the total population for the CRA/RFA region was 30†225. Bega Valley Shire's population is expected to increase to 32†200 in 2001 and 34†600 in 2006. The unemployment rate in the CRA/RFA Region in 1996 was 12.2%. Bega Hospital is the major hospital servicing the area, and hospital services are also provided at Pambula and Bombala hospitals. In 1996, the largest industry employer was the retail trade (15% of total employed) followed by the agriculture, forestry and fishing industries (14%). Other major employers were accommodation, cafes and restaurants (10%) and the manufacturing industry (9%).

3.5.3 Social values of forests

Case study community profiles

The case study communities were selected on the basis of:

- diversity of size, industries, infrastructure;
- growth or decline and urban or rural; and
- the likelihood of significant social impacts as a result of changes to forest tenure and management.

The case study areas were the townships of Eden, Bega, Merimbula, Bombala, Cobargo, Pambula, Wyndham and Wonboyn Lake.

A variety of methods was used to develop a profile of each case study area, including an assessment of the social and economic structure of communities. The analysis drew upon data collected using workshop, interview, focus group and participant observation methods. Data were also collected through secondary data sources such as ABS statistics, shire reports, government publications, community service directories, and extensive fieldwork.

Eight community workshops were conducted in these communities to explore community issues such as significant events in the community in the recent past, “community attachment” and community aspirations.

Surveys of occupational communities

In the Eden CRA Region, data was collected from all forest-related workers and businesses on a confidential basis to develop a profile of each occupational community. “Occupational communities” in the Eden Region are those:

- directly employed in transport, harvesting and milling;
- those employed by forest management agencies;
- tourism operators; and
- other forest users which includes apiarists, small mobile and fixed mills, graziers, seed collectors and specialty timber users.

Occupational flexibility reflects the number of years in current occupation, level of education attained, transportability of skills and experience in other industries. The degree of personal flexibility is assessed on the basis of housing status (own/rent), length of residence and family attachment.

Timber industry workers are predominantly male, on average aged between 37 and 44 years. Even though 55 percent of sawmill workers had worked in other industries the degree of occupational flexibility was assessed as low, with 90 percent leaving school at or before Year 10. Fifty percent of chipmill workers left school at or before Year 10 and 13% had tertiary qualifications and 77 percent had worked in other industries. Over 75 percent of contractors left school at Year 10 and 70 percent had worked in other industries.

Family networks within timber industry workers were strong, with 60-70 percent of workers in direct employment having family living in the area. One third of all workers have other family members employed in the timber industry in the Eden Region.

The majority of chipmill workers earn between \$25†000 and \$40†000. Approximately 80 percent of sawmill workers earn less than \$25†000. Bush crew employees mainly earn between \$25†000 and \$60†000 per annum.

There are two forest management agencies in the region: State Forests of NSW and the National Parks and Wildlife Service. Fifty percent of State Forest personnel left school at Year 10 or earlier and 6% had tertiary qualifications. State Forest workers had been working in their current job for an average length of 12.4 years. National Parks employees working within the region had been working in their current job for an average of 3.5 years.

A high proportion of timber industry employees live in Eden and Bombala and surrounding hamlets. Forest management agency personnel also live mainly in these towns.

All survey respondents said that the scenic beauty of the area, the clean healthy environment and recreational opportunities were aspects they most liked about living in the area. The lack of employment opportunities and the lack of services and facilities were cited across all respondents as the major dislikes about living in the area. Isolation and remoteness were also often mentioned.

A survey of tourism operators in the Eden Region identified that the forest areas considered most important to their businesses were Ben Boyd National Park, Bournda National Park, Mimosa Rocks National Park and Nadgee Nature Reserve. Other areas mentioned were Tantawangalo, Coolangubra and Mumbulla Falls.

The small numbers of other forest users in the area and the low response rate means that little general information is available for these groups. However, further information about these forest users is contained in the economic assessments (which are summarised in the *Eden CRA Project Summaries* booklet accompanying this report).

Community attitudes survey

A random sample telephone survey was undertaken in July 1997.

Respondents noted the following as the most important social issues currently facing Australia: unemployment (47.4 percent), the health system (43.3 percent) and the environment (35.1 percent).

Two thirds of respondents in Eden reported an awareness of the difference between State forests and National Park tenure. A large proportion of respondents said they made visits to forested areas more than once a week, mostly for the purposes of bushwalking, nature appreciation and picnics.

Forty eight per cent of respondents considered Aboriginal sites should be protected, and two thirds of respondents agreed that environmental protection can co-exist with forest industries. Almost 80 percent of respondents considered that some small communities are economically reliant upon the forest industry and considered that it should therefore be sustained for these small communities. Eighty five percent of respondents considered Australia should draw its timber products from Australian forests rather than overseas forests, even if overseas timber products are cheaper. Forty three per cent agreed, and the same number disagreed, with the statement "I would like to see more forested land conserved even if it means a loss of income to the state from timber harvesting." This reflects the difficulties experienced by people and

communities when conservation values and economic and social values come into conflict.

Sixty percent of respondents considered that tourism derived from the conservation of forest areas may generate regional income and employment. Eighteen percent were unsure and 22 percent disagreed. There was a strong response in favour of harvesting timber products from eucalypt plantations in preference to native forests.

Locational business impacts

A study was commissioned to ascertain the flow of money from the native forest industry into the regional Eden community. The survey of timber industry businesses identified 195 non-timber businesses in the region which provide services to the timber industry. A "relative exposure index" was developed which showed Eden as highly dependent on supplying to the timber industry, with Bombala moderately dependent. Pambula, Merimbula and Bega also benefit from this expenditure. It was estimated that \$23 million is expended annually, with wages and salaries contributing over \$10 million. Individual timber businesses reported the main issues of concern were the need for resource security and reliable government policies which would lead to confident business investment.

Structural adjustment and mitigative processes

A situation report and analysis of current structural adjustment and mitigative processes in the Eden Region was commissioned. The study estimated the loss of 120 timber industry jobs in the Eden Region and focuses on the experiences of 32 former native timber industry workers and contractors who lost their jobs between December 1995 and June 1997. Of the sample studied, 6 are now in full-time employment, 9 in part-time employment and 12 unemployed, with the remainder retired or studying.

The study also identified that, over this time, 80 former timber industry workers were approved assistance of \$1.8 million under the Commonwealth/NSW Forestry Industry Structural Adjustment Package (FISAP) program which provides assistance in cases of industry restructuring initiatives. Some of these workers

resided outside the Eden CRA Region. Business exit assistance of \$5 million was also approved for 22 harvesting and haulage companies⁴.

The FISAP measures helped to ease the immediate financial burden of redundancy amongst forest workers. FISAP payments were used by recipients mainly to reduce debt. However, reportedly, the payments did not significantly alter negative experiences relating to the economic, personal and social aspects of the lives of those retrenched from the industry. Significant loss of self-esteem, financial insecurity and uncertainty about the future were widely reported by respondents and confirmed by community-based professionals.

Aboriginal forest use values

Three social and economic workshops were conducted with Aboriginal groups in the Eden Region, including representatives from the Bega, Eden and Merriman's Local Aboriginal Land Councils.

Historically, Aboriginal people were involved in every aspect of the timber industry – from sleeper cutters to benchmen. Current employment in the forest industries is limited to firewood cutting as part of a Community Development Employment Program (CDEP). The three workshops reported very high unemployment rates in the Aboriginal communities with CDEP providing the major employment potential.

Aims for the economic and social development of Aboriginal people in the Eden Region combined cultural tourism, partnerships in forest management across all tenures, and a potential for some employment in partnership with the existing timber industry.

Development of the social impact model

A computer-based dynamic systems model was developed to assess potential social implications of each land use and management scenario. A 'base flow' of timber jobs in each community has been established from survey results. Impacts, such as job losses or gains, were

calculated using data provided by the FORUM model on timber industry employment changes over time. The model provides an analysis of occupational flexibility, personal flexibility characteristics and also incorporates any timber or other industry or mitigative initiatives which could result in additional jobs.

⁴ Business Exit Assistance (BEA) may also include some companies outside the Eden CRA Region.

Figure 3a Analytical Framework for Economic and Social Assessments - Eden RFA (separate attachment)

4. ECOLOGICALLY SUSTAINABLE FOREST MANAGEMENT OVERVIEW

4.1 BACKGROUND

The Commonwealth/NSW Scoping Agreement states that:

The Commonwealth and New South Wales Governments believe that the long-term ecologically sustainable management of forests and the development of competitive and efficient forest industries are compatible objectives and therefore they are committed to providing a basis for these objectives in the regions covered by this Agreement, thereby ensuring: the protection of conservation values; the basis for an internationally competitive forest products industry; and the effective use of other economic and social resources of the regions.

The Commonwealth and New South Wales Governments agree that ecologically sustainable forest management will require a variety of mechanisms, including: the implementation of a comprehensive, adequate and representative (CAR) reserve system, complementary off-reserve management, appropriate codes of forest practice and management plans. Both Governments recognise that an important and integral part of this process is the consideration of economic and social factors in determining and implementing such mechanisms. The Governments agree to prepare the necessary documents including performance indicators as an integral part of the RFAs.

Determining how the Regional Forest Agreement (RFA) for Eden can ensure ecologically sustainable forest management of the Region's forests has been the task of the Ecologically Sustainable Management (ESFM) Group. This is achieved through a number of project areas, the two main streams of which are the development of forest management systems and processes for achieving ESFM and the identification of performance indicators for assessing forest management outcomes.

The ESFM Group developed principles for ecologically sustainable management of NSW forests across all tenures and uses. These were used to assess current NSW forest management arrangements for developing forest management systems and processes for achieving ESFM. Performance indicators and targets for indicators were developed with reference to the outputs of the Montreal Process, the State and Commonwealth reporting of the 'State of the Environment', expert advice on a set of indicators for the Eden RFA, and input from the Eden Regional Forest Forum.

The two main project areas were supported by a review of impacts of forest management practices on a broad range of forest values and assessments of impacts of different scenarios developed for exhibition through a range of indicators and targets.

As a basis for the assessment of ESFM, the NSW ESFM Group drafted a Technical Framework for ESFM that defined ecologically sustainable forest management as:

‘managing forests so that they are sustained in perpetuity for the benefit of society by ensuring that the values of forests are not lost or degraded for current and future generations.’

The primary goals of ESFM are to restore, maintain or enhance:

- ecological processes within forests (such as the formation of soil, energy flows and the carbon, nutrient and water cycles);
- biological diversity of forests at the ecosystem, species and genetic levels (which includes natural patterns of ecosystems, species and gene pools in time and space);
- natural and cultural heritage and Indigenous forest values;
- long-term social and economic benefits on an ecologically sustainable basis;
- intangible benefits of forests and the maintenance of options for the future; and
- other identified forest values.

4.2 KEY ISSUES FOR ESFM IN THE EDEN CRA/RFA PROCESS

To achieve ESFM for an RFA it is important to identify an acceptable balance between regional environmental, social and economic values. As forest values vary from place to place and time to time, not all parts of the forest can contribute equally to the maintenance of all forest values. Therefore, balance between values must be understood in this light and in terms of their location, tenure and appropriate systems for management.

One of the greatest challenges for the Eden RFA is to allocate land use and develop management practices for the full range of forest values according to ongoing community expectations, whether on protected areas, State forests or private land. This requires a forest management system that incorporates performance indicators and targets for indicators. When these indicators are applied, the results of forest management and the condition of the forest can be assessed and continual improvement and adaptive management mechanisms developed.

4.3 ESFM PROJECTS

The ESFM Group established the following projects to provide the basis for developing ESFM for the Eden RFA.

4.3.1 Definition and principles of ESFM

A set of five principles was developed based on the definition of ESFM (quoted in section 4.1). The principles are detailed in appendix 4.1 and summarised below:

Principle 1

Maintain or increase the full suite of forest values for present and future generations across the NSW native forest estate. Values include:

- biodiversity;
- productive capacity and sustainability of forest ecosystems;
- forest ecosystem health and vitality;
- soil and water;
- positive contribution of forests to the global geochemical cycle;
- long-term economic and social benefits; and
- natural and cultural heritage values.

Principle 2

Ensure public participation, access to information, accountability and transparency in the delivery of ESFM.

Principle 3

Ensure legislation, policies, institutional framework, codes, standards and practices achieve ecologically sustainable forest management of the native forest estate through requirements and/or by providing incentives.

Principle 4

Apply precautionary principles for the prevention of environmental degradation.

Principle 5

Apply best available knowledge and adaptive management processes.

4.3.2 Statewide and regional assessment of NSW management systems and processes for delivery of ESFM

This project involved an independent assessment of current forest management arrangements in NSW in relation to the five principles for ESFM and the key components of an environmental management system - policy and commitment (including legislation), planning, implementation, monitoring and evaluation and review and improvement. The assessment provided recommendations on how current NSW forest management arrangements can be improved to achieve ESFM. It was undertaken on a Statewide basis, covering all land tenures and land uses for forested areas.

Currently, management of State forests in the Eden CRA Region is undertaken in relation to legislative requirements, management practices and measures established by the NSW Minister for Urban Affairs and Planning arising from the approval of the 1994 Eden Management Area Environmental Impact Statement.

A general approach to ecologically sustainable forest management for RFAs was agreed at the Commonwealth-State Comprehensive Regional Assessments Implementation Forum (CRAIF) in April 1996. To establish its approach and develop a framework for ESFM CRAIF used the National Forest Policy Statement, Montreal Process Criteria and Indicators, outcomes of the United Nations Conference on Environment and Development (UNCED), Forest Stewardship Council Principles and Criteria, and the principles and guidelines of ISO (International Standards Organisation) 14001/4 Environmental Management System.

The broad framework for the assessment of ESFM agreed at CRAIF was customised for NSW by the NSW ESFM Group. The structure and principles of ISO 14001/4 Environmental Management Systems were adapted as a framework for the assessment of NSW agencies responsible for forest management and regulation, while ESFM principles specifically developed by the NSW ESFM Group were used to assess the various components of the management system.

An Expert Working Group (EWG) was appointed to carry out the assessment. The group consisted of independent specialists in legislation, forest management and planning, flora and fauna conservation, hydrology, soil and site productivity, silvicultural and environmental management systems. The EWG was provided with documentation outlining the current management arrangements and was involved in a series of briefings by NSW agencies on their roles and functions. Issues relating to ESFM raised by stakeholders through the NSW ESFM Group and Regional Forest Forums were considered by the EWG in developing its recommendations.

The EWG did not assess cultural heritage management arrangements, including Aboriginal cultural heritage values, or the broader range of Aboriginal concerns in relation to spiritual, social and economic values. An assessment of cultural heritage values is currently being undertaken by the NSW Cultural Heritage Working Group through the project Protecting Cultural Heritage Values and Places in the NSW Forests (see *Eden CRA Project Summaries* booklet accompanying this report). There is also consideration of broader issues of Aboriginal concern in projects dealing with identification of places of significance, Aboriginal heritage area management, use, and access, and economic and social assessment of forest uses and values from the point of view of Aboriginal people. When completed, these projects need to be reviewed in terms of ESFM.

4.3.3 Criteria, indicators, targets and monitoring processes for the Eden CRA/RFA Region

This project defined a set of measurable indicators and targets for key ecological, cultural, economic and social values identified within the NSW ESFM principles.

At an international level, a Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests proposed a framework of indicators to be used at a national level (The Montreal Process 1995). These indicators have been endorsed by countries with the great majority of non-tropical forests, including Australia. Australia has established a national working group to facilitate the implementation of these indicators at a regional level.

At a national and NSW State level, the *State of the Environment Reports* include environmental indicators, and the CRA/RFAs Environment and Heritage and Economic and Social Technical Committees have both identified potential indicators.

The ESFM Group engaged consultants to address the values identified in the ESFM principles, taking into account issues raised by the Eden Regional Forest Forum (Fortech 1997 and CSIRO *et al.* 1997). The consultants also looked at existing national and international work in this area in order to propose a set of ESFM indicators for the Eden CRA. These indicators were designed to serve two main purposes:

- to identify the consequences of a given land use decision and wood supply commitment; and
- to monitor the implementation of the RFA over its 20 year lifetime.

The consultants provided a substantial list of potential indicators reflecting both the core values identified in the ESFM principles for NSW and the national and international reference documents (Fortech 1997). The Committee reviewed this work and used it to develop a set of 22 indicators recommended for use in the RFA process (appendix 4.2). The indicators are identified in three categories:

- Category A indicators have data currently available and were used to assess each Eden RFA scenario.
- Category B indicators have data available, but their response to management was not sufficiently well known to be usable during the development of scenarios. These indicators are intended to be monitored during the life of the RFA and used to evaluate performance in management.
- Category C indicators reflect issues for which data is currently lacking or incomplete. These indicators will be further developed and implemented during the RFA period.

The Group developed targets for all category A and B indicators. These targets, then, will be the performance measures for the future assessment of the implementation of the scenario chosen for the RFA.

4.3.4 Assessment of forest management practices for the Eden CRA/RFA Region

Experts were engaged to review existing forest management practices, identify their impacts and propose changes to practices that might vary impacts (CSIRO *et al.* 1997). Practices examined included timber harvesting, thinning, fire prevention and prescribed burning, road construction and maintenance and recreational site development, with the focus on timber harvesting and forest fire management. A range of different harvesting regimes that might be appropriate for ESFM in Eden, including patch-cutting, group selection or variable intensity selection logging, were identified.

4.3.5 Management options and scenarios to generate ESFM targets for the Eden RFA

In determining the implications of management scenarios for ESFM, it is important to recognise the interaction of/between forest values and the need for trade-offs to achieve sustainable outcomes.

This project assessed the implications of each scenario. These scenarios consisted of maps identifying different areas for consideration as part of the CAR reserve system and wood supply requirements. Assessment of the implications of each scenario was carried out either quantitatively or qualitatively in relation to harvesting intensities for the following type A indicators (see appendix 4.2):

- extent of forest/vegetation type by growth stage;
- extent of connectivity in the forest landscape in relation to threatened species, habitat, conservation reserves, general retained habitat;
- management measures in place to maintain species extent and abundance;
- proportion of catchment likely to be harvested from 1997-2019 by harvest system as an immediate proxy determination of water quality; and
- change in the level of growth stages from 1997-2019 by catchment as an immediate proxy rating of water quantity.

Full assessment of the impacts of a wider range of combinations of harvesting and silvicultural practices was not undertaken because of time and

data constraints. A summary of the implications for each scenario is discussed in chapter 9.

4.4 CONCLUSION

There is no simple or precise definition of ESFM. The ESFM principles address a range of forest values. However, the relative weighting given to the values will vary locally, and thus must relate to an agreed management goal for a particular area of forest. Emphasis will vary from conservation, through multiple use, to intensive wood production (eg. plantation forestry).

Forest values vary in both space (eg. with environmental conditions) and time (eg. during forest succession after disturbance). This is true for both natural forests, and following forest management (eg. harvesting). It follows that not all parts of the forest can contribute equally to all forest values, and that any patch might well make very different contributions at any particular time.

Management arrangements must reflect these factors and address ESFM at appropriate scales. For example, soil and water values and

endangered species need to be protected at the local (site) level, but most biodiversity goals (targets) will be achieved at larger scales that encompass both reserves and wood production forests. Wood production goals will also be set at larger scales, with some patches of forest making no contribution and others making a large contribution.

Expectations that a particular patch of forest must/can provide the same level of all forest values even when managed for different purposes, is unrealistic. The community must decide what levels and mix of environmental, social and economic forest values provides an acceptable balance for ESFM based on the scientific requirements for maintaining certain values (for example, wildlife population viability or wood supply to industry).

During the life of the Eden RFA, a forest management system which incorporates performance and sustainability indicators will be used to guide and assess management planning, practices, the performance of land managers, and will provide transparency in the direction and results of forest management.

5. EDEN FOREST RESOURCE AND MANAGEMENT SYSTEM OVERVIEW

5.1 BACKGROUND

To develop an RFA for Eden it is necessary to understand the currently available wood resources in the Eden CRA Region's forests, and the expected future yields which can be sustained over time.

To this end, a Technical Committee was established, with representatives from State and Commonwealth Governments and various stakeholder groups, to develop methods and oversee assessment work. The Forest Resource and Management System (FRAMES) Technical Committee identified its aims as:

- determining ecologically sustainable wood flows and expected sawlog sizes and qualities for a range of management options and a varying resource base for use in RFA integration;
- providing reliable ecologically sustainable yield figures as a basis for an RFA between the Commonwealth and NSW;
- providing a basis for ongoing ecologically sustainable management of wood flows by State Forests of NSW;
- providing information on resource characteristics for use in long term planning by wood-based industries in NSW; and
- providing information on and validation of the modelled effects of environmental and

silvicultural options for use in developing proposals for ecologically sustainable forest management.

The ecological sustainability of wood flows was primarily addressed by the ESFM Technical Committee.

5.2 FRAMES AND THE EDEN CRA

A detailed Forest Resource and Management System (including detailed inventory) is currently being applied to forested areas which are included in the New South Wales Comprehensive Regional Assessments (CRAs).

However, in setting out to establish wood flows over time for the Eden CRA Region, the FRAMES Technical Committee decided in January that there would not be sufficient time to complete a full strategic inventory for Eden, as is being carried out for the rest of the State. Separate Eden-specific projects were therefore developed, with the expectation that a revised and externally validated wood resources database, plus improved associated models, would provide a reasonable foundation for estimates of harvestable log volumes and sustained yield. This combined assessment is referred to as Eden FRAMES.

The work carried out for Eden has included:

- refinement and independent review of existing information on wood resources;
- revised estimates of forest growth rates to enable the prediction of future wood resources; and
- revised calculations of potential future sawlog and pulpwood yields from the Eden Region.

This overview provides background about the methods used and the overall results of the assessment applied to the Eden CRA. More detailed information about the individual Eden projects is contained in the report *Eden CRA Project Summaries*.

5.3 TIMBER RESOURCES IN THE EDEN CRA REGION

5.3.1 Native forests

The timber resource in the Eden CRA Region can be categorised into two main components:

- the multi-aged forest; and
- the essentially even-aged regrowth forest.

The multi-aged forest resource includes unlogged forests and forest areas which have been selectively harvested in the past and represent a currently available bank of wood resource.

The regrowth forest in the Eden CRA Region includes regrowth originating from fires (where the fires have been of sufficient intensity to kill most overstorey trees) as well as from integrated harvesting. The regrowth forest will be an important future source of wood for the region's industries. There have been four major fire seasons affecting the resource, 1952, 1968, 1972 and 1980. Since 1967, approximately 170,000 hectares have been burnt.

Even where trees have not been killed, the long history of wildfire in the region has affected log quality in the multi-aged forests. Due to the younger average age and reduced exposure to damaging wildfire, the regrowth sawlogs are anticipated to be of considerably higher quality than the multi-aged forest sawlogs. The STANDSIM growth model predicts that the

regrowth resource will produce higher volumes per hectare of sawlogs than the multi-aged forest. Younger regrowth areas result from integrated harvesting operations conducted from 1970 onwards. About 120 000 hectares have been harvested by integrated harvesting operations since 1970.

The multi-aged forest resource is expected to provide the majority of sawlog supply in the Eden CRA Region over the next 20 years until about the year 2015. From around 2016 onwards, it is anticipated that sufficient area of the regrowth resource will have reached a size where it alone can supply the pulpwood and sawlog commitments previously obtained from the multi-aged forest.

There is also estimated to be around 90,000 hectares of private forest in the CRA Region. Management of this resource and its potential yields are not clear.

5.3.2 Plantations

SFNSW plantations of *Pinus radiata* in the Eden CRA Region have a net area of 31 000 hectares. Most are concentrated in the Bombala area, between Craigie, Rockton, Towamba and Cathcart, with smaller plantations in the Glenbog and Glen Allen areas. Most of the resource is less than 25 years old, with some areas reaching second and third thinning age. Significant increases in harvest volume are planned over the next decade (see table 5a).

The area of privately owned pine plantations in the Eden CRA Region is around 2000 - 3000 hectares.

About 1100 hectares of eucalypt plantations have been established in the area. Most are less than ten years old and principally targeted at the pulpwood market. These include 800 hectares of predominantly *Eucalyptus nitens* plantation and about 300 hectares of smaller farm woodlots recently planted as joint ventures between farmers and SFNSW, comprising *E. nitens*, *E. botryoides*, *E. saligna* and *E. agglomerata*. Yields are unknown.

TABLE 5A SOFTWOOD RESOURCE VOLUMES FROM PLANTATIONS IN THE EDEN CRA REGION

Period	Sawlogs (m ³) per annum	Pulpwood roundwood (t) per annum	Sawmill residues (t) per annum
Current Harvest	50 000	35 000	-
Potential 2002 ^{a, b, c}	290 000	200 000	87 000
Potential 2010 ^{a, b, c}	380 000	270 000	114 000
Potential 2020 ^{a, b, c}	550 000	270 000	165 000

a) Potential 2002 level of yield based on current plantation resource; Potential 2010 level and Potential 2020 levels of yield assume an expansion of the total plantation estate by 10,000 ha and 20,000 ha respectively.

b) Sawlog availability predicated on the sale of all pulpwood and sawmill residues.

c) Potential yields represent sustained annual levels assuming an even distribution of age classes (which is not currently the case).

Source: SFNSW, BRS.

5.4 DATA COLLECTION

All data was collected for area units known as coupes, which are the area basis for planning harvesting operations. Average coupe area is approximately 50 hectares.

The FRAMES Technical Committee developed methods and oversaw projects (see figure 5a) as follows.

5.4.1 Review and validation of resource data (refer Project NE09/FRA)

Existing available SFNSW data on wood resources included:

- the results of a 1987 timber inventory which formed the basis for the 1994 Eden Environmental Impact Statement (EIS) predictions and the 1996 Interim Assessment Process (IAP) Wood Resources Study; and
- actual historical yields for harvested coupes dating back to 1970.

The 1987 inventory was built up in recognition that the management practice of alternate coupe harvesting in the Eden CRA Region allowed for actual volumes per area and species and size mix to be cross-referenced to adjoining unlogged coupes. As a result, future wood volumes could be estimated in adjacent unlogged coupes, recognising that corrections need to be made for differences between current and historical net harvestable area and tree retention prescriptions. The review of this existing resource data was carried out by a consultant (“Validation of Eden Wood Resources Data”, Forest Essentials Pty Ltd, 1997a). The review involved quantifying the reliability and the limitations of work which had been undertaken to predict the resource available per hectare in the current multi-aged and regrowth forests. For the multi-aged forest, this involved:

- documentation and review of the derivation of resource data; and
- a statistical analysis of the relationship between predicted yields (from the 1987 inventory) and actual yields.

For the regrowth forest (both fire and harvesting), it was recognised that existing information was not adequate and additional information needed to be obtained from field plots to develop an adequate knowledge of the young stands. State Forests has measured around 1000 field plots. Most plots were established in areas that are likely to be thinned in the next 10 to 15 years as these areas will provide the bulk of the regrowth sawlogs prior to 2040. Sampling of the regrowth resource is an ongoing process and plot measurement is continuing so that more detailed information will be available for post RFA reviews.

5.4.2 Retained tree inventory (refer Project NE11/FRA)

Timber harvesting during some periods has resulted in significant numbers of trees left standing in harvested coupes to provide seed trees, fauna habitat and some future sawlogs. Retained trees can affect future yields in that:

- some future sawlog volumes may be available from previously retained trees; and

- there may be an impact on regrowth growth rates.

As part of the Interim Forest Assessment (IFA), a study was conducted to examine tree retention after previous harvesting to explore whether any previously retained trees were likely to be available for harvesting for sawlogs once the surrounding regrowth was well-established. This study concluded that these previously retained trees were likely to be required for ongoing habitat, and were thus unable to significantly contribute to sawlog volume during future harvesting operations.

A CRA project was carried out to estimate rates of tree retention which could affect the rate of growth of regrowth forests. Retained tree rates (number per hectare) were determined from existing records and were recorded for each coupe.

5.4.3 Net harvestable area (refer Project NE12/FRA)

In estimating expected future wood volumes it is also important to recognise that the total area of a forest is *not* available for timber harvesting. Significant areas are not harvested, but are set aside to protect flora and provide fauna habitat, provide wildlife corridors, protect water catchments, protect cultural and historical sites.

An assessment of the likely future net area available for harvesting under current controls across the Eden CRA Region was undertaken, allowing environmental controls to be taken into account in calculating wood resources available for harvesting. This project also allowed for an assessment of the variation that future environmental controls might cause to the net harvestable area.

In order to determine the net harvestable area, the area of forest in which harvesting is excluded was specified and mapped.

This mapping of excluded areas allowed calculation for each coupe of a quantitative statement of net harvestable area according to current controls.

Tabular summaries were also generated for the whole CRA Region (table 5b).

TABLE 5B: EXCLUSIONS IN THE EDEN CRA REGION

Exclusions	Area	Cumulative Area	
	(ha)	(ha)*	(%)
Preferred Management Priority ¹	22 914	22 914	11.56
Rainforest and buffers	5 061	26 731	13.49
Rocky areas and buffers	2 122	27 711	13.99
Swamp (wetlands) and buffers	754	28 320	14.29
Heath and buffers	2 166	29 590	14.93
Slope > 30°	3 456	31 746	16.02
Fauna stream buffers	14 350	40 987	20.69
Pollution control stream buffers	16 804	44 416	22.42
High erosion risk	5 236	45 493	22.96

* Due to overlap of areas these figures are not simply a sum of exclusion areas.

¹ PMP Exclusions were:

- 1.1.2 Special Emphasis (Recreation)
- 1.1.7 Flora and Fauna Protection
- 1.1.9 Aboriginal Sites
- 1.2 Undeveloped Natural Forest
- 1.3 Preserved Natural Forest
- 3.1 Cleared
- 3.2 Special Development

5.4.4 Site productivity index (refer Project NE13/FRA)

To identify the potential productivity of different areas of the forest, a site productivity project was carried out.

Its purpose was to use existing plot data to extrapolate site productivity on a regional scale in order to predict growth and yield values for all of the Eden CRA Region. The project was also informed by the mapping of environmental factors that contribute to forest growth. These factors were broadly: nutrients, moisture, temperature and light.

The output of this exercise was that, within each forest type, a low, medium and high mean annual increment (ie. the mean annual rate of growth) was calculated. This was then used as another input

variable for estimating the growth of regrowth forests.

5.4.5 Sawlog species mix (Project NE20/FRA)

Sawlog wood flows were assessed not only in terms of total volume of sawlog resource available but also by the species and size class of sawlogs.

Historical data from SFNSW sales records were used to predict the percentage of species and size class of sawlogs available in the future from the multi-aged forest. Actual proportions of species and diameter classes were obtained and applied to the adjacent unlogged coupes for each compartment. This methodology was consistent with the 1987 inventory described under section 5.4.1. Where no such information was available (for approximately 15% of compartments), the average mix from similar areas was used.

5.5 DATA COMPILATION

The collected data (as described in Section 5.4) were compiled into a Microsoft Access database (refer Project NE10/FRA).

5.6 MODEL DEVELOPMENT AND APPLICATION

5.6.1 Growth and yield models (refer Project NE14/FRA)

It was assumed that the multi-aged forest resource has a zero net growth in quota sawlogs, as any growth is offset by decline. For the regrowth, resource estimation of growth rates was required to estimate future yields of wood products from the regrowth component of the forest.

STANDSIM, a stand simulator developed for Victorian stands of *E. sieberi* (Silvertop Ash) and other species, was modified and adopted for use in the Eden CRA Region. The simulator was modified using SFNSW growth and yield research work. It was recognised that STANDSIM, as modified, was most suitable for the Silvertop Ash dominated stands in the Eden CRA Region, and would produce less accurate – but estimated as conservative – outputs for other forest types (“Modification of the STANDSIM model for the

Eden Management Area”, Forest Essentials Pty Ltd, 1997b).

5.6.2 Modifier models (refer Project NE15/FRA)

In developing projects it was proposed to take into account the effects of thinning of the regrowth forest, and other forest management practices that could affect growth and future yields.

STANDSIM (which includes growth models adopted for Eden) has the ability to evaluate yields from various thinning regimes for the stands. Commercial thinning regimes with thinnings around ages 30 years and 45 years across the thinnable area were assumed.

Because of insufficient data, STANDSIM as used did not reflect growth responses to thinning. Furthermore, STANDSIM was not able to evaluate management intensification practices, such as fertilising, in Eden.

The effects of other management practices (e.g. various intensities of selective harvesting) were assessed by the ESFM Technical Committee. The results are described in relation to the relevant scenarios in chapter 9.

5.6.3 Yield estimation and scheduling (refer Project NE22/FRA)

The final step in Eden FRAMES was to integrate the multi-aged and regrowth forest resource data and growth models into a package which estimated yields from each coupe in the forest and enabled a program of future harvesting to be simulated, with volumes scheduled during each year to ensure a predictable resource supply to wood-based industries during the RFA period.

This scheduling task for Eden was considered to be relatively simple as coupes within the multi-aged forest could be scheduled at any time to produce the same yield. The scheduling was carried out manually taking into account the spatial location of coupes across the Region. The outputs of the yield scheduling for Eden show:

- when coupes should be/are best harvested in future years;
- expected yield by species, volume and size class for the multi-aged forest;

- volume of products available from the regrowth forest; and
- yields smoothed to provide similar yield each year to 2019.

5.7 WOOD FLOWS

Key outputs of Eden FRAMES are:

- resource data in terms of standing volume and value (the latter via current log price);
- prediction of future yields for multi-aged and regrowth forest; and
- gross and net harvestable areas of forest under specified prescriptions.

5.7.1 Projected volumes

The timber currently available for harvesting is shown in table 5c. The volumes have been calculated using the current land tenure and applying current management prescriptions but do not take account of fauna moratorium areas which will be considered as part of the RFA.

There is a potential impact from wildfire which was not taken into account in tables 5c and 5d and applying current management prescriptions. Table 5d shows total harvestable volume for the multi-aged forest by species group and diameter class. This data has been extracted from the Eden FRAMES database.

The FRAMES Technical Committee recognised that the certainty of these estimates varies with time period. The relevant time periods are:

- from 1997 to 2019 estimated yields are drawn primarily from the multi-aged forest; and
- from 2020 to 2040 estimated yields are largely drawn from fire regrowth and thinning of logging regrowth.

Beyond 2040 estimated yields are drawn primarily from logging regrowth which has not been well sampled. Estimates are indicative only.

Based on this information allowable cut calculations can be estimated for the current planning horizon (Forest Essentials Pty Ltd 1997b).

TABLE 5C ANNUAL WOOD RESOURCE VOLUMES FROM NATIVE STATE FORESTS IN THE EDEN CRA REGION

Period	Current land tenure including any areas from which harvesting has been deferred	
	Sawlog ¹ (m ³) per annum	Pulp ¹ (t) per annum
1997-2019	28 300	403 000
2020-2040	28 300	444 000
2040+	>30 000	~500 000

¹ From MAF and regrowth including thinnings

TABLE 5D: TOTAL HARVESTABLE VOLUME (m³) FROM THE MULTI-AGED FOREST BY SPECIES AND DIAMETER CLASS

Species Group	Sawlog diameter class (centre diameter under bark)	
	<40 cm (m ³)	≥40 cm (m ³)
Silvertop Ash	10 000	134 000
Stringybarks	15 000	149 000
Messmate	3 000	56 000
Spotted Gum	3 000	12 000
Monkey Gum	5 000	68 000
Tablelands spp ¹	3 000	64 000
Specials ²	1 000	3 000
Other	3 000	26 000

¹ Mountain gum, brown barrel, shining gum, manna gum

² Grey box, grey gum, ironbark, white box

5.7.2 Integration and development of scenarios for Eden

As various scenarios were developed during the integration phase of the CRA process, Eden FRAMES was used to predict the sawlogs and pulpwood during the periods 1997–2019 and 2020–2040, for the areas of forest available for harvesting and for the current prescriptions that apply at that point. These outcomes are provided in chapter 9 in relation to each of the scenarios.

Further analysis was applied to the FRAMES data by the ESFM Technical Committee to simulate changes to forest management practices for particular scenarios. These are reported for each scenario.

For each scenario developed in the integration phase of the CRA process, the breakdown of

volume shown in table 5d was generated, by location within the Eden CRA Region and for each year of supply, and was supplemented by volume of regrowth sawlogs and pulpwood. This data was then provided to the Economic and Social Technical Committee for use in the Forest Resource Use Model (FORUM) to allow economic modelling of wood based production to be carried out.

5.8 AFTER THE REGIONAL FOREST AGREEMENT

Eden FRAMES identified a need for more inventory data for future evaluations of the regrowth resource. The FRAMES Technical Committee considers an inventory system necessary to more accurately predict when fire and logging regrowth will become available as sawlogs. Initial results of the inventory should be reviewed two years after signing the RFA and the five yearly review should include a detailed review of sustained yield calculations based on the inventory (see chapter 12).

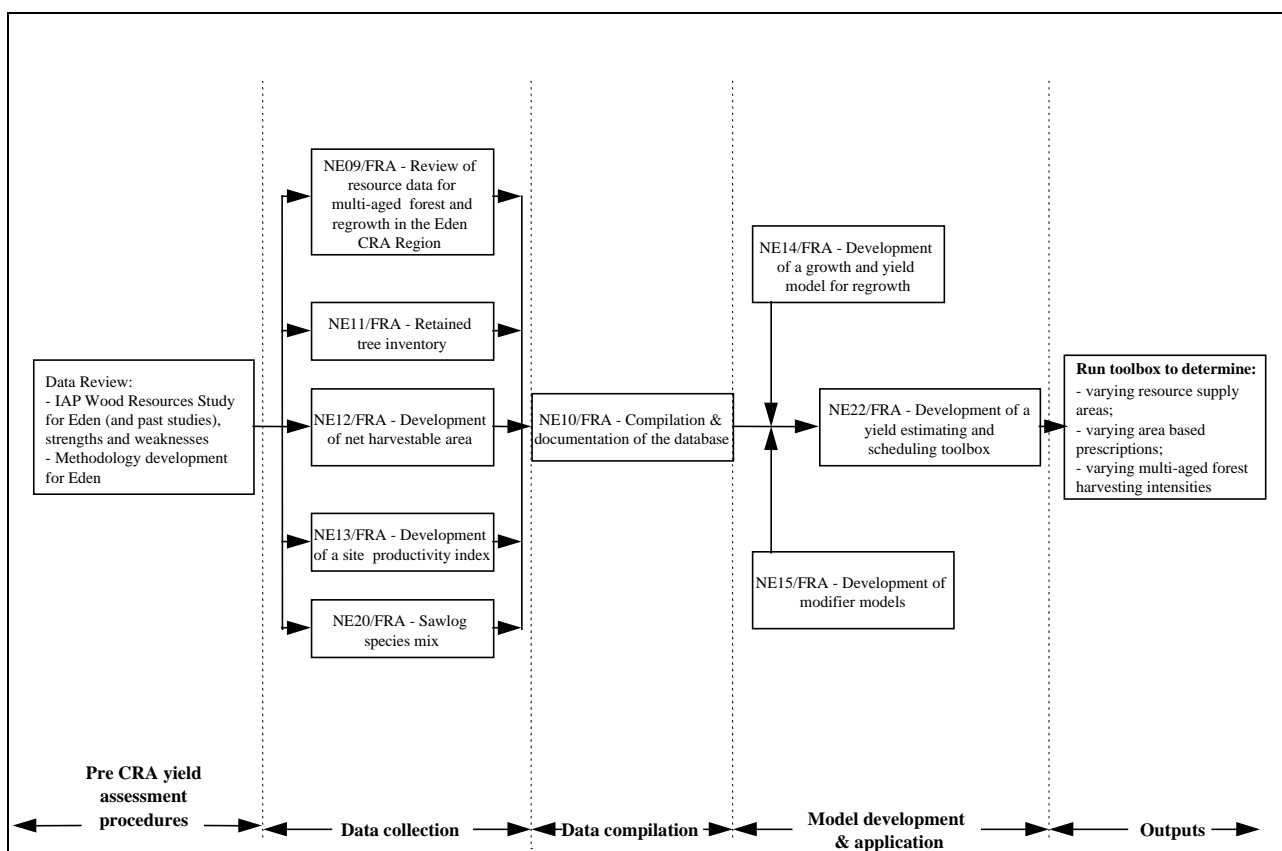


Figure 5A Eden FRAMES methodology

Note: Project summaries are available in a booklet accompanying this report

6. EDEN REGIONAL FOREST FORUM

6.1 BACKGROUND

The Eden Regional Forest Forum, one of four in NSW, was established to provide a communication link between the CRA/RFA Steering Committee and stakeholders at a regional and local level. In addition to stakeholder involvement on the Steering Committee and Technical Committees, the forums provide a regional stakeholder focus.

All Forums are made up of representatives of key community groups with an interest and involvement in those forests undergoing comprehensive regional assessments. The Forums are kept informed about the CRAs and are providing their input into the process, thereby contributing a regional 'voice' to the forest debate and decision-making in New South Wales. The Forums were given the tasks of:

- enhancing community awareness and inviting and encouraging participation of interested parties in the creation of a comprehensive, adequate and representative system of forests and an ecologically sustainable timber industry;
- liaising with the Steering Committee on regional information needs; and
- providing a regional context for the comprehensive regional assessments through advice to the Steering Committee on regional issues.

The Eden Regional Forest Forum consisted of 22 members from key stakeholder groups. Membership included representatives from the following organisations:

- Regional Development Group

- Tourism NSW
- Australian National University
- Forest Products Association
- Institute of Foresters Australia, NSW Division
- Australian Forest Growers
- National Association of Forest Industries
- Forest Protection Society
- Nature Conservation Council
- Confederation of Bushwalking Clubs NSW
- NSW Apiarists Association
- NSW Farmers Association
- NSW Aboriginal Land Council
- Construction Forestry Mining and Energy Union
- NSW Minerals Council
- State Catchment Coordinating Committee
- South East Timber Millers and Users Group (as permanent observers).

Government officials from many Departments briefed the Forum on a wide range of issues. In addition the following agencies had representatives participating as forum members:

- Local Government and Shires Association
- NSW National Parks and Wildlife Service
- State Forests of New South Wales
- Commonwealth Department of Primary Industry and Energy

The Chair of the Eden Regional Forest Forum was chosen from the local community to maintain a regional focus. The Forum meetings were

coordinated by a Regional Liaison Officer who, along with other NSW and Commonwealth officers, facilitated the information flow between regional stakeholders and the Steering Committee.

6.2 EDEN REGIONAL FOREST FORUM (RFF)

6.2.1 Involvement in projects

Through regular meetings (the Eden Forum met nine times leading up to the development of the scenarios contained in this report), the Forum was kept up-to-date with the progress on CRA projects for Eden. Forum members gained an understanding of the context and methods of the assessments through briefings on both the technical frameworks and also specific aspects of the four assessment streams.

The Eden Regional Forest Forum provided advice to technical experts working for the Ecologically Sustainable Forest Management Group. This included the discussion on forest values and also current and possible future forest management practices. Consultants working on the development of indicators for Ecologically Sustainable Forest Management and on a review of management practices were present during these Forum meetings. This enabled project staff to better understand the regional context of issues relevant for Ecologically Sustainable Forest Management and to gain an insight into issues relevant for a range of stakeholders in the Eden region.

Forum members were further invited to contribute their regional knowledge in Community Heritage Workshops which took place in the Eden Region during June. These workshops aimed at identifying forest places with special significance.

The Forum was briefed on key project outputs before the development of various scenarios for Eden began. This included:

- viewing of reports and key output maps;
- briefings from technical staff; and
- a demonstration of C-plan, integration software used to develop the various scenarios for Eden.

6.2.2 Contribution to the process

Advice was provided to Steering Committee on all issues raised in the Forum meetings through:

- ‘Status Reports’, summarising the main points of discussion in the Forum;
- the minutes of each Forum meeting; and
- reports from the Regional Liaison Officer to Steering Committee.

Forum members reached consensus on a range of issues which were submitted to the Steering Committee as regional recommendations. Issues where regional stakeholders were unable to reach agreement in the Forum – and other important local issues – were tabled to the Steering Committee.

These regional issues have been submitted to technical committees for consideration and information during the development of scenarios.

Eden Regional Forest Forum’s position

For a discussion of how these issues have been addressed in the process please refer to chapter 11.

- The Forum recommends the allocation of a proportion of timbers (particularly miscellaneous timbers) by a tender system to allow wide access to the resource asset consistent with NFPS.
- The Forum supports the Eden Wharf in conjunction with development of softwood processing industry.
- The Forum recommends consideration of the possibility for Eden Region to become a model for demonstrating ecologically sustainable best practice forest management and forest resource value adding industry components.
- The Forum recommends that a Recovery Committee be urgently established under the NSW Threatened Species Act, with powers and financial support to quickly develop and implement an effective recovery plan that reverses the long-term decline in koala numbers in the Region.
- The Forum recommends that the land tenure map for the Eden RFA should have the complete land tenure position, including granted mining leases and exploration licences. This is not currently available in this form.

- The Forum recommends a fire policy in all agencies.
- The Forum recommends to seek State and Commonwealth government assistance to implement the Brown Mountain Interpretation Centre.
- The Forum recommends employment targets for the development of scenarios:
 - Medium-long term: Jobs growth strategy - linked to industry development in both hardwood and softwood sectors - contained in RFA.
- Basic to maintaining viable forest management and maintaining the traditional range of forest based industries that result from viable forest management, is the maintenance of a relatively large forest estate dedicated to timber production on a local area basis. To be viable, these production forest estates must be in a consolidated block and not be a checkerboard of reserved and non-reserved areas.
- The Eden Regional Forest Forum recognises the importance of the development of the soft wood industry for this region. There needs to be incentive to encourage investment in this resource with the guarantee that this will include a local soft wood processing plant. It will be necessary to maintain export controls to ensure that whole sawlogs are not exported and to discourage value adding off-shore.
- The Forum supports the establishment of extensive plantations of local species on private land through the farm forestry program with the emphasis on providing a value added saw-log resource where appropriate.
- The Eden Regional Forest Forum will support an industry option that is consistent with meeting JANIS criteria to deliver a CAR reserve system and create the greatest economic and social benefits to the region.
- The Forum supports a change in NPWS beekeeping policy subject to the outcome of studies into the effects of beekeeping on native forest systems.
- The Forum agrees the area needs an industry capable of using thinnings and sawlog waste
- Recognition of the need to move decision making process from operational to strategic.
- Recognition of the need for flexibility to ensure there is both a CAR reserve system and a hardwood industry.

7. SCENARIOS ANALYSIS – INTRODUCTION

7.1 INTRODUCTION

Following the completion of the assessments, Government and non-Government stakeholders analysed the data and its implications in order to develop a number of scenarios for the future management of forested land in Eden. This chapter introduces the issues which should be addressed in assessing scenarios for the future of the Eden forests.

7.2 TENURE

The Comprehensive Adequate and Representative (CAR) reserve system will include dedicated and informal reserves and will recognise the contribution of off-reserve management to conservation. Appendix 7.1 outlines the JANIS criteria reserve categories.

Currently dedicated reserves are those established under the *National Parks and Wildlife Act 1974* (NPW Act) ie. national parks, nature reserves and historic Sites and, in addition, flora reserves established under the *Forestry Act 1916*. Within State Forest Preferred Management Priority areas (PMPs) are established to complement the dedicated reservation system and contribute to the Ecologically Sustainable Forest Management [ESFM] of NSW forests). NSW is proposing to modify some components of the PMP system to comply with the requirements of JANIS. The details and mechanisms associated with these proposed changes are expected to be available in the near future and will be considered in finalising the RFA.

In developing and assessing the scenarios consideration was given to comparing the

achievement of reservation targets across all tenures including private lands. However, identification of potential additional areas for reservation was only considered from the existing public land estate.

In presenting the scenarios in this report the tables and analyses identify those conservation values that are achieved to their fullest practicable extent on public land. It is recognised that management related mechanisms may be appropriate for the further protection of these values on State forests and private land.

Such mechanisms include conservation protocols, a number of statutory obligations as outlined in Chapter 12 and the negotiation of Voluntary Conservation Agreements under the *National Parks and Wildlife Act 1974*.

Areas of high conservation value which also coincide with areas of regionally identified priority for mineral potential also need to be considered. A map of those areas considered through the CRA minerals project to be those of regionally identified priority for mineral potential accompanies this report. The appropriate tenure for areas of both high conservation potential and mineral potential is an issue to be resolved in finalising the RFA.

7.3 ENVIRONMENT AND HERITAGE ANALYSES

The implications of the reference points and scenarios in terms of environment and heritage were assessed by identifying the extent to which JANIS targets for forest ecosystems, old growth, wilderness, centres of endemism, fauna and flora

were achieved. JANIS targets were expressed as hectares required on public land.

Other environment and heritage values such as natural national estate values, some of which are comparable to JANIS values, have no specific conservation targets. These values have been considered in terms of the areal extent to which they were included in areas proposed for conservation reserves.

In assessing how well each scenario achieved fauna and flora targets it was noted that it was not possible to take into account certain aspects of fauna ecology when developing the fauna target areas. These included minimum patch size, connectivity, dispersal limitations, and site specific habitat considerations. For some species this modelling approach may have led to over estimation of both the amount of identified habitat and/or achievement of targets. In addition, this may have resulted in the selection of unsuitable areas for some species. The selection of areas for fauna protection will be refined through the process of finalising the RFA.

It is also recognised that achievement of target areas within the reserve system is not a complete assessment of the success in ensuring the maintenance of a functional population for each species. Rather, it is an indication only of the protection likely afforded the core habitat of each species.

Cultural heritage values which have been identified through the application of national estate and State heritage criteria have not been specifically considered in terms of achievement within dedicated reserves. Cultural values can vary widely in their level of sensitivity to forest management practices, and consequently their protection requirements. The majority of cultural heritage values occur as relatively small discrete sites and may simply be protected by their exclusion from forestry operations. However, some of the larger landscape scale values such as aesthetic areas, and some historic landscapes, may be highly sensitive to disturbance and hence require reservation.

The approach taken to Indigenous Heritage during the assessment phase of the RFA has not been to define specific sites and places requiring protection, but rather to identify areas of interest to

the Indigenous community for which there are aspirations relating to a range of outcomes including ownership and joint management (see chapter 10).

7.4 ECONOMIC AND SOCIAL ANALYSES OF SCENARIOS

The economic and social implications of the scenarios were assessed using linked economic and social impact analyses.

The existing industry structure, sourcing wood resources from forests of the Eden CRA Region, consists of sawmills at Bombala and Cooma and a woodchip mill at Eden together with a series of small and mobile mills.

Economic implications are assessed on the basis of both the direct changes in the hardwood timber industry resulting from changes in available supplies of timber from public forests in the Eden Region and the flow-on (or indirect) effects to the regional economy.

Direct economic effects were assessed for a 23-year period using the FORUM model, developed by ABARE. Depending on the volumes of quota quality sawlogs, allowance is made for establishment of a recovery mill in Eden that uses both quota quality sawlogs and salvage logs. The maximum capacity of the recovery mill is assumed to be 40 000 m³ of logs including a maximum of 14 000m³ of salvage logs.

For the purposes of comparing levels of direct employment between reference points and scenarios, current employment in the hardwood industry directly attributable to the Eden resource is estimated to be 172 people (assuming current annual sawlog supply of 26 000m³). This is comprised of 95 in the transport and harvesting sector, 25 in the sawmill sector and 52 in the woodchip mill.

Employment in State Forests of NSW and in NSW NPWS, directly attributable to forest management in the Eden region, is not included in the direct employment estimates produced by FORUM.

The economic value of timber benefits foregone annually as a result of changes in wood supplies was estimated relative to the baseline situation

using a threshold value model. The threshold values estimated depend on assumptions relating to the discount rates, changes in industry technology and community preferences for conservation compared with ordinary goods and services.

The softwood industry is assumed to operate on an unchanged basis, unaffected by changes in the level and type of hardwood activities. The impact on other forest based activities such as apiary, minerals, grazing, tourism and recreation is assessed on the basis of the potential restriction of access to current, or identified, areas of use.

Indirect regional economic effects of reduced log supplies on output, value added and employment were assessed using a regional input-output model constructed by the Centre for Agricultural and Regional Economics. They include changes in State Forests of NSW but not NPWS which may partially off-set reduced employment in SFNSW associated with those scenarios indicating a reduced resource supply. The regional effects cover a time period of two to three years and should be interpreted as upper bounds of impacts. The social assessments, which also apply to a relatively short time period, indicate that workers displaced through any industry re-structuring would tend to remain in the area.

Therefore the consumption-induced impacts would not be as great as indicated in the model simulations. Adjustment assistance designed to facilitate industrial development and labour mobility, would also help to ameliorate adverse economic impacts. In addition, other development proposals may reduce the overall economic impact on the Region.

7.4.1 Social Implications

The social impact assessment for the Eden RFA analysed potential social impacts on communities of reserve design and forest management options using information from surveys, workshops and ABS data. A social impact model (see appendix 7.2) was developed with a data input of employment by township of residence by income level associated with each scenario.

The objectives of the social impact assessment are:

- to identify those communities most sensitive to changes in forest use and management as proposed by various scenarios;
- to identify the type of social impact, the relative severity, adaptability/ resilience and time dimensions of those impacts at the community level; and
- to identify any proposals, such as industry development options or alternative economic development proposals which may mitigate impacts in those communities.

Eight communities were selected as case studies for detailed assessment and impact analysis. The relevant socio-demographic information used in relation to these communities is summarised in appendix 7.2.

The social impact analysis covers a time period of only three years (1998–2001) because there are too many non-forest related social variables to enable any accurate prediction of impacts beyond this time period.

The projected social implications flowing from each forest use and management option is detailed against each scenario in chapter 9.

Employment Changes

For each scenario employment changes were calculated based on FORUM outputs. The FORUM outputs have been adjusted to reflect the current employment base in the timber industry attributable to Eden Region resource.

Occupational and personal flexibility

The indicators of employment and personal flexibility for identified communities are discussed. Broadly the occupational flexibility varies with employment sector and these implications are assessed for each scenario.

Location (community) of impact

The discussion of the locational impacts has been based on FORUM predicted outputs and the socio-demographic information relevant to the eight case study communities.

Social well-being and community resilience

The important indicators within each community contributing to the assessment of community vitality are discussed in relation to the changes predicted for that community. Community workshops held throughout the region provided a valuable basis for these assessments.

7.5 ECOLOGICALLY SUSTAINABLE FOREST MANAGEMENT ISSUES

The contribution of different scenarios to ecologically sustainable forest management (ESFM) was examined by considering their impact on a range of environmental, social, economic and cultural indicators and targets. Differences between the scenarios were assessed against key indicators including:

- changes in extent of growth stages by vegetation ecosystem type;
- extent of connectivity in the forest landscape;
- management measures in place to maintain species extent and abundance;
- soil and water in relation to proportion of catchment harvested and impact on water yield.

While being broadly based on the scientific assessments undertaken for the Eden CRA process, ESFM must also be responsive to community expectations regarding the use and management of forests. The scenarios development process included an investigation of a range of possible forest management practices, providing an indication of the implications of possible future management arrangements which could be applied in the Eden Region.

The formal CAR reserve system provides the foundation for the protection of many conservation values. A number of values can also be protected off-reserve. ESFM can help establish a balance between on reserve and off-reserve management by complementing a reserve design scenario with more or less restrictive conservation protocols, and more or less intensive harvesting practices.

Forest management protocols

The JANIS criteria recognise that conservation can be achieved not only through inclusion in a conservation reserve, but also through management regimes in production forests. The NSW Government has established a process for development of conservation protocols recognising interactions between the reserve system, forest management and economic and social requirements.

A set of conservation protocols for the Eden Region has been proposed by NSW agencies. These are available for public comment and are summarised in appendix 7.3. Each of the scenarios outlined in this report has associated with it a set of conservation protocols which is either the NSW draft or set designed to complement the particular scenario. It is recognised that a final set of protocols to complement the agreed reserve design will be included as part of the RFA.

Timber harvesting regimes

The timber harvesting regime currently practiced in the region includes 'alternate coupe harvesting' with the reduction of the canopy by 70% and the associated application of conservation protocols. Some scenarios are based on modified timber harvesting regimes with differing intensities and approaches to management.

This report reflects that the scenarios proposed include modified harvesting regimes and, for the purposes of comparison, includes an assessment of the implications of each reserve design against the current 70% canopy reduction harvesting regime.

The ESFM analysis examined how different forest harvesting practices and conservation measures would affect wood resource yields and conservation values. These are discussed in appendix 7.4.

As a general rule changes in water yield and flow and water quality may occur in the Wallagaraugh and Coastal South Catchments under any harvesting scenario. The magnitude of the impact will vary according to harvesting and thinning regimes applied. Initial increases in water flows would be expected from the increased extent of, and changes in, spatial patterns of regenerating stands due to regrowth thinning. It is expected that

water flow rates and duration would reduce as forests mature, but increase as forests develop into mature stands. At a catchment level changes in water yield over time can be expected to be minimal if a range of growth stages is maintained over time.

7.6 FRAMES ISSUES

The wood resource impacts for each of the scenarios were calculated using the Forest Resource and Management System (FRAMES) database. The FRAMES calculations take into account most restrictions on harvesting off-reserve such as streamside filter strips, habitat tree retention, slope restriction, and Preferred Management Priority (PMP) areas.

The restrictions which need to be separately considered and are not included in the FRAMES calculations are fauna management, flora management and old growth protection off-reserve. The impact of these restrictions on wood resource varies depending on the conservation protocols and EPA licensing arrangements applied. These impacts were taken into account in assessing the scenarios.

Wood resource in the Eden Region consists of multi-aged forests and areas of regrowth forest resulting from wildfire or timber harvesting events in the past. 'Raw' FRAMES calculations assume that the majority of wood to be harvested up to around 2016 will be drawn from the multi-aged forest, and that the regrowth forest will then become the main source of wood supply. The timing of the transition from multi-aged forest to regrowth resource is constrained by the age at which the regrowth can produce sawlogs, and will influence the level of sawlog resource which can be made available over the period of an Eden RFA.

An analysis undertaken by SFNSW since the scenarios development process, has indicated that some additional regrowth may be harvested before 2020. The size of regrowth sawlogs is the critical factor, with progressively earlier harvesting increasing the risk that an economic supply of quota sawlogs will not be available. For the quantities of sawlogs required, SFNSW considers that the risk is too high if the oldest major regrowth resource, the 1952 fire regrowth, is

intensively harvested earlier than 2016 (ie at age 64). Rescheduling this regrowth harvest to 2016 enables all of the available multi-aged forest to be harvested by 2015 and all sawlogs thereafter to be regrowth sawlogs.

The effect of this rescheduling is an increase in the average yield over the period 1997 to 2019 of 500m³/year (noting that virtually all of the regrowth sawlogs are harvested in the years 2016 to 2019). The scenarios vary in the extent to which regrowth sawlog harvesting is brought forward into the period 1997 to 2019.

There are many uncertainties in estimating timber yields from forests with high inherent variability, such as the Eden forests. Although some of this variability cancels out as compartments are aggregated to produce an annual yield, that annual yield may still have reasonably wide confidence limits.

8. EDEN REFERENCE POINTS

8.1 INTRODUCTION

This chapter summarises the current reserve system and a reserve system that maximises the achievement of JANIS targets in the dedicated reserve system. These two ‘Reference Points’ set the outer bounds for assessing the four scenarios in chapter 9.

The intention of the reference points is to allow consideration of:

- the broad economic and social implications from pursuing particular conservation targets;
- the broad implications for conservation outcomes from pursuing particular resource targets.

To develop the reference points, and then the scenarios, an interactive computerised system called C-Plan, along with other support systems was used.

8.2 REFERENCE POINT 1: CURRENT RESERVES

This reference point is based on the current reserve tenure (national parks and State forest reserves - PMP 1.3) and provides a basis to develop a CAR reserve system.

This reference point assumes the current integrated harvesting practices and off-reserve management under the current regulatory licensing arrangements such as retention of riparian buffers, habitat trees, food resources and the protection of special features. Rocky outcrops, heathlands, rainforest and wetlands are protected by buffer zones. However, current arrangements for special

protection and exclusions from harvesting for rare and endangered flora and fauna species were not considered in the reference point.

Forest ecosystems

Broadly forest ecosystems can be considered as having different conservation requirements depending on whether they are eucalypt forest types, rainforest and riparian communities, or non-eucalypt forest types such as heath and wetlands.

Groups of forest ecosystems are identified in table 8a to assist with interpretation of the reserve scenarios. Thirty-five forest ecosystems have their JANIS targets fully met within existing reserves and a further four have their targets met as fully as possible on public land. Further detailed information is contained in the tables of targets accompanying this report. The remainder comprise four estuarine and floodplain wetlands essentially unaffected by forest industries, seven shrub lands and grasslands within the forest landscape but with no merchantable timber, five rainforests and riparian shrub lands within the forest landscape and 17 eucalypt-dominated ecosystems with potentially merchantable timber.

TABLE 8A REFERENCE POINT 1: FOREST ECOSYSTEM ACHIEVEMENT OF JANIS TARGETS

ID	Target met	ID	Target not met
3	Rocky top dry shrub forest		<i>Estuarine and Floodplain Wetlands</i>
4	Silvertop brogo shrub rainforest	60	Floodplain wetlands
9	Mountain wet layered forest (Shining Gum)	63	Estuarine wetland (Melaleuca ericifolia)
10	Mountain wet layered forest (Brown Barrel)	64	Saltmarsh
12	Mountain wet fern forest	66	Estuarine wetland (Avicennia marina)
13	Hinterland wet fern forest		
14	Hinterland wet shrub forest		<i>Shrub lands and Grasslands</i>
15	Mountain wet herb forest	23	Monaro grassland
16	Basalt wet herb forest	51	Rock shrub
26	Tableland dry shrub forest	52	Mountain rock shrub
29	Nalbaugh dry grass forest	53	Montane heath
31	Hinterland dry grass forest	54	Mountain Nadgee heath
32	Coastal dry shrub forest (Woolybutt)	56	Swamp heath
33	Coastal dry shrub forest (Yellow Stringybark)	59	Subalpine bog
34	Brogo dry shrub forest		
35	Escarpment dry grass forest		<i>Rainforest and Riparian Shrublands</i>
37	Coastal dry shrub forest (Apple)	6	Coastal warm temp rainforest
41	Mountain dry shrub forest (White Ash)	7	Hinterland warm temp rainforest
42	Coastal dry shrub forest (Messmate)	8	Cool temp rainforest
43	Mountain dry shrub forest (Gum)	38	Southern riparian scrub
44	Foothills dry shrub forest	39	Northern riparian scrub
45	Mountain dry shrub forest (Silvertop Ash)		
46	Lowland dry shrub forest		<i>Eucalypt Forests</i>
47	Eden dry shrub forest	11	Tantawangalo wet shrub forest
48	Bega dry shrub forest	17	Flats wet herb forest
49	Coastal dry shrub forest (Stringybark-Silvertop Ash)	18	Brogo wet vine forest
50	Genoa dry shrub forest	19	Bega wet shrub forest
55	Coast lowland heath	20	Bega dry grass forest
57	Lowland swamp	21	Candelo dry grass forest
61	Coastal scrub	24	Subalpine dry shrub forest
81	Wadbilliga dry shrub forest	25	Sandstone dry shrub forest
82	Wadbilliga range ash forest	27	Waalima dry grass forest
84	Wadbilliga range wet forest	28	Wog wog dry grass forest
85	Wadbilliga gorge dry forest	30	Wallagaraugh dry grass forest
86	Wadbilliga range valley forest	36	Dune dry shrub forest
ID	Target met as far as possible on available public land	58	Swamp forest
1	Dry rainforest	71	Monaro basalt grass woodland
2	Myanba eucalypt/fig forest	72	Numeralla dry shrub woodland
5	Bunga head rainforest	73	Monaro dry grass forest
83	Wadbilliga mallee heath	79	Timbillica dry shrub forest

Old growth

Table 8b shows the extent to which the existing dedicated reserve system achieves JANIS targets for old growth forests. More detailed information is contained in the tables of targets accompanying this report. Eighteen of the 47 old growth forest ecosystems meet or exceed their JANIS targets in existing reserves. An additional two are met as far as possible on public land.

The remaining 27 old growth forest ecosystems fall short of achieving their JANIS targets (see table 8b).

Wilderness and National Estate

The total percentage of NWI \geq 12 within the existing dedicated reserve system is 97%.

Centres of endemism are conserved in the existing reserve system to 57% of their target.

TABLE 8B - REFERENCE POINT 1: OLD GROWTH ACHIEVEMENT OF JANIS TARGETS

ID	Target met	ID	Target not met
9	Mountain wet layered forest (Shining Gum)	14	Hinterland wet shrub forest
10	Mountain wet layered forest (Brown Barrel)	16	Basalt wet herb forest
11	Tantawangalo wet shrub forest	17	Flats wet herb forest
12	Mountain wet fern forest	18	Brogo wet vine forest
13	Hinterland wet fern forest	19	Bega wet shrub forest
15	Mountain wet herb forest	20	Bega dry grass forest
33	Coastal dry shrub forest (Yellow Stringybark)	24	Subalpine dry shrub forest
43	Mountain dry shrub forest (Gum)	26	Tableland dry shrub forest
44	Foothills dry shrub forest	27	Waalimma dry grass forest
45	Mountain dry shrub forest (Silvertop Ash)	28	Wog wog dry grass forest
47	Eden dry shrub forest	29	Nalbaugh dry grass forest
48	Bega dry shrub forest	30	Wallagaraugh dry grass forest
50	Genoa dry shrub forest	31	Hinterland dry grass forest
81	Wadbilliga dry shrub forest	32	Coastal dry shrub forest (Woolybutt)
82	Wadbilliga range ash forest	34	Brogo dry shrub forest
84	Wadbilliga range wet forest	35	Escarpment dry grass forest
85	Wadbilliga gorge dry forest	36	Dune dry shrub forest
86	Wadbilliga river valley forest	37	Coastal dry shrub forest (Apple)
		41	Mountain dry shrub forest (White Ash)
		42	Coastal dry shrub forest (Messmate)
		46	Lowland dry shrub forest
ID	Target met as far as possible on available public land	49	Coastal dry shrub forest (Stringybark-Silvertop Ash)
21	Candelo dry grass forest	58	Swamp forest
25	Sandstone dry shrub forest	71	Monaro basalt grass woodland
		72	Numeralla dry shrub woodland
		73	Monaro dry grass forest
		79	Timbillica dry shrub forest

Flora and fauna

Fauna were priority ranked from 1 to 5 according to their vulnerability to disturbances occurring off reserve, their level of protection in the current reserve system and a perceived need to alter current management protocols. Species ranked 1 and 2 were given a maximum priority when selecting areas for reservation. Species ranked 1 included the stuttering barred frog, long-footed potoroo and greater glider. Species ranked 2 included the koala, southern brown bandicoot, yellow-bellied glider, barking owl, powerful owl and sooty owl.

As recognised by the priority ranking, many species of fauna can be managed off-reserve through general and specific conservation protocols applied to harvesting operations, and the management of threatening processes such as feral pests.

Targets for fauna species were considered at two scales, regionally and subregionally. Sub regional targets were those that experts identified as adequate for maintaining viable populations of each species across their geographic spread in the Region.

The core habitat of 16 fauna and 32 rare flora species do have their regional target met within the current reserve system. The summary tables at the end of chapter 9 list the flora species that do not have their target met within the current dedicated reserve system.

The fauna species for which regional targets are currently met as far as possible on public land are listed below:

- common bentwing bat
- common death adder
- giant burrowing frog
- greater glider
- crested shrike tit
- grey-headed flying fox
- long-nosed bandicoot
- long-nosed potoroo
- olive whistler

- pink robin
- red-browed treecreeper
- southern brown bandicoot
- stuttering barred frog
- varied sitella
- white-footed dunnart
- yellow-tailed black cockatoo

The core habitat of the remaining 11 fauna and 43 rare flora species do not have their regional target met within the current reserve system. The summary tables list the flora species that do not have their target met within the current dedicated reserve system.

- barking owl
- eastern horseshoe bat
- glossy black cockatoo
- long-footed potoroo
- masked owl
- powerful owl
- smoky mouse
- koala
- sooty owl
- tiger quoll
- yellow-bellied glider

Species that are too poorly known, have very limited distributions within the area and those for which no model could be generated, only had regional targets. These species included the:

- long-footed potoroo
- smoky mouse
- barking owl
- common bentwing bat
- eastern horseshoe bat

Of the twenty-two fauna species with sub regional targets, nine species have all of their sub-regional targets met within the current reserve system. These are the:

- common death adder
- glossy black cockatoo
- long-nosed bandicoot

- olive whistler
- pink robin
- southern-brown bandicoot
- varied sitella
- white-footed dunnart
- yellow-tailed black cockatoo

The thirteen species which do not have their sub-regional targets included within the current reserve system include the:

- crested shrike tit
- giant burrowing frog
- greater glider
- grey-headed flying fox
- koala
- long-nosed potoroo
- masked owl
- powerful owl
- red-browed tree-creeper
- sooty owl
- stuttering barred frog
- tiger quoll
- yellow bellied glider

The flora and fauna species for which targets have not been met will be further discussed in relation to reference point 2 and the four scenarios. The summary tables at the end of chapter 9 provide information on how flora and fauna targets are met within the current reserve system.

In developing reference points and scenarios it was considered that rare flora species may also be protected off reserves through the creation of small flora reserves.

Information on the extent to which flora and fauna habitat is represented in the current reserve system can be found in the tables in the front pocket of this report.

Long-footed potoroo management

The long-footed potoroo is listed as endangered in the Commonwealth *Endangered Species Protection Act 1992* and the NSW *Threatened Species Conservation Act 1995*. In each case a draft recovery plan is being finalised for the

species. These plans would apply following any modification and adoption by Governments. Because of limited knowledge of the impacts of disturbance on the long-footed potoroo a conservative approach to the management of these species has been taken in the draft recovery plans. Recommendations for the management of the long-footed potoroo in the Eden region include the continuation of a moratorium area around all known locations, which entails:

- no logging;
- protection from severe wildfire;
- no road construction or maintenance of existing tracks (except for fire operations);
- predator control;
- cessation of baiting for pest herbivores; and
- protection from broad scale mining activities.

If, when adopted by Ministers, recovery plans contain similar provisions to the current drafts, research on the conservation of the species will be required before the provisions excluding timber harvesting could be altered. As a result there is some uncertainty regarding future access to timber volumes in this area.

The future of the LFP management area will be an important issue in finalising the RFA.

Ecologically Sustainable Forest Management

In this reference point old growth forests would be harvested outside the reserve system and this would result in a reduction in the total area of old growth by eight percent over the next 23 years. Of 29 forest types, old growth decreases by less than 10% in 7 and decreases by more than 10% in 9, during the next 23 years.

There would be no formal reserves connecting forests from the coastal areas to the tablelands.

Water quality protection via filter strips and EPA licensing would continue. Impacts on water yield and quality would continue at current levels.

From an economic and social perspective, the reference point would continue a high level of industry activity and provide for ongoing timber industry jobs.

Economic implications

Under this reference point it is assumed that 28 290 cubic metres of sawlog and 403 000 tonnes of pulpwood would be available annually.

At the resource levels indicated, direct employment directly attributable to Eden resource is estimated by FORUM to be 187 for the period to 2000. This represents an increase of 15 over the current level of employment directly attributable to Eden resource. Further increases in employment would occur should the recovery mill be built at Eden, commencing production in 2000.

The annual net value of production of the hardwood industry attributable to Eden resource is estimated by the FORUM model to average \$14.7m and the net present value of land and tree resource rents is \$180m, measured in 1997 prices.

Social Implications

An additional 15 people could be employed under this reference point. No mitigation costs would be anticipated under this reference point but industry development assistance could be sought to purchase thinnings equipment and towards the construction of a recovery mill.

The relocation of the sawmill operations from Bombala to Eden would cause some social dislocation in Bombala, however the sawmill workers have been aware of the potential relocation of the new mill to Eden and most residents and employees are prepared for this event.

Community vitality in forest-related communities would be predicted to rise. If there were signs that existing industry structures and marketing avenues were secure, business opportunities such as increased plantation development would be more likely to eventuate.

8.3 REFERENCE POINT 2: MAXIMISED JANIS IN DEDICATED RESERVES

The JANIS reserve criteria states that a first preference should be given to achieving reservation targets in dedicated conservation reserves but notes that this is unlikely to be

practicable in forest regions. This reference point was developed recognising that it was not feasible in the Eden Region to produce a practicable reserve outcome with all values fully protected in dedicated reserves. One reason for this is that many of the conservation values are fragmented or linear in nature. The reference point therefore helps to identify those values which are unlikely to meet targets under any scenario.

The values for which additional targets were achieved through identified additions to the reserve system are outlined below. Information on the extent to which all values are represented in this reference point can be found in the tables accompanying this report.

Forest ecosystems

When compared with the current reserve system an additional 5 forest ecosystems achieved JANIS targets fully or as far as possible in dedicated reserves on public land. These are listed below:

- 28 Wog wog dry grass forest
- 6 Coastal warm temperate rainforest
- 54 Mountain Nadgee heath
- 7 Hinterland warm temperate rainforest
- 79 Timbillica Dry Shrub forest

Significant improvement in the level of representation in dedicated reserves of a number of other forest ecosystems towards targets was achieved. This is shown in the tables of targets accompanying this report and also in the summary tables in the following chapter.

Old growth

An additional 11 old growth forest ecosystems achieved JANIS targets fully or as much as possible on public land. These are listed below:

- 18 Brogo wet vine forest
- 73 Monaro dry grass forest
- 28 Wog wog dry grass forest
- 16 Basalt wet herb forest
- 72 Numeralla dry shrub woodland
- 35 Escarpment dry grass forest
- 46 Lowland dry shrub forest

- 14 Hinterland wet shrub forest
- 49 Coastal dry shrub forest (Stringybark-Silvertop)
- 31 Hinterland dry grass forest
- 41 Mountain dry shrub forest (White ash)

The representation of the remaining old growth ecosystems was increased to the point where all except 6 achieved 90% or more of the target area on public land in areas proposed for conservation reserve.

Flora and fauna

An additional two regional and thirteen sub-regional targets of eight priority fauna species reached their targets as far as possible on public land in this scenario. For the species accorded the highest priority (Priority 1 & 2) for protection in dedicated reserves the long-footed potoroo and the greater glider have significantly enhanced levels of reserved habitat.

An additional thirteen rare flora species achieved their targets as far as possible on public land.

Wilderness and national estate

With the inclusion of the Murrabrine State Forest additions, all areas of high quality forested wilderness were identified for inclusion in dedicated reserves. Centres of endemism were represented in the area proposed for reservation to 82% of target. Other key natural national estate values – most notably intact catchments and refugia – have enhanced protection within areas proposed for conservation.

Ecologically Sustainable Forest Management

On the basis of the identification of additional reserves in this reference point, the area of old growth forest is projected to increase by five percent overall in the next 23 years. Regional and local connectivity of undisturbed forest would also be maintained and enhanced. The new protected areas would establish a network north-south along coastal and tablelands areas and east-west across the coastal plain to the tablelands.

The reference point was designed to focus on the formal reserve system only. The design of this reference point creates a reserve system which would be impractical to manage.

While this reference point has major conservation benefits the impacts in terms of economic and social values would be significant. Large reductions in wood supply may require government action to assist with a rapid downsizing of the traditional industry and the development of new economic activities to minimise economic and social impacts within the Region.

Economic implications

Under this reference point it is assumed that 16 100 cubic metres of sawlog and 237 000 tonnes of pulpwood would be available annually. It is also assumed the recovery mill would not be built given the resource levels indicated under this reference point and that the Bombala mill would continue to operate, at reduced capacity, using the entire allocation from the Eden Management Area. The Cooma mill would cease to source Eden logs.

There would be a significant contraction of the timber industry. The net value of production and net present value of resource rent would fall to \$7m and \$85m respectively or less than half of that achievable under the current situation reference point.

The FORUM model indicates direct employment directly attributable to Eden resource under this scenario would average 109 people in the period to 2000. This represents a reduction of 63 jobs from the current estimate of 172. Over 40 percent, or 37, of these job losses are predicted to occur in the transport and harvesting sector, with losses also occurring in the sawmill and woodchip mill sectors.

Substantial negative flow-on effects on the regional economy would also occur under this reference point

Social implications

The communities of Eden and Bombala are predicted to be the most affected by the loss of timber industry employment under this reference point. Pambula, Merimbula and Cooma would also be affected.

Most of the jobs likely to be lost are generally held by people who have lower occupational and

personal flexibility, reflecting relatively less experience working in other industries, low educational levels, strong family and community networks and a degree of financial commitment in the area. Accordingly it is predicted that few would readily transfer to another industry in the Region.

The relative impact of this reference point on Eden would be significant given the cumulative effect of other recent events in the town, the current level of adaptability and the depleted community vitality.

Bombala has been assessed as having a currently reduced capacity to adapt to negative change due to the frequency and level of impact of recent events in the town. In Bombala, initiatives such as further softwood processing and thinnings and tourism development, together, would be required to mitigate this level of hardwood sector restructuring and to avoid immediate decline in morale and infrastructure.

Community and government funded mitigation would be needed to avoid long term social disadvantage within both Eden and Bombala. However, community leaders and organisations have developed a range of new investment strategies that, were they to proceed, would mitigate some of the predicted impacts of this reference point.

9. SCENARIOS FOR EDEN

9.1 INTRODUCTION

This section describes four scenarios for an Eden Regional Forest Agreement. These scenarios were developed by State and Commonwealth Government officials and stakeholders. Scenarios A, B and C were developed during a joint options development process in October/ November 1997. At the time the proposed NSW conservation protocols for fauna and old growth were not available to stakeholders. Scenario D was subsequently developed by the Commonwealth in response to the NSW conservation protocols.

Each scenario consists of a reserve design, and off-reserve management considerations. Maps for each scenario accompany this report.

In each scenario dedicated reserves and PMP areas are combined into a single category entitled 'proposed for conservation reserve'. The scenarios as proposed differ in their mix of dedicated and PMP areas. Reserve tenures will be resolved with the finalisation of the RFA.

Some scenarios also differed markedly in their approaches to the management of State forests. Key points of difference related to:

- harvesting regimes;
- the age of regrowth harvesting;
- EPA licence conditions to protect water values;
- conservation protocols for the protection of flora, fauna and old growth on State Forests;
- availability for timber harvesting of the long-footed potoroo management zone;

- informal reservation of current Preferred Management Priority (PMP) areas;
- consideration of industry development.

All scenarios were revised somewhat following the options development process.

Off-reserve management arrangements are described in relation to each scenario and in more detail in chapter 7. Against each scenario the implications are described for wood resources, environment and heritage, ESFM and economic and social values.

In the development of Scenarios A to D it was recognised that the aspirations of Aboriginal people to negotiate lease back, and joint management arrangements can be addressed in all scenarios. NSW has begun the process of developing a co-management approach with Aboriginal communities in the region.

9.2 CONSISTENT COMPARISON OF RESERVE DESIGN

The forest management differences can make a comparison of the scenarios difficult, and so a second brief analysis has been provided for all scenarios, using a consistent set of management arrangements. The second analysis should aid comparability and clarify the differences between the reservation elements.

The key differences between the scenarios which affect their comparability in relation to these issues are introduced below.

Consistent comparison of reserve design (refer section 9.2)

The outcomes of the comparative analysis appears in shaded boxes throughout the chapter. The proposed reserve designs of all Scenarios are considered briefly with a set of management arrangements consistent with those applied to Scenarios B and D. The analyses are comparable except that a different assumption about the availability of the long-footed potoroo management area is taken for Scenario C. The consistent elements are as follows:

- Application of NSW draft conservation protocols;
- Current harvesting regimes which involve 70% canopy removal;
- Final harvesting of regrowth no younger than 64 years;
- Continuation of current regulatory agency licensing arrangements.

NSW officials have proposed a set of draft protocols designed to complement the reserve design of Scenario B. These draft protocols are also applied to Scenario D to provide for comparison of reserve design outcomes. Conservation and industry/CFMEU stakeholders have proposed changes to the protocols which aim to achieve the objectives of Scenarios A and C respectively. Conservation protocols are described in chapter 7 and appendix 7.3.

Current harvesting regimes involve integrated harvesting which reduces the canopy by an average of 70%. Scenario A proposes harvesting at a reduced harvesting intensity with specified areas being harvested at 50%, 30% and 10% canopy reduction. Scenario C proposes a slightly increased harvesting intensity in some areas through reduced habitat protection in dry stringybark forest ecosystems. Forest management regimes are described in chapter 7 and appendix 7.4.

Scenario A proposes final harvesting of some regrowth forests at a younger age which, if viable, substantially increases the available wood resource for the 20 year period of the RFA. Scenarios B, C and D do not allow final harvest of regrowth until the forest is 64 or 65 years of age, because of the risk that many of the trees would be harvested before reaching a size where they produce quota sawlog and the increased risk to longer term wood supply. This issue is described in Chapter 7.

Scenario C proposes a change to EPA licences to allow low intensity harvesting within and adjacent to the outer edges of streamside filter strips which are currently protected from harvesting.

Scenario C assumes that a part of the Long-footed Potoroo Management Area will be available for harvesting. As discussed in chapter 8, this area is identified under draft National and State recovery plans for protection from timber harvesting. The Commonwealth considers that proposals to supply any wood volume from this area are associated with a high level of uncertainty.

Reserve design proposals for Scenarios B and C include as proposed conservation reserves some areas which are currently classified as Preferred Management Priority (PMP). These areas include selected large PMP 1.2, PMP 1.1.7 over 100m wide and PMP 1.1.6 over 200m wide.

9.3 SCENARIO A

This scenario was developed by conservation stakeholders during the joint options development process. This scenario focussed on maximising the conservation of forests, while seeking to maintain the NSW Government parameter of a minimum quota sawlog supply of 20,000m³ per annum for industry. Key aspects of the scenario include:

- The addition of 57,506 ha to conservation reserve including significant areas of Coolangubra and Nalbaugh and large areas in Tantawangalo and Yurramie. Other additions include Biamanga, Bournda, Ben Boyd, Mt Imlay, Mimosa Rocks National Park and Nadgee Nature Reserve. Several small reserves are proposed east of Nimmitabel and on the coast and coastal hinterlands;
- Consolidates the establishment of a north-south escarpment reserve corridor and contributes to links through hinterland forests to coastal national parks;
- Inclusion of the majority of the long-footed potoroo management area within dedicated reserves;
- A Special Management Zone proposed for selective logging of sawlogs and reduced use of heavy machinery. Harvesting intensities of 10% canopy reduction in areas of Koala habitat and 30% canopy reduction in remaining areas would apply to the zone. It is proposed that this zone would provide resource for small scale sawmills and portable sawmills, and access for mineral exploration and apiary, while maintaining many conservation values;
- A General Management Zone to be harvested at no more than 50% canopy reduction. (current practice is to reduce the canopy by 70%). It is assumed that similar sawlog recovery will be achieved from the 50% canopy reduction as from the current 70% canopy reduction;
- Revisions to the draft conservation protocols which propose increased habitat protection for flora and fauna consistent with the average 50% canopy reduction, and protection of all old growth forests in the region;
- Earlier final harvest of regrowth forests than is considered for the other three scenarios. If viable, this is expected to increase quota sawlog availability over the next 20 years, but at the expense of wood availability in the longer term;
- A view that the major wood resource in the region is the softwood plantations near Bombala and that appropriate utilisation of the softwood resource will mitigate the social and economic impacts of the proposed reserves and harvesting regimes;
- Supply of 20,000m³ per annum of quota sawlog, including 2,000m³ allocated to small sawmillers. The remaining 18,000m³ would be allocated to a sawmill that would also use 5000m³ of salvage quality logs. Supply of 265,000t per annum of pulpwood;
- A net present value of resource rent of \$102 million. An initial reduction in current employment within the timber industry of 48 jobs. If, as proposed, 2000m³ of sawlogs are allocated to small millers it is estimated 4 jobs will be created.

Consistent comparison of reserve design (refer section 9.2)

The elements of this analysis differ from that proposed above in that it applies the draft protocols outlined in Scenario B, assumes a 70% canopy reduction logging regime, and assumes that the possibility to increase the annual sawlog volume by utilisation of additional regrowth is limited to 500m³ per annum. The maintenance of current regulatory processes as is consistent with those proposed above.

The comparative assessment of this scenario would result in the following outcomes:

- An annual wood yield of 19,000m³ of quota sawlogs and 291,000t of pulpwood.
- A net present value of resource rent of \$115 million.
- An initial reduction in current employment within the timber industry of 39 jobs.

9.3.1 Implications of Scenario A

These implications are based on the scenario as proposed by the stakeholder in the unshaded box above.

Wood supply implications

The net effect of accepting all assumptions of the scenario described above is a sawlog availability of approximately 20 000m³ per annum. The proposal to reduce harvesting intensity has a significant impact on pulpwood availability, reducing it to 265 000t per annum.

This scenario requires early first harvesting of an increased area of regrowth forests at an early age. It is considered that there is a significant risk associated with scheduling regrowth for final harvest before 64 years of age if thinned, or 65 years if unthinned, as the majority of trees may not have achieved quota sawlog size. This may affect the certainty of supplying 20 000m³ of quota sawlog per annum under this scenario.

Environment and heritage implications

This scenario focussed on protecting conservation values within dedicated reserves and has achieved higher levels of protection for old growth, fauna and flora compared with the other scenarios.

The following environment and heritage implications are compared to the extent of protection achieved in the current reserve system described in Reference Point 1.

Environment and heritage implications of reference points and scenarios are summarised in tables at the end of this chapter.

Forest ecosystems and old growth

An additional four forest ecosystems and eight old growth types achieved their full JANIS targets: and seven forest ecosystems and five old growth types achieved their targets as far as possible on public land.

Fauna and flora

One additional regional and 15 sub-regional targets for 11 priority fauna species and 20 rare flora species targets were achieved in this

scenario. A number of other species were met as far as practicable on public land.

For those fauna species with the highest priority for protection in reserves (ranked 1), the long-footed potoroo had 97% of its target achieved in conservation reserves. In this scenario the targets for the stuttering barred frog and the greater glider were fully met.

For fauna species ranked 2 the yellow-bellied glider had its regional target met and one sub-regional target met in this scenario. The powerful owl had an additional two sub-regional targets met in this scenario. One koala and one sooty owl additional sub-regional targets were met as far as possible on public land. The regional targets were improved for all of the rank 2 species.

Wilderness and national estate

With the inclusion of a large area of Murrabrine State Forest as dedicated reserve, the total percentage of NWI_{≥12} reserved is 100%. This area may be declared under the NSW *Wilderness Act 1987* and added to the existing wilderness areas in the Region.

Centres of endemism are proposed for conservation in reserves to 68% of target. Other key natural national estate values, notably intact catchments and refugia have enhanced protection with the additional areas identified for conservation.

ESFM implications

This scenario expands on the protection of biodiversity both in reserves and on available State Forest. Areas important for fauna habitat will be harvested at a lower intensity and provided with wider buffers.

On the basis of the reserve design and modified harvesting practices there would be a slight increase in old growth forest of between 4% and 8% of current extent in the next 23 years.

This scenario will increase the regional connectivity of reserved forest. The new protected areas would establish a network of reserves north-south along coastal and tablelands forests and east-west along the coastal plain to connect with the tablelands.

Due to the lower intensity of harvesting, this scenario will result in lesser fluctuations in water flows and flow duration than current harvesting regimes. Systematic thinning of regrowth forests may increase water yields in some catchments.

Lower harvesting intensity will impact on the growth rates of retained trees and inhibit regeneration and thus adversely affect the overall productivity of the forest from a timber production perspective.

This scenario includes a number of very small areas for conservation and lower harvesting intensities both of which may involve significant management costs.

Economic implications

It is assumed the recovery mill would not be built given the resource levels indicated under this scenario. Accordingly, the Bombala mill would continue operating. The Cooma mill would cease to source Eden logs immediately and it is assumed that 2,000 cubic metres of logs would be allocated to small-scale millers in the region.

The FORUM model indicates direct employment directly attributable to Eden resource under this scenario would average 124 people in the period to 2000. This represents a reduction of 48 from the current estimate of 172. Job losses would be highest in the transport and harvesting sector at 31, with losses in sawmills and the chipmill estimated to be 3 and 14 respectively, for the same period.

The net value of production is expected to average around \$8m per year in the period 1997-2020, measured in 1997 prices.

The net present value of resource rent is \$102m measured in 1997 prices. This represents a fall of 43% compared with the NPV that could be achieved with full production outside current reserves.

The threshold value study indicates that, compared with the current industry structure and land use, the timber industry benefits that must be foregone annually to implement scenario A range from \$126 000 to \$397 200 expressed as a threshold value in the initial year. The threshold value depends on assumptions relating to the discount rate, changes in industry technology and

community preferences for conservation compared with ordinary goods and services.

The input-output model of CARE predicts that the upper-bound estimate of the total impact on the economy of the Eden RFA region, taking into account flow-on production-induced and consumption-induced effects, would be a decrease in value added (personal and business income) of \$13.7 million and a reduction in employment of 149⁵ persons since 1996-97 (or 106 excluding State Forests impacts within the Region). It should be noted these impacts include changes that have already taken place in the regional economy. Further, the employment impacts include possible changes to State Forests of NSW employment which could be offset by NSW National Parks and Wildlife Service employment.

There are several regionally identified priority areas of minerals potential that intersect with areas designated for reserves under this outcome. These include Numeralla, Yambulla, Waalimma, Back Creek and Whipstick. It is assumed that the Special Management Zone proposed in this scenario would not preclude access for mineral exploration and mining.

Production and employment in the apiary industry are not predicted to be significantly affected by additions to the reserve system in the short term. Longer term effects could include a reduction in available apiary sites over time in areas transferred to reserves.

The proposed changes to reserves are not likely to affect possible nature based tourism developments.

Social implications

Over forty direct timber jobs are predicted to be lost under this scenario, with 90 percent of these from Eden and Bombala and the remainder from Merimbula and Cooma. Approximately 4 additional jobs could be created in the region on

⁵This figure is not comparable with the direct employment impact figure provided by FORUM and care should be exercised in its use as the upper bound estimate uses as its base 1996-97 and thus includes significant employment impacts which have already occurred. It also includes State Forest employment impacts.

the basis of resource currently being processed in the Cooma mill being made available for use by small mobile and fixed mills in the Eden Region.

Current unemployment levels are around 12% in Eden and 7% in Bombala. There is a significant pool of workers with timber skills who have taken redundancies over the past 18 months. Current research shows that there may be a personal cost for these workers which could not be expected to be fully mitigated by the current Forest Industry Structural Adjustment Program (FISAP).

The occupational flexibility of the sawmill workers in Bombala has been assessed as low, with many leaving school at or before year 10. Many have no other industry experience and very few have readily transferable skills. In addition, the personal flexibility of Bombala mill workers is low as most have strong family and community networks and a degree of financial commitment to the area. These workers are therefore assessed as not having a high capacity to move from the area to seek alternative employment. For those who remain in Bombala, added stress as a result of reduced employment prospects may be predicted to occur. The occupational flexibility of those predicted to be affected in Eden is rated higher than the workforce in Bombala given a slightly higher average level of experience in other industries.

A negative flow-on impact on forest related communities is expected to affect Eden and Bombala premised on the loss of employment directly in the hardwood sector, and a loss of business and community confidence. These effects would occur particularly in Eden which has the largest share of business dependency from timber industries in the region.

For Eden, the relative impact of this scenario would be significant given the cumulative effects of other recent negative events in the town. Community vitality in Eden has been affected by recent increases in unemployment, specifically in the hardwood industry but also in the fishing industry. Currently the Eden community has a relatively reduced capacity to adapt to further changes.

In Bombala the greatest negative impact perceived by the community is the possible loss of health services, police and school teachers. However,

community vitality in Bombala has been assessed as generally high with strong attachment to place, very strong family and social networks, relatively low unemployment and a resilient housing market.

The longer term prospects for Bombala are very good if the processing of pine can be established in or near Bombala. However, if this softwood industry development proposal is not implemented in the near future, and the hardwood sector declines in the short term, there is a community perception that the population, infrastructure and services may decline to a level where the town is not considered viable enough to support the new industry.

The beneficiaries of such a forest decision would be those people who highly value the existence and conservation of the forests in the Eden Region. Issues such as tourism development, biodiversity and water quality consideration were rated highly as positive consequences of such a scenario in some towns and villages in the Region.

Community and government funded mitigation would need to be expedited to avoid long term social disadvantage within both Eden and Bombala. However, community leaders and organisations have developed strategies such as a wharf development (conditionally linked to a new softwood processing plant in the region), tourism infrastructure, regional promotion, new industries with a high technology focus and aquaculture.

9.4 SCENARIO B

This scenario was originally developed by the NSW National Parks and Wildlife Service (NPWS) and State Forests during the joint options development process. This scenario focussed on achieving NSW Government objectives of at least 30,000ha of new reserves and at least 20,000m³ of quota sawlog volume per annum in the Eden Region. A specific objective of 23,000m³ quota sawlog was set to achieve this. The scenario does not however represent a NSW Government position. Key aspects of the scenario include:

- The addition of 42,747ha to dedicated reserve including proposed expansion of the existing South East Forests National Park (NP) to include Coolangubra as well as significant additions to the Tantawangalo, Waalimma, Yurammie and Genoa sections. Further additions to Biamanga NP, Bournda NP, Ben Boyd NP, Mt Imlay NP, Mimosa Rocks NP, and the establishment of several small reserves east of Nimmitabel and on the coast.
- Consolidates the establishment of a north-south escarpment reserve corridor with links through hinterland forests to the coastal parks.
- Selected Preferred Management Priority (PMP) areas 1.2, 1.1.7 and 1.1.6 are proposed for conservation reserve additional to the above areas
- Inclusion of almost all of the long-footed potoroo management area within dedicated reserves, excluding a small area of leasehold land;
- Recognition of the impediments associated with proposing some lands for inclusion within a dedicated reserve system such as areas with high mineral potential, leasehold lands, and areas under Aboriginal land claims. The proposed reserve design could therefore be readily implemented;
- A set of draft conservation protocols which form the basis for additional protection of flora and fauna, some old growth forests and rare forest ecosystems on State forests available for harvesting. Current EPA licence restrictions to protect water values would be applied in conjunction with the protocols;
- Supply of 22,500m³ per annum of quota sawlog which is considered an adequate basis for the development of a new recovery mill in the region. Supply of 318,000t per annum of pulpwood;
- A net present value of resource rent of \$142 million.
- An initial reduction in current employment within the timber industry of 24 jobs. With the establishment of the projected recovery mill an additional 10 jobs will be created from the year 2000.

Consistent comparison of reserve design (refer section 9.2)

The harvesting regime, protocols and regrowth harvesting regime used in this scenario provided the benchmark for the comparative assessment. This scenario achieves the same outcomes as above:

- An annual yield of 22,500m³ of quota quality sawlogs and 318,000m³ pulpwood.
- A net present value of resource rent of \$142 million.
- An initial reduction in current employment within the timber industry of 24 jobs. With the establishment of the projected recovery mill an additional 10 jobs will be created from the year 2000.

9.4.1 Implications of Scenario B

These implications are based on the scenario as proposed by the stakeholder in the unshaded box above.

Wood supply implications

The net effect of the above described elements of this scenario is sawlog availability of approximately 22 500m³ per annum and pulpwood of approximately 320 000t.

Environment and heritage implications

In addition to achieving JANIS targets, this scenario focussed on issues such as reserve design and management efficiency. Thereby addressing the adequacy of reserve management and reserve design in the JANIS criteria.

The following environment and heritage implications are compared to the extent of protection achieved in the current reserve system described Reference Point 1.

Environment and heritage implications of reference points and scenarios are summarised in tables at the end of this chapter.

Forest ecosystems and old growth

An additional four forest ecosystems and eight old growth types achieved their full JANIS targets: and five forest ecosystems and four old growth types achieved their targets as far as possible on public land.

Fauna and Flora

One additional regional and nine sub-regional targets for 7 priority fauna species and 11 rare flora species targets were achieved in this scenario. A number of other species met targets as far as practicable on public land.

For those fauna species with the highest priority for protection in reserves (ranked 1), the stuttering barred frog had one additional sub-regional target met and the regional target was met. The long-footed potoroo had 95% of its target achieved in dedicated reserves in this scenario. The target for the greater glider was not fully met; an additional

32 hectares are required. It is considered, however, to be protected as far as practicable.

For fauna species ranked 2, the yellow-bellied glider had its regional target met and one sub-regional target met in this scenario. The powerful owl had one additional sub-regional target met in this scenario. One additional sooty owl sub-regional target was met as far as possible on public land. The regional targets were improved for all of the rank 2 species.

Wilderness and national estate

With the inclusion of an area of a large area of Murrabrine State Forest as dedicated reserve, the total percentage of NWI_{≥12} reserved is 100%. This area may be declared under the NSW *Wilderness Act 1987* and added to existing wilderness areas in the region.

Centres of endemism are proposed for conservation in reserves to 72% of target.

Other key natural national estate values, notably intact catchments and relictual species have enhanced protection with the additional areas identified for conservation.

ESFM implications

Reserve design and management issues such as connectivity and perimeter to area ratios were considered and this has resulted in a practical reserve design which could be implemented without major obstacles.

On the basis of the reserve design there would be a slight decrease in old growth forest of about 4%. For 7 old growth ecosystems a reduction of 7% is expected over the next 23 years. This analysis does not however take into account the proposed protection of old growth through conservation protocols.

This scenario will strengthen the regional connectivity of reserved forest, though not to the same extent as Scenario A. The new protected areas would establish a network of reserves north-south along coastal and tablelands forests and east-west along the coastal plain to connect with the tablelands.

Given the concentration of timber harvesting in the Wallagarough catchment and Coastal South

there may be some changes in water flow in this area. In other catchments, the systematic thinning of regrowth forests may increase water yields over the coming two decades.

Economic implications

Under this scenario it is assumed the recovery mill would be built in Eden, with construction commencing in 1998, and the mill becoming operational in the year 2000. It is also assumed that the Cooma mill would cease sourcing Eden logs in 1998, the Bombala mill would close in the year 2000 and all available sawlogs would be allocated to the recovery mill.

The FORUM model indicates direct employment directly attributable to Eden resource under this scenario would average 148 people in the period to 2000. This represents a reduction of 24 from the current estimate of 172. Two-thirds of those job losses are estimated to be experienced in the transport and harvesting sector.

Employment is estimated to increase in the sawmilling sector by 10 in the period 2001-2005, reflecting the operation of the recovery mill.

The FORUM model indicates the net value of production is expected to increase from \$11.2m per year in the period 1997-2000, to \$12.7m per year in the period 2001-2020 measured in 1997 prices.

The net present value of resource rent is \$142m measured in 1997 prices. This represents a decrease of 21% compared with full production outside current dedicated reserves.

The threshold value study indicates that, compared with the current industry structure and land use, the timber industry benefits that must be foregone to implement Scenario B range from \$6,600 to \$34 700 expressed as a threshold value in the initial year. The threshold value depends on assumptions relating to the discount rate, changes in industry technology and community preferences for conservation compared with ordinary goods and services.

The input-output model of CARE predicts that the upper-bound estimate of the total impact on the economy of the Eden RFA region, taking into account flow-on production-induced and consumption-induced effects, would be a decrease

in value added (personal and business income) of \$8.7 million and a reduction in employment of 85⁶ persons, since 1996-97 (or 54 excluding State Forests impacts within the Region). It should be noted these impacts include changes that have already taken place in the regional economy ie independent of any flow on likely from this scenario. Further, the employment impacts include possible changes to State Forests of NSW employment which could be offset by NSW National Parks and Wildlife Service employment.

There is one regionally identified priority area of minerals potential that intersects with areas designated for dedicated reserves under this outcome. This is Numeralla.

This scenario assumed that proposals for conservation reserves in the Pambula and Wolumla areas are proposed for a tenure which would not preclude access for mineral exploration and mining.

Production and employment in the apiary industry are not predicted to be significantly affected by additions to the reserve system in the short term. Longer term effects could include a reduction in available apiary sites over time in areas transferred to reserves

The proposed changes to reserves are not likely to affect possible nature based tourism developments.

Social implications

Under this scenario industry restructuring is predicted to result in the loss of around 20 timber industry jobs, with the primary impacts being experienced in the communities of Bombala and Eden associated with the reduction in the harvest and haul sector and the relocation of the sawmill from Bombala to Eden. The impact on Bombala would be high given the slightly higher relative dependence of that town on the harvesting sector.

Benefits from a net increase of 10 jobs in sawmill employment after the year 2000 would accrue in Eden and those working in the new Eden mill may benefit from training in a more technically

⁶ Please refer to footnote in Scenario A.

advanced mill, thereby enhancing occupational flexibility.

As discussed under Scenario A, the occupational flexibility and personal flexibility of sawmill workers in Bombala has been assessed as low, and workers affected by the closure of the sawmill would not have a high capacity to move from the area to seek alternative employment, and those who remain in Bombala rather than relocate to Eden would be predicted to suffer added stress as a result of reduced employment prospects.

Mitigation in the form of FISAP business exit assistance may be required, in addition to possible relocation assistance for Bombala sawmill employees and industry development assistance to establish the new mill.

As discussed under Scenario A, the community vitality in Bombala has been assessed as generally high. The longer term prospects for Bombala are very good if the processing of pine can be established in or near Bombala.

9.5 SCENARIO C

This scenario was developed by timber industry and union stakeholders during the scenarios development process. This scenario aimed to provide a minimum quota sawlog supply of 26 000m³ per annum while meeting the NSW Government parameter of providing a minimum 30 000ha of additions to reserves. Key aspects of the scenario include:

- The addition of 33,616ha to conservation reserve including proposed expansion of the existing South East Forests National Park (NP) with smaller additions to the Tantawangalo, Waalimma, Yurammie and Genoa sections. Additions to Biamanga NP, including the Murrah corridor (linking the coast and Mimosa Rocks NP), Bournda NP, Ben Boyd NP, Mt Imlay NP, Mimosa Rocks NP and the establishment of several small reserves to the east of Nimmitabel and on the coast.
- Contributes to the establishment of a north-south escarpment reserve corridor with links to the coastal national parks.
- Approximately 2,900ha of the proposed reserves are subject to leases and Aboriginal land claims, and negotiation would need to occur before these areas could be considered as available for formal reservation.
- Selected Preferred Management Priority (PMP) areas 1.2, 1.1.7 and 1.1.6 are proposed for conservation reserve in addition to the above areas.
- Timber harvesting within a significant part of the long-footed potoroo management area. The other three scenarios provide for continued unavailability of all, or almost all of this area. Proposals to supply wood volume from this area are associated with a high level of uncertainty as it is identified under draft National and State recovery plans for protection.
- Revisions to the draft conservation protocols which propose reduced habitat protection in dry stringybark forest types, some low intensity harvesting within and adjacent to streamside filter strips and fewer connection corridors. Harvesting within filter strips would involve a change to EPA licences which is at present uncertain.
- Supply of 26,000m³ per annum of quota sawlog and 378,000t per annum of pulpwood which is considered adequate to maintain the current level of industry activity in the region and to provide a basis for the development of a new recovery mill.
- A net present value of resource rent of \$178 million.
- An initial increase in current employment within the timber industry of 2 jobs. With the establishment of the projected recovery mill an additional 10 jobs will be created from the year 2000.

Consistent comparison of reserve design (refer section 9.2)

This analysis differs from that proposed above in that it applies the draft protocols outlined in Scenario B, assumes a 70% canopy reduction logging regime, and maintains current regulatory processes. Both scenarios assume that the increase in sawlog volume through the increased utilisation of regrowth will be limited to 500m³ per annum.

Based on application of a generally consistent set of assumptions to all scenarios (as described in section 8.1), this scenario would have the following features and implications:

- An annual yield of 24 900m³ of quota sawlogs and 362 000t of pulpwood.
- A net present value of resource rent of \$168 million.
- An initial reduction in current employment within the timber industry of 4 jobs. With the establishment of the projected recovery mill an additional 10 jobs will be created from the year 2000.

9.5.2 Implications of Scenario C

These implications are based on the scenario as proposed by the stakeholder in the unshaded box above.

Wood supply implications

The net affect of successful application of all aspects of the scenario described above is to provide for a sawlog availability of just over 26,000m³ per annum.

This scenario requires some low intensity harvesting within and adjacent to filter strips which would require a change to EPA licensing arrangements. It also requires harvesting within part of the long-footed potoroo management area. There is some uncertainty regarding future access to timber volumes in the long-footed potoroo management area (PMA). The estimated annual sawlog volume from the area of the PMA proposed for harvesting in this scenario is 700 m³. In addition, there are currently impediments to harvesting within filter strips, which mean that the availability of the full 26,000m³ of quota sawlog per annum is not certain under this scenario. These issues will be negotiated as part of the finalisation of the Eden RFA.

Environment and heritage implications

This scenario achieves conservation protection in dedicated reserves while minimising wood resource impacts. JANIS targets are achieved to a similar extent to Scenario B, however less quantifiable aspects such as reserve design and catchment protection have not been given the same emphasis in this scenario. As a result there is a higher level of small isolated reserves proposed for reservation.

The following environment and heritage implications are compared to the extent of protection achieved in the current reserve system described in as Reference Point 1.

Environment and heritage implications of reference points and scenarios are summarised in tables at the end of this chapter.

Forest ecosystems and old growth

An additional two forest ecosystems and eight old growth types achieved their full JANIS targets: and one forest ecosystems and three old growth types achieved their targets as far as possible on public land.

Fauna and flora

One additional regional and 12 sub-regional targets for 7 priority fauna species and an additional 12 rare flora species targets were achieved in this scenario. A number of other species targets were met as far as practicable on public land.

For those fauna species with the highest priority for protection in reserves (ranked 1), the long-footed potoroo had 71% of its target achieved in dedicated reserves. The target for the stuttering barred frog was met. The target for the greater glider was not fully met - an additional 32 hectares are required. It is considered, however, to be protected as far as is practicable.

For fauna species ranked 2, the yellow-bellied glider had its regional target met and one subregional target met in this scenario. The powerful owl had an additional two sub-regional targets met in this scenario. One additional powerful owl sub-region target was met as far as possible on public land. The regional targets were improved for all of the rank 2 species.

Wilderness and national estate

With the inclusion of a large area of Murrabrine State Forest as dedicated reserve, the total percentage of NWI_{>=12} reserved is 100%. This area may be declared under the NSW *Wilderness Act 1987* and added to the existing wilderness areas in the Region.

Centres of endemism are proposed for conservation in reserves to 70% of target.

Other key natural national estate values, notably relictual species and refugia have enhanced protection with the additional areas identified for conservation.

ESFM implications

This scenario establishes a CAR reserve design which improves the protection of biodiversity and old growth in reserves while allowing the timber supply to operate at near current levels of supply. Management issues such as perimeter to area ratios, were not given the same weight as for Scenarios A and B.

This scenario may be less readily implementable as negotiation would be necessary in relation to leases and areas under Aboriginal land claim. These areas may therefore not be available for reservation.

On the basis of the reserve design there would be a slight decrease in old growth forest of about 5%. For 10 old growth ecosystems a reduction of more than 10% from the current is expected over the next 23 years. This analysis does not however take into account the proposed protection of some old growth through the revised conservation protocols.

While the scenario would primarily apply the current harvesting regime of 70% canopy reduction, in areas with dry stringybark forest types reduced habitat tree retention would effectively result in increased harvesting intensity being practised. This could lead to a loss of local scale connectivity.

This scenario will strengthen the regional connectivity of reserved forest, though not to the same extent as Scenarios A and B. The new protected areas would establish a network of reserves north-south along coastal and tablelands forests and a quite narrow east-west link along the coastal plain to connect with the tablelands.

The slightly increased harvesting intensity would have some impacts on water flows in those catchments with large areas of State forest such as the Wallagaraugh. Shifts from old growth or mature forest to regrowth may reduce water yields. However the systematic thinning of regrowth may compensate for this by increasing water yields.

Economic implications

Under this scenario it is assumed the recovery mill would be built in Eden, with construction commencing in 1998, and the mill becoming operational in the year 2000. It is also assumed that the Cooma mill would cease sourcing Eden

logs in 1998, the Bombala mill would close in the year 2000 and all available sawlogs would be allocated to the recovery mill.

The FORUM model indicates direct employment directly attributable to Eden resource under this scenario would average 174 people in the period to 2000. This represents an increase of 2 people over the current estimate of 172.

Employment is estimated to increase in the sawmilling sector by 10 in the period 2001-2005, reflecting the operation of the recovery mill.

The FORUM model indicates the net value of production is expected to increase from \$14.2m per year in the period 1997-2000, to \$15.7m per year in the period 2001-2020 measured in 1997 prices.

The net present value of resource rent computed by FORUM is \$178m measured in 1997 prices. This represents a decrease of 1% compared with full production outside current dedicated reserves. The threshold value study indicates that, relative to the current industry structure and land use, there is no loss of benefits to the timber industry. Introduction of the recovery mill would lead to an increase in the economic benefits derived from timber-based activities.

The input-output model of CARE predicts that the upper-bound estimate of the total impact on the economy of the Eden RFA region, taking into account flow-on production-induced and consumption-induced effects, would be a decrease in value added (personal and business income) of \$3.4 million and a reduction in employment of 24⁷ persons, since 1996-97 (or 8 excluding State Forests impacts within the Region). It should be noted these impacts include changes that have already taken place in the regional economy ie independent of any flow on likely from this scenario. Further, the employment impacts include possible changes to State Forests of NSW employment which could be offset by NSW National Parks and Wildlife Service employment.

There are several regionally identified priority areas of minerals potential that intersect with areas designated for reserves under this outcome. These

⁷Please refer to footnote in Scenario A

include Numeralla, Waalimma, Wolumla, Back Creek and Whipstick .

increased plantation development would be more likely to eventuate.

This scenario assumed that proposals for conservation reserves in the Pambula area are proposed for a tenure which would not preclude access for mineral exploration and mining. Production and employment in the apiary industry are not predicted to be significantly affected by additions to the reserve system in the short term. Longer term effects could include a reduction in available apiary sites over time in areas transferred to reserves. The proposed changes to reserves are not likely to affect possible nature based tourism developments.

Social implications

Under this scenario, there would be no further direct timber job losses. It is predicted that an additional 10 jobs would be created with the establishment of a new value added mill. The overall social impact assessment of this resource scenario predicts a positive social benefit to those communities in the region in which forest industry employees live.

In the year 2000, the relocation of the sawmill from Bombala to Eden would cause some social dislocation in Bombala, however this is offset by the general maintenance of harvest and haulage sectors, many of whom live in Bombala. The sawmill workers have been aware of the potential relocation of the new mill to Eden and most residents and employees are prepared for this event. An increased opportunity for training in new timber milling technologies may have long term benefits for sawmill workers. Mitigation may be required to offset job losses for those workers who may not have the personal flexibility to relocate to Eden.

In addition it is predicted that there would be flow on benefits in the medium term as a result of enhanced business confidence in Eden particularly and community confidence particularly in Bombala. No further losses to infrastructure in either Bombala or Eden are anticipated as a consequence of such an option. Community vitality in forest related communities would be predicted to rise. If there were signs that existing industry structures and marketing avenues were secure, business opportunities such as

9.6 SCENARIO D

This scenario was developed by the Commonwealth to demonstrate the reserve design implications of delivering the current level of sawlog supply, ie. 26 000m³ per annum of quota sawlogs under the current management arrangements for State Forests, the conservation protocols proposed by NSW officials and taking into account draft national and State long footed potoroo recovery plans. The scenario does not represent a Commonwealth Government position. Key aspects of the scenario include:

- The addition of 20 048 ha of areas proposed for conservation including additions near Biamanga National Park (NP). Several other smaller reserves are proposed throughout the Region.
- Recognition that some uncertainty exists regarding the long-footed potoroo management area. As a result, and so as not to pre-empt formal acceptance of the draft recovery plans, the timber in the area is not considered to contribute to available volume nor are the conservation values considered as reserves for environment and heritage implications.
- This scenario was designed to ensure issues that affect uncertainty in resource supply are minimised.
- Supply of 26,000m³ per annum of quota sawlog and 363 000t of pulpwood.
- A net present value of resource rent of \$169.5 million.
- Maintenance of current employment within the timber industry. With the establishment of the projected recovery mill an additional 10 jobs will be created from the year 2000.

Consistent comparison of reserve design (refer section 9.2)

The harvesting regime, protocols and regrowth harvesting regime used in this scenario are the same as for scenario D . This scenario achieves the same outcomes as above:

- An annual yield of 26 000m³ quota quality sawlog and 363 000t of pulp.
- A net present value of resource rent of \$169.5 million.
- Maintenance of current employment within the timber industry. With the establishment of the projected recovery mill an additional 10 jobs will be created from the year 2000.

9.6.1 Implications of Scenario D

These implications are based on the scenario as proposed by the stakeholder in the unshaded box above.

Wood resource implications

The net effect of considering all aspects of the scenario described above is to provide a sawlog availability of approximately 26,000m³ per annum and pulpwood of approximately 363,000t per annum.

Environment and heritage implications

This scenario achieves fewer JANIS targets than the other three scenarios and relies on a higher level of off-reserve protection than Scenario C.

The following environment and heritage implications are compared to the extent of protection achieved in the current reserve system described in Reference Point 1.

Environment and heritage implications of reference points and scenarios are summarised in tables at the end of this chapter.

Forest ecosystems and old growth

An additional three forest ecosystems and two old growth types achieved their full JANIS targets: and three forest ecosystems and two old growth types achieved their targets as far as possible on public land.

Fauna and flora

An additional 5 sub-regional targets for 5 priority fauna species and an additional 8 rare flora species targets were achieved in this scenario. A number of other species met targets as far as practicable on public land.

For those fauna species with the highest priority for protection in reserves (ranked 1), the long-footed potoroo had 59% of its target achieved in dedicated reserves. The target for the greater glider was not fully met. It is considered, however, to be protected as far as practicable. The stuttering barred frog had one additional sub-regional target met and the regional target was met.

For fauna species ranked 2, one additional sooty owl sub-region target was met as far as possible on public land. The regional targets were improved for all of the rank two species.

Wilderness and national estate

The total percentage of NWI_{≥12} reserved is 97%.

Centres of endemism are proposed for conservation in reserves to 60% of target.

ESFM implications

This scenario establishes a CAR reserve design which improves the protection of biodiversity and old growth in reserves while allowing the timber supply to operate at close to current levels of supply. Under this scenario conservation protocols would play an important role of meeting some JANIS targets through prescription.

There would be an anticipated decrease in old growth forest of between 5 - 8% with 10 old growth ecosystems being reduced by more than 10% of current extent in the next 23 years. This analysis does not however take into account the proposed protection of some old growth through conservation protocols.

The scenario establishes a network of reserves north-south along coastal and tablelands forests with very little east-west linkage between the coastal plain and tablelands. It will strengthen the regional connectivity of reserved forest, though not to the same extent as in any of the other scenarios.

Water quality protection via filter strips and EPA licensing would continue. The impact of timber harvesting in forest catchments – in particular Wallagaraugh and Coastal South – would be at least as significant as for Scenarios B and C. Shifts from old growth or mature forest to regrowth may reduce water yields. However, the systematic thinning of regrowth would compensate for this by increasing water yields. As a result, impacts on water yield and quality are likely to continue at current levels.

Economic implications

Under this scenario it is assumed the recovery mill would be built in Eden, with construction commencing in 1998, and the mill becoming operational in the year 2000. It is also assumed that the Cooma mill would cease sourcing Eden logs in 1998, the Bombala mill would close in the year 2000 and all available sawlogs would be allocated to the recovery mill.

The FORUM model indicates direct employment directly attributable to Eden resource under this scenario would average 172 people in the period to 2000, which is equivalent to the current employment estimate.

Employment is estimated to increase in the sawmilling sector by 10 in the period 2001-2005, reflecting the operation of the recovery mill. The FORUM model indicates the net value of production is expected to increase from \$13.4m per year in the period 1997-2000, to \$15.1m per year in the period 2001-2020 measured in 1997 prices.

The net present value of resource rent computed by FORUM is \$169.5m measured in 1997 prices. This represents a decrease of 6% compared with full production outside current dedicated reserves.

The threshold value study indicates that, relative to the current industry structure and land use, moving to this scenario would result in direct economic gains to the timber industry.

The input-output model of CARE predicts that the upper-bound estimate of the total impact on the economy of the Eden RFA region, taking into account flow-on production-induced and consumption-induced effects, would be a decrease in value added of \$4.6 million and a reduction in employment of 38⁸ persons, since 1996-97 (or 18 excluding State Forests impacts within the Region). The employment impacts include persons engaged in forest management employed by State Forests of NSW and would be offset by some increase in the number of persons employed by NSW National Parks and Wildlife Service.

There are two regionally identified priority areas of minerals potential that intersect with areas designated for reserves under this outcome. These are Numeralla and Wolumla.

Production and employment in the apiary industry are not predicted to be significantly affected by additions to the reserve system in the short term. Longer term effects could include a reduction in available apiary sites over time in areas transferred to reserves.

The proposed changes to reserves are not likely to affect possible nature based tourism developments.

Social implications

While there are differences in reserve design between Scenarios C and D, there are no discernible differences in social consequences of the direct impact on the hardwood timber industry between these scenarios.

As discussed for Scenario C, the overall social impacts assessment of this scenario predicts a positive social benefit to those communities in areas in which forest industry employees live.

⁸Please refer to footnote in Scenario A

10. A SCENARIO FOR ABORIGINAL ISSUES

10.1 INTRODUCTION

A preferred Aboriginal outcome for the Eden Region was developed by the Bega, Eden and Merrimans Aboriginal Forest Management Committee (BEMAFMC). This committee represents the Bega, Eden, Merrimans Local Aboriginal Land Councils (LALCs), and includes representatives from the Yuin Elders Council, the Monaro-Ngarigo-Cheruipirn Elders Council and the Djirrananj People. While the preferred Aboriginal outcome does not use the same framework as the scenarios described in the previous chapter it has equal status with them.

Recognising the need for compromise in the debate over forests, but also recognising the rights of Aboriginal people, the Aboriginal position has been designed to be compatible with all the scenarios presented in chapter 9. The BEMAFMC considers that its position can accommodate the outcome of the debate over the other competing scenarios.

10.2 PREFERRED ABORIGINAL OUTCOME FOR THE EDEN CRA

The BEMAFMC was established in July 1997, once funding was secured specifically for the Eden CRA/RFA process. As there was little involvement from Aboriginal people in the Interim Assessment Process in 1996, the development of BEMAFMC's position has occurred in a short period of time as a result of intensive effort from its members. It is the BEMAFMC's intention that its input into land and water management in the Eden CRA/RFA Region should continue throughout the life of the RFA.

The BEMAFMC undertook the 'Places of Aboriginal Significance in the Eden CRA Region' project to identify some of the places of cultural, social and economic significance to them in the region. This project produced a map with GIS data layers showing these places, as well as a report outlining in detail the rights, needs and aspirations of the Aboriginal peoples of the region.

The map, which accompanies this report, represents the position put forward by the BEMAFMC (subject to minor discrepancies caused by scale). Where the map is inconsistent with the schedules to the draft Heads of Agreement, those schedules prevail. The draft Heads of Agreement is at appendix 10.1.

10.3 TENURE MANAGEMENT ARRANGEMENTS

The proposed tenure/management arrangements should be read in conjunction with the map entitled 'Places of Aboriginal Significance in the Eden CRA/RFA Region' contained at the front of this report and in conjunction with appendix 10.2.

The BEMAFMC's position identifies four tenure/management arrangements which it would wish to have incorporated into the Eden RFA:

1. Areas requiring comprehensive heritage assessment.
All areas within the Eden CRA Region are of significance to Aboriginal peoples and require full heritage assessment prior to the commencement of any development. Assessments should be conducted in cooperation with and at the direction of the relevant Aboriginal community or

communities. Areas of significance identified by assessments should then be preserved and managed in accordance with the wishes of the relevant Aboriginal community(ies).

2. Areas proposed for Aboriginal ownership without condition (ie. freehold title).

Some small areas have been identified to be transferred to the ownership of the relevant Local Aboriginal Land Council (LALC) to hold in trust for Aboriginal people, each for a specific purpose. Two examples are: (i) the protection of a significant cultural area being assured if the area is Aboriginal owned; and (ii) the identification of an area for the socio-economic sustainability of an Aboriginal community. These areas are not required for timber harvesting and do not significantly impact on conservation outcomes.

3. Areas proposed for Aboriginal ownership with conditions (such as ownership with leaseback to the Crown).

These are areas in which Aboriginal people have interests and which the BEMAFMC has proposed to be transferred to Aboriginal ownership with an agreement in place to lease it back to the government. The BEMAFMC considers that this will result in a binding and ongoing relationship between LALCs and government, thereby ensuring the benefits of Aboriginal knowledge and participation in the land management as well as adequate resources for management. Under the *National Parks and Wildlife (Aboriginal Ownership) Amendment Act 1996* this type of arrangement is possible on National Parks tenures and the BEMAFMC has initiated discussions with government in regard to other tenures.

4. Areas proposed for joint management by Aboriginal peoples and the Crown.

These are areas which will remain in government tenures with Aboriginal input into their management. The level of Aboriginal input would depend on the area and would be worked out through arrangements/agreements/memoranda of understanding with the responsible government agency. It is proposed that management would always include Aboriginal involvement in Aboriginal cultural

heritage assessment and management but may also involve representation on advisory committees, agreements over access and use of land, and contribution to the development and implementation of plans of management.

During the development of scenarios phase, the BEMAFMC tabled an analysis of its position to illustrate its view that there would be a low impact on the other scenarios (see appendix 10.3). A Draft Heads of Agreement document between stakeholders seeking their support for the BEMAFMC position was also tabled (appendix 10.1). The Heads of Agreement, if adopted, will provide the foundation for more specific arrangements to be entered into in the Eden Region in the RFA context..

It is acknowledged that the necessary legislative and administrative arrangements may not currently exist to satisfy the BEMAFMC's position. The Committee considers that the best way to achieve outcomes for Aboriginal people, government, stakeholders and the community in general is by way of negotiation about Aboriginal rights, needs and aspirations rather than through the Courts. It also considers that, if agreements can be reached between the relevant parties then there is scope to include the necessary legislative and administrative changes in the RFA.

11. ISSUES RELEVANT TO ALL SCENARIOS

11.1 INTRODUCTION

This chapter provides detail on a range of options for the future management and development of the Eden Region that relate to the RFA and the scenarios published in chapter 9.

Two issues are addressed:

- the issues raised for inclusion in the RFA process by the representatives on the Regional Forest Forum; and
- industry development options that can be explored for the Eden Region.

Consideration of these issues is a significant component of the RFA but not directly related to any particular reserve design scenario. As such, the principles addressed in this chapter can be considered broadly applicable to all of the scenarios outlined earlier.

11.2 EDEN REGIONAL FOREST FORUM ISSUES

The Eden Regional Forest Forum (RFF) (see chapter 6) achieved consensus on a number of regional issues which it proposed should be considered when developing scenarios for an Eden RFA. These issues were supplied to the Steering Committee, and all parties involved in the development of scenarios, for their consideration. During the development of scenarios, a number of stakeholders from the region attended part or all of the process. This provided a regional perspective to the deliberations.

The section below describes how the Eden Regional Forest Forum issues were addressed during deliberations leading to the development of scenarios.

1. The Forum recommends the allocation of a proportion of timbers (particularly miscellaneous timbers) by a tender system to allow wide access to the resource asset consistent with the National Forest Policy Statement.

Both Governments endorse the NFPS principle of providing wide access to the resource asset and will consider specific mechanisms during the development of the RFA.

2. The Forum supports the Eden Wharf in conjunction with development of softwood processing industry.

Both State and Commonwealth Governments support the development of a multipurpose wharf in Eden as a basis for future regional development.

3. The Forum recommends consideration of the possibility for the Eden Region becoming a model for demonstrating ecologically sustainable best practice forest management and forest resource value adding industry components.

As part of the Comprehensive, Regional Assessment process for Eden, detailed assessments of various aspects of Ecologically Sustainable Forest Management (ESFM) have been carried out. Members of the Steering Committee have noted the Forum's proposal and will consider it prior to finalisation of the RFA.

4. The Forum recommends that a Recovery Committee be urgently established under the NSW Threatened Species Act with powers and financial support to quickly develop and implement an effective recovery plan that reverses the long-term decline in koala numbers in the Region.

This issue has been referred to NSW NPWS. The NPWS has established a koala recovery team across NSW, which includes the Eden area.

5. The Forum recommends the land tenure map for the Eden RFA should have the complete land tenure position, including granted mining leases and exploration licences. This is not currently available in this form.

Spatial information on mining leases and exploration licences was included as part of the data set used in the process of developing scenarios for an Eden RFA. This data was made available to all stakeholders.

6. The Forum recommends the establishment of a fire policy for all agencies.

This issue has been referred to NSW NPWS and SFNSW for their consideration. The NPWS will continue to develop fire policies for its existing and any new reserves as part of its Plan of Management program and is actively preparing fire management plans for the region. SFNSW has a current fire policy which applies to all SFNSW managed land.

7. The Forum recommends seeking State and Commonwealth government assistance to implement the Brown Mountain Interpretation Centre.

Possible industry development opportunities for the region, including tourist developments are discussed briefly elsewhere in this chapter and will be considered in more detail by both Governments.

8. The Forum recommends as an employment target for options development: The inclusion in the RFA of a medium to long term jobs growth strategy. The strategy to be linked to industry development in both hardwood and softwood sectors.

Both Governments support jobs growth for the region. An economic and social objective for

the options development was to retain current regional employment levels. Employment levels have been used as an indicator in assessing the implications of the scenarios. The consideration by Governments of industry development options prior to finalising the RFA will be important in terms of identifying opportunities for job growth in the region.

9. Basic to maintaining viable forest management and maintaining the traditional range of forest based industries that result from viable forest management, is the maintenance of a relatively large forest estate dedicated to timber production on a local area basis. To be viable these production forest estates must be in a consolidated block and not be a checkerboard of reserved and non-reserved areas.

Reserve design principles are outlined in the JANIS reserve criteria. During the development of all of the scenarios published in this report, reserve design and resource access were taken into account in the identification of areas for reservation. The range of scenarios indicates that there is a range of possible reserve design outcomes. These outcomes will provide a basis for Governments to develop a final reserve design for implementation.

10. The Eden Regional Forest Forum recognises the importance of the development of the softwood industry for this region. There needs to be incentive to encourage investment in this resource with the guarantee that this will include a local softwood processing plant. It will be necessary to maintain export controls to ensure that whole sawlogs are not exported and to discourage value adding off-shore.

Both State and Commonwealth Governments support the development of a softwood processing plant in the region. Possible industry development options are discussed briefly elsewhere in this chapter describing scenarios and will be considered in more detail by both Governments prior to finalisation of the RFA.

11. The Forum supports the establishment of extensive plantations of local species on private land through the farm forestry program with the emphasis on providing a value-added sawlog resource where appropriate.

The potential for plantation development in the Eden Region is discussed in the Economic and Social overview and in detail in the project 'Identification of Plantation Expansion Opportunities in NSW' (NA07/ES). Possible industry development initiatives, including plantation development, are discussed briefly elsewhere in this chapter and will be considered in more detail by both Governments prior to finalisation of the RFA.

12. The Eden Regional Forest Forum will support an industry option that is consistent with meeting the JANIS criteria to deliver a CAR reserve system and create the greatest economic and social benefits to the region.

The need to develop options which are consistent with meeting the JANIS criteria and which will also maximise economic and social benefits was the major consideration in developing the range of scenarios published in this report. Chapter 9 provides an indication of the extent to which the JANIS criteria have been met and the economic and social implications for each of the scenarios.

13. The Forum supports a change in NPWS beekeeping policy subject to the outcome of studies into the effects of beekeeping on native forest systems.

This issue has been referred to NPWS for consideration in relation to finalisation of the RFA. The NPWS will continue to review the impact of introduced honey bees on native plants and animals based on research findings. The current policy allows all existing licenses to continue for the life of the lessee, and beekeeping licences current on all lands which may be transferred to the NPWS will be recognised by the NPWS and allowed to continue.

14. The Forum agrees the Eden Region needs an industry capable of using thinnings and sawlog waste.

The value in having an industry capable of using thinnings and sawlog waste is

recognised by both Governments. The industry structure in the Eden region is discussed briefly in the Economic and Social Overview chapter. Possible industry development initiatives, including expansion of the current thinnings program are discussed briefly elsewhere in this chapter and will be considered in more detail by both Governments prior to finalisation of the RFA.

15. Recognition of the need to move the decision-making process from operational to strategic.

An objective of the CRA/RFA process is to move towards more strategic decision making in relation to forests. For example, as part of the development of the RFA it is proposed that a number of legislative requirements be addressed for the RFA period. The final section of this report indicates how some of the legislative issues may be addressed through the RFA. In addition, the ESFM systems and processes project described in this report will examine New South Wales' systems for forest planning and management in detail with a view to developing improved decision making processes. Revised processes may not however be introduced prior to finalisation of the Eden RFA.

16. Recognition of the need for flexibility to ensure there is both a CAR reserve system and a hardwood industry.

The need for considering flexibility was an important consideration in developing the scenarios published in this report. Both Governments will consider carefully the flexibility provisions in JANIS prior to the finalisation of an RFA.

11.3 INDUSTRY DEVELOPMENT OPTIONS

The objectives of the CRA/RFA process include the identification of industry development options. An RFA for Eden may include a number of industry development initiatives to help create an internationally competitive timber industry. These initiatives may offset any economic and social impacts associated with the establishment of a comprehensive, adequate and representative reserve system and ecologically sustainable forest management.

The Economic and Social Overview briefly outlines a number of potential industry developments which were identified through the Eden comprehensive regional assessments (see Chapter 3). As outlined above, from a local perspective, the Eden Regional Forest Forum has expressed support for a number of initiatives which it considers would generally benefit the Region. While Governments may be involved in some proposals, it should be understood that many potential developments would be initiated and implemented by the private sector and that normal commercial considerations would apply to any investments.

Potential developments which could benefit the Eden Region include:

- new investment opportunities such as a hardwood “recovery” sawmill at Eden, a medium density fibreboard plant, a large scale softwood sawmill, a plywood/laminated veneer lumber (LVL) plant and small mobile sawmill operations. (These are discussed in more detail in Chapter 3, Economic and Social Overview);
- assistance to promote market development, skills development and investment in value-adding technologies;
- supplementary measures such as accelerated thinnings programs;
- plantation and farm forestry development;
- initiatives to facilitate infrastructure development in the Region, for example the proposed Eden wharf and forest-based tourism initiatives.

The NSW and Commonwealth governments will explore ways to facilitate these developments as part of the process of arriving at an RFA for Eden. Some proposed initiatives are outlined in the following subsections.

11.3.1 Market development, skills development and investment in value adding technologies

The Commonwealth and State Governments together with industry are investigating the possible establishment of a Native Timber Industry Marketing and Development Fund, to set the strategic direction for native timber product development and promotion and marketing, and

to coordinate those activities within NSW. The fund would initially be overseen by a joint government-industry board, but would eventually be solely run and financed by the NSW timber industry.

11.3.2 Accelerated thinnings programs

Commercial thinning has the potential to enhance wood resources by providing an early pulpwood harvest and bringing forward the yield of regrowth sawlogs by concentrating growth on the better stems. Commercial thinning can provide important advantages in levelling out supply by bringing forward the sawlog harvest.

An area of about 1500 hectares of fire regrowth was identified for thinning in the 1994 Eden EIS. Operational thinning trials are being conducted with the aim of developing technology, skills, and organisational procedures for future application in regrowth forests following integrated harvesting. Net thinnable area in the Region has been calculated as 131745 hectares based on the net harvestable area which is under 20 degrees slope. State Forests of NSW and CSIRO are currently refining estimates of the age at which commercial thinning can be carried out. Indications are that commercial first thinning can generally be carried out at age 30, while the highest quality sites can be thinned at age 20. The site quality of regrowth sites is also critical to determining the viability and the estimated yields from commercial thinning. Over the period of the RFA, commercial thinning of regrowth is expected to increase in importance as a source of pulpwood for the Region. An increase in the number of thinnings crews would provide benefits in terms of investment and forest-based employment in the Region.

Pre-commercial and investment thinning trials have also commenced in the Eden forests as part of the South-East forest regional adjustment package, but this is at a very small scale. Pre-commercial thinning can reduce rotation ages and can increase sawlog yield and economic return. The economics are largely dependent on initial costs (particularly labour costs), subsequent growth rates and future wood royalties.

11.3.3 Plantation development

The potential for plantation development in the region is discussed briefly in the Economic and

Social Overview (Chapter 3). It is recognised that plantations may have a range of benefits including environmental benefits and enhanced future wood resources. In October 1997 a new policy initiative “Plantations for Australia: The 2020 Vision” was launched. The 2020 vision is a partnership between the Commonwealth, State and Territory governments and industry. As part of its Greenhouse Response package, the Commonwealth has committed funding of \$1.8 million nationally towards implementing the 2020 vision. These funds will be made available through the Natural Heritage Trust.

11.3.4 Initiatives to facilitate infrastructure and tourism development in the Region

The proposed Eden wharf is a major infrastructure development under consideration in the Region. It is being considered in relation to proposals for new softwood processing facilities.

A number of potential proposals for forest-based tourism infrastructure have been canvassed for the Region. These include construction by the National Parks and Wildlife Service of recreational facilities including the proposed Old Growth Visitor Centre at Brown Mountain and a concept plan for a regional facility in the Biamanga National Park which may include a cultural facility depending on the results of consultation with the local Aboriginal community.

12. TOWARDS AN RFA

12.1 INTRODUCTION

The Regional Forest Agreement (RFA) for Eden will be an agreement between the State of NSW and the Commonwealth of Australia. The agreement will form the basis for the long-term ecologically sustainable management of the Eden Region's forests, a competitive and efficient forest industry, and protection of environmental and heritage values. The Prime Minister and Premier will sign the agreement, committing their Governments to the undertakings within it. The RFA is intended to provide certainty for industry, conservation and the community for the next 20 years.

The issues addressed in the RFA will include existing State and Commonwealth responsibilities which are relevant to forest management within the Region.

12.2 MAJOR COMPONENTS OF THE RFA

While the final form of the RFA is yet to be determined, there are a number of key components under which Governments will agree to actions. These include:

- agreement to the means by which the two Governments will pursue ecologically sustainable forest management;
- defining and describing the means for conserving those areas needed to form a comprehensive, adequate and representative (CAR) reserve system;
- management strategies for forest products and other uses;
- operational mechanisms for the Agreement; and

- guidance for the implementation of the Agreement, including review mechanisms, monitoring and reporting provisions, funding arrangements, data agreements, and mechanisms for continuing public participation and consultation.

12.3 RFA CERTAINTY

Both governments recognise the need to provide certainty over the long term in relation to both environment and industry-related outcomes. The RFA itself will be an important element of the certainty for outcomes of the RFA process. The Agreement will reflect the firm commitment of both governments to the outcomes and will be part of the framework that permits Eden's forest industries to be internationally competitive and deliver desired environmental outcomes.

Further, a degree of certainty will be provided as the RFA process and the final RFA will enable both the Commonwealth and NSW to meet their statutory requirements. For example, for the Commonwealth, the RFA process is designed to be conducted in a manner consistent with the statutory requirements of the Commonwealth *Environment Protection (Impact of Proposals) Act 1974*.

Finally, both Governments will consider options for complementary legislation to enhance the certainty of the RFA. The Commonwealth has undertaken to introduce legislation to provide that certain provisions of Commonwealth export control and environment and heritage legislation will not apply to forestry activities in regions where RFAs are in place. The proposed legislation will also specify circumstances in which the Commonwealth may terminate a RFA. The NSW Government is currently considering

the advantages and disadvantages of State legislation.

12.4 ECOLOGICALLY SUSTAINABLE FOREST MANAGEMENT

A key component of the RFA will be arrangements for the ecologically sustainable management of forests in the Region. Following public consultation on the scenarios described in this report, and recommendations of the Ecologically Sustainable Forest Management (ESFM) Expert Advisory Group (EAG 1998) (See appendix 12.1, Summary of recommendations) the Commonwealth and State will agree on a number of initiatives to improve ESFM for the Eden Region. These will be elaborated in the RFA and will include arrangements for monitoring and review. The ESFM initiatives proposed for the Eden RFA may include:

- identification of areas for improvement, enhancement or efficiencies needed in the system of forest management and a process for responding to the recommendations;
- appropriate forest practices for Eden, including a range of silvicultural systems and guidelines for their implementation and zones across the landscape to which particular practices are to be applied;
- instigation of a process leading to a compilation of a code system, including manuals, for the purpose of management regulation during the period of the RFA and for accreditation purposes;
- management and monitoring of values in the reserve and production forest estate;
- a statement of the principles of ESFM for the Eden Region;
- performance indicators for the RFA;
- target levels or objectives for these indicators;
- research requirements for the Eden region;
- time lines and milestones for the implementation of the above;
- specific initiatives arising from the FRAMES Technical Committee including establishment

of a process for strategic inventory of wood resources in the Eden Region; and

- fire protection and management arrangements for the regrowth forest.

It is expected that the Eden RFA will only outline a process for improving and enhancing forest planning and management systems. Any improvements to the NSW system of overall forest planning for all values will need to be considered from a Statewide perspective, including management recommendations from the National Estate and Natural and Cultural Heritage CRA projects. The exact nature of these changes may not be fully established at the time of signing of the Eden RFA, and may be developed in conjunction with the development of RFAs for all regions in NSW.

12.5 THE COMPREHENSIVE, ADEQUATE AND REPRESENTATIVE (CAR) RESERVE SYSTEM

Following public consultation on the scenarios described in this report, State and Commonwealth Governments will agree on a CAR reserve system for implementation as part of the RFA. In accordance with the JANIS criteria, the CAR reserve system will include four components:

- dedicated reserves equivalent to categories I, II, III or IV as defined by the IUCN Commission for National Parks and Protected Areas (1994) (see appendix 7.1);
- informal reserves established through forest management plans;
- values protected by prescription in areas which are available for timber harvesting;
- voluntary provisions for protecting conservation values on private land.

The RFA will include an agreed CAR reserve system consisting of a combination of these reserve categories and any new categories of forest reserves.

The NSW Government is proposing to establish a new system of tenure classifications within State forests, which will be consistent with JANIS categories. These will be resolved before the finalisation of the RFA.

The RFA will include arrangements for the establishment of the CAR reserve system including details of all tenure categories making up the reserve system, arrangements for changing tenure (including changes to preferred management priority (PMP) classifications on State forest), and for the ongoing management of all tenures.

12.6 INDUSTRY DEVELOPMENT OPPORTUNITIES

An important aspect of the RFA will be initiatives which promote industry certainty and, as a consequence, development of higher value adding of timber products in the Region. There are likely to be a number of opportunities to enhance industry outcomes arising out of the RFA which may improve the competitiveness of the Region's wood-based industries.

A number of potential industry developments were identified as part of the economic stream of the Comprehensive Regional Assessments for Eden. These developments were assessed over the southern region of NSW, incorporating both the Eden and Southern CRA/RFA areas. Some potential developments for the Eden Region are outlined in chapter 11 (Issues Relating to all Scenarios).

The following identifies some of the broad opportunities that could potentially arise as part of the Eden RFA as well as some more specific development scenarios. This list, which is not intended to be exhaustive, includes:

- removal of woodchip export controls, and also improving conditions for industry development;
- new investment in processing facilities (refer to chapter 3 for more detail);
- assistance to promote market development, skills development and investment in value-adding technologies;
- accelerated thinnings programs to improve future timber yields;
- plantation development and research on plantations;

- initiatives to facilitate infrastructure development in the Region, for example the proposed Eden wharf; and
- forest-based tourism initiatives such as a visitor information centre.

The Commonwealth and State have a joint program in place, as part of the Commonwealth's Forest Industry Structural Adjustment Package, which provides for structural adjustment measures at both the business and employee level. \$120 million has been made available by the governments to fund the program in New South Wales. To date around \$20 million has been spent in New South Wales, assisting over 420 workers and 72 businesses.

There are three main elements of the FISAP:

- a) industry and enterprise development, which funds activities leading to the development of a more competitive timber processing industry capable of producing and marketing products of higher value-added.
- b) financial assistance for enterprises with reduced business attributable to Government actions.
- c) assistance to workers adversely affected by Government actions.

12.7 MONITORING, REPORTING AND REVIEW

An integral component of any long term agreement is the arrangements for monitoring and review of the operations of the Agreement itself. The Eden RFA is intended to last 20 years and will include provision for review every five years. For the RFA to satisfy the Scoping Agreement it must:

- accredit codes of forest practice, including the process for continual improvement of those codes and other management arrangements for forests within the RFA boundaries;
- identify performance indicators and develop monitoring arrangements to enable a detailed assessment of and report on the indicators and the performance of the agreement every five years;

- identify a mechanism for updating the Agreement in the light of significant new information or exceptional circumstances.

Accreditation will be undertaken through action agreed by both Governments in the RFA.

It will also be necessary before signing the RFA for both Governments to consider exceptional circumstances that could significantly influence the RFA outcomes and that would require re-assessment and amendment of the Agreement before its expiry date.

The review process for NSW RFAs will include consideration of community involvement, and processes for extending or renegotiating the RFA beyond 20 years.

The links between monitoring and review of the RFA and other government monitoring and review requirements will be described in the RFA. Most notably the RFA will take into account the State of the Environment Reporting, State of the Forest Reporting, Montreal Implementation Group monitoring arrangements and State monitoring and planning review arrangements.

12.8 COMMONWEALTH AND STATE LEGISLATIVE REQUIREMENTS

The RFA will address legislative obligations of the Commonwealth and NSW Governments under an RFA in relation to forest management in the Eden Region.

12.8.1 Commonwealth legislation

As noted above, the Commonwealth is committed to introducing legislation which will remove the application of Commonwealth export controls on woodchips and certain provisions of Commonwealth environment and heritage legislation in respect of areas covered by RFAs. Subject to this legislation entering into force, the following legislation applies to the RFA process.

Woodchip exports

The Commonwealth controls the export of woodchips and unprocessed wood through regulations made under the *Export Control Act 1982*. The 1996 Export Control (Wood Chips)

Regulations provide that from 1 January 2000 woodchip exports will be permitted only from areas covered by a Regional Forest Agreement. The 1997 Export Control (Regional Forest Agreements) Regulations remove export controls on wood sourced from a region for which a Regional Forest Agreement is in force. The proposed new Commonwealth legislation will reinforce these provisions.

Environmental impacts

The Commonwealth Government's proposal to enter into a Regional Forest Agreement with NSW for the Eden Region was referred to the Commonwealth Minister for the Environment, in accordance with the administrative procedures under the *Environment Protection (Impact of Proposals) Act 1974*. These procedures require the Minister to determine whether preparation and public review of an environmental impact statement or a public environment report are required to satisfy the object of the Act. The Minister is required to provide this advice before the Regional Forest Agreement is finalised. The assessment and public consultation process for the Regional Forest Agreement has been designed to be consistent with the requirements of the Act.

The National Estate

The Commonwealth Government's proposal to enter into a RFA for the Eden Region was referred to the Australian Heritage Commission in accordance with section 30 of the *Australian Heritage Commission Act 1975*. The Commission is required to provide advice on proposed Commonwealth actions that might adversely affect National Estate places in the Eden Region. In relation to its statutory responsibilities for listing places on the Register of the National Estate, the Australian Heritage Commission will take into account identified national estate values and levels of protection. It is expected that the RFA will contain a jointly agreed process for delineating places for listing.

World Heritage

The Commonwealth has international obligations under the World Heritage Convention which include the identification and conservation of places of outstanding universal natural or cultural

heritage value. The *World Heritage Properties Conservation Act 1983* requires the Commonwealth to protect and conserve the World Heritage values of 'identified property', defined under the Act as places inscribed or nominated for possible inscription on the World Heritage List, or areas subject to a Commonwealth natural or cultural heritage inquiry, or declared by regulation to form part of the natural or cultural heritage.

To meet these obligations, a method for identifying places of possible outstanding universal values has been developed jointly between the Commonwealth and the States. This method is described in the Environment and Heritage Assessments Overview (Chapter 2). The outcomes of this process for the Eden CRA Region, and New South Wales in general, are detailed in the recent report of the World Heritage Expert Panel (World Heritage Report, *Record of the World Heritage Expert Panel Meeting: Western Australia, New South Wales and Queensland*). This information will be available to the RFA Steering Committee and used in finalising the RFA.

Further assessment of possible places will be undertaken when joint assessment processes are agreed between the Commonwealth and State Governments. Subsequent nomination of any places for possible World Heritage listing would occur through the joint agreement of both governments.

Endangered species

The Commonwealth *Endangered Species Protection Act 1992* has schedules of nationally endangered, vulnerable and presumed extinct native species of flora and fauna, endangered ecological communities, and key threatening processes. This Act requires that any effect on scheduled species and communities be taken into account in all Commonwealth actions and decisions.

The *Endangered Species Protection Act* also requires that recovery plans be prepared for nationally listed species and that threat abatement plans be prepared for key threatening processes. For some listed species found in NSW, recovery plans have been prepared or are being prepared.

For other species, the RFA will describe a process for the preparation of recovery plans.

Native title

Under the *Native Title Act 1993* the Commonwealth has obligations relating to the protection of native title rights and interests. It is not intended that the RFA will in any way affect any native title claims that may arise. If any government action to implement the RFA might affect native title, that action will be taken in accordance with the *Native Title Act*.

At this stage of the CRA/RFA process for Eden there is already one claimant application under the Native Title Act 1993 which overlaps with the Eden CRA/RFA Region.

12.8.2 State legislation

Environmental assessment

The *Environmental Planning and Assessment Act (EP & A Act) 1979* and *Timber Industry (Interim Protection) Act (TI (IP) Act) 1992* and amendments require environmental assessment of forestry activities.

An EIS for the Eden Management Area to meet the requirements of this legislation was approved with conditions on the 14 December 1995 and has been amended several times since that date. State Forests of NSW currently undertakes forestry activities according to the conditions in this approval, and also uses other non-legislative tools and protocols (such as Forest Practices Codes; Harvesting Plans; Operational Circulars and Conservation Protocols) to ameliorate environmental harm and manage harvesting operations.

After the RFA is signed, some changes to the EP&A Act and the TI(IP) Act may be advisable so as to reduce possible duplication or confusion about the requirements being placed on forest managers. These matters are already being considered by the NSW Government independently of the RFA process.

Conservation

Conservation is covered in NSW by the *National Parks and Wildlife Act 1974 (NPW Act)*, *Wilderness Act 1987*, the *Heritage Act 1977* and the *Threatened Species Conservation Act 1995 (TSC Act)*.

The National Parks and Wildlife Act provides a legal framework for the management of areas to conserve a variety of environmental, cultural, social and scientific values. The Act provides for the care, control and management of all areas reserved and dedicated as national parks, historic sites, nature reserves, Aboriginal areas and state game reserves. State recreation areas and regional parks are also administered under the Act.

The Wilderness Act provides for the identification and declaration of wilderness areas which meet specified criteria.

Threatened species

The Threatened Species Conservation Act provides for the protection of all listed threatened plants and animals native to New South Wales. One important way of achieving this is by placing specific responsibilities on applicants, proponents of developments, and consent and determining authorities. The National Parks and Wildlife Service also has key responsibilities in the fields of environmental planning, development control, recovery planning and threat abatement planning.

In the Eden CRA, resources were concentrated on forest-dependent species that were potentially affected by forestry operations. To make the best use of available funds there was an emphasis on groups of listed threatened species with similar conservation requirements.

The RFA will outline which species will have recovery plans prepared under State legislation. These are likely to include *Eucalyptus kartzoffiana* and a group of twelve flora species which are associated with rhyolite outcrops. Much of the work on fauna will be on Statewide recovery plans and expert workshops. Species such as forest owls, hollow-dependent bats, the tiger quoll, the broad-headed snake and the brush-tailed phascogale are likely to be dealt with across the State. A recovery plan for the southern brown

bandicoot will cover both the Eden and Southern CRA regions.

Timber harvesting

State Forests of NSW manages a large area of public forested land. SFNSW operates under the *Forestry Act 1916* which sets out its powers, duties and objectives. These include:

- conserving and using the timber, preserving and improving the soil resources and water catchment capabilities on Crown-timber land⁹ (including State forests, timber reserves, flora reserves); and
- promoting and encouraging recreation and conserving birds and animals in State forests.

Native title/land claims

Land can be claimed by local Aboriginal Land Councils or the NSW Aboriginal Land Council under the NSW *Land Rights Act 1983*, if it is claimable Crown land as defined by the Act. After it is investigated by the Minister for Land and Water Conservation, and if the claim is accepted, it is then transferred into estate fee simple (freehold). New South Wales, like other states, passed the *Native Title (New South Wales) Act 1994* to complement the Commonwealth *Native Title Act 1993*. It provides for State-based mechanisms for deciding claims to native title and ensures New South Wales law is consistent with standards set by the Commonwealth Act.

The National Parks and Wildlife Amendment (Aboriginal Ownership) Act 1996 provides a process for the return to Aboriginal people of ownership of national parks and reserves that are of special cultural significance. The Act ensures the involvement of Aboriginal people in the management of these areas while retaining their status as national parks and reserves by way of lease back to the NSW National Parks and Wildlife Service. Boards of management, consisting of representatives from stakeholder

⁹ Crown-timber land includes State forest, flora reserve, land affected by profit à prendre, and most Crown land including licences and leases but not Crown land held under a tenure or with an area of less than two hectares.

and other interest groups are established to manage the land as national parks and reserves. The Act provides for the transfer of ownership of five areas within NSW to Aboriginal people. Other national parks and reserves which meet relevant criteria may be transferred to Aboriginal ownership following inclusion on the schedule to the act.

Vegetation management

The management of vegetation on private land is predominantly undertaken by the Department of Land and Water Conservation and local government.

SEPP 46, created under the EP&A Act, and clearing provisions in several other acts have been replaced by the *Native Vegetation Conservation Act 1997*.

One of the key aspects of the *Native Vegetation Conservation Act 1997* is the development of Regional Vegetation Management Plans (RVMPs). Regional Vegetation Committees (RVCs) will develop RVMPs, and will monitor and review the plans. RVCs are community-based committees with representation from rural interests, conservation interests, Aboriginal interests and State and local government.

RVMPs will identify areas where clearing of native vegetation, that is consistent with the plan, will not require development consent. RVMPs will also identify areas where an application to clear will be necessary. Clearing can only be carried out in these areas if the Minister for Land and Water Conservation has granted development consent.

In areas without an RVMP, native vegetation can be cleared if the clearing is consistent with the exemptions in the Act, and other clearing restrictions do not apply. Where exemptions or a Code of Practice do not apply, an application to clear will be necessary.

12.9 PRIVATE FORESTED LAND

The scenarios described in this report indicate that there are some conservation values which exist on private land and could contribute to a

comprehensive adequate and representative reserve system. The RFA will define which values may require protection on private land and will define a process for developing and implementing mechanisms to protect these values in consultation with landholders in the Region. Mechanisms would include a variety of voluntary agreements. Agreements could take into account the need to consider property rights, the public interest and the financial and legal mechanisms to support voluntary arrangements.

Governments have agreed that there will be no compulsory acquisition of private property. Any contributions of privately owned forests containing identified conservation values which may contribute to a comprehensive, adequate and representative reserve system are to be negotiated with the landholder in question on a voluntary basis.

Governments recognise the importance to some landowners (and to the Region as a whole) of developing or maintaining long term commercial opportunities provided by privately owned forest resources. The voluntary nature of any proposed arrangements offers landowners flexibility in this regard.

The *Native Vegetation Conservation Act 1997* provides incentives for individual landholders, or groups of landholders, to enter into property agreements with the Department of Land and Water Conservation. In addition, landholders may be eligible for financial assistance under the Act, for such things as fencing around significant native vegetation remnants, from a special Native Vegetation Management Fund. A sum of \$15 million over three years has been allocated to the fund.

12.10 FINALISATION PROCESS FOR THE RFA

In finalising the RFA following publication of this report Governments will take into account public comments.

This report will be on public exhibition until June 26 1998, and comment on any issue relevant to the RFA is invited. Following exhibition of the report and receipt of public comment,

Governments will conclude the final drafting of the RFA.

You are invited to send your comments to the address set out in chapter one of this report.

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GLOSSARY

Comprehensive, Adequate and Representative (CAR) Reserve System – a reserve system to conserve all native forest types and old growth as well as the plants and animals that depend on them.

Comprehensive - the full range of forest communities recognised by an agreed national scientific classification at appropriate hierarchical levels; *Adequate* - the maintenance of the ecological viability and integrity of populations, species and communities; *Representative* - those sample areas of the forest that are selected for inclusion reserves which should reasonably reflect the biological diversity of the communities.

Comprehensive Regional Assessment (CRA) – a joint scientific assessment of all forest values - environmental, heritage, economic and social - by the Commonwealth and State leading to the establishment of a Comprehensive, Adequate and Representative Reserve system, agreements on forest management, and the signing of a Regional Forest Agreement (RFA).

Compartment – an area of forest with established boundaries which has been set aside for commercial forestry activities.

Deferred Forest Areas (DFAs) – current wood production areas that may need to be set aside from logging in the interim to allow their possible inclusion in a Comprehensive, Adequate and Representative Reserve System.

Ecologically Sustainable Forest Management (ESFM) – managing forests so that they are sustained in perpetuity for the benefit of society by ensuring that the values of forests

are not lost or degraded for current and future generations.

Export woodchip licence – a licence issued by the Commonwealth Government authorising the export of woodchips.

Forest estate – all forests growing on public or private lands.

Hardwood – timber from broad-leaved, flowering trees, irrespective of physical hardness. Includes eucalypts, wattles and rainforest species.

Interim resource area – areas in which commercial logging operations, including harvesting and associated roading activities, are permitted during the period of a DFA agreement.

JANIS – a joint Commonwealth-State sub-committee responsible for preparing reports on the implementation of the National Forest Policy Statement for the information of the relevant Ministerial councils (the Australian and New Zealand Environment Conservation Council and the Ministerial Council on Forestry, Fisheries and Aquaculture).

National Estate Places – those places, being components of the natural environment of Australia, or the cultural environment of Australia which are listed on the Register of the National Estate as having National Estate values i.e. aesthetic, historic, scientific or social significance or other special value for future generations as well as for the present community.

Native forest – any locally Indigenous forest community containing the full complement of native species and habitats normally

- associated with that community, or having the potential to develop these characteristics.
- National Forest Policy Statement* – a joint Commonwealth, State and Territory Government response which outlines agreed objectives and policies for Australia’s public and private forests.
- Old growth* – forest that is ecologically mature and has been subjected to negligible unnatural disturbance such as logging, roading and clearing. The definition focuses on forest in which the upper stratum or overstorey is in the late mature to over-mature growth phase.
- Plantations* – intensively managed stands of either native or exotic tree species, created by the regular placement of seedlings or seeds.
- Pulp logs (or pulpwood)* – logs that are processed for the purposes of producing wood based panels, pulp and paper products.
- Regional Forest Agreement (RFA)* – an agreement between the Commonwealth and a State Government about the long-term management and use of forests in a particular region. Its purpose is to reduce uncertainty, duplication and fragmentation in government decision-making by producing a durable agreement on the management and use of forests.
- Regrowth forest* – native forest containing a substantial proportion of trees that are in the younger growth phase and are actively growing in height and diameter. Regrowth forests may contain scattered individuals or small occurrences of ecologically mature, or old growth, trees.
- Reserves* – areas such as national parks and nature reserves which are subject to an established degree of protection from disturbance.
- Sawlogs* – logs for processing into sawn timber, veneer, poles and sleepers.
- Sawmill residue* – material left following the processing of logs into sawn timber.
- Softwood* – timber of coniferous trees, irrespective of physical hardness. Includes pines and cypresses.
- Sustained yield* – the sustained yield of a forest is the maximum level of commercial timber which can be maintained in perpetuity under a given management regime.
- Value adding* – an economic term which describes how a raw product is processed into a product which is of more value than the material in its raw state. In the forest and wood industry context, examples of this include the kiln-drying of sawn timber and the manufacturing of wood veneers.
- Vulnerable or threatened species* – species which may soon move into the ‘endangered’ category if causal factors affecting their numbers continue. Included are species of which all or most populations are decreasing because of over-exploitation, extensive destruction of habitat; species which are seriously depleted; under threat and dependent upon a limited habitat which would be vulnerable to further threats.
- Wilderness* – land that, together with its plant and animal communities, is in a state that has not been substantially modified by, and is remote from, the influences of European settlement or is capable of being restored to such a state; is of sufficient size to make its maintenance in such a state feasible; and is capable of providing opportunities for solitude and self-reliant recreation.
- Woodchips* – forest product created by processing timber and residues. Most commonly used in wood panels, pulp and paper making.
- Wood pulp* – processed wood fibre used for manufacture of paper and paper products.
- World heritage* – areas deemed to have universal value for humankind under an international convention to which Australia is a signatory.

