Tasmanian Regional Forest Agreement

Sustainability Indicators for the first review in 2002

Joint Paper - Tasmania and Commonwealth

June 2000

Contents

Introduction

Context

The Tasmanian Regional Forest Agreement (RFA) is an intergovernmental agreement signed by the Tasmanian and the Commonwealth Government on 8 November 1997. The agreement is to remain in force for twenty years (clause 7). Under the RFA there are two major monitoring and reporting requirements (clauses 44 and 45). For the first five years of the Agreement, the Commonwealth and Tasmania provide annual reports on the achievement of agreed undertakings, or milestones (38 milestones are specified in Attachment 3 of the RFA). In addition, a performance review is to be undertaken during the last year of each five year period. The first five yearly review is due to be completed by 8 November 2002.

The five yearly review of the RFA is to assess the progress of the RFA against its specified milestones and commitments. Among other matters the review is to use and take account of Sustainability Indicators including trends and be sufficient to satisfy the requirements for a Tasmanian State of the Forests Report as required by sections 59D of the *Forestry Act 1920* (Tasmania) (now required by section 42 of the *Forest Practices Act 1985).*

Both Tasmania and the Commonwealth regard it as desirable to effectively integrate work for the RFA review with work to complete future Tasmanian State of the Forest Reports (SOFR). Since the RFA was signed the responsibility for undertaking the SOFR has been transferred from Forestry Tasmania to the Tasmanian Forest Practices Board. The date of completion of the next SOFR coincides with that of the RFA review. Importantly, work for the RFA review and SOFR are intended to provide input to the Tasmanian State of the Environment (SOER) process and to the national SOFR and SOER processes. The National Forest Inventory is intended to be used to facilitate input from the State to the national processes.

This paper relates specifically to development of one important RFA milestone to be in place by December 1999, Sustainability Indicators. It thus covers one important aspect of preparations for the five yearly review of the RFA. Other important RFA commitments that will be reported under the five yearly review, rather than directly by the sustainability indicators, are all 38 separate milestones listed in RFA Attachment 3, commitments specified in RFA Attachment 9, Maintaining a Permanent Forest Estate, and commitments in Part 2 of the RFA (which outlines environment, heritage, social and economic commitments).

Some important conservation milestones are:

- maintaining an extensive and permanent native forest estate including formal reviews of the area of forest communities within Interim Biogeographic Regions of Australia (IBRA) regions as part of the five-year review process;
- developing and implementing a Threatened Species Strategy and a Tasmanian Biodiversity Strategy; and,
- introduction of mechanisms to encourage native vegetation retention and management on private land.

Some important social and economic related milestones and commitments are:

- review of the sustainable high quality sawlog supply levels including changes in the forest inventory and new intensive management forest management initiatives; and
- review of resource estimates and management for the deep red myrtle resource available for supply to the furniture and craft industries.

RFA Reporting: Sustainability Indicators

Clause 91 of the Tasmanian Regional Forest Agreement states that the Parties (Tasmanian and Commonwealth governments) agree:

> "To develop and establish by the first of December 1999 an appropriate, practical and cost effective set of Sustainability Indicators which:
>
> - have regard to the Montreal Process Criteria (as amended from time to time) the current form of which is specified in Attachment 4 and take account of the processes and regional framework of indicators developed by the Montreal Process Implementation Group;
> - assess the criteria for sustainable forest management for the whole of the Tasmanian Region;
> - take account of the results of the Warra Case Study to develop effective regional indicators;
> - include appropriate social and economic indicators; and
>
> in the development of those indicators the Parties agree to:
>
> - determine the frequency of monitoring and reporting;
> - provide for public consultation and to take account of public comments; and
> - develop efficient linkages to the ongoing work being carried out on the Commonwealth and Tasmanian State of the Forests and State of the Environment Reports to avoid duplication of effort."

The Department of Premier & Cabinet in Tasmania and the Commonwealth Department of the Prime Minister and Cabinet are responsible for coordinating input to the project on a whole-of-government basis. The outline for the project, at Appendix A, was released to stakeholder groups in June 1999 for comment.

As described above the RFA Sustainability Indicators are to have regard to the Montreal Process criteria and indicators, developed by a group of 12 countries including Australia, that together contain more than 90 per cent of the world's temperate and boreal forests.

The Australian Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA) endorsed the use of the Montreal Process criteria and indicators as the basis for assessing sustainable forest management at the national level and the development of a regional framework of indicators to be used at the regional level and in the Regional Forest Agreement process. The framework is intended to promote consistency in reporting at all levels and to avoid duplication in data collection.

In August 1996 the Commonwealth and States agreed to establish the Montreal Process Implementation Group for Australia (MIG) to develop the framework of regional criteria and indicators. The MIG completed its work with the adoption of the document entitled "A framework of regional (sub-national) level criteria and indicators of sustainable forest management in Australia" in August 1998. This provided for a set of core indicators (Category A) to be implemented immediately for most forests, plus Category B and Category C indicators, the implementation of which will be subject to feasibility of their inclusion in the core set.

This paper describes the application of the framework of indicators in the context of the RFA. Table 1.1 provides a summary of sustainability indicators for reporting in 2002. In this document, all indicators are MIG regional indicators as provided in the MIG framework except when otherwise specified as a national or modified MIG indicator. For explanatory purposes the MIG indicator 'rationale' has been provided and for consistency has quoted verbatim from the regional framework. Following each indicator and rationale is a brief account of the expected data and information to be provided at the time of RFA sustainability indicator reporting in 2002.

The MIG framework provides regions with a guideline to the implementation of sustainability indicators. The wording of some of the indicators has been modified, without compromising the intent of the indicator, to reflect the nature of the relevant data in Tasmania.

Several indicators are the subject of current research and development work (Table 1.2) and are outlined in Attachment 1.

Explanatory notes

Tasmania is treated as a single region, as defined for the RFA. Those indicators included have been selected on the basis that data is available or likely to be available for all relevant tenures within this region.

The effectiveness of these indicators is largely dependent on the nature of the data and information upon which they are based. The sources of the data will be recorded, where possible, when the indicators are reported along with a description of the methodology and an indication of its accuracy or reliability. Similarly, methods of data collection will affect the accuracy of the data and therefore methodologies will be upgraded as new techniques/information become available. Where changes in accuracy associated with updating or modifying data for science or management reasons has occurred, the reporting on the indicator will include a narrative detailing these changes. Where numeric data is not available or appropriate for an indicator a narrative is given.

In general, data will be reported as at June 2001, five years after the collection of data for the Tasmanian RFA was concluded. Where possible, indicators will use data and information from the full time period for which RFA data is available, June 1996 to June 2001 (encompassing the five yearly review period).

The majority of the data which is expected to inform reporting against these indicators will come from the developing and regularly updated data sets in the Department of Primary Industries Water and Environment, Forestry Tasmania, Private Forests Tasmania, the National Forest Inventory, the Australian Bureau of Statistics and the Australian Bureau of Agricultural and Resource Economics. In developing this set of Sustainability Indicators the Tasmanian and Commonwealth Governments have sought to ensure they are appropriate, practical and cost effective. However, the resource implications of implementing the Indicators have not yet been considered in detail.

Consultation

Stakeholder consultation on the project outline produced a variety of responses. Of the five responses received two were acknowledgments without offering specific input, two supported the outline stressing emphasis on particular topics and one submission expressed surprise at the amount of work likely to be generated by the review process and related concern at possible costs.

Key stakeholders and the public were invited to comment on the jointly developed Commonwealth-Tasmania RFA sustainability indicators paper. Input was received from a number of individuals and organisations and taken into account in finalising the indicators.

Tasmanian RFA sustainability indicators

Table 1.1: Sustainability indicators for reporting in 2002

1.1.a	Extent of area by forest type and tenure.
1.1.b	Area of forest type by growth stage distribution by tenure.
1.1.c	Extent of area by forest type and reservation status (modified National Indicator 1.1.c).
1.1.d	Area of old growth by forest type by reservation status (modified National Indicator 1.1.d).
1.2.a	A list of forest dwelling species.
1.2.b	The status (rare, vulnerable, endangered, or extinct) of forest dwelling species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment.
1.2.c	Population levels of representative species from diverse habitats monitored across their range.
2.1.a	Area of forest land and net area of forest land available for timber production.
2.1.c	The area, age class and future yield of plantations of native and exotic species.
2.1.d	Annual removal of wood products compared to the sustainable volume.
2.1.e	Annual removal of non-timber products (modified Regional Indicator).
2.1.f	Area of plantation established meeting effective stocking one year after planting. (modified Regional Indicator).
2.1.g	Area and per cent of harvested area of native forest effectively regenerated.
3.1.a	Area and per cent of forest affected by processes or agents that may change ecosystem health and vitality.
4.1.a	Interim indicator: Area and per cent of forest land systematically assessed for soil erosion hazard, and for which site-varying scientifically-based measures to protect soil and water values are implemented.
5.1.a	Total forest ecosystem biomass and carbon pool (modified Regional Indicator).
6.1.a	Value and volume of wood and wood products production, including value added through downstream processing.
6.1.b	Value and quantities of production of non-wood forest products.
6.1.d	Value of wood and non-wood products production as percentage of regional value of production.
6.2.a	Area and per cent of forest land available for general recreation and tourism
6.2.b	Number, range and use of recreation/tourism activities available in a given region.
6.2.c	Number of visits to recreational sites per annum (modified Regional Indicator).
6.4.a(i)	Area and per cent of forest land in defined tenures, management regimes and zonings which are formally managed in a manner which protect Indigenous peoples' cultural, social, religious and spiritual values, including non-consumptive appreciation of country.
6.4.a(ii)	Number of places of non-Indigenous cultural values in forests formally managed to protect these values (modified Regional Indicator).
6.5.a	Direct employment in the forest sector and forest sector employment as a proportion of total employment (modified Regional Indicator).
6.5.b	Average wage rates and injury rates in major employment categories within the forest sector.
6.6.a	Extent to which the management framework maintains and enhances Indigenous values including customary, traditional and native title use by Indigenous peoples and for Indigenous participation in forest management.
7.1	(Narrative) Extent to which the legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests. Includes 7.1.a, 7.1.b, 7.1.c, 7.1.d, 7.1.e.
7.2	(Narrative) Extent to which the institutional framework supports the conservation and sustainable management of forests. Includes 7.2.a, 7.2.b, 7.2.c, 7.2.e.
7.4	(Narrative) Capacity to measure and monitor changes in the conservation and sustainable management of forests. Includes 7.4.a, 7.4.b.
7.5	(Narrative) Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services. Includes 7.5.a, 7.5.d, 7.5.f.
Total	16 Category A; 5 Category B; 3 Category C; 5 Additional

Table 1.2: Indicators relevant to Tasmania with current research or development occurring

1.1.e	Fragmentation of forest types.
1.2.c	Population levels of representative species from diverse habitats monitored across their range.
2.1.d:	Annual removal of wood products compared to the sustainable volume - Fuelwood/Firewood aspects
2.1.e:	Annual removal of non-timber products (modified Regional Indicator) - Water supply aspects
3.1.c	Area and percentage of forest land with diminished or improved biological, physical and chemical components indicative of changes in fundamental ecological processes.
4.1.e	Area and per cent of forest land with significant compaction or change in soil physical properties resulting from human activities.
4.1.f	Per cent of water bodies in forest areas (eg stream kilometres, lake hectares) with significant variance of biological diversity from the historic range of variability.
5.1.a	Total forest ecosystem biomass and carbon pool, and if appropriate, by forest type, age class, and successional stages.
6.3.a	Value of investment, including investment in forest growing, forest health and management, planted forests, wood processing, recreation and tourism.
6.5.a	Direct and indirect employment in the forest sector and forest sector employment as a proportion of total employment.
6.5.c (i):	Viability and adaptability to changing social and economic conditions of forest dependent communities

Sustainability Indicators to be Reported in 2002

Criterion 1: Conservation of Biological Diversity

1.1.a: Extent of area by forest type and tenure

Rationale
"This indicator is useful as it measures the current level of forest cover, by forest type and demonstrates whether the area is increasing or decreasing"

This indicator will provide area (hectares) data which tracks total forest area and classifies this by forest type and by tenure categories, as defined below.

- **Forest type:** The 50 Tasmanian native forest communities, as referred to in the RFA, plus softwood and hardwood plantation.

- **Land classification (tenure):** Six categories:

    - National Parks and Wildlife Act Reserves,
    - Crown Lands Act Reserves (Public Reserve),
    - Forest Reserve,
    - Other State forest (multiple-use),
    - Other publicly managed land (Commonwealth, municipal, HEC), and
    - Private freehold land.

1.1.b: Area of forest type by growth stage distribution by tenure

Rationale
"Ecological processes and the species associated with those processes, within any forest ecosystem or forest type, are associated with vegetative structures (age of the vegetation, its dimensions) and successional stages (varies between species)"

This indicator will provide area (hectares) data, indicating changes to the growth stage distribution by forest type and tenure, as defined below.

- **Growth stage:** (Consistent with definitions to be used for national MIG Category A reporting).

    - Regeneration,
    - Regrowth, and
    - Mature + over mature.

- **Forest type:** The 50 Tasmanian native forest communities as referred to in the RFA.

- **Tenure:** As defined for criterion 1.1.a.

Tables will provide summary data, as follows:

Growth stage by:

- **Forest types**: Areas of 3 growth stages (regeneration, regrowth, mature + over mature) by 50 forest types.

- **Tenure:** Areas of 3 growth stages (all forest types combined) by 6 land classifications.

1.1.c: Extent of area by forest type and reservation status (modified National Indicator 1.1.c)

Rationale
"The strategy for nature conservation should be based on a system of reserves that are comprehensive, adequate and representative in combination with complementary off-reserve management"

This indicator will provide area (hectares) data which tracks total forest area and classifies this by forest type[1] and by reservation status, as defined below.

- **Forest type:** As defined for 1.1.a.

- **Reservation status:** Seven categories:

    - Formal dedicated reserve on public land,
    - Formal dedicated reserve on public land (subject to *Mineral Resources Development Act 1995*),
    - Informal reserve on public land,
    - Other public land,
    - Formal reserve on private freehold land (subject to *Mineral Resources Development Act 1995*),
    - Informal reserve on private freehold land, and
    - Other private freehold land.

1.1.d: Area of old growth by forest type by reservation status (modified National Indicator 1.1.d)

Rationale
"The strategy for nature conservation should include a system of reserves that are comprehensive, adequate and representative"

This indicator will provide area (hectares) data, indicating changes to the extent of old growth within forest types, using the following definitions.

- **Old growth:** Ecologically mature forest where the effects of disturbances are now negligible, as defined and identified in the RFA.

- **Reservation status and forest type:** As defined for 1.1.c 1.1.b, respectively.

[1] The area classification of RFA communities by IBRA region will be reported as part of the five yearly RFA review.

1.2: Species Diversity

1.2.a: A list of forest dwelling species

Rationale
"This indicator documents the presence/absence of forest dwelling species over time"

List of species, which tracks species numbers by taxon. Of most interest is loss of species and knowledge of scientifically recognised newly discovered species. This indicator will include:

- a list of species and changes, identifying the number of scientifically recognised new species; and
- a narrative relating to improvements in information base consequential on new knowledge, including the status of newly discovered species.

1.2.b: The status (rare, vulnerable, endangered, or extinct) of forest dwelling species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment

Rationale
"There is a need to manage threatened species so as to improve their conservation status and formal designation"

List of species and status which tracks the movements of species between protection categories and on and off the State and National legislative lists (as defined below). Species will be tracked, rather than communities.

- **Species status:** rare, vulnerable, endangered, or extinct
- **Species lists:** *Threatened Species Protection Act 1995* (Tas), *Endangered Species Protection Act 1992* (Commonwealth)
- A narrative relating to the status of priority species listed in Attachment 2 of the RFA.

1.2.c: Population levels of representative species from diverse habitats monitored across their range

Rationale
"This indicator is a broad measure of the conservation status of a range of representative species across habitats. The intention is to provide early warning of changes in conditions that may impact negatively on biodiversity. This measure reflects elements of ecosystem and genetic diversity"

Narrative with case studies based on currently available information on population level surrogates such as habitat or range - swift parrot habitat; wedge-tailed eagle habitat; 40-spotted pardalote habitat - and including other data on representative species that are available at the time of reporting.

Criterion 2: Maintenance of Productive Capacity of Forest Ecosystems

2.1.a: Area of forest land and net area of forest land available for timber production

Rationale
"This indicator is a fundamental element of the capacity of forests to meet society's demand for wood products"

- **Gross area**: The total area (hectares) of Multiple Use Forest within State Forest and all private forest land, excluding formal reserves.
- **Net area**: The area (hectares), both for public and private lands, potentially available for timber harvesting.
- Narrative explaining how the above information is calculated for public and for private land.

2.1.c: The area, age class and future yields of plantations of native and exotic species

Rationale
"This is a direct measure of plantation production"

Areas, age classes and yield information for each of hardwood and softwood plantations as contributed to and classified for purposes of the National Plantation Inventory (NPI). This indicator will not distinguish between public and private land.

2.1.d: Annual removal of wood products compared to the sustainable volume

Rationale
"A measure of the actual harvest, to meet society's demand for wood products, against the sustainable level of production"

Annual removals (1000s cubic metres/year)

- Annual removals for native forest (both eucalypt and other[2]) by product, including veneer log, sawlog, and pulpwood, from public land and private land.
- Annual removals for hardwood plantation by product, including veneer log, sawlog, and pulpwood, from public land and private land.
- Annual removals for softwood plantation by product, including veneer log, sawlog, and pulpwood, from public land and private land.

[2] The area of State forest being managed for long rotation special species timbers will be reported as part of the five yearly RFA review.

Sustainable volume comparisons

- Narrative on product removals against intended strategy, including appropriate numerical information for public lands and private lands, explaining the comparison of product yields with intended yields for which planning has been based on sustainable forest management principles.

2.1.e: Annual removal of non-timber products (modified Regional Indicator)

Rationale
"Provides an indication of the level of use of non-timber forest products compared with forecast sustained yield, including some products that are significant for Indigenous communities"

Apiary sites in forested regions

- Sites and number of hives (principally leatherwood honey industry) on public land.

Tree-ferns

- Average annual quantity of tree ferns harvested by tenure. Narrative on the significance of the production.

Commercial seed collection

- Quantities for public and private land combined.

Game quantity

- Based on Parks and Wildlife Service licences for possum, wallaby and deer. Narrative on the effects of fluctuations in the game market on the indicator.
- Narrative to explain the inter-relationship between forest and non-forest habitats of these species.

2.1.f: Area of plantation established meeting effective stocking one year after planting (modified Regional Indicator)

Rationale
"To determine success of the planting effort"

- Areas (hectares) for both softwood and hardwood plantation established.
- Narrative in relation to the stocking quality standards.

2.1.g: Area and per cent of harvested area of native forest effectively regenerated

Rationale
"To determine success of the regeneration effort"

- Areas (hectares) harvested and per cent effectively regenerated.
- Narrative in relation to the stocking quality standards.

Criterion 3: Maintenance of Ecosystem Health and Vitality

3.1.a: Area and per cent of forest affected by processes or agents that may change ecosystem health and vitality

Rationale
"A number of agents can affect basic ecological processes in forests. Where these processes are altered beyond some critical threshold they may produce significant changes to the condition of the forest. This indicator tracks those processes"

This indicator will provide area (hectares) data and per cent of forest affected, for native forest and plantations for the following selected agents.

- **Fire:** Area of planned and unplanned fire across all lands based on data reported annually by relevant government agencies (Forestry Tasmania, Tasmanian Fire Service and Department of Primary Industries Water and Environment). Distinguish native forests from plantations by narrative.

- **Pests and diseases:** Area affected for selected pests and diseases, based upon case studies and forest health surveys.

Criterion 4: Conservation and Maintenance of Soil and Water Resources

4.1.a: Interim indicator - Area and per cent of forest land systematically assessed for soil erosion hazard, and for which site-varying scientifically-based measures to protect soil and water values are implemented

Rationale
"This indicator aims to demonstrate that soil erosion risk has been explicitly addressed in forest management planning and field operations"

For timber harvesting and related roading activities:

- Narrative describing process to systematically assess production forests for erosion hazard, and in this respect, the degree of compliance of all Forest Practices Plans with the Forest Practices Code.

- Narrative describing the efficacy of the Forest Practices Code prescriptions in relation to soil movement.

For major walking tracks and other heavy-use recreational areas:

- Narrative based on Parks and Wildlife Service audits.

Criterion 5: Maintenance of Forest Contribution to Global Carbon Cycles

5.1.a: Total forest ecosystem biomass and carbon pool (modified Regional Indicator)

Rationale

"Estimates of total forest biomass allow temporal changes in the total carbon pool to be identified. Forest type is important in understanding where these changes are occurring. The age class distribution and successional stage of forests provides information on the changing structure of forests and determines whether they are in a predominantly regenerating or mature stage"

Forest biomass estimates will be reported if available by 2002. Forest type, age class, and successional stage information will not be available.

Criterion 6: Maintenance and Enhancement of Long-Term Multiple Socio-Economic Benefits to meet the needs of Societies

6.1.a: Value and volume of wood and wood products production, including value added through downstream processing

Rationale
"Enables socio-economic benefits to be monitored by ascertaining trends in value and volume of wood production against management objectives"

Australian Bureau Statistics figures - volume (ABS publication number 1303.6)

- Volume of eucalyptus logs delivered (m3/yr).
- Volume of eucalyptus sawn, peeled, sliced timber produced (m3/yr).
- Volume of plantation softwoods delivered (m3/yr).
- Volume of plantation softwood sawn, peeled, sliced timber produced (m3/yr).

Australian Bureau Statistics figures - value (ABS publication number 8221.6)

- Industry Gross Product Log sawmilling and timber dressing ($m/yr).
- Industry Gross Product Total wood and paper product manufacturing ($m/yr).

6.1.b: Value and quantities of production of non-wood forest products

Rationale
"Enables socio-economic benefits to be monitored by ascertaining trends in value and quantities of non-wood production against management objectives"

Australian Bureau Statistics figures for specific products.

- Quantity of honey* and beeswax produced in Tasmania (kg/yr).
- Value of honey and beeswax produced in Tasmania ($/yr).

* (leatherwood represents the majority but is not available separately)

6.1.d: Value of wood and non-wood products production as percentage of regional value of production

Rationale
"The indicator would be a useful measure of the contribution of the forest industries to regional economies"

Australian Bureau Statistics figures (ABS publication number 8221.6)

- Industry Gross Product wood and paper manufacturing as a percentage of Tasmanian total manufacturing (per cent).

6.2.a: Area and per cent of forest land available for general recreation and tourism

Rationale
"The indicator provides information on access for recreational and tourism uses of forests. It also provides a fairly coarse measure of the extent to which forest management is providing for the recreational needs of the community"

Narrative based on the total area of forested public land excluding Commonwealth land categories.[3]

6.2.b: Number, range and use of recreation/tourism activities available in a given region

Rationale
"This indicator is useful because it provides information on the diversity of recreation opportunities"

Narrative on the number, locations and range of activities.

6.2.c: Number of visits to recreational sites per annum (modified Regional Indicator)

Rationale
"The indicator is useful because it provides an indication of the amount of overall recreation use and suggests the amount of demand. It is a key variable in determining the sustainability of recreation and tourism"

Visitor use data for specific major recreational sites, as nominated by agencies.

6.4.a (i): Areas and per cent of forest land in defined tenures, management regimes and zonings which are formally managed in a manner which protect Indigenous peoples' cultural, social, religious and spiritual values, including non-consumptive appreciation of country

Rationale
"To ensure that adequate land is placed appropriately under the range of tenure classifications and/or dedicated management regimes to protect Indigenous peoples' values associated with forests"

- Narrative regarding public and Aboriginal land specifically dedicated to protection of Aboriginal heritage values.
- For timber harvesting areas, extent of compliance in relation to Indigenous heritage protection provisions within forest practices plans.
- Area (hectare) data for Indigenous special management areas in public land.
- Narrative for how Indigenous heritage values are managed for different tenures, including an explanation of changes in management planning.

[3] The status (area and tenure) of high quality wilderness will be reported as part of the five yearly RFA review.

6.4.a (ii): Number of places of non-Indigenous cultural values in forests formally managed to protect these values (modified Regional Indicator)

Rationale
"This indicator measures and monitors management regimes for non-Indigenous cultural values, such as historical, research, education, aesthetic, and social heritage values"

- Narrative regarding public land specifically dedicated to protection of historic cultural heritage values.
- For timber harvesting areas, extent of compliance in relation to historic cultural heritage protection provisions within forest practices plans.
- Number and area (hectares) data for historic cultural heritage special management areas in public land.

6.5.a: Direct employment in the forest sector and forest sector employment as a proportion of total employment (modified Regional Indicator)

Rationale
"Employment is an important measure of the contribution of forests in meeting community needs. Direct employment is defined as employment in the wood and wood product industries and forest contact industries. Indirect employment is the 'other' employment generated by direct forest employment. That is the potential multiplier effect of direct forest employment"

Australian Bureau Statistics figures (ABS publication number 8221.6)

- Employment - Forest and logging (No./yr)
- Employment - Log sawmilling and timber dressing (No./yr).
- Employment - Total wood and paper product manufacturing (No./yr).
- Employment - Wood and paper manufacturing as a percentage of Tasmanian total manufacturing (per cent).

6.5.b: Average wage rates and injury rates in major employment categories within the forest sector

Rationale
"A sustainable industry will ensure high levels of workforce health and welfare and wage rates comparable with other rural industries"

Australian Bureau Statistics figures (ABS publication number 8221.6)

- Average wage rate for log sawmilling and timber dressing ($/yr).
- Average wage rate total wood and paper product manufacturing ($/yr).

National Occupational Health & Safety Commission

- Compensated injury rate (5 or more days) within the forest sector (No.).
- Compensated fatality rate within the forest sector (No.).

6.6.a: Extent to which the management framework maintains and enhances Indigenous values including customary, traditional and native title use by Indigenous peoples and for Indigenous participation in forest management

Rationale
"This indicator measures the extent to which Indigenous people participate in forest management. Ultimately, active participation in management reflects the relationship of people with the land"

Narrative describing changes in existing management systems developed in consultation with Aboriginal community representative organisations.

Criterion 7: Legal, Institutional and Economic Framework for Forest Conservation and Sustainable Management

There are a total of 14 regional indicators to be reported on under Criterion 7. These cover the legal and institutional framework for forest conservation and sustainable management, the capacity to measure and monitor changes, and the capacity to conduct and apply research.

The approach to reporting on this criterion will be to examine and document changes to the agreed improvements to forest management and institutional arrangements as identified in the RFA.

This information will be presented as a narrative and practicable quantitative information wherever possible. The criteria and the rationale for each are listed below and a description of the issues, data, methods, interpretation, and research and development needs is provided in the MIG framework report.

7.1: Extent to which the legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests, including the extent to which it:

7.1.a: Provides mechanisms to clarify property rights and establish appropriate land tenure arrangements that recognise traditional management practices and self management as well as the existence of native title and the customary and traditional rights of Indigenous peoples

Rationale
"The indicator is useful as it identifies changes to:

- the legal system and frameworks for land ownership and management, including self management;
- the legal system and frameworks for Indigenous land; and
- ownership and other inherent rights relating to land; particularly the rights and interests of Indigenous peoples"

7.1.b: Provides for periodic forest-related planning, assessment, and policy review that recognises the range of forest values, including coordination with relevant sectors

Rationale
"This indicator shows how the legal framework demonstrates a regional commitment to achieving sustainable forest management"

7.1.c: Provides opportunities for public participation in public policy and decision-making related to forests and public access to information

Rationale
"To assess whether the legal framework ensures transparency and participation in public policy and decision-making at the regional level"

7.1.d: Encourages the development and application of best practice codes for forest management

Rationale
"Codes of practice indicate a commitment to compliance with environmental management systems and continuous improvement in forest management practices"

7.1.e: Provides for the management of environmental, cultural, social and/or scientific values in forests and ensures the participation of Indigenous peoples in all aspects of forest planning and management processes

Rationale
"Provides for qualitative and quantitative measurement of the legal framework to include special environmental, cultural, social and/or scientific values in forest management; including the recognition and inclusion of Indigenous perspectives and value systems. It allows for Indigenous self-determination through the articulation of values by Indigenous people.

This indicator is designed to provide an analysis of the legal framework through data collected by other indicators"

7.2: Extent to which the institutional framework supports the conservation and sustainable management of forests, including the capacity to:

7.2.a: Provide for public involvement activities and public education, awareness and extension programs and make available forest-related information

Rationale
"An institutional commitment to building community awareness and support is essential for the sustainable management of forests"

7.2.b: Undertake and implement periodic forest-related planning, assessment, and policy review including cross-sectoral planning and coordination

Rationale
"Periodic regional planning, assessment and policy review by the responsible institutions provide the basis for continuous improvement in forest management"

7.2.c: Develop and maintain human resource skills across relevant disciplines

Rationale
"Appropriate levels of human resource skills are required to implement sustainable forest management"

7.2.e: Enforce laws, regulation and guidelines

Rationale
"Enforcement of laws etc means that plans are implemented effectively"

7.4: Capacity to measure and monitor changes in the conservation and sustainable management of forests, including:

7.4.a: Availability and extent of up-to-date data, statistics and other information important to measuring or describing indicators associated with criteria 1–7

Rationale
"To summarise data availability and currency under the regional framework of indicators"

7.4.b: Scope, frequency and statistical reliability of forest inventories, assessments, monitoring and other relevant information

Rationale
"A comprehensive and current inventory provides the basis for all forest planning"

7.5: Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services, including:

7.5.a: Development of scientific understanding of forest ecosystem characteristics and functions

Rationale
"A scientific understanding of forest ecosystem characteristics and functions is needed to underpin sustainable forest management"

7.5.d: Enhancement of ability to predict impacts of human intervention on forests

Rationale
"The ability to predict impacts is required to ensure that long-term objectives are likely to be met"

7.5.f: Per cent of native forests and plantations that are formally supported by silvicultural and utilisation research support

Rationale
"Research support is required to ensure that all forests have an adequate scientific basis for management"

Attachment 1: Stage of Development of Key Category B&C Indicators Requiring Further Research

The Tasmanian RFA sustainability indicators are likely to be refined and improved over time and through research and development. This attachment provides a list of those MIG category B and C indicators agreed by both governments as potentially reportable but which will not be reported on in the first five yearly report because the methodologies have not been fully developed. It is intended that narrative descriptions in the 2002 report will be comprehensive and detailed to reflect the current research status of the indicators under development.

Conservation of Biological Diversity

1.1.e: Fragmentation of forest types

Rationale

"This indicator aims to provide information on the loss of forest cover and the spatial configuration of that loss within a region. Fragmentation has the following effects on the gene pools of formerly continuous populations:

- small populations become demographically vulnerable through inbreeding; and
- loss of variability from local populations can limit adaptations to environmental change"

1.2.c: Population levels of representative species from diverse habitats monitored across their range.

Rationale

"This indicator is a broad measure of the conservation status of a range of representative species across habitats. The intention is to provide early warning of changes in conditions that may impact negatively on biodiversity. This measure reflects elements of ecosystem and genetic diversity"

2.1.d: Annual removal of wood products compared to the sustainable volume - Fuelwood/Firewood aspects[4]

Rationale

"A measure of the actual harvest, to meet society's demand for wood products, against the sustainable level of production"

[4] Annual removals for native forest Fuelwood/Firewood (1000s cubic metres/year). Reliable, comprehensive data do not exist at this time for these products and will not be available for the first review. However, governments are considering the development of options for assessing fuelwood/firewood as part of the Montreal Process Implementation Group process. The state-of-play on research and development towards a fuelwood/firewood indicator will be reported in 2002.

2.1.e: Annual removal of non-timber products (modified Regional Indicator) - Water supply aspects[5]

Rationale
"Provides an indication of the level of use of non-timber forest products compared with forecast sustained yield, including some products that are significant for Indigenous communities"

Maintenance of Ecosystem Health and Vitality

3.1.c: Area and percentage of forest land with diminished or improved biological, physical and chemical components indicative of changes in fundamental ecological processes

National indicator
"Area and percentage of forest land with diminished biological components indicative of changes in fundamental ecological processes (e.g. soil nutrient cycling, seed dispersion, pollination) and/or ecological continuity (monitoring of functionality important species such as fungi, arboreal epiphytes, nematodes, beetles, wasps, etc)"

Rationale
"This indicator is useful because it provides a measure of the status of fundamental ecological processes which underpin the maintenance of ecosystem health and vitality"

Conservation and Maintenance of Soil and Water Resources

4.1.e: Area and per cent of forest land with significant compaction or change in soil physical properties resulting from human activities

Rationale
"To measure the extent of soil physical change induced by human activities that might adversely affect soil fertility and thus ecosystem processes"

4.1.f Per cent of water bodies in forest areas (e.g. stream kilometres, lake hectares) with significant variance of biological diversity from the historic range of variability

Rationale
"The in-stream fauna reflects the quality of the habitat and water. This in turn, reflects the impacts of off-stream management activities, so that aquatic biodiversity is a good measure of the success of forest protective management prescriptions"

[5] Water Supply. Comprehensive quantity and quality information for water supply, including domestic water drawings from forested catchments, and especially that from springs, does not exist at this time. However, governments are considering the development of options for assessing water supply as part of the Montreal Process Implementation Group process. The state-of-play on research and development towards this indicator will be reported in 2002.

Maintenance of Forest Contribution to Global Carbon Cycles

5.1.a: Total forest ecosystem biomass and carbon pool, and if appropriate, by forest type, age class, and successional stages

Rationale
"Estimates of total forest biomass allow temporal changes in the total carbon pool to be identified. Forest type is important in understanding where these changes are occurring. The age class distribution and successional stage of forests provides information on the changing structure of forests and determines whether they are in a predominantly regenerating or mature stage"

Maintenance and Enhancement of Long-Term Multiple Socio-Economic Benefits to meet the needs of Societies

6.3.a: Value of investment, including investment in forest growing, forest health and management, planted forests, wood processing, recreation and tourism

Rationale
"Provides an indication of the long-term and short-term commitment to forest management, further processing and other forest uses"

6.5.a: Direct and indirect employment in the forest sector and forest sector employment as a proportion of total employment

Rationale
"Employment is an important measure of the contribution of forests in meeting community needs. *Direct employment* is defined as employment in the wood and wood product industries and forest contact industries - that is, those industries in direct contact with forests (e.g. beekeeping, eco-tourism operations, grazing, forest reserve management).

Indirect employment is the 'other' employment generated by direct forest employment. That is, the potential multiplier effect of direct forest employment"

6.5.c (i): Viability and adaptability to changing social and economic conditions of forest dependent communities

Rationale
"Communities with a high economic and cultural dependence on forest and forest-related industries should be sustainable into the future.
This indicator provides a measure of the extent to which communities are able to respond and adapt to change successfully"

Appendix A: Project outline - Tasmanian RFA Sustainability Indicators

The development of the Tasmanian RFA Sustainability Indicators is a joint project of the Tasmanian and Commonwealth governments.

In order to satisfy the requirement of clause 91 that the indicators be appropriate, practical and cost-effective, those developed and established are to be capable of being used in the five yearly review of the performance of the Tasmanian RFA, as specified in clause 45(iv). This clause specifies taking account of the Sustainability Indicators including trends.

Public consultation should be most effective if opportunities could be provided in two stages. The first stage for public participation is reviewing the proposed project outline and providing additional input. The second stage is reviewing the proposed detailed Indicators prior to their finalisation by the governments.

The proposed Sustainability Indicators will be based on the Framework of Regional (Sub-national) Level Criteria and Indicators of Sustainable Forest Management in Australia, developed by the Montreal Process Implementation Group, August 1998.

The primary focus will be on those Category A indicators which can be established and implemented for the whole of the Tasmanian Region, including social and economic indicators.

The secondary focus will be on those Category B indicators which are potentially capable of being applied immediately for the whole of the Tasmanian Region, provided that agreed resources are available. In addition, comment will be sought on which Category B and C indicators could be implemented (or given priority) in the region within the next 5 years.

Additional indicators relating to either process or outcomes deriving from Tasmania specific systems and processes, capable of immediate utility, which support the regional framework, and which will benefit both the national and Tasmanian state of the forest and environment reporting processes and 5-yearly reporting on the RFA.

Specifications for the Sustainability Indicators will comprise the description, adopting the format outlines in the regional framework, land tenures applicable, frequency of data collection, frequency of reporting, and any qualifications relating to interpretation of particular Indicators.