



## Assessment of Code of Practice for Plantation Forestry: Tasmania

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**Cover Photo:** Harvesting operation in a *Pinus radiata* plantation, Tasmania. The heavy slash cover provides soil protection, and most fine residues are retained on-site to recycle organic matter and nutrients.

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## 1. SUMMARY

The Tasmanian Forest Practices Code and inter-related aspects of the forest practices system in Tasmania, including its implementation, were assessed for their effectiveness in meeting the ‘Forest Practices Related to Wood Production in Plantations: National Principles’<sup>1</sup>. The current Code and its implementation, together with State legislation, are achieving environmental care outcomes, i.e. the National Principles, at a high standard. The Code is effective because it is part of a forest practices system that has good governance and a well-developed and effective system of implementation, compliance and continuous improvement. It was also evident that the forest industry supports the forest practices system and contributes to it through participatory approaches.

Some minor improvements are suggested:

*Training*- Develop and implement a more formalised, systematic and accredited training program for contractors and operators to strengthen the application of the Code on the ground.

*Small growers* - The concerns expressed by small growers regarding the background analysis and documentation required when applying to establish plantations on farms, and for subsequent Code application, need to be reviewed to encourage more participation by small growers.

## 2. BACKGROUND

Codes of forest practice are integral to developing and managing forest plantations in Australia. Their development and implementation are a responsibility of State and Territory governments. The Commonwealth Government has a role in sustainable forest management at the national level, which is implemented through various Acts, regulations and policies (Plantations2020 2007). These include:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Export Control Act 1982*
- Export Control (Unprocessed Wood) Regulations 1986
- Export Control (Hardwood Wood Chip) Regulations 1996
- Export Control (Regional Forest Agreements) Regulations 1997
- National Forest Policy Statement
- *Quarantine Act 1908*
- *Regional Forest Agreements Act 2002*

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<sup>1</sup> <http://www.daff.gov.au/forestry/plantation-farm-forestry/principles>

- Renewable Energy (Electricity) Regulations 2001

The Export Control (Unprocessed Wood) Regulations 1986 (section 4) requires the Federal Minister for Agriculture, Fisheries and Forestry to take into account the outcomes of a scientific assessment of a State or Territory code of practice in relation to its effectiveness in meeting the 'Forest Practices Related to Wood Production in Plantations: National Principles' (National Principles, Appendix A).

The outcome of this assessment is part of the decision making process by the Minister, if businesses in the State or Territory are to be exempt from requiring export licences for unprocessed wood as chips or logs. This assessment has been conducted in close consultation with the State and Territory agencies responsible for developing and administering the Codes, and with input from other relevant parties including local government, planning authorities, and public and private plantation forest owners or managers. Codes in all States and Territories were previously assessed by CSIRO (Acronyms, Appendix B) during 1996-2002 (Tasmania in 1996).

In July 2010, CSIRO was commissioned by the Department of Agriculture, Fisheries and Forestry (DAFF) to undertake a second assessment. In addition, after this assessment, CSIRO was requested by DAFF to comment on the National Principles (Terms of Reference, Appendix C). This report is our assessment of the Tasmanian Code.

### **3. METHOD OF ASSESSMENT**

#### **3.1 General Approach**

The assessment followed a consistent approach across all States and Territories:

- Review of the scientific validity of the goals and guidelines contained in the Code, the way the Code is implemented, and how environmental performance and other aspects of compliance are monitored. The process did not fully evaluate environmental outcomes in the field, but observations at a sample of sites and discussions with stakeholders were used as the basis for assessing the impacts of forest operations on the environment.
- Effectiveness in complying with the National Principles was assessed against eight criteria based on responses to a set of questions exploring each criterion. These were agreed between DAFF, representatives of all States and Territories, and CSIRO at the outset.
- Review of the relevant regulations (e.g. planning) and guidelines applicable to the regional and local contexts that affect risk to environmental values.
- Discussions with key stakeholders.
- Visits to and discussions at representative sites where plantation forestry operations including harvesting could impact on the environment.
- In each State and Territory, we also sought information from organisations not concerned with wood production (e.g. Environment Protection Authority, local government, and one or more Aboriginal organisations) that could advise on potential environmental impacts and provide comments.

Although this assessment is focussed on the Code, it also took into account guidelines, policies and regulations that contributed to overall environmental outcomes, e.g. State-wide

environmental plans for biodiversity, catchment management plans, company internal processes, and forest management certification.

## **3.2 Approach in Tasmania**

Our work was facilitated by the Forest Practices Authority (FPA), Tasmania, which is an independent regulatory body responsible for developing, revising and implementing the Code and related regulations. We gathered information from the FPA, private and public forest growers, a relevant government advisory authority (Private Forestry Tasmania), local government, and other agencies (Organisations Consulted, Appendix D). Key documents reviewed included:

- The Tasmanian Forest Practices Code (Forest Practices Board 2000, hereafter referred to as the Code), which deals with both native forests and plantations. In areas where plantation management has the potential to adversely affect the environment (e.g. site preparation practices), the Code provides guidelines specific to plantations.
- A guide to planning approvals for forestry in Tasmania (Local Government Forestry Consultative Committee 2006) that was developed with the participation of a wide range of stakeholders.
- FPA Annual report of 2009-2010 (Forest Practices Authority 2010a), which reports on many aspects of the regulatory environment for forestry in Tasmania, including monitoring, compliance, and changes to the Code or guidelines.
- Forest practices compliance and assessment reports from the past five years (e.g. Forest Practices Authority 2009), which provided data on Code compliance, including penalties imposed on significant breaches. Most aspects of these reports are also included in the relevant FPA annual report.
- Plantation management plans dealing with forest planning and harvesting, including spatial information on plantations and adjacent areas.
- Numerous guidelines, advice and scientific papers from the FPA based on research for continuous improvement in areas including protection of biodiversity, procedures for the management of threatened species, riparian zone management, water quality, and managing erodible soils.

Field visits and discussions were conducted with local forest owners and their managers to understand how the Code and related regulations were applied to achieve the National Principles. These visits highlighted specific issues using contrasting case studies. At one site we examined the planning and planting of a eucalypt plantation in a landscape with several environmental risks (erodible soils, steep slope, a major streams, threatened species, and cultural heritage). At another site we examined the harvesting plan and its implementation for a 30-year-old pine plantation that was being clear-felled. We also had the opportunity to interact with the harvesting contractors and to assess the extent of their understanding of and commitment to the Code.

A map showing the distribution of plantations in Tasmania is provided in Fig. 1. Tasmania has about 0.31 M hectares of plantations (mainly *Pinus radiata*, *Eucalyptus globulus*, *E. nitens* and *E. regnans*), which is 15% of the national total of 2.09 M hectares (Gavran and Parson 2011).



Figure 1. Map showing the location of plantations in Tasmania (Gavran and Parsons 2011). Hardwood plantations are shaded as green,,and softwoods as red.

### 3.3 CSIRO Team

The CSIRO team consisted of Philip Smethurst (Project Leader), John Raison, Sadanandan Nambiar, Alan House, and Bradley Moggridge, which covered all fields of expertise required and it specifically included sustainable plantation management, soils, nutrition, hydrology, biodiversity, conservation, and cultural heritage. Smethurst, Raison, Nambiar and House participated in the field visits. Moggridge conducted a desk-top assessment of cultural heritage values, including contact with relevant stakeholders.



### **3.4 Discussions and Field Visits**

The team visited Tasmania once during the assessment for a total of two days, with the itinerary as provided in Appendix E. The team leader also discussed issues with other organisations (Appendix D), including Private Forests Tasmania and the Local Government Association of Tasmania. During these visits and follow-up contacts with key stakeholders we gathered the required information.

## **4. INTRODUCTORY COMMENTS ON THE TASMANIAN FOREST PRACTICES SYSTEM**

Tasmania has an integrated system for developing, improving and governing forest practices in accordance with the National Principles. An overview of the system is described here as it is relevant to the assessment across all principles. The system is also summarised in a brochure (FPA 2010b).

In Tasmania, the forest practices system regulates all forest practices, including those in native forests and plantations, in Tasmania. It has jurisdiction over both public land (e.g. state forests managed by Forestry Tasmania) and private land. It is empowered by the *Forest Practices Act 1985*, which is implemented by the FPA using the Code as the main guiding document.

### **4.1 Forest Practices Authority**

The system is administered by an independent body called the Forest Practices Authority (FPA), established under the *Forest Practices Act 1985*, and led by the Chief Forest Practices Officer. The FPA is governed by a board of independent experts that reports directly to the Tasmanian Minister for Forests. A Forest Practices Advisory Council made up of stakeholder representatives, as required by the Act, advises the FPA. A Forest Practices Tribunal provides the right of appeal on decisions made by the FPA, if decisions are contested by the applicant of a forest practices plan (FPP). It is mandatory that the FPA produces an annual report on its operations. After this report is tabled by the Minister in the Tasmanian parliament, it is posted on the FPA website.

The FPA is funded by a grant from the Tasmanian Government and income generated through its regulatory functions. The FPA has significant legislated powers to verify and audit proper compliance with laws and regulations, and to impose penalties for breaching the Code. The FPA employs a team of specialists and technical staff with expertise in areas including biodiversity, soils, water, geomorphology, and cultural heritage.

Despite the legal powers available to the FPA, its *modus operandi* is based on a collegial culture with forest managers and other relevant bodies that promotes a “co-regulatory approach” built on self regulation by the growers, regardless of their size, and independent monitoring and enforcement by the FPA.

The effectiveness of the FPA is strengthened by its capacity to provide services, including the assessment of applications for a FPP, the training and accreditation of Forest Practices Officers

(FPOs), the provision of specialist advice and assistance by FPOs, independent monitoring and follow up compliance actions, and research to strengthen the forest practices system.

## **4.2 Forest Practices Code**

Since 1987, all forestry operations in Tasmania, from planning to harvesting and re-establishment, have been subject to the provisions of a Tasmanian Forest Practices Code (the Code) that was amended in 1994 and revised in 2000 (which was the version assessed). We were informed that the current Code is again due for a participatory review, but that the review had been temporarily suspended while the FPA sought clarification from the government on matters of future forest policy, which included objectives for the management of biodiversity within forests, the type and intensity of silvicultural regimes applied to native forests, the management of smoke from planned burns, the impact of plantations on water catchments, and public engagement in forest policy and planning.

The Code applies to all tenures and sizes of operations, if the intended use of the plantation is commercial wood production.

The Code is a central instrument influencing the achievement of environmental care in plantation development and subsequent operations. Therefore an understanding of the mechanisms controlling the administration and implementation of the Code is important in assessing its effectiveness.

## **4.3 Forest Practice Officers**

The Forest Practices Act is administered in the field by Forest Practices Officers (FPOs), who are trained, accredited, and appointed by the FPA. The FPOs are responsible for planning, regulating and ensuring compliance with the Code for all forestry activities, including plantations. Forest Practices Officers are accredited at two levels: FPO (Planning) and FPO (Inspecting). FPOs are required to have a university degree in forestry or equivalent technical qualifications, and at least five years practical experience in forest management including harvesting operations. All FPOs must act under the jurisdiction of the FPA and in accordance with the scientific and operational guidance provided by the FPA.

Most FPOs are employees of forestry organisations that have wood production as a major objective, i.e. they are not directly employed by the FPA. Private Forests Tasmania (a state government body established to promote private forest development in Tasmania) and some accredited private consultants provide FPO support for private forestry. FPOs have legislated powers to enforce compliance with the Code, e.g. power of entry to private lands where timber is being harvested, to order a stop to work, and to enforce actions to repair damages. Authority to act as an FPO is given to a particular officer regardless of employer, i.e. public organisation, private company, or private consultant. All FPOs are subject to an ongoing review of performance in fulfilling obligations in respect of the spirit and intent of the Code.

## 4.4 Forest Practices Plans

Almost all plantation forestry practices can commence only after obtaining an approved Forest Practices Plan (FPP). No single plan covers the full cycle rotation of a plantation, but instead a separate plan is required for planting, harvesting or any road construction related to harvesting or reforestation. This practice provides flexibility in adopting changes during a rotation, and it allows a focus on key issues relevant to each particular management phase. Significant parts of the plan for planting are also applicable to harvesting plans. An FPP, approved by an FPO and countersigned by the owner, contractor and buyer, is required for all operations.

Where forestry is the intended land use (as in the case of plantation establishment) the FPP for harvesting must also include provisions for reforestation.

An FPP is assessed thoroughly, including peer review if necessary, before it is certified and approved. If the land is in the vulnerable category (e.g. high erosion risk) there is no exemption from an FPP. Outside vulnerable land (*Forest Practices Regulations 2007*), the threshold is any land expected to have more than one hectare per year of forestry activity or is expected to yield more than 100 tonnes of wood per hectare per year.

We reviewed several approved FPPs during the field visits. These FPPs contained comprehensive information at an adequate enough level to enable full compliance with the Code.

## 4.5 Private Timber Reserves

Declaration of a Private Timber Reserve (PTR) assists landowners to dedicate land for long-term forest management with timber harvesting rights to successive rotations. Legislation stipulates that forestry activities on that land are subject to a single set of state-wide planning regulations through the *Forest Practices Act 1985*. Thus, land under a PTR is not subject to local planning regulations, but any forestry on that land must comply with the Forest Practices Code and other related regulations.

Forest operations on land not declared as a PTR may also need local government approval, if it is required under the planning scheme, and local government may impose additional conditions on the proposed operation. Hence, a forest operation on a PTR does not require local government approval.

Local government and neighbours may object to the declaration of a PTR through the Forest Practices Tribunal, which is part of the appeal process in the forest practices system.

## 4.6 Compliance

The FPA is required to conduct an independent annual audit of the degree of Code compliance. Outcomes are kept in a register that is available for perusal by all interested parties, and a summary is reported in the FPA's compliance and annual reports. As the FPA approves a large number of plans every year, auditing is undertaken on a subsample derived by a strategic sampling technique; typically 15% of all approved FPPs each year are audited by FPA specialists or independent FPOs. The audit systematically evaluates the evidence for adequate

performance. The assessment protocols have been developed in accordance with the Australian Standard prescribed in the Guidelines for Environmental Management and ISO(International Organization for Standardisation) 19011. The audit protocol used by FPA and the outcomes are publically available.

## **4.7 Code Implementation in Relation to Local Planning**

Authority for permitting Plantation Forestry as a land use is vested with the local planning schemes and not by the FPA. Planning must comply with both *Forest Practices Act 1985* and *Land Use Planning and Approval Act 1993* (apart from the exception for PTRs referred to above). Rural land use decisions in Tasmania are subject to a range of planning regulations, mostly administered by the local government (Councils). Forest Practices Plans approved by the FPA do not override Council regulations, nor do Council permits to develop plantations allow a land holder to proceed without an approved FPP.

If the proposed forestry plan includes what is described as vulnerable land (which includes stream side reserve, steep terrain potentially landslide prone, high or very high erodible soils, habitat of threatened flora and/or fauna, rare endangered forest communities), the Code prescribes special conditions for their protection that must be met satisfactorily in FPPs. The FPA provides a significant source of information to aid this process.

## **4.8 Conclusion**

We conclude that the FPA's structure, function, governance and expertise provide a high degree of independence and competence in fulfilling its regulatory function. The process of co-regulation is an effective way of balancing economic and environmental outcomes in commercial plantation forestry.

# **5. CRITERION 1: COMPLIANCE OF PLANTATION MANAGEMENT WITH RELEVANT PLANNING SCHEMES AND LEGISLATION**

## **5.1 Relevant National Principles and Questions**

National Principle: 1.3

1.3 Plantation management should comply with State and regional conservation and catchment management objectives, relevant planning schemes and legislation.
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a) Are the processes adequate to meet this criterion?

## **5.2 Existing Processes**

There are 27 Acts or Regulations that relate to plantation forestry operations in Tasmania (Plantations2020 2007). These include:

- *Forest Practices Act, 1985*
- *Forest Practices Regulations 2007*
- *Forestry Act, 1920, amended 1994*
- *Historic Cultural Heritage Act, 1994*
- *Land Use Planning and Approvals Act, 1993*
- *Private Forests Act, 1994*
- *Threatened Species Protection Act, 1995*

Plantation forestry development and management practices are subjected to a range of planning strategies, regulations and protocols within the jurisdictions of local government (Councils), State regulatory authorities, and agreements including the Tasmanian Regional Forest Agreement. These regulations give authority to establish plantations, construct and maintain roads, and to provide other measures like fire protection.

The *Forest Practices Act 1985* is the key integrating legislation. It establishes the requirement for a Code, and other aspects of the forest practices system described in section 3, which is designed to address all legislative and regulatory aspects of forest plantation management. A guide developed by the Local Government Forestry Consultative Committee (2006) describes the forest planning process for Tasmania, which includes plantations.

Planning requires companies harvesting more than 100,000 tonnes of wood per year to lodge a 3-year plan with the FPA, which is discussed annually with relevant councils. Planning at the forest management unit level is achieved mainly through the Code and FPP. In all situations, establishing or harvesting a plantation on a private timber reserve, on areas where a development approval has been granted by local government, or on State forest, an approved FPP is required.

During planning, particular emphasis is placed on roads and water crossings, because these have a potential environmental impact, and their cost is a consideration for plantation managers and local government. Where plantations are within 2 km upstream of a domestic water supply, town water supply, or freshwater aquaculture facility, special provisions for the timing and type of road and water crossing operations are included in the FPP.

### **5.3 Comments on Existing Processes**

The Code provides detailed guidelines on all aspects of planning for commercial wood growing and harvesting. It also provides detailed steps (guidelines as ‘should’ statements, and prescriptions as ‘will’ statements) for sound planning and operations, including the location and construction of roads. Regional conservation strategies are generally adequately considered (see section 4), but prior to revising the Code the FPA is currently seeking clarification on several other regional environmental issues that include the impacts of plantations:

- objectives for the management of biodiversity within forests,

- the management of smoke from planned burns,
- the impact of plantations on water catchments, and
- public engagement in forest policy and planning.

Whilst it is possible to establish plantations at a standard below that stipulated in the Code for areas less than 10 hectares (e.g. tree planting in streamside management zones, roads established to lower construction standards), any deficiency carried over through such practices would have to be corrected before the owner could receive approval for harvesting through an FPP (harvesting). Hence, if there is a desire to harvest plantation trees, the FPP requirement is likely to deter activities that may impair environmental values. In general, plantation establishment and maintenance involves less intensive land management practices than those in agriculture. Thus, forest plantations well-managed for commercial wood production may provide net environmental benefits to the landscape.

We received a comment that the approval process can be onerous and the costs high for small, private growers, which may deter private plantation development. However, the farming community has recently increased its influence on the FPA through the appointment to the Forest Practices Advisory Council of a nominee of the Tasmanian Farmers and Graziers Association.

## **5.4 Scope for Improvement**

Some comments received by us that may be useful to the FPA for further improving the forest practices system include:

- The FPA sometimes places conditions on FPPs that go beyond the Code, e.g. widths and operations within buffers, and thereby effectively changing the Code without formal amendment of the Code. To retain confidence in the system, it will be important to subject these changes to the revision processes of a formal Code review.
- The approval process is seen as onerous and costly for small, private, plantation growers, e.g. farm-foresters, which may be acting as a deterrent to private plantation development. Ways should be sought to maintain or improve environmental standards for these types of developments whilst keeping the complexity and costs at an acceptable level.
- Currently, the typical cost of preparing an FPP, plus the FPA fee, is \$20-40 per hectare. The industry would like to see the system simplified, especially for successive rotations, and large plantations where the total cost has reached about \$10,000 per FPP in some instances.

## **5.5 Conclusion**

Tasmania has an effective system of planning for (i) identifying and defining environmental risks, and (ii) regulating plantation activities that might threaten environmental values. The forest practices system is supported by guidelines for addressing the risks at the planning stage.

## 6. CRITERION 2: PROTECTION OF NATIVE VEGETATION AND ANIMAL COMMUNITIES AND NATURAL LANDSCAPE VALUES

### 6.1 Relevant National Principles and Questions

National Principles: 1.1, 1.2 and 1.8, except for cultural heritage values, which are considered in Criterion 5

- 1.1 Native forest should not be cleared for plantation establishment where this would compromise regional conservation and catchment management objectives. In some circumstances it may be appropriate to clear forests that have been severely degraded by impacts such as disease, weed invasion, wind and fire so as to enable rehabilitation through replanting.
- 1.2 Values such as intensive recreation, high scenic quality, significant geomorphic, biological, or cultural heritage sites, should be recognised in the planning of plantation forest operations.
- 1.8 Fauna, floristic, and landscape values should be protected by the careful planning of plantation layout establishment operations and the reservation and protection of appropriate areas of native vegetation; such values should be recognised in subsequent plantation management.

- a) Are the processes for managing the clearing of native vegetation adequate to meet the objectives of the National Forest Policy Statement (including the objective of not clearing for plantation establishment where this would compromise regional conservation and catchment management objectives)?
- b) Do these processes take into account the need to achieve adequate conservation of important natural heritage values?
- c) Are there measures and processes in place for the identification of these values in assessing proposed plantation sites and adjacent areas for natural values?
- d) Where values are identified are protection measures taken into account in the planning and future management of plantations?
- e) In the planning of plantation layout and establishment operations, are there measures and processes for managing identified natural heritage values, including the protection of threatened species and communities?

### 6.2 Existing Processes

In Tasmania, clearing of native vegetation for plantation forestry is decreasing rapidly. On public land, clearing of native vegetation for conversion to plantations is not permitted. Large plantation companies no longer clear native vegetation for plantations. Some native vegetation is cleared by land owners for small-scale operations. The clearing of native vegetation is closely monitored and up-dated three-monthly on the FPA website. The FPA aim is to retain 95% of the 1996 extent of native vegetation, whilst clearing no threatened communities.

Clearing of native vegetation for plantation establishment is subject to scrutiny and control under a series of regulations (in the Code) and Acts, as explained in the document 'Information on Land Clearing Controls in Tasmania' (Forest Practices Authority 2010c), the state is broken down into bioregions for more detailed planning for plantation development.

With a few exemptions, controls apply to all woody vegetation with the potential to grow to more than 5 m height, and to threatened non-forest native vegetation. An FPP is required to authorise clearing, but prior to an FPP being approved by an FPO, a specialist at the FPA will be consulted on biodiversity. The consultation includes a check of local and regional flora and fauna databases and management strategies for known values. Generalised principles for conservation are included as a guide in the Code. Generally the FPA manages for habitat rather than individual species, but there are notable exceptions for certain species and the focus on habitat is partly because data on species is lacking, e.g. wedge-tailed eagle.

The FPO must be satisfied that the proposed operation will not remove vegetation types or habitats that are inadequately reserved or that will affect flora and fauna species that are threatened or priority species under the Regional Forest Agreement. The FPO has several sources of information to assist in establishing the conservation values of land proposed to be cleared, including:

- Forest Practices Resource Manuals describing flora and fauna that include details on areas of occurrence, abundance of species and their significance.
- Databases and planning tools on vegetation types and threatened species maintained by DPIPW, in conjunction with the Forest Practices Authority, Forestry Tasmania and The University of Tasmania. There have been several flora and fauna surveys conducted in the State, many by the FPA specialists, which have delineated and recognised areas required for conservation.
- Advice by the FPA ecologists and a network of specialists outside the FPA.

If the proposed FPP is likely to threaten conservation values, approval is withheld and the matter referred to the Chief Forest Practices Officer. The options following referral are:

- For public land, FPA consults with the DPIPW to decide on the need for protection or reservation.
- For private land, where harvesting of native forest would affect rare and endangered, or insufficiently protected (reserves) species the following steps are mandatory:
  - Firstly, the FPA and DPIPW specialists establish if the requirements for protection can be met through the systems established for public lands. Tasmania has policies to ensure that nature conservation objectives are met primarily through public land, but also encourages conservation in private land, if appropriate.
  - Secondly, if there is no consensus, the FPP applicant can appeal to the Forest Practices Tribunal. A decision arising from this can be enforced,



with due consideration for compensation being subsequently made by the Minister.

- Thirdly, a further general limit is placed on the clearing of native vegetation for plantation establishment through an assessment of the suitability of the site for commercial timber growing. Plans can be refused if sites are considered unsuitable for viable forestry. Criteria for that assessment of suitability are stipulated in a number of documents available from the FPA.

Sometimes conflicts arise between conservation and wood production values. An example is protection of planted seedlings from browsing by native mammals (e.g. possums) that are not threatened species. Straight plantation edges generally help to minimise mammal browsing, but irregular edges facilitate some conservation values. In such cases technical information is assembled and general recommendations provided to planners (Munks and McArthur 2000).

The FPA have invested in building knowledge, databases and planning tools for biodiversity. They suggested that their emphasis is now shifting to ‘effectiveness monitoring’, i.e. evaluating how effective the guidelines and forest management generally are at achieving desirable outcomes. This effort is supported by research and monitoring by the FPA, other agencies, and universities. One area of particular interest is the value of retained native vegetation within plantation estates. We note that at present there is no State-wide native vegetation management authority in Tasmania responsible for vegetation and habitat suitability mapping; the FPA conducts these activities for forested areas. This issue is worth resolving, as noted in the responses of FPA and Forest Practices Advisory Council to recommendations made in the current (2007) review of the Code.

There are requirements to consider and protect landscape values in several specific scenic zones identified in local planning schemes. Guidelines for the protection of landscape values are provided in the Code, particularly in regard to planning of logging and plantation operations that are likely to have a landscape impact. A Manual for Forest Landscape Management (Forestry Commission of Tasmania 2006) also provides methods and guidelines to assist planners. FPA specialists also provide advice on how to accommodate special values in planning at the coupe level.

Special permits are required for plantation operations in zones designated for the protection of special landscape and scenic values. There are measures in the Code and in FPA procedures to protect significant geomorphologic landforms. These measures include a requirement for surveys in areas where important landforms do or may occur (e.g. karst), reference to the Tasmanian Geoconservation database and other publications, assessment of risk before the preparation of an FPP, and necessary modification of management.

The FPA annual report 2009-10 shows that approved Forest Practices Plans covered 7010 hectares of new plantations (98% private land), of which 1786 hectares were on previously cleared land and 5224 hectares were on ex-native forest sites (82 hectares on public land for this period). State-wide, between 2008-09 and 2009-10, native vegetation clearing for plantations decreased from 7768 to 5224 hectares.

### **6.3 Comments on Existing Processes**

The process is thorough, but knowledge gaps remain about species-habitat linkages requirements, and long-term species responses to management actions. Overall, a precautionary approach is adopted where knowledge is lacking.

The effort applied to biodiversity by the FPA is large compared to other environmental values. For plantations, continued research and monitoring is critical to fine-tune and adjust policies in respect of biodiversity. Plantation forestry is only one of many influences on biodiversity, and shifts in responses (e.g. of individual species) to landscape management generally need to be factored into policy settings. The example of the wedge-tailed eagle (where adjustments are made to operational access to plantations because of a shift in the start of the sensitive breeding season) demonstrates how the Tasmanian system allows for research-driven knowledge to influence policy and practice.

Amongst stakeholders consulted, no concerns were raised about the Code in relation to visual landscape and recreational values.

### **6.4 Scope for Improvement**

The current Code review, which has a biodiversity focus, is awaiting the clarification of several issues by the state government, including future state government policy on ‘objectives for the management of biodiversity within forests’. The outcomes of this review might have important implications for how biodiversity is managed in plantations, but generally we can suggest no major improvements to the current system that Tasmania has for protecting natural plant and animal communities and landscape values.

### **6.5 Conclusion**

In Tasmania, native forest clearing for plantations is declining rapidly. Where clearing is occurring in small-scale private ventures, sound mechanisms to assess and regulate clearing are in place. These regulations and their applications give due consideration to environmental values within a holistic framework of principles and regulations applied state-wide.

The co-regulatory framework used in Tasmania for implementing the Code allows for significant transparency in applying regulations and practices relating to biodiversity management, and it fosters understanding of biodiversity and conservation issues amongst forest growers.

## 7. CRITERION 3: PROTECTION OF WATER QUALITY AND, WHERE REQUIRED, MANAGEMENT OF WATER YIELD

### 7.1 Relevant National Principles and Questions

National Principles: 1.4 and 1.5

- 1.4 Water quality (physical, chemical, or biological) should be protected by measures controlling change resulting from plantation activities
- 1.5 Water yield should be managed as required by careful planning of operations.

- a) Do measures that protect water quality include streams, springs, soaks, swampy ground and bodies of standing water, and minimise sediment and other contaminant input to streams from plantation areas including roads?
- b) What environmentally sound guidance regarding plantation management strategies for the use of nutrients and biocides do the codes of practice provide especially to ensure that changes to water quality are within acceptable limits?
- c) Where the water resource is required to be managed (for example, controlled catchments), do the codes of practice provide effective strategies for managing water yield?

### 7.2 Existing Processes

Water quality is a focus of the Code, attracting many ‘will’ statements (mandatory), where as water yield receives less attention with one ‘should’ statement (not mandatory, but expected).

#### 7.2.1 Water Quality

The Code provides a basic approach and clear guidelines for the protection of water quality in streams and other water bodies. Sources of potential contamination considered are sediments, pesticides, fertilisers, lubricants and fuels. Streams are classified and each class is given varying degrees of protection depending on their likely impacts on water quality. Protection is provided by streamside reserves (buffers) and machinery exclusion zones that restrict forest operations next to streams and act as a buffer to filter and transform contaminants entering from up-slope. Protection is also provided up-slope (i.e. in the plantation area) in the form of provisions for roads, drains, and the use of fuels, lubricants, fertilisers and pesticides. These provisions vary according to the level of risk related to slope, soil erodibility, and rainfall patterns.

Guidelines for protecting water quality are rigorous. For example, when commercial forestry is in a water supply catchment ‘. . . clearfelling will not be permitted within 50 m of a bank of a Class 1, 2, or 3 watercourse and harvesting will not be permitted within 10 m of a Class 4 water course for a distance of 2 km upstream from a town water supply intake, unless approved by the local government authority . . .’. Above 2 km and in non-water-supply catchments, this zone is available for wood production, with restricted machine access.

It is recognised in the Code that plantation operations can potentially affect water quality in the following sets of circumstances:

- (i) clearing of existing native vegetation for the establishment of a plantation,
- (ii) harvesting of plantations where land has been previously planted up to the stream bank, i.e. planting occurred before the introduction of the Code in 1987,
- (iii) establishment of subsequent rotations, or new plantations in areas of previously cleared streamside reserves,
- (iv) establishment in the first and subsequent rotations of plantations in areas up-slope of streamside reserves or machinery exclusion zones, and
- (v) construction and maintenance of roads.

Somewhat different types of guidelines apply in each case for water quality protection.

Regarding the guidelines for (i), which involves clearing of native forest, it must be recognised that clearing of native forests for plantation is a rapidly decreasing practice. Nevertheless the provisions in the Code include:

- Soil disturbance near the watercourse must be avoided in a buffer (streamside reserve) of varying width adjacent to the stream by avoiding clearfelling.
- Selective logging of up to 30% of the canopy in areas beyond 10 metres from the streambank of the streamside reserves of Class 1 and 2 streams, and all of the reserve of Class 3 streams is permitted under dry conditions, if individual trees are marked by an FPO. Logging machines may not enter the reserve. Logging within a streamside reserve should not increase the risk of substantial windthrow.
- Complete tree removal without machine traffic within 10 metres of the streambank is permitted adjacent to temporary (Class 4) streams, but this provision has been modified by new guidelines based on erosion risk.
- In all cases of logging within streamside reserves, trees must be directionally felled out of the reserve, and tree heads and logging debris (slash) should be removed in cases of accidental incursion. Such logging is to occur only in dry conditions.
- Minimum reserve widths are specified for each stream class. The width increases with the size and importance of the stream and with erosion risk. Reserves wider than the minimum may be specified in particular conditions. The dimensions and locations of streamside reserves are specified by the FPO in the FPP, and they should be marked in the field.

Guidelines for (ii) where plantations were established before 1987 include:

- On high to very highly erodible soils, additional measures (as appropriate) are required to be included in FPPs to protect riparian areas.
- On other sites, harvesting is allowed under dry season conditions with restrictions on machinery type and access to the stream bank.

Guidelines for (iii) where plantations are being established on cleared land include:

- A ban on cultivation of all soil erodibility classes if slope exceeds 26°.
- Re-establishment of native vegetation adjacent to major streams.
- In other low risk situations, commercial species may be replanted and logged as specified under (ii) above.
- Minimum site preparation within non-forested buffers is permitted under dry conditions, on low slope and low erodibility sites and without disturbing stream banks.

Guidelines for (iv), where plantations are being established up-slope of streamside reserves and machinery exclusion zones, include:

- Ceasing operations during wet-weather,
- Judicious use of chemicals, fertilizers, fuels, and lubricants, and disposal of rubbish,
- Minimum site disturbance (avoid burning and retain slash),
- Browsing mammal control,
- Stream crossings, and
- Roads and drainage.

During our field visits we observed situations (ii) to (iv) where the conditions described above were documented provided in FPPs and implemented in the field.

The forest owner has a responsibility to protect water resources to at least a level compatible with the ambient water quality criteria stipulated by DPIPWE. Ground application of chemicals must be kept outside streamside reserves, except for spot applications, and spray drift into these areas must be avoided. Aerial fertiliser application must be planned and executed to minimise the risk of contaminating water bodies. The provisions of the DPIPWE Code of Practice for Aerial Spraying apply to aerial applications of agricultural chemicals. Some water quality monitoring is done voluntarily by plantation owners, particularly in relation to chemical applications.

### **7.2.2 Water Quantity**

The Code indicates that logging operations should be restricted to less than 5% of the total area of major water supply catchments in any year, and a precise location of town water supply intake points is provided as an appendix to the Code.

Although there is public controversy about the affect of plantations on water yield, there appears to be inadequate information available to well-manage this value at the land-use management level, e.g. individual plantation or farm. As a result, there is an inadequate basis of knowledge, databases and processes to enable regional water yield planning in Tasmania. Hence, the 5% area limit for forest harvest suggested in the Code as desirable cannot currently be implemented. This is one of the regional environmental issues that FPA is awaiting guidance on from the state government (Section 5.3).

## **7.3 Comments on Existing Processes**

There have been a small number of cases where poor compliance with the Code has led to concerns about water quality. The most notable case related to the detection of simazine in a

major river. Simazine is a herbicide used in both plantation forestry and agriculture. The chemical concentration in this case was below health standards. Occasionally, coincident with heavy rainfall, large sediment concentrations and loads are delivered to streams (BMT 2010). Such rainfall events are likely to trigger erosion from a range of land uses, but it has been difficult to identify sediment sources because data and modelling in Tasmania have not been robust enough to adequately integrate the salient factors of landscape, climate, land use, and river bank and bed sediments. A claim of potentially serious contamination by plant-based chemicals was raised publically as a concern in 2010, but a panel of experts concluded that the concern had a weak scientific basis (Cooperative Research Centre for Forestry 2010, Koehnken et al. 2010).

## 7.4 Scope for Improvement

We did not identify any potential improvements in the water quality provisions of the Code. Impacts of plantation forestry on water yield are considered by some to be a significant environmental issue in Tasmania, but scientific evidence to support this view is limited. Most plantation areas are outside critical catchments, or the planted area within major catchments is small relative to other land uses. As research provides new knowledge and tools to enable catchment-scale water yield management, the state government and FPA should consider options in conjunction with water use by other land uses.

## 7.5 Conclusion

The Code and other aspects of the forest practices system provide a comprehensive approach to protecting water quality in Tasmania. These measures take into account the current scientific information on landscape and soil properties, their degree of vulnerability to damage and the knowledge of the way buffer strips and other vegetation retention techniques can be used to avoid or minimise impacts. Our field visits confirmed that Forest Practices Plans and the knowledge of the contractors who carry out operations are effective in protecting water quality. Thus we conclude that the guidelines for the direct protection of water quality are adequate.

# 8. CRITERION 4: PROTECTION OF SOIL RESOURCES

## 8.1 Relevant National Principles and Questions

National Principles: 1.6 and 1.7, except cultural heritage values are considered in Criterion 5.

- 1.6 Soil stability should be protected by measures, which regulate site disturbance.
- 1.7 Soil, water catchment, cultural and landscape values should be protected by the careful location, construction, and maintenance of roads and tracks, and regulation of their use

- a) Are there measures and processes in place to assess the risks to soil resources? How are differences in soil type, topography and climatic conditions taken into account?

- b) Do the codes of practice provide guidelines for roading, harvesting and site preparation that minimise soil loss or adverse change to soil properties?

## 8.2 Existing Processes

The current practices are greatly assisted by considerable background information on geomorphology and soils in Tasmania. Several of the major plantation owners have geographic-information-system-based soils information systems, and in the case of plantations on ex-farmland, soil maps are available of most farming districts.

The Code provides detailed guidelines and procedures for protecting soil values during forestry operations. These are described in various sections dealing with forest operations. For specific information on aspects that are of high risk (e.g. soils with high erodibility, on steep slopes, or prone to water-logging) relevant appendices provide explicit information and guidance.

Additional detailed information is provided by the FPA through a set of well researched and well presented documents. These include:

- A Forest Soils Conservation Manual (Brown and Laffan 1993) and a Geomorphology Manual (Kiernan 1990) produced by the Forest Practices Unit,
- A detailed description of Tasmanian forest soils (Grant et al. 1995), much of which is duplicated as fact sheets on the FPA website,
- A report on the effects of harvesting impacts on soil physical properties (Williamson 1991), and
- Several more recent and updated guidelines incorporate current research outcomes: New Guidelines for the Protection of Class 4 Streams (FPA 2004), Guidelines for Road Batter Construction (McIntosh 2010), and Generic Guidelines for Drainage Depression (McIntosh 2008).

The FPA also has staff with expertise on landscape-soil-hydrology systems who can provide advice to planners and supervisors of forestry operations.

To provide a basis for applying soil protection measures, soils are initially classified and then grouped into erodibility classes. The erodibility classes form an important basis for the choice of operational procedures and technology from site preparation to harvest system types, and decisions on the location of landings and snig tracks. Selection of a logging system must also take into account slope and season (e.g. wet weather conditions). Cable systems are required in steep areas. Machinery types are also restricted according to ground bearing pressure. Proposed soil protection measures must be specified in the FPP. Other important guidelines to be followed in the management of snig tracks and roads include:

- Location and construction of snig tracks, and road location and design standards required to minimise threat to soil and water values from slumping, erosion and runoff.
- Culvert and cross bank spacing related to slope and soil erodibility class. These are provided in clear tables with easy to follow illustrations.
- Sediment traps and the appropriate diversion of table drains are required to limit the impact of road drainage on stream water quality.

- Snig tracks must be drained after completion of logging, or where tracks will not to be used for more than a week.
- Specifications to avoid rutting, and in the event of rutting occurring, how to restore tracks by filling in and draining.
- Harvesting and log transport operations are to be restricted in wet weather. Limits to wheel and tyre ruts and flow of turbid water or mud and other guidelines are specified in the Code. These assist operators, supervisors and FPO's to judge the point at which operations should be suspended. Our interaction with a contractor-operator in the field indicated a good understanding of these principles and a commitment to comply with regulations.
- Guidelines on the size, location and use of log landings, and the requirement for non-permanent landings to be drained, rehabilitated and revegetated after completion of logging.

Site preparation prescriptions are based on slope and soil erodibility. Windrowing, ripping and other forms of cultivation are restricted above critical slopes, and contour working is required at intermediate slopes. More extensive guidelines are provided by the major growers, and they have developed detailed prescriptions appropriate to their objectives. A range of other guidelines covering cultivation in relation to soil moisture regime, diversion of run-off water, heaping of slash, cultivation in streamside reserves, crossing of ephemeral streams, and soil disturbance in drainage lines are given in the Code and through other documents produced by the FPA.

### **8.3 Comments on Existing Processes**

Existing processes are adequate for meeting this criterion.

### **8.4 Scope for Improvement**

We have no specific improvement to suggest on the Code or its implementation processes regarding the protection of soil resources.

### **8.5 Conclusion**

Plantation forestry in Tasmania achieves soil protection by having well-defined goals and guidelines in the Code and associated Soil Manuals, and internal geographic-information-system-based soil information systems developed by major growers. This information is regularly updated with ongoing research outcomes. The Code specifically addresses protection measures in relation to soil types, topography and management risks. Specific guidelines are provided to operators to ensure effective planning and implementation of roading, harvesting and site preparation operations. These guidelines recognise the importance of managing soil and water values interactively so that the investment in protecting one enhances the value of the other. These guidelines are robust and practical, and are well-illustrated in the Code and cross-referenced to important information manuals. The FPA conducts proper evaluation of compliance with the Code across the total estate. We conclude that, the overall system in place is effective in ensuring that the application of the Code protects soil resources.



## 9. CRITERION 5: PROTECTION OF CULTURAL HERITAGE VALUES

### 9.1 Relevant National Principles and Questions

National Principles: NP 1.7 and 1.8, cultural heritage aspects only.

- 1.7 Soil, water catchment, cultural and landscape values should be protected by the careful location, construction, and maintenance of roads and tracks, and regulation of their use
- 1.8 Values such as intensive recreation, high scenic quality, significant geomorphic, biological, or cultural heritage sites, should be recognised in the planning of plantation forest operations.

- a) In the planning of plantation layout, establishment and maintenance operations, are there measures and processes for managing cultural heritage values?

### 9.2 Existing Processes

The Code stipulates that plantation managers and regulators have cultural heritage obligations (Aboriginal and non-Aboriginal) under the relevant acts. Plantation managers and the FPA verify maps of areas planned for plantation activities for known cultural heritage values. One or more cultural heritage specialists are employed by the FPA to assist in the protection of this value via on-site assessments and the development of FPPS. Locations of significance are marked on appropriate maps and their management is described in FPPs. If new sites are reported to the FPA, they are recorded for future use.

The *Aboriginal Relics Act 1975* provides for the identification and protection of all Aboriginal relics, and the *Historic Cultural Heritage Act 1995* provides for the identification, assessment, protection and conservation of historic cultural heritage. The Acts also provide for the assessment and the development of management plans for cultural heritage values. In the event of any cultural heritage features being located in the course of operations, an FPO must be notified and the site assessed and recorded prior to further disturbance.

### 9.3 Comments on Existing Processes

Examples of FPPs shown to us had clearly identified cultural heritage, and appropriate management schedules. The Research and Advisory Annual Report 2009–10 (Forest Practices Authority 2010e) goes into much detail on cultural heritage issues. The report contains useful reporting, assessment, notification and advice on cultural heritage.

The FPA has established guidance on roles and responsibilities regarding cultural heritage programs.

It is important that information gathered during the discovery of an aspect of cultural heritage, particularly location information, continues to be recorded and used in future FPPs.

The FPA pointed out that delays are occurring in conducting cultural heritage surveys for plantations, because of the lack of availability of Aboriginal Heritage Officers, and that this issue is affecting several land uses including plantation forestry.

We were told that visual landscape values are becoming more difficult to deal with and in some cases they have caused plantation activities to be stopped, delayed or changed. This comment probably reflects rigour in the system for protecting these values, but the complexity of dealing with this issue may be deterring some plantation developments.

## **9.4 Scope for Improvement**

A clear mechanism for reporting new occurrences of cultural heritage values is needed. There is also a need to increase the availability of people qualified to conduct cultural heritage surveys.

## **9.5 Conclusion**

The FPA has significant skills in conservation and protection of cultural heritage values, but there is a need to increase the availability of people qualified to conduct cultural heritage surveys. We conclude that procedures established in the preparation of FPPs and their implementation, and in State legislation, provide an adequate basis to manage the threatening processes that may affect cultural and heritage values in plantation forest landscapes. Furthermore, auditing for compliance is adequate to identify breaches of the Code that could threaten these values.

# **10. CRITERION 6: PROTECTION FROM FIRE, PESTS AND DISEASES**

## **10.1 Relevant National Principles and Questions**

National Principle: 1.9

1.9	Plantations and adjacent native forests should be protected from the adverse effects of fire and from the introduction and spread of plant, insect and animal pests and plant diseases.
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- a) Do the codes of practice provide for fire management plans for plantations including containment from adjacent native forest?
- b) Do the codes of practice provide guidelines to deal with outbreaks of pest and diseases?

## **10.2 Existing Processes**

### **10.2.1 Fire**

The Code stipulates that to protect the forest from fire, a fire management plan should be prepared by the land owners for all consolidated areas of commercial forestry larger than 50

hectares. The details for preparation and content of the plan are prescribed in the Code. These details are reviewed at the time of preparation of an FPP, which is expected to explicitly state whether a fire management plan exists or not. If no fire plan exists then the measures proposed for the protection of the plantation must be stated in the FPP. As part of the Tasmanian forest practices system, the FPA (including FPOs) are available to assist in the preparation of such plans. The Code provides guidelines for the location and management of fire breaks, fuel reduction and slash burning, and other aspects of fire protection.

Landholders have a responsibility under the *Fire Service Act 1979* to take all reasonable measures to prevent the movement of fire onto or off their property. The same Act also empowers officers of the Tasmania Fire Service to direct or implement fire protection measures on private land (such as the construction of fire breaks) where necessary. Fire Hazard Abatement Officers of local government also have powers to direct landowners to undertake hazard abatement under the *Local Government Act 1993*. Larger plantation owners employ fire protection measures such as fire breaks and maintain suppression capabilities to protect their assets. When fuel reduction burning is done in dry eucalypts forests it should be done according to the appropriate guidelines that are available from the FPA.

### **10.2.2 Pests, Diseases and Weeds**

The Code contains principles and guidelines covering insect pests, plant diseases and weeds. Further extensive guidelines are contained in the Plantations Handbook (Neilsen 1990) and in a pest and diseases management plan.

Large plantation organisations, e.g. Forestry Tasmania, have ongoing surveillance programs aimed at the early detection of incursions.

The poison 1080, which was commonly used for protecting tree seedlings and some agricultural plants from browsing native mammals, can only be used by licensed officers of the DPIPWE. Forestry Tasmania no longer uses 1080, and other plantation forest growers have decreased their reliance on 1080 during the past decade.

Where applicable, control measures for pests, diseases and weeds will be specified in FPPs.

All landholders have a responsibility to control pest animals and noxious weeds on their property. Where there is a known risk of introducing pests and pathogens, the risk must be minimised through appropriate treatment of equipment when moving from known infected areas. It is the responsibility of the land owner to control and eradicate all declared noxious weeds, and to prevent the spread of, and as far as possible eradicate, established pest animals. The movement of machines from areas with declared weeds should only occur after washing, which should be done well clear of water courses.

Smoke management in forestry is regulated by the FPA, but this is relevant to plantations only if native vegetation or plantation harvest residues are burnt. Most smoke issues arise from burning for native forest regeneration. Smoke management guidelines are available from the FPA, but clarification is currently being sought from the state government in regard to regional planning for this value.

### **10.3 Comments on Existing Processes**

The existing processes are generally adequate for the protection of these values. However, the capacity of the small-scale growers to adequately monitor pests and diseases is rather limited. At a regional level, therefore, major growers are relied upon to meet this criterion.

It should be recognised that fires, weeds and pests cannot be completely controlled or eliminated from plantations under some overwhelming circumstances, and under circumstances of inadequate control or eradication measures on adjacent land.

### **10.4 Scope for Improvement**

The goal of preventing or eliminating fires, weeds, diseases and other pests from plantations must be maintained, but we also recognise that the plantation resource can overall be maintained even if some of these agents are present. While efforts within the plantation area generally occur on an on-going basis, much emphasis is also needed at a regional level, e.g. fire and pest control activities, and at a national level, e.g. biosecurity measures. Current efforts internal and external to the plantation area must continue or increase in effectiveness.

### **10.5 Conclusion**

Fire management is adequately covered in the Code and associated documents. Large plantation owners maintain a fire suppression capability to protect assets. Pest, disease and weed management are essentially a commercial imperative for plantation forestry regardless of the size. Never-the-less, the Code provides basic guidelines for the monitoring of forest health and remedial action where required. Existing Code content and implementation processes are generally adequate for protection against fire, weeds, and other pests, but control efforts internal and external to the plantation area must continue or increase if the plantation resource is to remain adequately protected.

## **11. CRITERION 7: TRAINING FOR ENVIRONMENTAL CARE**

### **11.1 Relevant National Principles and Questions**

National Principle: 1.10

1.10 Operators will be trained in the principles of environmental care.
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a) Are the processes adequate to meet this criterion?

### **11.2 Existing Processes**

The Code does not explicitly deal with training for environmental care. The Code is informative, sufficiently comprehensive and illustrated to be used as a resource for training. It serves as a field guide to the principles of environmental care as well as containing the specific guidelines to regulate operations.

The forest practices system has training and accreditation procedures that ensure an adequate knowledge and skill level of the FPOs, whose roles are fundamental for achieving environmental outcomes. Applicants who seek to be an FPO are expected to have, as a minimum, a degree or technical qualification in forestry or in a related field (e.g. agriculture or natural resource management) or a minimum of five years of practical experience in forestry. There are some 180 certified FPOs in Tasmania, attesting to the high level of participation in the implementation of the Code. The FPA runs regular sessions in the office and field to update FPOs about new technical information.

Most, if not all, forestry operations (and hence implementation of FPPs) are now out sourced to contractors and their field supervisors play a critical part in ensuring that operators are aware of the provisions of the Code. Field visits by FPOs are an important aspect of the system, with consequent direct discussion of issues with operators on the job. When site-specific questions arise for which the Code might not provide clear guidelines, operators have clear instructions to temporarily suspend the operations, and they have ready access to experts in the company or the FPA for on-site examination and advice.

Tasmanian forestry operators (including contractors) are required to obtain a certificate of competency under the Tasmanian Forest Industry Training Board. The forestry industry organises forestry operator courses (e.g. tree falling, and skidder operation) and these include a theory unit covering the Code.

Commercial operators of chemical spraying equipment are required to obtain a permit from the Registrar of Pesticides. Aerial operators are required to hold an Aerial Agricultural Association of Australia Spraysafe certificate.

Forestry Tasmania requires that their operators complete a one day Chemical Handlers Certificate. Supervisors of chemical application operations are required to complete a three-day Spray Supervisors Workshop. Chemical application operations by Forestry Tasmania are covered by a Pesticide Application Manual (1994). The larger private plantation managers have either adopted this manual or have developed their own. A separate Code of Practice for Forest Use of Chemicals is being prepared in accordance with the *Agricultural and Veterinary Chemicals Control and Use Act 1995*.

### **11.3 Comments on existing processes**

Environmental management is complex, including understanding and implementing the Code. Managers and supervisors are trained to some extent in these aspects, but Code effectiveness is likely to be further enhanced if all practitioners have at least a basic understanding of environmental management.

Well trained operators are central, because they implement the Code operationally and thereby have a large influence on outcomes. We found wide recognition of the importance of training at all levels for achieving desirable environmental outcomes.

Large companies have internal requirements (including certification) that ensure enough expertise is available. Apart from managers and supervisors, at least one large plantation company is developing plans to include contractors in basic training in environmental care.

However, local governments and small growers in many cases have inadequate expertise or resources.

## 11.4 Scope for Improvement

Although there are several avenues, formal and informal, through which forestry contractors and their operators can receive training, we suggest that there is a need to develop a more formalised and systematic training program for contractors and operators. To achieve a uniform high standard of environmental training it is desirable that such training program be delivered by state or national training organisations, rather than by individual companies. Further follow up training, refresher courses and incentives may be best done within companies.

The structure and content of a course should be centred around the Code and include aspects such as:

- simple scientific basis, technology, and guidelines for achieving sustainable management,
- environmental care including the management of soil, water, noise and dust, and the protocols for disposing of wastes, and
- operational safety in respect of terrain and machines.

We noted a high degree of support for and ownership of the Code by forest growers. Collectively, these factors result in a high awareness of the provisions of the Code and its importance in achieving environmental protection.

## 11.5 Conclusion

There is a variety of mechanisms, information dissemination techniques, and ‘hands on’ involvement of specialists (through the Forest Practices Authority) and FPOs to continually update environmental care awareness within the forestry industry in Tasmania. Training needs should be more specifically addressed in the Code. Further improvements in developing a formal, holistic training and refresher courses for contractors and operators and fostering participation in such courses would improve outcomes.

## 12. OTHER NATIONAL PRINCIPLES

There are a further 23 National Principles (NPs), but many of these overlap extensively with those of Environmental Care dealt with above. In this section, each of these additional NPs is listed and a ‘*Comment*’ added.

### 12.1 NP2. SAFETY

2.1 All plantation establishment, management and utilisation activities will be conducted to comply with relevant occupational health and safety legislation and policy. In particular, all operators should be trained to designated standards in the safe and efficient use of equipment and machinery, and be responsible for safe working practices.

*Comment:*

*This NP restates a need that already exists under federal and state worker safety legislation. Large plantation companies seem to go beyond the minimum requirements, but we have not examined to what extent small growers and agro-forestry operators provide safe working conditions.*

## **12.2 NP3. PLANNING**

3.1 State and Local Governments should, with appropriate public involvement, pursue planning policies that provide secure zoning for commercial planting with the objective that tree planting and subsequent harvesting for commercial wood production should be an “as of right” use.

3.2 State Governments will establish a sound legal basis for separating the forest asset component from the land asset for tree plantings. The Commonwealth Government will consider similar action re taxation, capital valuation etc.

3.3 Plantation strategic planning should be developed in conjunction with regional development plans.

3.4 The environmental, social and economic effects of all plantation operations envisaged for an area will be considered during the planning process.

3.5 Individual plantation operations will be conducted in accordance with relevant codes of practice.

*Comment:*

*NP 3.2 The Forest Rights Registration Act 1990 ensures that the separation of land and tree ownership is possible (Plantations2020 2007).*

*NP 3.4 We were not told of any mechanisms by which the FPA considers economic aspects of plantations, but its operations are broadly consistent with industry and government plantation development strategies. Regarding social aspects, the ‘Good Neighbour Charter for Commercial Forestry in Tasmania’ (<http://www.forestrytas.com.au/forest-management/policies/good-neighbour-charter>) is supported by the FPA.*

*Other NPs here have been addressed earlier in this report, especially under criterion 1.*

## **12.3 NP4. ACCESS**

4.1 Planning of road systems in plantations will be based on both the economic principle of minimising the combined cost of roading and extraction and on the Principles of Environmental Care.

4.2 Road design will be to standards consistent with the purpose for which the road is to be used, and capable of carrying the anticipated traffic with reasonable safety.

4.3 Construction and maintenance of roads and associated works will be undertaken in a manner, which will ensure compliance with the Principles of Environmental Care.

4.4 Roads will be closed in wet conditions when unacceptable damage would occur or when such other conditions may warrant.

*Comment: Without reporting on roads as a separate criterion, these NPs have been implicitly addressed earlier in this report. Roads are recognized in the Code as a major potential source*

*of environmental concern, and they are dealt with in a major part of the plantation section of the Code.*

## **12.4 NP5. ESTABLISHMENT AND MAINTENANCE**

5.1 Plantation establishment methods should be economically and environmentally appropriate for the particular requirements of the species to be planted and the specific site conditions.

5.2 Establishment of plantations may involve introduction of selected species, provenances or populations to increase productivity or value. However management of these plantations should aim to constrain or prevent the introduction of these species into surrounding areas.

5.3 Intensive management practices, such as site preparation, fertilising, weed control, pest and disease control and other operations will be carried out in accordance with codes of practice, and consistent with the Principles of Environmental Care.

*Comment:*

*NP 5.2 The FPA has a guidelines for managing gene flow between plantation and related native forest species (FPA 2010d).*

*The other principles on establishment on maintenance have been addressed earlier in this report, especially under criteria 3 and 4.*

## **12.5 NP6. TIMBER HARVESTING**

6.1 Timber harvesting will be planned and carried out under codes of practice to meet the Principles of Environmental Care.

6.2 The harvesting plan will consider factors such as harvesting unit size, slope and location of harvesting units: design and location of landings and snig tracks; harvesting equipment; areas excluded from logging; and areas specified for protection and reforestation.

6.3 Harvesting operations should not be conducted in a manner which compromises the Principles of Environmental Care, or where the safety of workers is at unacceptable risk.

6.4 Soil and water values should be protected by progressive rehabilitation and drainage of snig tracks, temporary roads, log dumps and any other earthworks associated with harvesting operations.

*Comment: These principles on timber harvesting have been addressed earlier in this report, especially under criteria 3 and 4.*

## **12.6 NP7. FOREST PROTECTION**

7.1 Fire protection planning should be undertaken on a regional basis in co-ordination with relevant land management agencies and with local bush fire control organisations.

7.2 Plantation health surveillance should be undertaken on a regular basis.

7.3 Where weeds, pests or diseases cause significant damage, decline, or deaths of trees, prompt specialist advice should be sought to address the problem.



7.4 Use of chemicals, such as herbicides and pesticides, and other pest control methods in plantation operations will be in accordance with State policies, procedures and approved usage.

*Comment: The principles on forest protection have been addressed earlier in this report, especially under criterion 6.*

## **12.7 NP8. MONITORING AND REVIEW**

8.1 Where practicable, plantation operations should be supervised and monitored by qualified persons and be subject to audit.

8.2 The National Principles should be reviewed and evaluated after three years.

*Comment: Monitoring and auditing systems are well developed in Tasmania. An evaluation of the National Principles will be conducted after all State and Territory Codes have been assessed.*

## **13. ACKNOWLEDGEMENTS**

Visit coordination and other assistance by Graham Wilkinson and Mick Schofield of the FPA were much appreciated. The participation and helpfulness of these and participants from other organisations (Appendix E) was also much appreciated.

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## **APPENDIX A – NATIONAL PRINCIPLES**

### **FOREST PRACTICES RELATED TO WOOD PRODUCTION IN PLANTATIONS: NATIONAL PRINCIPLES**

#### **PREAMBLE**

Wood production is an accepted major commercial use of Australia's forests and is the primary purpose for establishing and managing plantations. In addition, plantations can provide a range of commercial, environmental and aesthetic benefits to the community. In pursuing a vision of ecologically sustainable management of Australia's forests, Australian Governments, through the National Forest Policy Statement, have enunciated a national goal for plantations:

“to expand Australia's commercial plantations of softwoods and hardwoods so as to provide an additional, economically viable, reliable and high quality wood resource to industry”.

In this context, the establishment of plantations for wood production should be determined on the basis of economic viability and international competitiveness, and market forces should determine the extent of resource use and the nature of industry operations. In essence, plantations established for wood production should be treated in the same way as any agricultural productions.

To achieve greater investment in plantations, it will be necessary to ensure that the impediments to plantation development are minimal, that clear and consistent policies for resource development are established across all levels of government and that there is security of access to established resources. Provided that social and environmental objectives are met, Governments will keep regulations to a minimum. For example, the Commonwealth will remove controls over the export of unprocessed public and private plantation wood subject to the application of codes of practice to protect environmental values. Furthermore, it is not intended that controls be imposed on the plantation industry that would not apply to other agricultural activities.

In accordance with the National Forest Policy Statement, the Ministerial Council on Forestry, Fisheries and Aquaculture, representing the States and the Commonwealth's forestry authorities, has prepared this statement of national principles to be applied in the management of plantations.

These principles et the framework for a consistent and scientific basis for sound plantation management to which all States and Territories subscribe. Codes of practice for plantations, conforming to the national principles, will be developed by the States and Territories taking into account the range of plantation types, conditions and situations applying due to natural and cultural variations. Several States and Territories already have such codes in place.

The principles have been structured into several sections relating to different activities associated with plantation production: The principles apply to both public and private plantations.

## **1. PRINCIPLES OF ENVIRONMENTAL CARE**

1.1 Native forest should not be cleared for plantation establishment where this would compromise regional conservation and catchment management objectives. In some circumstances it may be appropriate to clear forests that have been severely degraded by impacts such as disease, weed invasion, wind and fire so as to enable rehabilitation through replanting.

1.2 Values such as intensive recreation, high scenic quality, significant geomorphic, biological, or cultural heritage sites, should be recognised in the planning of plantation forest operations.

1.3 Plantation management should comply with State and regional conservation and catchment management objectives, relevant planning schemes and legislation.

1.4 Water quality (physical, chemical, or biological) should be protected by measures controlling change resulting from plantation activities

1.5 Water yield should be managed as required by careful planning of operations.

1.6 Soil stability should be protected by measures, which regulate site disturbance.

1.7 Soil, water catchment, cultural and landscape values should be protected by the careful location, construction, and maintenance of roads and tracks, and regulation of their use.

1.8 Fauna, floristic, and landscape values should be protected by the careful planning of plantation layout establishment operations and the reservation and protection of appropriate areas of native vegetation; such values should be recognised in subsequent plantation management.

1.9 Plantations and adjacent native forests should be protected from the adverse effects of fire and from the introduction and spread of plant, insect and animal pests and plant diseases.

1.10 Operators will be trained in the principles of environmental care.

## **2. SAFETY**

2.1 All plantation establishment, management and utilisation activities will be conducted to comply with relevant occupational health and safety legislation and policy. In particular, all operators should be trained to designated standards in the safe and efficient use of equipment and machinery, and be responsible for safe working practices.

## **3. PLANNING**

3.1 State and Local Governments should, with appropriate public involvement, pursue planning policies that provide secure zoning for commercial planting with the objective that tree planting and subsequent harvesting for commercial wood production should be an “as of

right” use.

3.2 State Governments will establish a sound legal basis for separating the forest asset component from the land asset for tree plantings. The Commonwealth Government will consider similar action re taxation, capital valuation etc.

3.3 Plantation strategic planning should be developed in conjunction with regional development plans.

3.4 The environmental, social and economic effects of all plantation operations envisaged for an area will be considered during the planning process.

3.5 Individual plantation operations will be conducted in accordance with relevant codes of practice.

#### **4. ACCESS**

4.1 Planning of road systems in plantations will be based on both the economic principle of minimising the combined cost of roading and extraction and on the Principles of Environmental Care.

4.2 Road design will be to standards consistent with the purpose for which the road is to be used, and capable of carrying the anticipated traffic with reasonable safety.

4.3 Construction and maintenance of roads and associated works will be undertaken in a manner, which will ensure compliance with the Principles of Environmental Care.

4.4 Roads will be closed in wet conditions when unacceptable damage would occur or when such other conditions may warrant.

#### **5. ESTABLISHMENT AND MAINTENANCE**

5.1 Plantation establishment methods should be economically and environmentally appropriate for the particular requirements of the species to be planted and the specific site conditions.

5.2 Establishment of plantations may involve introduction of selected species, provenances or populations to increase productivity or value. However management of these plantations should aim to constrain or prevent the introduction of these species into surrounding areas.

5.3 Intensive management practices, such as site preparation, fertilising, weed control, pest and disease control and other operations will be carried out in accordance with codes of practice, and consistent with the Principles of Environmental Care.

#### **6. TIMBER HARVESTING**

6.1 Timber harvesting will be planned and carried out under codes of practice to meet the Principles of Environmental Care.

6.2 The harvesting plan will consider factors such as harvesting unit size, slope and location of harvesting units; design and location of landings and snig tracks; harvesting equipment; areas excluded from logging; and areas specified for protection and reforestation.

6.3 Harvesting operations should not be conducted in a manner which compromises the Principles of Environmental Care, or where the safety of workers is at unacceptable risk.

6.4 Soil and water values should be protected by progressive rehabilitation and drainage of snig tracks, temporary roads, log dumps and any other earthworks associated with harvesting operations.

## **7. FOREST PROTECTION**

7.1 Fire protection planning should be undertaken on a regional basis in co-ordination with relevant land management agencies and with local bush fire control organisations.

7.2 Plantation health surveillance should be undertaken on a regular basis.

7.3 Where weeds, pests or diseases cause significant damage, decline, or deaths of trees, prompt specialist advice should be sought to address the problem.

7.4 Use of chemicals, such as herbicides and pesticides, and other pest control methods in plantation operations will be in accordance With State policies, procedures and approved usage.

## **8. MONITORING AND REVIEW**

8.1 Where practicable, plantation operations should be supervised and monitored by qualified persons and be subject to audit.

8.2 The National Principles should be reviewed and evaluated after three years.

## **APPENDIX B – ACRONYMS**

DAFF	Department of Agriculture, Fisheries and Forestry
DPIPWE	Department of Primary Industry, Parks, Water and Environment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
FPA	Forest Practices Authority
FPO	Forest Practices Officer
FPP	Forest Practices Plan
NP	National Principle
PTR	Private Timber Reserve

## **APPENDIX C – TERMS OF REFERENCE FOR CSIRO**

In undertaking a review of Codes of Practice for the states and territories for assessment against “*Forest Practices Related to Wood Production in Plantations: National Principles*”, (National Principles), the CSIRO will:

1. By 30 June 2011, assess codes of practice for measures and processes for the protection of environmental values. This will include:
  - the scientific quality of the measures
  - their method of implementation
  - adequacy of procedures for auditing, monitoring and securing compliance.
2. Provide a statement on the measures and processes that are in place that address each National Principle.
3. Identify if new measures and processes or modifications are required to adequately address the any National Principle.
4. Prepare draft reports for comment by the Commonwealth and the relevant State/Territory following each assessment.
5. Prepare a final report for the Commonwealth and the relevant State/Territory following revision of the draft reports.
6. Provide assessment of areas to be considered for updating the National Principles following completion of all assessments.

## **APPENDIX D – ORGANISATIONS CONSULTED**

Environmental Protection Agency

Forest Practices Authority

Forestry Tasmania

Gunns Ltd.

Kingborough Council

Local Government Association of Tasmania

Norske Skog

Private Consultant Forest Practices Officer

Private Forests Tasmania



## APPENDIX E – MEETINGS AND FIELD VISITS

### Visit 9-10 December 2010

#### *Thurs 9<sup>th</sup> Dec*

9am CSIRO team meet at FPA office, 30 Patrick Street, Hobart. The meeting format will be guided by the previously agreed criteria and questions.

9:00 Graham Wilkinson introduction, welcome visitors and introduce FPA staff, Forestry Tasmania and industry representatives.

9:10 Mick Schofield Forest Practices System with a focus on plantation establishment, management and harvesting (Criteria 2).

9:30 Peter McIntosh management of soil and water (Criteria 3 and 4).

10:00 Sarah Munks biodiversity. Permanent native forest estate, conversion and biodiversity in plantations.

10:20 Forestry Tasmania overview of plantation estate and management (across range of areas including Criteria 1, 5, 6 and 7). [Peter Volker made separate contact at a later time.]

10:50 Gunns overview of plantation estate and management (as for Forestry Tasmania). Jim Wilson.

11:20 Independent private property Tony O'Malley (Consultant FPO). Managing independent private property, FPP planning and implementation. Include emerging opportunities e.g. carbon plantings / landscape restoration.

11:40 General discussions and questions

12:00 Lunch

12:30 Depart Hobart for field visit. Meet Gunns forester Jason Bolch eucalypt plantation site. 45 minutes travel from Hobart. Jason to explain FPP preparation, monitoring of operation, application of Code and Certificate of Compliance reporting.

4:30pm Back in Hobart

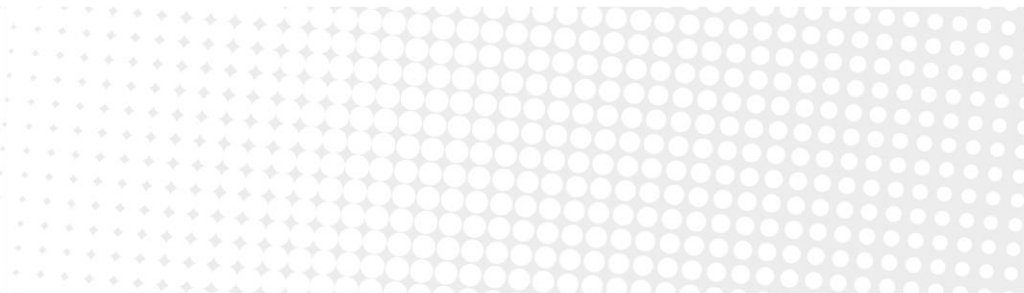
#### *Fri 10<sup>th</sup> Dec*

8am Depart Hobart for field visit Norske Skog

9:00 Meet Sandra Hetherington at the Norske Skog mill site. Visit harvesting operation, possibly two sites. Sandra to explain FPP preparation, monitoring of operation, application of Code and Chain of Custody reporting. Include any specific management for this FPP.

1pm Return to Hobart

3pm Depart for airport



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