



Assessment of Code of Practice for Plantation Forestry: Northern Territory

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Cover Photo: An African mahogany plantation in the Douglas-Daly region, Northern Territory.

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1. SUMMARY

The Northern Territory Codes of Practice for Forestry Plantations (2004, referred to as the ‘Code’) and inter-related aspects of the plantation forest practices system, including its implementation, were assessed for their effectiveness in meeting the ‘Forest Practices Related to Wood Production in Plantations: National Principles’¹. Plantations for wood production in the Northern Territory are mainly on Melville Island (approximately 30,000 hectares) and in the Douglas-Daly area south of Darwin (10,000 hectares).

The Code consists of 26 goal statements that collectively cover the main requirements for sound plantation planning and management. The stated goals are broadly consistent with the National Principles. However, the Code does not provide guidance on how these goals effectively link to and trigger supporting legislation, or how they can be translated into plans and on-ground practices that will allow the goals to be achieved. The Code requires the development of plantation management plans, but it does not provide sufficient guidance as to the level of detail required, how plans will be assessed for their adequacy in protecting environmental values, and how on-going compliance and effectiveness will be reported. The Code indicates that each management plan will individually define procedures for monitoring compliance, and that a separate management committee (which includes the plantation project proponent) will review and oversight compliance – such a process has the potential to lead to inconsistency and perceived lack of independence.

Planning processes have not been adhered to fully, and environmental damage has occurred in some instances (e.g. soil erosion, and a weed problem resulting from plantation wildlings). However, we observed that current practices have been modified to manage these problems. Internal processes of plantation management companies currently appear adequate to address environmental issues, but more systematic auditing of outcomes on the ground is required. Continual investment in environmental management by these companies and the Northern Territory and local governments will be essential to better manage environmental risks.

It is essential that a more comprehensive Code and supporting mechanisms are developed along similar lines to those used elsewhere in Australia. A new Code should be given formal status either as a policy instrument covering all forest plantations within the Northern Territory, or by being a voluntary Code endorsed by industry and the Northern Territory Government.

If the implementation of the Code is validated via by a thorough auditing system, such information can be used in any future forest management certification programs that the grower may enter into, and thus avoid duplication. The Northern Territory Government and industry stakeholders acknowledged that the Code and overall system of plantation regulation is in its infancy, and we were encouraged that there was a willingness amongst these stakeholders to develop a complete Code and related system in the near future.

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

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*
- 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 (Northern Territory in 2002).

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 Northern Territory 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. Environmental 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. Territory-wide environmental plans for biodiversity, catchment management plans, company internal processes, and forest management certification.

3.2 Approach in the Northern Territory

We gathered information during a visit to the Northern Territory (Territory) in October 2011, during which we consulted with representatives of the Territory government and industry, and selected other stakeholders (Organisations Consulted, Appendix D). Key documents reviewed include:

- Northern Territory Codes of Practice for Forestry Plantations (Northern Territory Government 2004). A slightly revised version of the Code, currently under discussion in the Territory, was also examined.
- *Pastoral Land Act (1992)*
- Integrated natural resource management plan for the Northern Territory (Northern Territory Government 2005).
- *Planning Act (2009)*
- Draft Native Vegetation Management Bill (Northern Territory Government 2011)
- Report on plantation buffer zone incursions on the Tiwi Islands: Rehabilitation Work Plan – high priority areas (Andersen and Eager 2009).

- Example of annual reports prepared by the Tiwi Plantations Corporation to the Federal Department of Environment.
- Documents used to support plantation planning and operations on the Tiwi islands. These included maps of total and planted area, and information on native vegetation, soil, water, terrain, and heritage values.
- Draft discussion paper “Plantation forestry in the northern territory” prepared by DNRETAS, January 2011 (DNRETAS 2011).
- Examples of maps and plans prepared by plantation managers.

Field visits and discussions with managers and supervisors of the plantation companies provided opportunities to explore how the goals of the Code and related regulations were applied.

The current plantation estate in the Territory has an area of approximately 38,000 hectares (Gavran and Parsons 2011) comprising 28,500 hectares of *Acacia mangium* ‘Mangium’, 900 hectares of *Pinus caribaea* ‘Caribbean pine’, 800 hectares of *Casuarina intratropica*, and 10,000 hectares of *Khaya senegalensis* ‘African mahogany’. The distribution of these plantations is shown in Fig. 1.



Figure 1. Map showing the location of commercial plantations in the Northern Territory in 2010 (Gavran and Parsons 2011). Hardwood plantations are shaded green, which are *Acacia mangium* on Melville Island in the north, and *Khaya senegalensis* in the Douglas-Daly region c. 200 km south of Darwin. Softwoods (*Pinus caribaea*) are shown in red.

3.3 CSIRO Team

The CSIRO team consisted of Philip Smethurst (Project Leader), John Raison, Bradley Moggridge, and Sadanandan Nambiar, which covered all fields of expertise required and it specifically included sustainable plantation management, soils, nutrition, hydrology, biodiversity, conservation, and cultural heritage.

3.4 Discussions and Field Visits

The CSIRO team (except Sadanandan Nambiar) visited the Territory for four days, with the itinerary provided (Meetings and Field Visits, Appendix E). During this visit and follow-up contacts with key stakeholders (Appendix D) we gathered the required information.

4. INTRODUCTORY COMMENTS

The Territory presently lacks any instruments developed specifically for managing forests for wood production, as the *Forestry Act 1980* was repealed in 1992. Many existing laws and policies regulate environmental management, none of which specifically refer to plantation forestry operations. All are much more explicit than the Code (Northern Territory Codes of Practice for Forestry Plantations, Appendix F) about operating methods for protection of land, water and biodiversity values. The Code currently has no status under relevant environmental or planning laws. The following table (prepared by DNRETAS 2011) summarises existing legislation relevant to forestry, and their provisions for dealing with environmental and resource management issues raised by forestry, including plantations and native forests.

Legislation	Relevant Provisions	Limitations
(Proposed) <i>Native Vegetation Management Act</i>	Regional plans and conditions on clearing permits	Existing clearing permits under the <i>Planning Act</i> were issued without conditions requiring a review if land use changes from, say, pasture to forestry and there is no proposal for retrospectivity in the new legislation. Consequently large areas of permitted clearing could still be converted to forestry without management conditions.
<i>Bushfires Act</i>	Permits to burn	It is possible to comply with the Act in full and yet still adopt approaches that compromise regional biodiversity.
<i>Environmental Assessment Act</i>	Assessments of acceptability and recommendations to regulators	Processes are based on the core premise that a responsible agency is readily identifiable, and has unambiguous powers to specify and enforce conditions and standards. Makes no explicit provisions for offsets.
<i>Heritage Conservation Act</i>	Protection of heritage places	Heritage places and objects may be protected by full declaration or interim conservation orders. The Act does not require heritage assessment of sites subject

Legislation	Relevant Provisions	Limitations
	and objects	to change, although related issues may be raised during the environmental assessment process.
<i>Pastoral Land Act</i>	Use of pastoral lands for non-pastoral purposes	The Pastoral Lands Board considers land clearing under the same guidelines used on other tenures. But because there is great discretion within guidelines, interpretations may differ. Use of land for non-pastoral purposes may be approved by the Board, but there are presently no provisions for specifying management regimes for non-pastoral use. Proposed changes to the Act will remove provisions for vegetation clearing from the Act under the new native vegetation legislation.
<i>Planning Act</i>	Land clearing Forestry operations	Provides for issue of land clearing approvals by delegates in DNRETAS on non-pastoral lands. Provisions may not apply if clearing is required or controlled under other legislation (e.g. TPWCA for commercial sale of felled trees, PLA). Northern Territory Planning Scheme does not apply conditions for forestry operations, so penalty provisions apply only in respect of compliance with initial land clearing approvals. Land clearing controls as currently administered do not provide for management of issues like important individual trees or groups of trees. Guidelines are silent on such issues and in any event cannot require maintenance of conditions favouring their long-term retention.
<i>Soil Conservation and Land Utilisation Act</i>	Protection of soil condition	The Commissioner for Soil Conservation may make orders requiring adoption of specified methods of land use, and prohibiting removal of vegetation cover. The specific remedies to reduce risks mostly refer to management of stock. The Commissioner may declare areas of erosion hazard and prescribe measures for reducing hazard. In addition to these reactive measures, the Soil Conservation Advisory Council has a role to advise on matters relating to the future utilisation of land. It would, however, appear that options available for reducing risk are to make individual orders for particular issues/sites in anticipation of problems or to declare the entire area an erosion hazard and specify responses.
<i>Territory Parks and Wildlife</i>	Protection of flora and fauna	Deals with permits to take or kill animals or plants, but not directly with protection of habitats as a whole or of

Legislation	Relevant Provisions	Limitations
<i>Conservation Act</i>		<p>particular features of habitat. Commercial use of native plants is regulated but makes no provision to control methods of harvest to minimise impacts on habitats except through permit provisions.</p> <p>Penalties for breach of permits are inadequate in respect of corporate breaches. The cancellation of a permit and hence cessation of sale of native species is the only other available response.</p> <p>Provisions for management of exotic species cover only animals and then only as pests. There are no provisions for managing harvest of exotic plant species to protect other values, although it may be possible to declare exotic plants as wildlife to make them subject to management.</p>
	Protection of places	There are no provisions for enforcing particular conduct unless the area of operation is declared as a park or reserve or as essential habitat. Either option entrains a complex suite of obligations on the agency and the user of the site.
	Offsets	Makes no provision for identification, standards of equivalence, monitoring condition or enforcement of standards or conditions.
<i>Waste Management and Pollution Control Act</i>	Management of waste associated with forestry operations	<p>Provides for setting environmental protection objectives which specify principles and standards to be observed to maintain environmental quality, especially in relation to waste and other pollution. The definition of pollution as a contaminant or waste may limit application to, for example, sedimentation processes.</p> <p>Like the <i>Water Act</i>, is weakened by mining and petroleum/energy issues being dealt with outside its provisions.</p>
<i>Water Act</i>	Water use	Permits are required for landowners or other interests to extract water (surface or groundwaters) or modify waterways to trap water. Water control districts may be declared and water allocation plans made with the assistance of water advisory committee. The potentially powerful framework weakened by deferral of decision-making for some major users (mining and petroleum/energy industries) to other groups.
	Water quality	Allowing waste to come into contact with water

Legislation	Relevant Provisions	Limitations
		<p>causing environmental harm is an offence, unless authorised. Disposal of waste via bore also requires authorisation. Waste discharge licences may be granted.</p> <p>Water quality standards may be specified for particular areas or more generally.</p>
<i>Weed Management Act</i>	Management of invasive plants	Covers declared weeds. Weed management plans may be made covering particular species and specified areas. Plans may prescribe methods for controlling weeds and preventing their spread, including methods for inspection of vehicles. It is conceivable that a plantation species could be declared a potential weed to make special provisions for its containment to a plantation site.

A draft discussion paper (DNRETAS 2011) argues that existing legislation is ineffective for regulating forestry activities, and indicates a likely need for ‘new law to provide principles and process for integrated handling of issues associated with forestry and other developments that have the potential to trigger many different resource management laws’. Proposed are 13 principles to guide forest management practice in the Northern Territory, and the establishment of an inter-departmental ‘forestry management group’ to develop the format for required forestry management plans, as well as to administer the processes required to implement them.

Land tenure in the Territory is mostly either pastoral lease, Aboriginal freehold land under the *Aboriginal Land Rights Act (Northern Territory) 1976*, or vacant Crown land. There are smaller areas of leasehold land (for a variety of development purposes) and non-Aboriginal freehold (largely the residential and surrounding areas of Darwin). There are significant differences in the legislation that regulates the development and management activities across these tenures. Subject to the resolution of native title issues, there is ongoing conversion between different forms of leasehold, and from Crown land to freehold.

The predominant land use in the Territory is grazing, with little clearing of native forests and woodland. The proportion of land cleared has been estimated to be < 1% of the total Territory land area. Because of limited forestry activity, limited pressure for related land clearing, and the desire to treat plantation forestry as an agricultural activity, the Territory Government has not developed regulations specifically for plantation forestry.

Plantation forestry in the Territory has not yet led to a proven supply of commercially viable wood products, but some possibilities exist. The industry is largely confined to plantation developments on Melville Island, and in the Douglas-Daly region south of Darwin. The Commonwealth government initiated plantation forestry on Melville Island in 1960, and about 3,900 hectares of *Pinus caribaea* were planted during the subsequent 20 years. These activities were terminated in the mid-1980s and the ownership of the existing plantations reverted to the Tiwi community, controlled by the Tiwi Land Council. About 900 hectares of these plantations

are expected to be commercially harvested during the next year or two, with the remainder deemed to have no commercial value and likely to be cleared for re-establishment.

In the mid-1990s, a new forestry project was established as a joint venture between the Tiwi community and Sylvatech Pty. Ltd., in which Aboriginal land was leased to Sylvatech. The Commonwealth and Northern Territory governments approved the project, which was to establish up to 30,000 hectares of *Acacia mangium*. The plantation was established following clearing of native vegetation under environmental guidelines of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The venture was declared non-viable in 2009 and abandoned, with the plantations and management responsibility subsequently passing to the Tiwi community, who are currently managing the plantations with assistance from plantation management consultants.

During the past 10 years, about 10,000 hectares of *Khaya senegalensis* plantations have been established in the Douglas-Daly River region for the production of high value timber. These plantations are expected to have a rotation length of about 20 years and include commercial thinning.

The current Code is the same that existed a decade ago (CSIRO 2002; Appendix F). It is a 3-page, 26-point statement of goals of environmental care applicable to plantation development and management. These goals are broadly consistent with the National Plantation Principles. In 2002, the CSIRO review recommended:

‘.... to support further development in plantation forestry, the Northern Territory should formally adopt the Northern Territory Code of Practice for Forestry Plantations. A draft code was provided to the assessment team. This provides environmental management objectives that cover the areas nominated for assessment. However, there are several matters related to the application of the proposed Code that should be resolved.

- Clause 1 of the Code provides that plantation proposals will be the subject of environmental assessment under relevant legislation. The requirements for assessment appear to differ between tenures. The Code could be strengthened by specifying a mechanism for mandatory assessment to meet an adequate standard on a common basis on all tenures.*
- The Code specifies a set of environmental management objectives. These need to be supplemented by work prescriptions to ensure effective implementation. In the case of the Melville Island Project (MIP) this is met by the detailed strategic management plan prepared by the proponents. There needs to be a similar requirement for proponents of any future plantation proposals to prepare management plans setting out work prescriptions that address the requirements of the Code adequately.*
- The Code does not specify procedures for the monitoring of compliance with work procedures and management plans. These are met in the case of the current project (MIP) through a combination of the strategic plan, conditions imposed in the consent including those applied by the Commonwealth, and the requirements of the Northern Territory inter-departmental committee on Tiwi plantation forestry.*

This objective might be met most simply through a requirement to obtain certification for the project’s management system under an internationally accepted environmental

management system such as ISO 14000 or under a sustainable forest management scheme such as the proposed Australian Forestry Standard or similar system.

It is also necessary that the Code of Practice and the supporting committee be put in place formally, and that there are systems and procedures for periodic review of the functioning of the Code and its support mechanisms'

Given that the current Code is unchanged from that reviewed by CSIRO in 2002, the following commentary focuses more on environmental outcomes in the intervening period, what will be required in an updated Code, and how existing legislation and approval processes can be effectively linked to a more comprehensive future Code.

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.

a) Are the processes adequate to meet this criterion?

5.2 Existing Processes

The Territory has an array of processes used to judge the suitability of agricultural developments including plantation forestry. In an attempt to clarify the processes for an investor, a brochure (Northern Territory Government 2009) summarises these processes using a matrix of:

- 13 Acts
- five types of land tenure (Freehold, Crown Land or Crown Lease, Pastoral Lease, Aboriginal Land Trust - *Aboriginal Land Rights (Northern Territory) Act 1976*, or Aboriginal Land Trust - Northern Territory Freehold),
- clearing required or not,
- two types of cropping (new or existing),
- two types of water supply (irrigated or non-irrigated), and
- two types of scale (large or small) and/or impact (small or large).

If native vegetation needs to be cleared, a Clearing Permit is required from DNRETAS. All tenures require a Permit to grow a declared weed as a crop and/or a Public Environmental Report, and/or Environmental Impact Statement. Developments on Crown Land or Crown Lease require the use to be consistent with the purpose of the existing Crown Lease, a New Lease on Crown Land, and/or a variation to provisions in the Crown Lease. Developments on Pastoral Lease land require approval from DNRETAS for a non-pastoral use (e.g. plantations), which lasts a maximum of five years before reapplications is required. Developments on

Aboriginal Land require approval by Land Councils and/or Traditional Owners. Tenure change is possible.

The Plant Industries Division, Department of Resources (DoR), provides a 'point of entry' to prospective investors seeking to start plantation enterprises. This includes arranging cross-agency briefings and assistance with identification of key contacts.

Issues related to soil, vegetation, biodiversity, ground and surface water, land clearing, environmental impact assessment and advice, heritage and archaeological matters, weeds and feral animal status are referred to DNRETAS. The Australian Government has authority for threatened species, heritage matters, Ramsar wetlands, and international environment protection agreements.

5.3 Comment on Existing Processes and Suggested Improvements

The relevant goal statements in the Code are 1-4, 8, and 26 (Appendix F). However, none of the planning processes refer to the Code, and neither does the Code refer specifically to these processes.

It is important to separate past processes from the way in which future development proposals are likely to be considered. In the Melville Island project, development approval was assessed in several stages. The steps included the preparation of several environmental assessments and a detailed management plan that were submitted to both Territory government and the Commonwealth for approval, and development of a monitoring plan including reports to an inter-departmental committee to oversight its implementation. About 30,000 hectares of plantation were established following clearing of native vegetation. Non-compliance with the management plan has been identified in relation to buffer zones for rainforest protection (Andersen and Eager 2009), and a number of corrective measures are still to be completed.

The *Khaya senegalensis* plantations were established largely under the existing processes described above in section 5.2.

For future plantation establishment and management there appears to be relevant legislation in place, although DNRETAS point out some limitations of the way existing legislation interacts. Although there are mechanisms for triggering the environmental assessment of plantation forestry activities, there is no forestry or plantation-specific legislation.

Goal statements 1-4 of the Code do not provide sufficient guidance as to the level of detail required for proposed plantation management plans (e.g. practices for the protection of soil and water values under the intense rainfall regimes experienced in the Territory), how plans will be assessed for their adequacy in protecting environmental values, and how on-going compliance and effectiveness issues will be dealt with. The suggestion in goal 4 that each management plan will individually define procedures for monitoring compliance is too ad hoc, and a more consistent approach is needed. Likewise, the suggestion for establishing a separate committee (that also includes the proponent) for each proposal to review and oversight compliance, may lead to inconsistency and perception of lack of independence. Goal 8 is a broad statement of ideal operational processes, but again it is not translated into implementable processes via the Code or supporting documentation.

The Code and related mechanisms (including specification of responsible entities for approval of plans and for monitoring compliance) need to deal with these critical issues, and to achieve

consistency across tenures. Much can be learned from how these issues are dealt with elsewhere in Australia. There is also a potential role for forest management certification to support activities managed under the Code, especially at the compliance stage.

5.4 Conclusion

The Territory has a range of legislation that provides coverage of the major issues relevant to plantation forestry, although there is no specific reference to plantation forestry which is treated as an agricultural activity. The Code provides a set of relevant goals, but no guidance on how these effectively link to legislation, or can be translated into plans and on-ground practices that will allow them to be achieved. A more comprehensive Code and supporting mechanisms needs to be developed, along similar lines to that used elsewhere in Australia. A revised Code should be given formal status either as a policy instrument covering all wood production plantations within the Territory, or by being a voluntary Code endorsed by the Territory Government and industry stakeholders.

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

Clearing of native vegetation in the Territory is controlled through several Acts and supporting regulations, and a Draft Native Vegetation Management Bill (2011) is under consideration. This proposed Act will control clearing on unzoned land that includes pastoral lease. Clearing on zoned land will continue to be controlled under the *Planning Act 2009*. The *Pastoral Land Act 1992* will be amended to enable land clearing on pastoral lands to be subject to controls under the Northern Territory Planning Scheme. Key provisions of the new legislation include a framework for developing regional native vegetation retention and management plans; a ‘safety net’ of minimum catchment, sub-catchment, and native vegetation retention targets; and a cap on the annual rate of clearing.

Under this draft Bill, no more than 10% of the natural cover of native vegetation in a major catchment could be cleared (or 20% in any sub-catchment), unless it can be shown that environmental values, particularly biodiversity and water resources, will not be threatened.

In 2010, the Northern Territory Government released an updated set of comprehensive land clearing guidelines to support the Northern Territory Planning Scheme. These provide detailed guidance on links to legislation, approval processes, information to be included in development proposals, specific guidelines for individual catchments, operational and environmental considerations, and specific prescriptions for protecting soils, buffering vegetation and riparian areas, and vegetation retention.

It is noted that there are at four major classes of land tenure that might be considered for plantation development: Freehold (non-Aboriginal), Crown Land and Crown Lease, Pastoral Lease, Aboriginal Land Trust (under either the *Aboriginal Land Rights (Northern territory) Act 1976* or as Northern Territory Freehold. Current clearing legislation applies in different ways on each of these tenures (Northern Territory Government 2009).

Freehold Land

There is only a relatively small area of non-aboriginal freehold land in the Territory. Clearing this land to establish forestry plantations requires development approval. In granting such an approval, the Minister responsible for the *Planning Act 2009* would have to consider the conservation aspects of any clearing proposed, and conditions could be placed on consents to clear to ensure no adverse impacts on regional biodiversity. Covenants on title can also be used to protect native vegetation.

Controls in relation to soil erosion and impacts on threatened species are the same as those on leasehold land.

Crown Land and Crown Lease

The nature of permitted development depends on the specific terms of the lease. Conditions that applied to some earlier leases would permit plantation forestry, and where this requires clearing

of native vegetation, this could be conducted without further approval. Even on these areas, clearing that led to or had the potential to lead to soil erosion, could be regulated by the Soil Commissioner. Also, clearing that potentially affects protected wildlife requires a permit, and permits may not be issued where there would be an impact on threatened species. Threatened species are also protected under the Commonwealth EPBC Act.

Pastoral Land

Activities on these lands are controlled by the terms set by the Pastoral Lease and by the Pastoral Board. Clearing, other than for incidental purposes, requires consent from the Pastoral Land Board. The establishment of extensive forestry plantations on these lands is not compatible with the definition of pastoral use. Therefore a variation to the lease type would be required for a plantation project to be approved. Small-scale agroforestry could be a use consistent with the pastoral nature of the lease.

Aboriginal Freehold Land

Aboriginal freehold land is unzoned land and therefore clearing on this tenure is controlled by the *Planning Act 2009*. However, Territory controls in relation to soil erosion or threatened species would apply as they would on leasehold or other freehold land and any clearing would also be subject to the requirements of the Commonwealth EPBC Act.

There are additional considerations where the land is sub-leased to external parties, e.g. joint-venture projects. In these cases, approval of the responsible Commonwealth minister is required and this automatically triggers consideration under the Commonwealth EPBC Act. This was the case for the Melville Island plantation forestry project.

The Code contains four goals that are directly relevant to the protection of flora, fauna and natural landscape values. The first three goals have been discussed under Criterion 1, above. Goal 5 states: There will be no net loss of biodiversity values associated with new plantation development. Losses caused by development activities essential for the viability of the plantation enterprise will be compensated by expanded conservation activity in other areas. The plan of management will detail mechanisms to protect endangered or threatened species.

6.3 Comment on Existing Processes and Suggested Improvements

Proposed new legislation and existing comprehensive guidelines provide an excellent foundation for control of land clearing and for protection of associated environmental values.

Several goals in the Code are relevant to Criterion 2, but again there is no clear links to legislation or to processes that would allow the goals to be achieved. There is also no indication of how compliance with plans or assessment of outcomes will be assessed.

The Tiwi Islands Forestry Project on Melville Island, which is on Aboriginal freehold land and involved earlier commercial agreements with an external parties, has several breaches of approval conditions still to be rectified that are relevant to this criterion (Andersen and Eager 2009). The main concern is wildling escapes from the *Acacia mangium* plantation into surrounding native vegetation and waterways. We comment further on this under Section 10, Criterion 6.

6.4 Conclusion

Existing legislation for protecting animal and plant communities and landscape values is adequate but complex. The method through which a proposal for clearing native vegetation for plantation forestry is currently evaluated depends on the tenure of the land and other variables, but under proposed new legislation more consistency will be achieved. A more comprehensive Code is required, as described under Criterion 1, to facilitate achievement of the stated goals for protection of animal, plant, and landscape values.

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

The management of impacts on water resources is regulated under:

1. The *Water Act 2011*, which makes it an offence to pollute water so as to render it unfit for any prescribed beneficial use, and which covers herbicide or sediment contamination.
2. The *Waste Management and Pollution Control Act 2000* imposes a duty of care to “take all measures that are reasonable and practicable to prevent or minimise pollution or environmental harm” (Section 12).
3. *Soil Conservation and Land Utilisation Act 1985*, under which Soil Conservation orders can be made by the Soil Commissioner to prevent erosion.

Goal statements 7, 9-14, 22 and 23 of the Code relate to the protection of water quality (Appendix F).

Water yield as might be affected by plantation forestry is not addressed in the Code. The general regulatory authority to do so is provided in the *Water Act 2011*, but there are no plantation-specific processes. As for other land uses, permits are required for landowners or other interests to extract water (surface or ground water) or modify waterways to trap water. Water control districts may be declared and water allocation plans made with the assistance of a water advisory committee.

7.3 Comments on Existing Processes and Suggested Improvements

The large number of goals in the Code that refer to protection of water quality demonstrate a high awareness of the significant risks imposed by frequent and sustained intense rainfall during the wet season in the Territory. However, the Code provides no guidance, or reference to supporting documentation, on how to mitigate this risk. This deficiency should be corrected in a new Code. The land clearing guidelines (Northern Territory Government 2010) provide practical guidance for reducing risks to water quality; these should be referenced in the Code.

Management plans for the Tiwi Islands Forestry Project and *Khaya senegalensis* projects contains operational prescriptions that address the Code objectives in relation to water quality protection during the establishment of these plantations. Harvesting of the Tiwi Island plantations is proposed to begin in the next year or two, and associated disturbances on- and off-site (e.g. roads) will increase risks to water quality. Current management plans do not specify how to mitigate such risks. Suitable management plans for these risks are needed before harvesting commences; managers are already aware of this need and are planning to meet this need.

We were shown some innovative approaches to plantation layout, use of contour banks, and drainage design developed by the managers of the *Khaya senegalensis* plantations south of Darwin. This experience and innovation needs to be captured and presented as guidelines or prescriptions in a new Code. Some on-site improvement is needed, e.g. location and drainage of plantation roads and tracks, and drainage areas for contour banks, but the main risk now appears to be off-site where drainage water from the plantation enters the public road network. In some cases, this is causing on-going erosion problems that need to be addressed by drainage designs suitable to the conditions.

A preliminary assessment of the potential impact in the Daly region of increasing the percentage cover of *Khaya senegalensis* plantations from 1% to 33% over 20 years is that there would be a minor impact on water availability (O’Grady et al. 2012). This result is mainly because plantations have similar water use to native woodlands in the area.

7.4 Conclusions

The intense nature of rainfall in the Territory can create a high risk of soil erosion and damage to water quality. The Code lacks specific guidance on how to plan and manage plantations to protect water values. Important experience gained during management of existing plantations should be incorporated in a new Code. Harvesting of *Acacia mangium* plantations on Melville Island is likely to commence in the near future, as well as thinning of the *Khaya senegalensis*

plantations. Therefore, guidelines for protecting water quality during plantation harvesting need to be developed quickly and linked to the new Code.

The National Water Initiative, to which the Territory is a signatory, requires accounting for water intercepted by bores, farm dams and forestry. Measurement of rainfall interception or ground water usage by plantation forestry requires estimates of tree water use, ground water levels and usage in the vicinity of plantations, surface water runoff and, in some cases, direct measures of water use during plantation establishment and maintenance. Research on this topic has commenced. In finalizing the new Code, the issue of the effects of plantations on surface and ground water availability should be addressed.

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 *Soil Conservation and Land Utilization Act 1980* makes no specific reference to plantation forestry, but it provides adequate powers to the Northern Territory Government for monitoring and control of risks to soil resources. The primary instrument of control is a Soil Conservation Order, which can be used to prescribe infrastructure planning, land use, and remediation practices (Melville 2008).

A plantation developer is expected to comply with this Act by liaising with DNRETAS about soil management methods (Melville 2008). If a DNRETAS officer considered it necessary, a Soil Conservation Order would be issued, but adequate planning would probably avoid the need for such action.

The Code contains the goals 6, 21, 22 and 24 that relate to the protection of soil values, but again there is no guidance on how these goals can be met (Appendix F).

Land clearing Guidelines (Northern Territory Government 2010) provide some broad advice on how to minimise soil disturbance during the removal of native vegetation.

8.3 Comments on Existing Processes and Suggested Improvements

The Code contains several goals pertaining to soil protection, but it lacks guidance, or reference to supporting documentation, such as the land clearing Guidelines, on how these goals can be achieved.

We observed new plantation development activities in the Douglas-Daly region that included Global Positioning System (GPS) guided construction of contour banks and cultivation lines designed to control water flow from the plantation area to the boundary. These practices appeared sound, but in some cases exit of this water from the plantation to the local government road reserve had not been adequately managed, resulting in serious erosion. This aspect requires improved designs and coordination with local government.

Soil erosion does not appear to have been a serious concern during development of the plantations on Melville Island. Lessons from all plantation areas in the territory (and plantation developments in other tropical regions) should be gathered to develop territory-wide guidelines for soil management during the establishment and harvesting phases. These guidelines should be included in or linked to the new Code.

8.4 Conclusions

A new Code is needed that includes specific guidance for the protection of soil values during the establishment, management and harvesting phase of the plantation rotation. There is a near-term need to develop harvesting plans that include protection of soil and water values.

9. CRITERION 5: PROTECTION OF CULTURAL HERITAGE VALUES

9.1 Relevant National Principles and Questions

National Principle: 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

Cultural heritage values in the Territory are covered under the *Heritage Conservation Act 2008* and Regulations 2007, the *Northern Territory Sacred Sites Act 2006* and *Aboriginal Land Rights (Northern Territory) Act 1976*, and a section within the *Northern Territory Planning Act*

2009. As a key source of information available through DNRETAS - the Heritage Branch administers the Archaeological Resources Database, which includes information from the previous Archaeological Site Catalogue that was administered by the Museum and Art Gallery. In 2007 the database had over 6000 sites listed in the Territory.

The following is a summary of the relevant legislation.

Heritage Conservation Act 2008

The principal object of this Act is to provide a system for the identification, assessment, recording, conservation and protection of places and objects of prehistoric, protohistoric, historic, social, aesthetic or scientific value, including geological structures, fossils, archaeological sites, ruins, buildings, gardens, landscapes, coastlines and plant and animal communities or ecosystems of the Territory.

Northern Territory Sacred Sites Act 2006

The purpose of the Act is to ensure a practical balance between the recognised need to preserve and enhance Aboriginal cultural tradition in relation to certain land in the Territory and the aspirations of the Aboriginal and all other people of the Territory for their economic, cultural and social advancement. Under the Act, a balance between sacred site protection and land use is achieved by sacred site avoidance under *Authority Certificates*. The Aboriginal Areas Protection Authority provides these certificates and will respond to applications within 60 days to ascertain whether a Certificate can be issued and any conditions needed to protect any sacred sites that might be affected by the proposed works. Authority Certificates provide indemnity for works carried out according to Certificate conditions on or near sacred sites.

The Aboriginal Areas Protection Authority (AAPA) is an independent statutory authority with a 12-member board established under the *Northern Territory Aboriginal Sacred Sites Act 2006*. The AAPA also has responsibilities under the *Heritage Conservation Act 2008* to protect and report (to police) all discovered burial sites and human skeletal remains.

Aboriginal Land Rights (Northern Territory) Act 1976

This Act seeks to recognise and protect traditional Aboriginal land rights through:

- the establishment of Land Councils and the Aboriginal Land Commissioner;
- the land claims process;
- establishment of processes for land use proposals, mining and exploration;
- funding through the Aboriginal Benefits Account; and
- a power over Northern Territory laws.

Its most fundamental aspect, however, is that it ensures that all decisions over Aboriginal land must be made by the traditional Aboriginal owners in accordance with Aboriginal law.

Northern Territory Planning Act 2009

This Act (Division 3 section 51) indicates matters to be taken into account during planning that include (part r) 'any potential impact on natural, social, cultural or heritage value'.

Goal 19 of the Code (Appendix F) provides for the protection of sites of heritage and archaeological significance, but it does not specify the cultural heritage legislative framework in place in the Territory or the procedures required to achieve this protection.

9.3 Comments on Existing Processes and Suggested Improvements

Aboriginal cultural heritage issues are very significant in the Territory. Goal 19 of the Code (Appendix F) provides for the protection of these values. However, there is currently no reference to the legislative framework or guidance material for identifying, managing, or protecting Aboriginal places or objects by, for example, establishing buffers and exclusion zones. This makes it difficult for plantation managers to protect heritage places and objects, without involving DNRETAS and the Traditional Owners at an early stage of planning. Despite a lack of clarity of process provided by the Code, current plantation operations in the Tiwi Islands and in Douglas-Daly regions are achieving the protection of cultural heritage values. We were not told of any serious breaches.

The Tiwi Island operation is of a high standard in protecting cultural heritage values as the Tiwi Land Council, Traditional Owners and Elders are engaged and consulted throughout the project. The Tiwi community were involved at the planning stage prior to clearing, during planting and also whenever new sites were identified by community or field staff. The sites are mapped and identified with a GPS location and then placed onto a Geographic Information System layer for use by operations staff. One other important aspect is that the Tiwi community are still living their culture, and this is acknowledged and respected by the forestry management team. For example, if an area is deemed by the Tiwi community to be off limits due to “Sorry Business” (funerals), this restriction is respected by the plantation staff.

The Code needs to deal better with this issue by outlining appropriate process. Without input from the local Aboriginal community, the discovery of new Aboriginal objects or places is at the discretion of those working or planning work at the plantation site. It then becomes the responsibility of these parties to ensure that they are appropriately trained and informed of requirements of the relevant heritage legislation. However, it is likely that not all operational staff will be familiar with this obligation and the required process if a suspected artefact or site is discovered during operations.

We suggest advice and linkage is provided in a new Code to the legislative framework for the protection of cultural heritage values, as well as guidance to the process of identifying and protecting heritage values, places and objects.

9.4 Conclusion

We conclude that current Code guidance and its reference to relevant legislation is inadequate to protect cultural heritage values on the plantation estate of the Territory. The industry currently provides protection of these values by using alternative information and processes.

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.

- 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 pests and diseases?

10.2 Existing Processes

The Code contains the two goal statements (18 and 19; Appendix F) relevant to this criterion.

Applications for development requiring approvals by DNRETAS are assessed for weed management issues. If a proposal is to use a species declared under the *Weeds Management Act 2001*, a permit is required. Plantation tree species are unlikely to become serious weeds. An exception is the spread of *Acacia mangium* wildlings into rainforest (drainage lines) on Melville Island (e.g. Andersen and Eagar 2009). In relation to this problem, the original Commonwealth approval for the project required a plan to prevent the spread of *Acacia mangium* into adjacent areas becoming a problem. Spread has occurred and now presents a serious risk to native ecosystems. The plantation manager is implementing a plan to achieve control, but success of the plan will depend on adequate resources being available on an on-going basis.

The potential for plants to escape managed situations and become established in natural environments led to development of a process for weed risk assessment. The Northern Territory Weed Risk Management System (Northern Territory WRMS) was developed and implemented in 2008 to assess weed risk and feasibility of control (likelihood of management success), to assign a management priority, and to make broad management recommendations for any species assessed. Questions asked in the assessment are divided into three main criteria; invasiveness, impacts and potential distribution. The system is designed to be used for assessing a wide variety of weed types - herbs, grasses, shrubs and trees and has been tested using potentially low, medium, high and very high risk plants. The system has demonstrated its ability to reliably assign plants to weed risk categories.

Incursions of plant diseases or pests are required to be notified to DNRETAS, whereby a risk assessment is conducted and, if warranted, a response plan designed and implemented. Plantation managers regularly inspect the health of their plantations, which facilitates early detection of pests and diseases.

Controlled burning and wildfires are common in the Territory. Under the *Bushfires Act*, landholders have the responsibility for managing fire on their property and preventing its spread onto adjoining properties. Plantation managers and traditional owners together develop fire

management plans for the Tiwi Islands plantations. Plantation managers and local rural fire brigades work together to prevent or control wildfires in other areas.

10.3 Comment on Existing Processes and Scope for Improvement

Considerable effort is being made to survey and eradicate *Acacia mangium* wildlings from rainforest on Melville Island. The control activities appear to be effective where resources have been applied, but the control plan is still in the ‘catch-up’ phase. More resources will probably be needed to complete this phase, after which the resource requirement can probably be expected to decrease to a lower level during the maintenance phase. It is possible that *Acacia mangium* will not be re-planted in a second rotation, but wildlings of this species will still be an on-going problem for many years.

The fire risk to plantations in the Territory is very high due to several factors: the high fuel loads and fast fires created by tropical grasses, a seasonal climate of hot, dry weather and lightening, and an Aboriginal culture of lighting fires. Despite these risks, fire protection is effective in the Melville Island plantations. Smaller-scale plantation developments in other parts of the Territory effectively combine with other local arrangements for fire protection that occurs without reference to the Code.

Surveillance is undertaken for pests and diseases, which has detected some small-scale outbreaks in both the *Acacia mangium* and *Khaya senegalensis* plantations. As the plantation estate increases in area, pest and disease issues might increase and require more coordination amongst stakeholders.

10.4 Conclusion

In a new Code, specific guidance will be needed for dealing with weed, pest and disease issues and fire protection.

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.

a) Are the processes adequate to meet this criterion?

11.2 Existing Processes

The Code does not refer to training for environmental care.

11.3 Comments on Existing Processes and Suggested Improvements

Code effectiveness is likely to be enhanced if all practitioners, including machine operators and other contractors, are well informed of the key principles and practices of environmental management. There is merit in developing co-ordinated and accredited training programs built on different modules and this may be best achieved by a joint effort between plantation companies and Government agencies.

11.4 Conclusion

There is a need to cover this aspect in a new Code.

12 OTHER NATIONAL PRINCIPLES

There are a further 23 National Principles (NPs), but many of these overlap with those of Environmental Care dealt with in earlier sections. In this section, each of these additional NPs is listed and a ‘*Comment*’ added if a principle has not already been addressed.

12.1 NP2. SAFETY

2.1 All plantation establishment, management and utilization 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 issue is covered in the Code via a brief reference to the Work Health Act, and in goals 15, 16 and 17 that deal with the safe and environmentally sensitive use of chemicals, machinery wastes, and other hazardous substances. It needs to be treated in greater detail in a new Code.

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: The main purpose of the Code is to foster plantation development with environmental care. The Code does not deal with social and economic issues, except to note in goal 25 that adverse impacts of plantation activities on neighbors and members of the public be minimized.

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: Roads are recognized in the Code as a major potential environmental risk especially to soil and water values, and are mentioned in several goals. Other aspects of these principles have been addressed earlier in this report (sections 7-8).

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: It is assumed that plantation managers will make only sound economic decisions, including those involving species, site and silviculture. Recent developments in the managed investment sector of the plantation industry in several States, including the Territory, brings into question the attainment of principle 5.1. However, this aspect was outside the scope of our assessment. Other aspects of these principles have been addressed earlier in this report (section 10).

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 have been addressed earlier in this report (sections 5-8).

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: These principles have been addressed earlier in this report (section 10).

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: The Code mentions that monitoring and auditing is a goal, but does not specify how this can be implemented.

An evaluation of the National Principles will be conducted after all State and Territory codes of forest practice have been assessed.

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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 set 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

AAPA	Aboriginal Areas Protection Authority
AMA	African Mahogany Australia
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture Fisheries and Forestry (Commonwealth)
DNRETAS	Department of Natural Resources, Environment, the Arts and Sport (Northern Territory)
DoR	Department of Resources (Northern Territory)
GPS	Global Positioning System
ISO	International Organisations for Standardization
NP	National Principle
NT	Northern Territory
PMP	Plantation Management Partners
TPC	Tropical Plantation Corporation
WRMS	Weed Risk Management System (Northern Territory)

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 December 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

African Mahogany Australia

Department of Resources, Northern Territory

Department of Natural Resources, Environment, the Arts and Sport, Northern Territory

Northern Tropical Timbers

Plantation Management Partners

Tiwi Plantation Corporation

APPENDIX E – MEETINGS AND FIELD VISITS

October 2011

<i>Mon. 10th</i>	Meeting with DoR and DNRETAS staff for introduction to plantation forestry in the Northern Territory, including the Code and other aspects of regulation
<i>Tues 11th</i>	Day-trip to Douglas-Daly area to look at African mahogany plantations and discuss Code-related matters
<i>Wed 12th</i>	Day-trip to Melville Island. Introduction to plantation forestry on the Tiwi Islands. Typical mangium plantation operations. Code-related aspects.
<i>Thurs 13th</i>	Meeting with DoR, DNRETAS, African Mahogany Australia, Tiwi Plantation Corporation, and CSIRO.

APPENDIX F – NORTHERN TERRITORY CODES OF PRACTICE FOR FORESTRY PLANTATIONS

1. All clearing of vegetation in the NT, irrespective of land tenure, is now subject to approval under legislation. For all freehold and crown land this approval is provided under the Planning Act initially through an Interim Development Control Order and eventually through amendments to the NT Planning Scheme. For the remaining 47% of land which exists as Pastoral estate, the approval is provided under provisions of the Pastoral Land Act. All vegetation clearing applications are assessed according to statutory processes and for plantation forestry proposals both the NT Clearing Guidelines and the NT Code of Practice for Forestry Operations would be used in the assessment process.
2. Clearing proposals are assessed by a range of government agencies including the Office of Environment and Heritage. The referral of a plantation forestry proposal to this Office of Environment and Heritage would trigger the environmental assessment of the proposal under the NT Environmental Assessment Act and relevant Commonwealth legislation. The referral of a plantation forestry proposal is a requirement of the Environmental Assessment Act and would be made by the agency responsible for approving clearing either under the Planning Act or the Pastoral Land Act.
3. A plan of management will be prepared by the developer setting out work prescriptions that address the requirements of this Code of Practice. Any plan would need to take into account recommendations as specified under an approval granted under the Planning Act and would be subject to the approval of the Minister for the Environment.
4. The plan of management will detail procedures for monitoring compliance with work prescriptions that address the requirements of this Code of Practice. A committee comprising representatives of Departments of Business, Industry and Resource Development, and Infrastructure, Planning and Environment, together with a representative of the proponent will review and oversight compliance.
5. There will be no net loss of biodiversity values associated with new plantation development. Losses caused by development activities essential for the viability of the plantation enterprise will be compensated by expanded conservation activity in other areas. The plan of management will detail mechanisms to protect endangered or threatened species.
6. Soil quality will be protected by preventing erosion and mitigating processes which could lead to chemical and structural change. The risk of water pollution caused by soil erosion will be minimised.
7. Water quality, stream stability and habitat values will be maintained in the forest environment including the development area and adjoining lands.
8. A high standard of operational planning, clear work instructions, and adequately trained workforce will ensure effective and reliable implementation of complying management operations. Inspection of operations, keeping of adequate records, and periodic auditing of the system's performance will ensure the maintenance of standards and their continuous improvement.
9. The threat to water quality will be minimised by controlling the extent of road construction, and the number of stream crossings to that required for efficient plantation operations. Roads will be located and designed to minimise run-off and to facilitate effective construction and maintenance.
10. Permanent watercourse crossings will be located, designed, constructed and maintained so as to minimise disturbance during construction and to ensure stability in the long-term in

order to minimise risks of degrading water quality and aquatic habitat. Temporary crossings will be sited, prepared and used so as to avoid exposure of dispersible soils and minimise the disturbance of banks. Temporary crossings will be rehabilitated to the satisfaction of the Commissioner for Soil Conservation.

11. Roads will be constructed to provide long-term stable traffic surfaces. Control measures will be implemented during the construction phase to protect against soil erosion and water quality degradation. Culverts and crossings will be installed to ensure long-term effective performance and to meet the needs of aquatic fauna.
12. Roads and their associated drainage systems will be maintained in effective functioning order to minimise risk of degradation of water quality.
13. Adverse impacts on soil, such as compaction, soil erosion and fertility loss, and degradation of water quality will be minimised during site preparation.
14. Forestry and associated operations will be conducted in such a fashion that they caused minimal disturbance of soil in buffers, in order to allow their effective and continuing functioning in filtering water pollution and preventing damage to aquatic habitat.
15. Chemical selection, rates and method of applications will assure healthy plantations, minimise risk to human health, and minimise adverse impacts on the environment.
16. Handling and storage of hazardous substances will be conducted to minimise risks to human health, site contamination, and off-site pollution, including adverse impact on flora and fauna.
17. Oils, fertiliser bags, empty chemical containers, unused chemicals, and other plantation and machinery waste will be removed off-site and disposed of by authorised disposal methods only in order to minimise risks to human health, site contamination, and adverse impacts on the environment.
18. Risks to life, property and the environment from wildfire will be minimised through adequate precautionary measures.
19. Sites with heritage and archaeological significance will be protected from disturbance by plantation activities.
20. Harmful pest outbreaks will be minimised by monitoring of plantation health and by timely implementation of control measures. Adjacent lands and forests will be prevented from degradation caused by the spread of weeds, pests and diseases.
21. Environmental disturbance associated with harvesting will be minimised by ensuring that operations are adequately planned, that clear work instructions are provided, and that supervision is effective.
22. The risk of water pollution caused by run-off from areas disturbed by harvesting machinery traffic, will be minimised during and after operations. The extent of adverse impacts on soils such as compaction caused by machinery traffic during wet weather will be minimised.
23. Turbid run-off from roads causing water pollution will be minimised.
24. Areas reserved for the protection of soil, water quality and maintenance of biodiversity will be protected and managed so that these environmental attributes remain functional in perpetuity.
25. Adverse impacts on neighbours and members of the public caused by employees, dust or safety hazards will be minimised.

26. The plan of management will provide for periodic reporting of compliance against the requirements of the plan and this Code and for ongoing monitoring. Breaches may result in action being taken under relevant legislation including the Water Act, the Weeds Act, the Bushfires Act, the Soil Conservation and Land Utilisation Act, the Parks and Wildlife Conservation Act and the Work Health Act.



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