

BACKGROUND DOCUMENT 5

Processes and Planning Tools to Meet Objectives and Requirements of the Biodiversity Provisions of Tasmania's Forest Practices System

Supplementary Information: Intensively Managed Areas



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for the
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Disclaimers

The information presented is a broad overview of information considered relevant (by the author) to the brief.

Analysis and discussion of information has been undertaken to different levels of detail. The author has drawn heavily on his own knowledge and experience from previous work in the forest practices system and many of the cited examples are personal observations.

Coverage of material related to all aspects of the brief may not be complete.

The opinions and interpretations of legislation and policy expressed in this document are made by the author and do not necessarily reflect those of the BERP.

SUMMARY

The forest practices system includes numerous provisions for the management of biodiversity values. The majority of the provisions included in the *Forest Practices Code* are aimed at native forest silviculture situations and are not designed to cater for management of values in more intensively managed landscapes.

Some supporting planning tools (e.g. *Forest Botany Manual*, *Threatened Fauna Adviser*, various technical notes) and processes (e.g. special values evaluation process) attempt to address the management of biodiversity values in more intensively managed landscape. However, implementation at a planning level is often thwarted by landowner and land manager concerns (sometimes related to initial cost of implementation but usually expressed as an ongoing cost of lost ground or management prescription implementation). Implementation at an operational level is hampered by cost, level of experience and site characteristics. However, the main concern at both levels is the lack of a clear objective for managing different biodiversity values in intensively managed landscapes, and the lack of ability to identify the values in the first place and then to manage them appropriately in the long term.

Review of the Code to include provisions to deal with biodiversity values in forestry-activity related intensively managed landscapes is seen as relatively simple as most of the concepts have already been developed and applied in numerous situations. For example, while wildlife habitat strips are primarily applied in extensive areas of native forest, they have been successfully applied (in a modified way) to newly established plantations on large properties. Similarly, application of wildlife habitat clumps, remnant and site specific (e.g. rocky knoll, swamps, etc.) management prescriptions can also be modified relatively simply to be more broadly applicable.

Some concepts such as restoration and rehabilitation of habitats in intensively managed landscapes are more difficult to incorporate into the present format of the Code but it is noted that some effort have been attempted at the operational level indicating that application is practical if objectives are defined.

Some management prescriptions typically applied to native forest silvicultural operations or smaller-scale forestry operations are less easily transferred to intensively managed landscapes such as extensive plantations. For example, issues such as weed, disease and reserve management are simpler to address on a small scale (e.g. individual coupe) than at a broad-scale (e.g. large property) because of scale, cost and ongoing maintenance.

There is also an issue of regulatory control. For example applying prescriptions for weed management to an individual patch in one coupe is a one-off event that can be managed under a short-term FPP. Annual monitoring and control of weeds along a reserve boundary is more difficult to control under typical duration FPPs.

The specific issue of weed invasion into reserves is also addressed. In summary, the current provisions for weed management under the forest practices system are presented as being relatively weak, especially in relation to management of weed invasion into reserves adjacent to forestry activities. Various recommendations are made with respect to this issue.

Invasion of pine wildlings into reserves is also addressed as a specific weed management concern. The key recommendation is that the research into the phenomenon be completed to allow management policies and prescriptions to be developed.

Introduction

This is the fifth background document prepared by the consultant addressing the terms of reference of the review of the biodiversity provisions of the forest practices system. This document provides supplementary information, primarily in relation to TOR item 2, addressing two subject areas raised by members of the general public with the BERP:

1. Do current Code provisions and planning processes for biodiversity meet objectives in more intensively managed landscapes?
2. Review information on invasion of weeds into informal and formal reserves.

This document is arranged into two main sections addressing each of these subject areas in turn. The document should be read in conjunction with the first four background documents and supporting documentation.

The previous four background documents are:

Background Document 1: Legislative and Policy Context for Review of Biodiversity Provisions of Tasmania's Forest Practices System (finalised 25 May 2007).

Background Document 2: Processes and Planning Tools to Meet Objectives and Requirements of the Biodiversity Provisions of Tasmania's Forest Practices System (finalised 29 July 2007).

Background Document 3: Processes and Planning Tools to Meet Objectives and Requirements of the Biodiversity Provisions of Tasmania's Forest Practices System: A Review of Forest Practices Code Provisions Relating to Management of Biodiversity at Different Spatial Scales, Implementation and Relationships between Biodiversity Provisions and Other Forest Management Provisions (finalised 21 September 2007).

Background Document 4: Review of Research and Monitoring Activities related to the Biodiversity Provisions of the Forest Practices System (in preparation).

In addressing the questions raised, some definitions (with discussion) are provided below.

“current Code provisions and planning processes for biodiversity”

The various provisions in the Forest Practices Code related to the management of biodiversity values are discussed in detail on Background Document 2 (but Background Document 1 may need to be referred to for complete context). It is assumed that the term “provisions” is intended to mean such prescriptive mechanisms as wildlife habitat strips, wildlife habitat clumps and other such habitat retention prescriptions included in the Code, and that the term “planning processes” is intended to refer to policy mechanisms such as the “agreed procedures” for threatened species management and administrative mechanisms such as special values evaluation and consultation.

“more intensively managed landscape”

The bulk of the biodiversity provisions in the Code relate to native forest silviculture situations (see Background Document 3 for a detailed discussion). The question addressed in the present background document refers to “more intensively managed landscapes” which are taken to mean situations such as existing and proposed estates of monoculture plantation. To a certain extent extensive areas of primary production land are also included in this definition.

“commercial and non-commercial activities”

These terms appear in the consultant’s brief (see Appendix A) so require some explanation. Virtually all activities undertaken under the provisions of the Code (i.e. those requiring an FPP) can be considered commercial to some degree.

The term “non-commercial” is often loosely applied to non-forestry activities that require an FPP (e.g. residential subdivisions, mines, etc.) but such activities are often highly commercial. Background Document 1 highlighted the matter of the RFA’s definition of a “forestry operation” for “commercial purposes” in that the RFA did not include activities such as subdivisions, mines and other such non-forestry practices in its definition. For the purpose of this background document, the ability of the Code provisions to address biodiversity values management in intensively managed landscape will be divided into commercial forestry activities (e.g. plantations), commercial primary production activities (e.g. clearing of native vegetation for primary production such as stock grazing or crops) and other commercial activities requiring FPPs (e.g. subdivisions, mine sites, etc.).

“weeds”

Weeds are taken to mean plant species listed as “declared weeds” on the Tasmanian *Weed Management Act 1999*. In addition, other exotic plant species considered by the author as potentially invasive in forestry situations will also be considered – such species include *Pinus radiata* (which will be considered separately from other weed species).

“informal and formal reserves”

Formal reserves are taken to mean those provided regulative control through provisions of the Tasmanian *Nature Conservation Act 2002* on both public land (e.g. national parks, forest reserves, state reserves, etc.) and private land (e.g. reserves established by conservation covenant through various private land reserve programs). Informal reserves will be taken to mean other areas set aside that contribute to the State’s reserve system but may not have the same level of legislative control – on public land informal reserves include such sites as protection forest in Forestry Tasmania’s Management Decision Classification system, and on private land may include sites such as Gunns Limited’ reserve system on its larger estates such as Surrey Hills and Woolnorth. Informal reserves will not be taken to mean smaller set-asides within and adjacent to coupes such as minor streamside reserves and wildlife habitats clumps.

Part 1. Do current Code provisions and planning processes for biodiversity meet objectives in more intensively managed landscapes?

What are intensively managed landscapes?

For the purposes of this background document, the following are provided as examples of "intensively managed landscapes".

1. Extensive stands of pre-Code monoculture plantations

Many parts of Tasmania, on both public and private land, support extensive areas of fairly contiguous stands of monoculture plantations (usually softwood, *Pinus radiata*; or hardwood, *Eucalyptus nitens* and *E. globulus*). The term "extensive" is used to indicate areas of plantation well outside an average coupe size (which are generally less than 100 ha), planted prior to the existence of the *Forest Practices Code*. Some examples are the extensive pine plantations on coastal sands at Seven Mile Beach and Strahan, steep hills behind Scamander, and several areas in the central north (as at Long Hill) and northeast (e.g. Kamona, Retreat). Extensive pre-Code eucalypt plantations are also widespread (e.g. Surrey Hills) but post-Code eucalypt plantations are more common.

Most of these stands represent sites that once supported native forest. In short, because these sites were established prior to the existence of a code of practice, very few "concessions" for management of biodiversity values were made at the time of native forest clearing. Using the Scamander pine plantations as an example, it is clear that streamside reserves were not, in general, retained and that any retained patches of native forest were mainly because of operational issues (e.g. a rocky site). Some extensive plantation areas do seem to have had wildlife habitat strips retained but these are in fact the so-called "green belts" that were retained not for biodiversity conservation.

The degree of native vegetation retention varies considerably between sites. For example, there is virtually no native vegetation present amongst the Long Hill plantations but the northeast plantations (e.g. near Scottsdale-Retreat-Brid) have significantly more existing native vegetation, although without reference to aerial photography and PI maps it is hard to ascertain the exact nature of the distribution of patches. Some "plantation blocks" (e.g. Retreat) may have as much as 30% of the forest block still as native vegetation.

2. Extensive stands of post-Code monoculture plantations

Many extensive stands of monoculture plantation have been established after 1987 (i.e. after the promulgation of the first *Forest Practices Code*), with many stands represented by different aged stands that may have been established during different versions of the Code (e.g. post-1987, post-1993, post-2000). These stands tend to be less extensive than the pre-Code stands occupying whole properties rather than whole forest blocks.

There are two types of stands of extensive post-Code plantations: those established on sites that once supported native forest and those established on previously cleared (pasture, cropping and grazing) land. Many stands are a combination of both these categories with significant areas of existing cleared land on a property being established as plantation, some native forest areas being harvested for establishment and some retention and/or native forest silviculture.

Example of extensive stands of post-Code eucalypt plantations occur on Gunns Woolnorth and Surrey Hills estates where large areas of native forest have been cleared for plantation establishment. These sites have significant areas set aside for biodiversity management and also large areas retained unharvested as part of a reserve system. There are also extensive stands of eucalypt plantations at sites such as the Buckland-Runnymede flats, the Pipers River flats, the Boobyalla-Waterhouse flats, Armistead near Kimberly and the Evercreech area (these are just a few examples to give an indication of the range of sites). Extensive stands of post-Code pine plantations are less widespread but there are some on near coastal areas (e.g. Waterhouse area, Midlands near Cressy).

3. Extensive agricultural clearing

Clearing of native vegetation for primary production still occurs in Tasmania although this has been scaled down because of recent more restrictive controls on land clearing. For the purpose of this background document, small-scale clearing (e.g. less than 50 ha) will not be considered.

Clearing occurs only on private land. Various types of vegetation is cleared from native forest and woodland, native non-forest vegetation (e.g. grassland) and stands of paddock trees. Clearing often occurs in a piece-meal fashion with lots of small-scale operations resulting in a large-scale clearing effect.

4. Non-forestry activities such as open-cut mines and residential subdivisions

Various non-forest commercial activities require FPPs because of regulative requirements, which means that technically the provisions of the Code would apply. Some of these activities could be considered "intensive" because they result in extensive areas of native vegetation being cleared.

What are the Code provisions and planning processes?

The main Code provisions for management of biodiversity values are:

- Coupe dispersal and size
- Wildlife Habitat Strips (WHS)
- Wildlife Habitat Clumps (WHC)
- Streamside Reserves (SSR)
- Management of remnants
- Other set asides (e.g. rocky knolls, swamps, etc.)
- Operational site-specific prescriptions for values such as disease, weed and reserve management.

The main planning processes for management of biodiversity values are:

- Special values evaluations for fauna and flora
- Implementation of "agreed procedures" for threatened species.

What are the objectives of the Code provisions and planning processes?

Based on the provisions and processes identified above, the basic objectives of each are outlined below to provide context to the discussion of whether they are met in more intensively managed landscapes.

- **Coupe dispersal and size**

As discussed in Background Document 3, the concepts of coupe dispersal and size is principally related to native forest silviculture situations. The Code does state:

“Dispersed harvesting should be considered for plantations. Large blocks of plantation established at a similar time should be managed to improve dispersal over subsequent rotations.” (p. 27, dot point 2)

The applicability to this clause to the management of biodiversity values in intensively managed landscapes depends on the objectives. Most extensive stands of plantation were not established with the intention of managing biodiversity values to any significant degree. Using this clause of the Code to enhance biodiversity values in existing stands of plantations is possible but the objectives need to be clearly defined. For example, is the intention to create multi-aged stands of plantation, different-species stands of plantations, restore areas of plantation to native vegetation, benefit threatened fauna, rehabilitate disturbed native vegetation remnants, or some combination of these.

There is probably little doubt that extensive stands of plantation that are structurally more diverse (i.e. different ages or species) will probably have enhanced biodiversity values. However, knowing whether the values are significant or not would require intensive research.

The fauna and flora section of the Code also recognises the concept of coupe dispersal, as follows:

“Basic Approach

Planning for flora and fauna conservation should initially be carried out at a regional level (e.g. whole property, forest block or district forest management plan). At this level:

- strategies should be developed to maintain species diversity, particularly in extensive plantation areas and other intensively managed areas;
- dispersed coupes should be considered...”. (p. 58, dot point 5)

An example of how this clause has been applied is from extensive stands of pine plantation in the forest blocks east of Scottsdale. A proposal to harvest a patch of native forest and establish as plantation was presented with the key issue being that the coupe effectively represented the last part of a catchment still supporting naïve forest. This coupe led to significant discussions about coupe dispersal in existing stands of extensive plantation (see appended discussion paper in Background Document 3).

- **Wildlife Habitat Strips (WHS)**

WHSs are intended to “maintain habitat diversity”. The Code provides a general guideline for their implementation (“strips of uncut forest 100 m in width, based on streamside reserves but including links up slopes and across ridges to connect with watercourses in adjoining catchments”, “every 3-5 km”, “connect any large

patches of forest which are not to be harvested, such as formal and informal reserves”).

It is noted that WHSs were not widely implemented until the late 1980s, mainly on State forest (although it is noted that Gunns, then North Forest Products, initiated the placement of some strips on their Surrey Hills estate).

The WHS provisions, as currently placed in the Code, relate specifically to “site management for fauna in native forests”. As such, WHSs do not currently have wide applicability to intensively managed landscapes such as existing monoculture plantations or proposed plantations on mainly cleared land. They have little applicability to non-forest activities such as mine sites and subdivisions, usually because of a combination of land use and areas involved.

As mentioned, WHSs have little applicability to existing extensive plantation sites because they were intended to apply to native forest silviculture areas. However, it is noted that the WHS provisions do state that “these strips should connect any large patches of forest which are not harvested, such as informal and informal reserves”. There are a number of sites where the presence of an extensive plantation (often juxta positioned with private property parcels) creates a discontinuity between widely separated reserves.

Some existing “strips” (e.g. in the Nicholas-Saddleback area) have significant management issues such as infestation by pine wildlings such that some foresters even refer to the forest type as “mixed forest” (i.e. dry eucalypt forest mixed with pine wildlings). Their retention versus their removal requires careful consideration because often such sites represent the last remaining native vegetation amongst a large expanse of monoculture (and are often classified as potential habitat for threatened fauna e.g. velvet worms).

See also section on remnants below.

- Wildlife Habitat Clumps (WHC)

WHCs are also primarily intended as a provision to maintain biodiversity values in native forest situations.

Broadly speaking, WHCs are intended to assist with the “maintenance of the habitat requirements of oldgrowth dependent fauna species, particularly hollow dependent fauna” and to “enhance recolonisation of areas following harvesting”.

WHCs are usually applied to native forest silviculture situations but the FPA Fauna Technical Note on WHCs makes an attempt to provide for WHC retention in other situations such as plantation sites. WHCs are impractical to apply to most non-forest activities.

As mentioned, WHSs have little applicability to existing extensive plantation sites because they were intended to apply to native forest silviculture areas. However, many areas of existing extensive plantation do have retained remnants of native forest, which are often considered as WHCs by forest planners. However, the rate at which these “WHCs” have been opportunistically (and operationally) retained is often orders of magnitude below the standard dictated by the native forest silviculture prescriptions. This is an extreme example of the surface area:volume ratio issue of how WHCs are retained at significantly different levels depending on silviculture. For example, in selective harvesting operations 1 clump every 5 ha is retained but in clearfell native forest silviculture 1 clump every 200 m along a

boundary is retained with virtually all other hollow-bearing trees felled. In existing plantations, there would rarely be situations in which one clump every 200 m is present, and even where such clumps are present, they rarely contain appropriate trees (and often have other management issues such as wildlings, windthrow and fire hazards). In other words, even maintenance of existing retained remnants does not meet the level of retention required for clearfell situations.

The WHC provisions potentially have greater applicability to post-Code plantation sites. However, the wording as currently provided in the Code is unsuitable because it refers to native forest silviculture only and requires retention of WHCs of a certain size, distribution and composition. New clauses would need to be added to recognise the need for habitat retention in extensive plantation areas. Any new clauses will need to be flexible to recognise the highly variable distribution of existing native vegetation on many properties e.g. linear riparian strips, copses of trees over pasture, "paddock trees", fenced remnants, etc. The first priority is probably to define the objective of habitat retention in such situations e.g. percentage of property intended for retention, restoration or rehabilitation, threatened species issues, ongoing management issues, etc.

See also section on remnants below.

- Streamside Reserves (SSR)

SSRs are primarily aimed at maintaining water quality but an obvious benefit is the retention and management of a key habitat feature (i.e. the aquatic and riparian environment).

Many pre-Code plantation areas have little remaining riparian vegetation. The Code presently encourages the concepts of restoration and rehabilitation, and some recommendations of the *Threatened Fauna Adviser* for aquatic species require riparian areas to be restored to native vegetation. Practical application of these concepts has been problematic at an operational scale. However, some attempts are being made at actively restoring native vegetation to riparian sites (e.g. Scamander plantation areas) although most ex-plantation riparian sites are simply left to regenerate naturally. It is recommended that the BERP seek input from FPA's Senior Soil and Water Scientist on this matter, especially in regard to the Scamander (and possibly other) sites being actively managed.

Most post-Code plantations established on ex-native forest sites have a greater degree of riparian habitat retention, although the width and quality of SSRs is highly variable depending on the age of plantation (i.e. which Code version was applicable), the original landowner's attitudes and the original composition of the site.

Many post-Code plantation established on essentially cleared land have disturbed strips of remnant native vegetation retained (picture classic riparian remnants amongst pasture, often stock-affected, low water quality, few trees, rubbish present, etc.). Older sites often have plantation species directly abutting previously cleared stream banks or the retained native vegetation patches but more recent Code provisions lead to the "retention" of "buffers" of pasture between the plantation and the stream (because of the perceived future non-commerciality of the riparian areas, which is only partially correct).

There are many examples of excellent management of remnant riparian vegetation in recently established plantations on cleared land. Some forest companies have been particularly diligent in retaining all remnants of native vegetation on properties. However, the degree of application of the concepts of restoration and rehabilitation is variable. A well-intentioned example is the karst topography of the Union Bridge paddocks with sinkholes and drainage features being actively managed to establish a cover of trees. The result of this is yet to be determined because trees have only just been established. On more extensive properties (e.g. in the Evercreech area), getting prescriptions included in FPPs for restoring and rehabilitating riparian areas (essentially to create "links" has been more problematic, meeting with significant land manager resistance (essentially a cost issue).

See also section on remnants below.

- Remnants

As discussed in previous background documents, the term "remnant" is variously defined in different policies. However, the Code contains a specific clause about remnants of particular relevance to the present document:

"In parts of the State where native forests occur mainly as remnants, consideration will be given to:

- retention of native forest remnants to aid in the maintenance of local flora and fauna diversity and landscape values;
- restoration of habitat including widening and linking wildlife habitat strips, particularly where species and communities of high conservation significance are known to occur." (p. 59, dot point 2).

This clause, in theory, applies to both existing and proposed areas of extensive plantation where native forest is restricted to remnant patches. The clause is technically very powerful in requiring "restoration" of habitat but in practice has been rarely applied in a practical manner. There have been a few innovative attempts at applying this Code provision on some areas of private property (e.g. Oatlands, Buckland, Evercreech) subject to proposed plantation establishment on essentially cleared land with varying degrees of acceptance from foresters and managers. To a certain extent, success depends on flexibility e.g. recognising the need for staged restoration and rehabilitation, flexible approach to the traditional concept of 100 m wide strips that must contain forest e.g. using narrow bands of native grassland to link forest remnants.

One of the problems with this Code provision is a definitional one – until the term "remnant" is formally defined in the Code, applying prescriptions to specific sites will remain difficult. This is particularly the case with intensively managed sites such as extensive stands of plantation. To illustrate this point, some examples are provided. A 6 ha patch of non-threatened but possibly regionally depleted lowland *E. regnans* forest amongst pasture and other plantation was defined as a remnant by FPA specialists and the forest company instructed to retain the patch intact. This met with considerable resistance and additional arguments (e.g. locally significant patch of tree-orchid present) were mounted and the patch retained. Retention of the last coupe of native forest in an otherwise converted catchment in the pine plantations east of Scottsdale was loosely defined as a remnant but still ended up being harvested but regenerated to native forest. A similar case several years later in the Retreat block ended up being converted because the planning forester managed to prove that the "remnant" patch of

native forest did not meet the *Forest Botany Manual* concept of a remnant (because it was 1.8 km not 2 km from the nearest patch of native forest greater than 20 ha).

Application of the remnant provisions of the Code to intensively managed agricultural areas is even more problematical because of landowner intentions, the often poor condition of remnants and ongoing management issues (e.g. stock access, firewood cutting, windthrow, fire risk, etc.). Often forest and woodland remnants on private property support populations of threatened flora or can be classified as potential habitat for threatened fauna. Further clearing (or establishing plantation right up to the boundary of the remnant) will often lead to the elimination of the threatened species (due to shading, changed microclimate, leaf litter changes, etc.).

Regulation of retained remnants is also a potential issue that needs to be addressed. If retained remnants are shown as “reserved from harvesting” on an FPP, they become vulnerable land upon FPP expiry, which then places additional constraints on activities within the remnants that may not be compatible with the original intent of their retention and/or the maintenance of the remnant.

Defining the objective of maintaining remnant native vegetation in intensively managed areas is probably as important as defining a remnant in the first place. Retention of remnants for good reason (e.g. presence of threatened flora) is a noble pursuit but if the act of establishing a plantation or continued (or intensified) primary production will result in degradation of the remnant (or its identified values), retention may ultimately not be a worthy pursuit.

The cost of retaining a remnant is often raised by landowners and managers. Some examples to illustrate this point. A 2 ha patch of *E. viminalis* wet forest intended for plantation conversion (prior to the more stringent controls on clearing of RVE vegetation) was estimated at \$15000 per hectare for the initial cut plus a minimum of \$5000 per hectare every 5 years thereafter for the plantation. A 0.5 ha remnant of *E. ovata* forest (also prior to the stringent controls but both examples stand) proposed for conversion to oaks for truffle growing was estimated at about \$2M over the life of the project. These figures become “worse” for mine and property developments.

- Other set asides (e.g. rocky knolls, swamps, etc.)

Many values require management at the operational scale and this is usually through prescriptions applied in FPPs. The prescriptions applied depend on the value present, the site characteristics and the applicability of different Code provisions.

Applying these types of Code provisions to intensively managed landscapes such as existing and proposed plantation sites is rarely problematical. Most existing plantations have numerous minor set-aside already in place (for lots of different values) and their continued retention (although not necessarily protection or appropriate management) is usually practical. Retaining small patches (e.g. rocky outcrops, swampy ground, etc.) amongst new plantation sites is also usually practical to apply and rarely encounters landowner resistance. However, it should be noted that many of the routinely applied prescriptions have been developed over many years in a native forest silviculture setting. An example: it is routinely accepted to apply a 10 m buffer to a sandstone cave/outcrop or a swamp. This may be appropriate if surrounding forest will only be selectively harvested by

may be quite inappropriate if the area outside the 10 m with be pasture-ised or converted to plantation.

Application of these sorts of Code clauses to primary production areas is difficult because of competing objectives. By way of example, installation of an irrigating system in the Midlands required an FPP because of the amount and type of forest being cleared. The irrigating system ended up swinging over a wetland ("swamp" within the meaning of the Code) supporting threatened flora. The FPP had to exclude these areas from its application because the Code would have required application of a 10 m buffer on the swamp.

Application of these sorts of Code clauses to non-forestry activities such as mine sites and subdivisions is often nonsensical (e.g. protecting an interesting rocky knoll from ope-cut mining is silly and preventing urban run-off into a "swamp" within a subdivision is impractical).

See also section on remnants below.

- Operational site-specific prescriptions for values such as disease, weed and reserve management.

These types of issues are relatively easily addressed for individual coupes but more difficult to apply in more intensively managed landscapes such as extensive plantation estates. At an individual coupe level where the issues are often one-off (e.g. treat a small patch of a weed prior to operations, buffer only a short section of reserve to prevent myrtle wilt with no ongoing maintenance, one-off machinery hygiene for a coupe) but with extensive plantation estates, the issues become a long-term management concern. For example annual monitoring and control of weed establishment along reserve boundaries may be required and it may be difficult to enforce this with FPPs of short duration. Ongoing maintenance of plantations may mean regular machinery hygiene protocols must be applied but again, this is only likely to occur during the operation of an FPP. Intensely managed plantations present their own management issues by virtue of their size. For example, protecting a rare plant in a remnant roadside patch of native forest from herbicide exposure is easy if its just one patch in a small plantation (e.g. use a backpack and person on the ground) but protecting the same patch amidst a sea of plantation becomes difficult because aerial spraying with less control is usually used.

Applying these sorts of management prescriptions to extensive non-forestry activities such as primary production sites is variably practical. Some managers already undertake weed management either voluntarily or because of provisions of the *Weed Management Act 1999*. But it should be noted that primary production land under the control of an FPP may also be subject to other activities not compatible with the values being managed under the FPP (e.g. the FPP may require use of a bio-active herbicide around streams but the land owner may be pouring dairy effluent and chemicals into the same stream). Few landowners manage for plant diseases such as *Phytophthora cinnamomi* and imposition of prescriptions in FPPs for land clearing are often difficult to apply (e.g. landowners use their own equipment with no suitable washdown facilities).

Applying these sorts of management prescriptions to non-forestry activities is also variably practical. Industries such as the mining and telecommunications sectors often already have more stringent controls on the manner in which they manage these sorts of issues than is usually applied through FPPs. However,

applying prescriptions for weed management, by way of example, for an FPP for a subdivision creates ongoing management and compliance issues perhaps better dealt with through local government requirements.

- Special values evaluations for fauna and flora

The present special values evaluation sheets are designed to allow planners to take account of various flora and fauna values. They are principally used at an operational (i.e. FPP-level) scale rather than a strategic scale. Most of the key issues addressed by the evaluation sheets already assume that some of the more strategic (landscape-level) type of planning has already occurred. As such, the evaluation sheets are not presently designed to cater for more intensively managed scenarios. As an example, the fauna evaluation sheet does ask the planner if new WHSs are needed for a larger property but the supporting documentation (including the Code and Fauna Technical Note) do not provide much guidance on this (principally because the Code provisions for WHSs are based on native forest silviculture not intensively managed landscape).

There may be some benefit to reviewing the evaluation sheets but some of the other matters raised in this document (e.g. defining remnants and objectives for their management, altering the Code to include provisions for WHSs and WHCs in plantation scenarios, etc.) may need to be addressed first.

- Implementation of “agreed procedures” for threatened species

The agreed procedures have been discussed in some detail in previous background documents. Issues regarding their application to “wood production areas” have already been discussed and are not repeated here in detail.

Some intensively managed areas (e.g. existing and proposed areas of extensive plantation) are effectively covered by the agreed procedures because they clearly fall under the concept of “wood production areas”. As the procedures are applicable, the consequent use of planing tools and undertaking of consultation follows. Whether the planning tools are adequate to cater for the management of threatened species in plantation situations is a concern.

In relation to threatened flora, the main concern is the poorly known presence of threatened flora in plantation areas (e.g. *Ehrharta juncea* in the northwest plantations, *Pimelea filiformis* in the central north plantations, *Odixia achlaena* in southeastern plantations, *Pimelea flava* in southern and northern plantations, *Bossiaea obcordata* in Fingal plantations) and the fact that existing plantations would rarely warrant a survey for threatened flora. However, this really is a minor concern because the first two cited species examples are proposed for de-listing, the middle two should be, and the sites of the latter species are relatively well known, within reason. Of greater concern is that existing retained native forest patches amongst plantations often support threatened plants and their presence is not usually detected and so ongoing management may not be appropriate (e.g. *Spyridium parvifolium* and *Pomaderris intermedia* in northern plantations). Proposed plantations on existing cleared land also pose a concern because numerous surveys have indicated that pasture (especially poorly-drained sites) and pasture remnants often support threatened flora (e.g. *Hypoxis vaginata* is a widespread pasture species throughout most of the eastern half of the State, *Vittadinia* and other threatened grassland and rockplate species on

rocky knolls and rocky rough pasture, threatened *Juncus* species in “wet pasture”, etc.). This is a policy level concern about the differential level of botanical assessment required for different situations within and outside the forest practices system.

In relation to threatened fauna, the concerns are more complex. Some concerns are at the species and site level (e.g. the risk of finding an eagle nest in a plantation or pasture remnant), some at the catchment level (e.g. hydrological changes to a stream system supporting giant freshwater crayfish) and some at the regional scale (e.g. amount of habitat required for a particular species throughout its range). To a certain extent, the provisions of the *Threatened Fauna Adviser* deal with the majority of these situations, especially at an operational level. The present review of the *Threatened Fauna Adviser* should be able to address the myriad of concerns presented by more intensively managed landscapes (e.g. lots of new eagle nests in plantation remnants, ongoing management of plantations next to eagle nests, etc.) but some of the larger-scale issues are more complex and better dealt with at a policy level. For example, development of public authority management agreements for species such as stag beetles and velvet worms, and land management agreements for properties such as Woolnorth, may be a better way of dealing with strategic management of threatened fauna. A complementary process may be the development of a policy that defines how much habitat for a threatened species is needed at different scales (e.g. Statewide, bioregion, forest bloc, large property, coupe level) – different processes may then allow implementation of the policy (e.g. PAMA or LMA for a region and *Threatened Fauna Adviser* prescriptions for a property or coupe).

Part 2. Management of weeds in relation to reserves

General discussion

Section E4 of the *Forest Practices Code* is the primary section dealing with the management of weeds in commercial forestry situations. The following are all the clauses related to management of weeds.

“General Principles

- Pests and diseases can pose economic and environmental threats.
- Lack of weed control can affect adjoining land and the viability of plantations. Noxious weeds can invade native forests” (p. 92, dot points 7 and 8).

“Basic Approach

E4.3 Weeds

- A list of declared weeds which may cause problems in agricultural and forested areas is available from DPIW.
- Before moving harvesting, roading and site preparation machinery from an area carrying declared weed to an area free from weeds, machinery should be thoroughly washed on site, but well clear of any watercourse.
- Where applicable control measures will be specified in a Forest Practices Plan.” (p. 93, dot points 7, 8 and 9).

The emphasis on the Code wording is on minimising damage to commercial forestry and agricultural activities rather than managing native forest sites for their intrinsic conservation values. In addition, the phrasing leaves much planning and implementation to the discretion of forest planners who are simply referred to out-of-date documentation. In practice, very few FPOs are even aware of the Tasmanian *Weed Management Act 1999*, which species are “declared weeds”, how their activities might affect the spread of these weeds and their obligations under the Act (e.g. “containment” versus “eradication” depending on the species and/or municipal zone).

The Code refers to “declared weeds”. While many “declared weeds” have the potential to establish and proliferate in reserves adjacent to forestry activities there are also many other species that may also pose a risk (e.g. blue butterfly bush *Psoralea pinnata*) at specific sites. The Code does not appear to deal with this class of weed.

Section D3.1 (Flora Conservation) of the Code presently contains a “Basic Approach” clause under the “Planning and Assessment” section that states:

“Planning for broad areas of forest will require the consideration of the conservation requirements of plant communities and species, maintenance of values in formal and informal reserves, and other flora-related issues”. (p. 60, dot point 2)

In a sense, this clause does provide for management prescriptions to be applied in some situations but it is suggested that the phrasing is too broad (see discussion of this clause in previous background documents, especially in relation to identifying values in reserves) and specific wording related to management of weeds should be developed.

Two additional “Basic Approach” clauses under the “Site Management for Flora in Native Forests” go some way to addressing the specific management prescriptions that may need to be applied:

“Measures should be taken to ensure exotic weed species, (e.g. pampas grass, ragwort, blackberry and Spanish heath), do not become established in native forest, particularly

reserves. Native forest most at risk includes areas adjoining plantations, and drier forest types in general. Machinery should be washed down before being transported from one area to another, particularly when moving from infested to uninfested areas". (p. 61, dot point 3)

"Consideration should be given to the protection (e.g. by buffering) of native forests, particularly reserves, from incursion by adjoining plantation species. For example, dry forests may be invaded by radiata pine, and some planted eucalypts may hybridise with related species in adjacent native forest". (p. 61, dot point 34)

The special values evaluation process for flora requires forest planners to identify if reserves are adjacent to proposed FPP areas, to identify potential risks and to seek specialist advice if risks are anticipated that cannot be mitigated against to the satisfaction of the planner. However, as indicated above, most FPOs do not possess the relevant skills to implement these clauses of the Code in a practical sense, and the present training provided to FPOs by the Forest Practices Authority does not address management of weeds in sufficient detail (FPO course currently emphasises disease management as a key issue).

The matter of regulatory control of weeds through the forest practices system also requires some discussion. The scale of both infestation and activity affects the degree to which control can be implemented and how effective the control will be. For example, a small infestation of spanish heath in a small coupe to be selectively logged can be managed simply enough e.g. include prescriptions in FPP to eradicate patch before operations commence, apply machinery hygiene practices, exclude the patch from disturbance and monitor and control new infestations during the life of FPP. However, extensive infestations of highly invasive weeds in more intensively managed landscapes (e.g. extensive plantations especially where agricultural weeds were present) are more difficult to manage, simply because of the scale of the problem being unmanageable during the usual life of an FPP (say 2 years). This issue is exacerbated if there is a risk of weed invasion into adjacent reserves and effective management will require regular (e.g. annual) monitoring and control of weeds within the plantation, along the plantation-reserve boundary and in the reserve. Such management is unlikely to continue beyond the expiry of the relevant FPP.

It is noted that the Tasmanian *Reserve Code of Practice* does not contain any specific guidance in relation to the management of weeds in reserves adjacent to commercial forestry sites.

The following recommendations are made in relation to weed management:

- that Section D of the Code be revised to include more specific reference to weed management, both as General Principles and Basic Approach clauses;
- that Section E of the Code be reviewed to alter the emphasis of the phrasing from commercial to conservation management (both are important so should perhaps be separate clauses);
- that the cross-referenced information on weed management be updated to more recent DPIW documentation (see previous background reports for reference to documents such as washdown guidelines);
- that the existence of the Tasmanian *Weed Management Act 1999* be formally acknowledged in the Code and a brief summary (as a planning "flag") of the key responsibilities of land managers and land owners be provided (e.g. "containment" vs "eradication", "zone A" vs "zone B" municipalities);

- that the flora special values evaluation sheet be reviewed and a greater emphasis be placed on the risk of weed spread into reserves adjacent to planned forestry operations;
- that a Flora Technical Note on weed management obligations of FPOs be developed;
- that a Flora Technical Note on the management of conservation values in reserves adjacent to planned operations be developed (note that the emphasis is on flora values rather than fauna);
- that a policy be developed to facilitate longer term monitoring and control of weeds in sites such as reserves (or similar high conservation value sites) beyond the usual period of an FPP.

Management of pine wildlings

Pinus radiata is planted extensively throughout much of Tasmania. While *P. radiata* is not listed as a declared weed within the meaning of the Tasmanian *Weed Management Act 1999*, its potential as an environmental weed is widely recognised. This background document will only consider the potential of *P. radiata* to act as a weed of reserves within and adjacent to commercial forestry operations (although it is recognised that it can be adventive along roadsides and other disturbed situations).

Despite the extensive estates of softwood plantations on both public and private land in Tasmania, and the anecdotal knowledge that pine wildlings often establish outside the defined bounds of the planted areas including into adjacent formal reserves, this management issue has received little **formal** attention (in terms of research and monitoring) in Tasmanian commercial forestry.

The Forest Practices Authority with funding support from Forestry Tasmania's Intensive Forest Management program undertook a study of the potential impacts of pine wildlings in Tasmanian forests. The work was undertaken by an FPA project officer, Katriona Hopkins in about 1999. She produced a relatively detailed literature review (available as hard copy only – included at Appendix B). She also undertook extensive field sampling in northeastern Tasmania. The data collected was collated into complicated Excel spreadsheets and very little analysis was undertaken. Subsequent to Katriona's departure, Fred Duncan engaged a statistician from Forestry Tasmania to analyse the data. To facilitate this project, a project summary was produced (included at Appendix C), which effectively summarises the extent of the field work undertaken by Katriona.

I am advised that the statistical analysis has not been undertaken (due to the departure of the officer during the early stages of the project). However, because I was closely involved in the project design and undertook several days of field work, I am in a position to provide a brief summary of findings.

- pine wildlings are a significant management issue in Tasmania's northeastern forests and probably elsewhere in Tasmania;
- wildlings readily establish on boundary tracks surrounding pine plantations;
- wildlings readily establish in adjacent native forest;

- wildlings establish in higher numbers in more open forest types (i.e. establishment seems to be most prevalent in dry sclerophyll forests and least in wet sclerophyll forests);
- there is some evidence that site characteristics such as aspect and topography affect establishment;
- wildlings are most common within the first 0-20 m of the pine plantation/track boundary and their density rapidly diminishes as distance from pine plantation increases (but this is affected by the forest type and other site features).

Forestry Tasmania, independent of the Forest Practices Authority's pine wildling study, undertook a field assessment of the potential impact of pine wildlings in WHSs (Jennings & Wardlaw 2006). They found that:

- pine wildlings were becoming established within WHSs, especially within drier forest types (up to 100s of metres into native forest);
- pine wildlings showed the ability to spread into undisturbed forest;
- wildlings could be found throughout the entire width of a WHS; and
- wildlings have the potential to change the whole structure of the WHS with the likely effect of markedly diminishing their value for conservation.

The key recommendation of Forestry Tasmania's report was:

- "Wildling pines: Control of wildling pines in WHS adjacent to mature or 2R pine plantations will be necessary if conservation value of WHS is to be maintained. This will need to be an ongoing program to be effective. An assessment of the extent of this problem needs to be done before any timeframe or methods can even be considered. The Forest Health Surveillance Team will undertake this task in the coming season and report accordingly". (p. 14).

A full copy of Jennings & Wardlaw (2006) is provided with this background report to the BERP for its further consideration (Appendix D). A more detailed report on the findings is available in draft format (Fred Duncan pers. Comm.).

My additional observations on this management issue are as follows:

- there are several forest reserves in the northeast of the State that currently support quite extensive infestations of pine wildlings (mainly in the Scamander-St Helens area);
- there are some threatened flora species that may be affected by the further spread of wildlings through modification of understorey shading and litter composition (e.g. *Hibbertia calycina* populations in the Skyline Tier area);
- there are some areas of retained native forests strips (e.g. in the Nicholas-Saddleback-Scamander area) amongst pine plantations that are now so infested with pine wildlings that the term "mixed forest" (i.e. dry eucalypt forest mixed with pine wildlings) is used – many such strips are often classified as potential habitat for threatened fauna such as velvet worms.

It is recommended that BERP encourage the completion of the pine wildling research projects by both the FPA and FT to gain a better insight into the scope of the management issues associated with the management of pine wildlings in reserves adjacent to pine plantations.

References

Jennings, S. & Wardlaw, T. (2006). *Monitoring the health of wildlife habitat strips in State forest plantations*. Technical Report 26/2006.

Appendix A. Consultant Brief

Project

Review of processes for conservation of biodiversity under the Forest Practices Code (2000).

Tasks

- Review information on the following issues to assist the BERP in its consideration of questions raised by members of the general public in relation to TOR 2:
 - Do current Code provisions and planning processes for biodiversity meet objectives in more intensively managed landscapes (where both commercial and non-commercial activities). Provide examples to illustrate possible response.
 - Review information on invasion of weeds into informal and formal reserves for consideration by the Biodiversity Expert Review Panel.
- To attend the Biodiversity Review Panel meeting in April to present the information gathered.

Timeframe

- April 9th - Provide first draft Background document 5 to executive officer for comment.
- April 14th – Provide second draft of Background document 5 to executive officer for circulation to BERP.
- Mid April (TBA) – Attend BERP meeting 10 to present summary of information contained in Background document 5.

Terms of Reference

1. Review the role of the Forest Practices System in the overall approach to the maintenance of Biodiversity in the State.
2. Review the relevance and scope of the Forest Practices System in relation to biodiversity conservation and evaluate the ability of existing provisions to meet conservation objectives at the local, catchment and regional scales. In particular consider:
 - a) Processes and planning tools to meet objectives and requirements of the RFA, Tasmanian Nature Conservation Strategy, Threatened Species Strategy, Threatened Species Recovery Plans, Tasmanian *Threatened Species Protection Act, 1995* and other relevant National and State legislation and policies.
 - b) Processes and planning tools to address current forest practices at both the landscape and stand level. Provisions to address plantation design and planning are a priority. Provisions for stream fauna are also a priority. In particular, consider the research undertaken to address issues raised in the last review of the Code, relating to the management of stream fauna, and translate outcomes into recommended actions.
 - c) Processes and planning tools for facilitating legislative responsibilities amongst agencies (e.g. interagency agreed procedures).
 - d) Processes and planning tools to facilitate implementation - practicability of current planning processes and provisions (strategic and operational).
 - e) Relationships between biodiversity provisions and other forest management provisions covered in the Code (eg. provisions for other natural and cultural values, roading, burning etc.).
3. Review the monitoring (implementation and effectiveness) that underpins the biodiversity provisions of the Code. What are the mechanisms for delivery of adaptive management under the FP system? Is the Code sufficiently adaptive in its approach? Are there appropriate feedback mechanisms outlined in the Code?

4. Review current research relating to the distribution, ecology and impacts of forest practices on forest fauna and flora and report on future funding priorities for new information.

Appendix B. Pine wildlings – literature review by Katriona Hopkins

Separately appended as **hard** copy.

Appendix C. Pine wildlings – project outline by Fred Duncan

Separately appended as **hard** copy.

Appendix D Jennings, S. & Wardlaw, T. (2006). *Monitoring the health of wildlife habitat strips in State forest plantations*. Technical Report 26/2006.

Separately appended as **hard** copy.