

Summary of recommendations made in the Review of the Biodiversity Provisions of the Tasmanian *Forest Practices Code*

Prepared by the Forest Practices Authority

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Key recommendations

Recommendation 1: That the Forest Practices Authority canvass with relevant agencies the establishment of a state-level set of overarching principles and objectives for off-reserve management of forest biodiversity. The establishment of such principles and objectives will require a multi-agency approach in consultation with stakeholders. (chapter two and chapter six, table 6.1)

Recommendation 2: As a result of the panel's review, some changes would be needed in legislation and policies to enable the forest practices system to assist forest management systems to achieve sustainable management of biodiversity, such as to allow for the inclusion of measurable objectives in the Forest Practices Code, establishing consistency in threatened species management. (chapter two)

Recommendation 3: The state should review the relevant roles and responsibilities of affected agencies, including interagency working groups, with a view to ensuring a more integrated and coordinated approach to the conservation of biodiversity. (chapter two)

Recommendation 4: Incorporate biodiversity conservation as a specific objective into the Forest Practices Act and include clear biodiversity objectives, sub-objectives and measurable outcomes in the Forest Practices Code (chapter two)

Recommendation 5: Incorporate those sub-objectives and measurable outcomes identified in table 6.1 into the Forest Practices Code. Reporting on progress should be formally linked to Forest Practices Authority annual reporting and/or to State of Forest reporting as appropriate. (chapter six, table 6.1). Further development and quantification of several sub-objectives identified in table 6.1 should be carried out by the Forest Practices Authority, in consultation with stakeholders so that implementation is practical and measurable. The panel consider that the consultation process should not be used to delay implementation of the measurable objectives.

Recommendation 6: Incorporate the National Forest Policy Statement's definition of sustainable forest management (Appendix C) into the Forest Practices Act and revise the objective of the Forest Practices Act accordingly. (chapter two)

Recommendation 7: Fully implement the RFA and RFA review recommendations for delivery of ecologically sustainable forest management as recommended by the Ramsay Report. (chapter two)

Recommendation 8: The forest practices system should increase its capacity to plan and manage strategically to provide more effective landscape level guidance for planners. Four scales of planning should be considered. These scales are:

- 1. statewide*
- 2. bioregional (IBRA)*
- 3. Planning Context Unit (PCU)—a notional contextual area around the planning node which depends on the scale of operation—the panel suggest using the CFEV major drainage basins*
- 4. Coupe Context Unit (CCU) which on State forest may be a notional 400 ha unit around the coupe, or may be a private property boundary and surrounding land-use context.*

(chapter four)

Recommendation 9: The concept of adaptive management and its key components should formally be recognised in the Forest Practices Act and Forest Practices Code so that changes can readily be incorporated. (chapter three)

Recommendation 10: Sufficient resources should be made available to allow for maintenance of adequate databases, mapping and GIS facilities.(chapters three and four)

Recommendation 11: A review be undertaken into ways of increasing relevant research capacity to support the forest practices system, including reviewing the research role of the Forest Practices Authority, academia, industry and other sources. In any event, the Forest Practices Authority should actively seek to increase its capacity to address biodiversity-related issues especially to facilitate and assimilate relevant research as well as addressing needs for GIS and database establishment and maintenance. (chapter five)

Recommendation 12: The Forest Practices Authority actively review and upgrade a systematic program of effectiveness monitoring for biodiversity conservation. (chapter five)

Recommendation 13: The Forest Practices Authority should collaborate with other relevant bodies, including DPIW, FT, PFT and private land stakeholders to prepare a discussion paper on its role in the provision of strategic level planning, with a view to informing government on the need to clarify roles and responsibilities across government for the strategic level conservation of biodiversity outside of reserves. This paper should include discussion on strategies and processes to deal with emerging issues such as the effects of climate change. (chapters three and four)

Recommendation 14: The panel note and endorse that the current Forest Practices Code Wildlife Habitat Strip provision applies to both state and private land where relevant. They encourage the further development on private land where this is achievable. (chapter four)

Recommendation 15: Biodiversity conservation issues should be considered at each of the four scales (see Recommendation 8) at the planning stage and integrated with other non-wood values (e.g. visual landscape, cultural heritage). (chapter four)

Recommendation 16: Gene conservation issue such as the current management to ameliorate exotic gene flow from Eucalyptus nitens to E. ovata should be included in the Forest Practices Code.(chapter four)

Recommendation 17: The following elements should be incorporated into the overarching Forest Practices Code principles:

- 17.1 Change flora and fauna in the Forest Practices Code to biodiversity to include three levels of biodiversity—genes, species and ecosystems.* (chapter two)

17.2 Planning should consider appropriate spatial and temporal scales and integrate relevant terrestrial and aquatic systems. (chapters two and four)

17.3 Adoption of more surrogate habitat approaches and other systems combined with individual prescriptions where these are needed. In some cases the tools for such an approach are already in place e.g. the Conservation of Freshwater Ecosystem Values database. (chapters three and four)

Recommendation 18: In the absence of any overarching vegetation management authority, this function should be adopted by the Forest Practices Authority. This may require legislative change and adequate resourcing. (chapters two and four)

Recommendation 19: There should be ongoing development of tools required to meet the recommended principles and objectives. The forest practices system planning and information support tools should be captured in a web-based Biodiversity Decision Support System so that it can be easily updated and accessed by planners and practitioners. (chapter four)

Recommendation 20: The history of management for the conservation of biodiversity values under the forest practices system should be formally recorded on an appropriate database to aid in future decision making and ensure continuity of management. The degree to which this is undertaken would vary depending on the measure applied and this should be determined by the Forest Practices Authority. (chapter four)

Recommendation 21: The state should immediately review the implementation of its Permanent Native Forest Estate Policy because clearance levels are approaching thresholds. (chapter two)

Recommendation 22: Maintain forest areas so that a 50% loss since 1750 on a bioregional basis is not approached. In those areas where this is being approached, or has already been exceeded, maintain all existing viable forest areas. (chapter two, chapter six, table 6.1)

Recommendation 23: Native forest community bioregional thresholds should be set at a threshold of maintaining 75% of the 1996 area or 2000 ha, whichever is the greater, unless a review of mapping and conservation status determines those communities are not of bioregional significance. (chapter two, chapter six, table 6.1)

Recommendation 24: The Forest Practices Code should explicitly recognise the importance of maintaining old growth attributes in the forest and of maintaining structural diversity across the landscape. (chapter four, chapter six, table 6.1)

Recommendation 25: In order to maintain structural diversity in the forests, no more than 15% of the native forested area of any CFEV catchment should be harvested by clearfell burn and sow methods in any 10 year period. (chapter four, chapter six, table 6.1)

Recommendation 26: Aim to maintain at least 30% of native vegetation (e.g. 30% cover or basal area) with a focus on trees with mature and old growth elements currently available at all four spatial scales. (chapter four, chapter six, table 6.1)

Recommendation 27: The Forest Practices Code should recognise that there are a number of ways of achieving structural habitat retention and flexibility of prescription application should be used to meet this objective, albeit with a reporting requirement to ensure that appropriate provisions have been made. (chapter four)

Recommendation 28: The forest practices system and Forest Practices Code should take appropriate account of biodiversity conservation in the context of planning and management

of plantations, and the current code review should address this need as an explicit task. (chapter four)

Recommendation 29: In June 2000, a workshop on Fauna Issues and Plantation Design was convened by the Forest Practices Authority and the CRC for Sustainable Forest Production (Munks and McArthur 2001). The outcomes of the workshop provide a set of principles and recommendations which could be incorporated into the Forest Practices Code after a review to clarify conflicts between some recommendations for browsing control and those for biodiversity maintenance. (chapter four)

Recommendation 30: The Forest Practices Authority should develop water-specific planning tools to maintain a proportion of unharvested headwater catchments and to maintain the spatial and temporal integrity of longitudinal and lateral connections of river headwater networks. These planning tools should take a flexible approach and the proportion of catchment required may be achieved as part of the CCU planning aim to maintain 30% of native vegetation. The effectiveness of the measures applied need to be monitored and the measures need to be further developed through research. (chapter four, chapter six, table 6.1)

Recommendation 31: Rehabilitation to become a 'should be considered' requirement in general and a 'will' requirement where required to meet specified ecological objectives. For example, rehabilitation of stream side vegetation may be required where clear and positive biodiversity outcomes can be achieved in a practical way. (chapter four)

Recommendation 32: In the absence of an integrated statewide approach to the conservation of remnant vegetation, the forest practices system should specifically address the retention and management of remnant vegetation in different situations, with an emphasis on remnants of high conservation significance. (chapter four)

Recommendation 33: The following aspirational objective be included for the management of genetic resources in areas covered by the forest practices system:

Maintain natural levels of genetic diversity and patterns of differentiation in forest tree species and species complexes to ensure their long-term evolutionary potential retain natural values and retain genetic resources for human use. (chapter two)

The panel note that this objective could only be operationalised through the application of specific examples such as the protection of geographically separate or genetically distinct populations, the use of local seed sources, and the management/mitigation of gene incursions by exotic species. Some of these procedures are already in place.

Recommendation 34: That the Forest Practices Code specifically emphasise the importance of ensuring that species currently not threatened do not become threatened through forestry actions. (chapters one and two)

Recommendation 35: The Forest Practices Authority should seek to ensure that there are clear links between its biodiversity conservation measures and processes and the requirements of threatened species Recovery Plans and Listing Statements. (chapters two and four)

Recommendation 36: The Forest Practices Authority should encourage the development of strategic level planning tools and processes relevant to threatened species. (chapter four)

Recommendation 37: Relevant authorities should progress programs to integrate threatened species into landscape level planning, using multi-species approaches where appropriate. (chapter four)

Recommendation 38: A formal, regular and transparent process be adopted for review and update of forest and non-forest species which potentially could become threatened. (chapter four).

Recommendations 39: That the Forest Practices Code encourages the move away from reliance on large and extensive clearfell burn and sow (CBS) harvesting systems in native forests and that maximum CBS coupe size should generally not exceed 60 ha. Where coupe sizes need to be larger (e.g. for safety and fire management considerations or to avoid adverse environmental outcomes) the reasons should be explicitly stated. (chapter four, chapter 6, table 6.1)

Recommendation 40: That the Forest Practices Code incorporate provisions on the size and dispersal of coupes in relation to both plantations and native forest to ensure the maintenance of structural diversity at multiple spatial scales. (chapter four)

Recommendation 41: That the current revision of the Forest Practices Code evaluate, and where relevant incorporate additional suggestions made by the panel in the body of this report and on existing biodiversity provisions of the Forest Practices Code. (Appendix F)

Auxiliary Recommendations

Chapter 2: ToR 1—Policy and legislative framework for biodiversity maintenance in Tasmania

From the viewpoint of biodiversity conservation, the forest practices system could be improved by the following actions:

- *Incorporating a definition of sustainable forest management as provided in the National Forest Policy (see Appendix C). Currently the primary objective of the Forest Practices Act cannot be met because the forest practices system is a regulatory rather than a forest management system.*
- *Incorporating biodiversity conservation as a specific objective into the Forest Practices Act.*
- *Including a definition of the term ‘reasonable’ into the Forest Practices Code because forest practices are to be conducted to provide ‘reasonable’ protection to the environment. Similarly, ‘reasonable’ duty of care should also be defined.*
- *Providing for biodiversity conservation in the longer term, at least by recognition of the role of other policies and procedures. Currently the Forest Practices Code:*
 - *only protects values for the duration of the Forest Practices Plan*
 - *does not provide for integrated planning in the non-commercial context where the Forest Practices Plan is often only one part of the planning process*
 - *does not require maintenance of any centralised recording of the location of vulnerable land.*
- *Establishment of a set of overarching guidelines or principles for off-reserve management to match the clear criteria set for the establishment of the CAR reserve system. The establishment of such guidelines for Tasmanian forests as a whole would require a new policy directive across agencies, including the Forest Practices Authority (FPA), in collaboration with a range of affected stakeholders.*

- *Increasing the capacity of the FPA to address these issues especially with respect to GIS and database establishment and maintenance.*

Chapter 3: ToR 2a and 2c—Implementation of biodiversity conservation via the Tasmanian forest practices system—meeting policy and legislation

Principles and objectives

- *Although the current Forest Practices Code has General Principles, some of which mention aspects of biodiversity conservation, they are not helpful for planning and operational implementation. The Forest Practices Code lacks any explicit statement about specific biodiversity objectives and outcomes. The panel has reviewed the need for such objectives and proposes a draft set for consideration in chapter six.*

General Principles and Basic Approach for general planning

- *The current approach could be simplified in some cases, e.g. plantation thinning and harvesting where these operations have been assessed previously and are unlikely to have a major impact on biodiversity values.*
- *Threatened non-forest communities and associated biodiversity values should also be catered for in the Forest Practices Code and associated Forest Practices Plans.*
- *The need for ongoing training in biodiversity conservation management for Forest Practices Officer's (FPO) accreditation is a high priority in order to maintain on-ground biodiversity conservation planning skills.*
- *The requirements for the conservation of natural and cultural values, including specific sites, should be recorded to aid in future decision making and ensure continuity of management. The scale at which this is undertaken will vary depending on the measure and this will be determined by the Forest Practices Authority.*
- *Areas of high conservation significance should be designated as Special Management Zones (SMZ) where operations comply with the agreed management recommendations with appropriate specialist advice.*
- *Strategic planning approaches should be adopted wherever feasible, to minimise 'last-minute' coupe level take up of issues.*

General Principles and Basic Approach for flora and fauna

The panel recommends the inclusion of the following elements into the General Principles:

- *Adoption of a broader approach to incorporate systems such as surrogate habitat approaches combined with individual prescriptions where these are known and necessary additions. In some cases, the tools for such an approach are already in place e.g. the CFEV database for freshwater ecosystems values.*
- *Change the wording of flora and fauna to biodiversity to include all levels of biodiversity—from genes to species and ecosystems.*
- *Spatial and temporal scales should be considered in a bioregional context, to include a land and water systems approach to planning.*
- *There should be active consideration and management of threatening processes—including weeds, pests, diseases and genetic pollution.*

The panel recommends that the forest practices system should also specifically set out:

- *how biodiversity outcomes are to be achieved*
- *how the responsibility for its achievement at the different scales is to be allocated*
- *how success/effectiveness of this planning is to be measured.*

Flora and fauna conservation

The panel recommends:

- *adoption of a web-based threatened flora adviser along similar lines to the TFA and incorporation into a single Threatened Species Adviser*
- *inclusion of regional and subregional biodiversity conservation issues at the planning stage*
- *inclusion of consideration of gene conservation issues*
- *resourcing to allow for maintenance of adequate databases, and a mapping and GIS facility*
- *adequate resources for monitoring and review of the effectiveness of prescriptions.*

Agreed Procedures

- *The panel notes that the Agreed Procedures appear to relate specifically to ‘wood production forests’ and recommends that the situation for FPPs certified for other purposes (e.g. residential subdivisions outside of wood production forests) should be clarified. The Agreed Procedures should also consider vegetation communities as well as species.*
- *The panel notes that it is unclear whether and how this ‘monitoring of efficacy of prescriptions’ actually happens. What monitoring of efficacy of prescriptions for the protection of threatened species has been done? How adequate/defensible are the data to address the question of adequacy of prescriptions?*
- *Thus the panel would like to see established a clear set of steps that spell out the resourcing, design, information generation, feedback to management, and ultimately incorporation into management of appropriate actions and prescriptions.*
- *The panel also recommend the establishment of a clear process for the monitoring of the efficacy of prescriptions.*
- *The panel considers that a transparent process is needed to ensure funding/resourcing for this research is made available, at appropriate levels and that there is a clear basis and process for setting and review of priorities for biodiversity conservation in general and threatened species in particular. The Agreed Procedures should also cover threatened vegetation communities.*
- *The panel also consider that the Agreed Procedures process requires review. Whilst the Agreed Procedures are particular to the two agencies with legislative responsibility for threatened species conservation, a revised process to include other major stakeholders to could facilitate the review and implementation of the procedures.*

Priority Species

- *The panel endorses the recognition of RFA Priority Species and notes that there appears to be some confusion about the process for listing and updating of Priority Species and therefore recommends that a formal, regular and transparent process be adopted for the review and updating of the list as recommended in the 10 year RFA review.*

Tasmanian Nature Conservation Strategy

- *The panel recommends that a process be developed for the systematic consideration and inclusion of measures for new weeds, pests and diseases (eg. foxes, devil facial tumour disease).*
- *The panel recommends that the CFEV data base be adopted as a planning tool to assist conservation of freshwater values as part of the forest practices system and the FPA maintain an active liaison and facilitation role in the development and subsequent adoption of research and modelling techniques for catchment planning. Of the tools that were under development at the time of this review, the panel noted the potential utility of WAFL (Water Availability and Forest Landuse Planning Tool) and PIRI-Tas (Pesticide Impact Rating Index). WAFL can support regional decisions about water use under different scenarios of changed land-use in a catchment (e.g. increasing the area under plantation). PIRI-Tas is a risk-based software tool to assist in decisions about where and when to apply pesticides.*
- *Whilst there will always be some species with individual requirements that require strategic planning, the panel considers that strategic approaches which deal with multiple species requirements probably offer the only viable way of achieving broad scale protection .*
- *The panel understands that the FPA currently already has the capacity within the forest practices system to institute improvements of planning for biodiversity conservation within its jurisdiction.*
- *The current forest practices system approach should have the flexibility of approach and the resourcing capacity to respond to changes.*
- *The panel notes that DPIW has also produced a Consultant's Brief in 2004, which relates to assessment of development proposals. There are several differences between the DPIW and FPA 'briefs' which may reflect differences of approach between FPOs and biodiversity consultants more generally. The panel recommends that FPA liaise with DPIW to maximise consistency of standards and approaches.*
- *Guidelines to protect drainage lines need to be added to the forest practices system. Road crossings (especially culverts) can limit longitudinal connectivity within streams, and the forest practices system needs to be adjusted to take advantage of recent, local research that can improve fish passage in culverts.*
- *MEZs on Class 4 streams probably do not prevent all inputs of sediment, especially shortly after harvesting in clearfell, and some additional provisions to protect species that depend on small, headwater streams may be warranted.*
- *Groundwater and groundwater-dependent ecosystems remain poorly mapped across Tasmania, and that future developments in this area (probably via CFEV) may result in a more coherent strategy for dealing with these communities.*

- *The panel have provided a definition of remnant vegetation and recommend its adoption for the forest practices system (Appendix C)*

Tasmanian Natural Resource Management

- *The panel notes that the issues of air pollution, climate change and fire all potentially impact on biodiversity in ways that are not addressed by the current Forest Practices Code. The panel recommends that the Forest Practices Code overtly and formally consider these issues for inclusion in future reviews of provisions where needed.*
- *The Forest Practices Act requires review of the Forest Practices Code and this includes public consultation. However the panel notes that there is no formal process for dealing with public involvement about potential adverse biodiversity issues although stakeholders are involved through the Forest Practices Advisory Council.*

Duty of Care

- *The panel notes that duty of care covers areas defined as forest and thus does not cater for non-forest areas covered by the Forest Practices Code.*

Chapter 4: Terms of Reference 2b, 2d and 2e. Implementation of biodiversity conservation via the current Forest Practices Code— processes and planning tools

The Forest Practices Code

- *Currently the forest practices system has legislated or policy responsibilities to deal at the statewide, bioregional and coupe levels, and uses the landscape context scale to inform reviews of applications about biodiversity planning around the immediate area of concern. The panel endorses this approach and recommends that it be formally adopted in consideration of FPPs. However the panel notes that whilst there is a very good planning system at the broader scale on public land, no such system exists for private land or for the consideration of biodiversity issues across tenures. In the absence of any statewide policy for consideration of these landscape context values for biodiversity, the panel recommends that such considerations be adopted formally within the Forest Practices Code to set the FPP context for biodiversity conservation. Thus planners should consider the spatial context of the individual coupe, whether on public or private land, taking into account such factors as reserve proximity, retained native forest, likely disturbance impacts, off-site effects and so on.*
- *Data from studies at the Warra LTER site and elsewhere demonstrate conclusively that there are significant components of biodiversity that are dependent on old growth forest for their survival. These elements are disadvantaged by 100 year or less clearfell regimes followed by burning and resowing to maintain regrowth forests, especially as the biological legacies of previous old growth forests are depleted over successive cutting regimes. Thus it is important that the Forest Practices Code recognise the significance of maintaining old growth attributes (including giant trees) in the forest if the principle of maintaining the potential for the expression of all aspects of biodiversity is to be realised throughout the forest estate. This does not mean that all elements must be present on every hectare at every time period, but that*

suitable prescriptions are put in place to ensure that every area is ultimately capable of supporting late successional elements of biodiversity.

- *The panel notes that some of the tools within the forest practices system also do not adequately address some of the consequent biodiversity conservation issues that now occur. Therefore the panel recommends that the Forest Practices Code itself should be revised to include these new responsibilities.*
- *The issue of offsets should be explicitly recognised in the Forest Practices Code, given the legislative and policy environment and the discretion afforded to the CFPO with respect to approving clearance and conversion of threatened native vegetation communities. A clear set of guidelines should be developed and published, for example no offsets should be available for destruction of significant habitat for threatened species or threatened communities.*

Climate Change

- *A landscape approach to biodiversity management provides a precautionary and optimal approach allowing species and ecological processes to respond to climate change. This particularly applies to linkages that maintain large contiguous habitats or that enable maintenance of ecological processes, especially across a range of environmental gradients.*
- *Future biodiversity planning and management should be informed by scientific understanding of likely implications of future climate change, as identified in the National Biodiversity and Climate Change Action Plan 2004-2007 (NRMMC 2004).*

Code structure

- *The panel questions whether the system can continue to provide the level of information/tools and guidance required to adequately cater for biodiversity with current resourcing levels. There is a need to review these new responsibilities to determine strategies to address resourcing needs.*
- *The panel recognises that there are a range of provisions related to management of biodiversity values. The individual provisions and comments on their implementation are included at Appendix F. Many of these relate to particular species or situations and are not commented on further here. However there is a key set of major provisions operating at a range of scales for which the panel has proposed measurable objectives and operational procedures for their application. These are detailed in chapter six.*
- *The scope of the Forest Practices Code (as it relates to the Forest Practices Act 1985 and other legislation) should be clearly stated.*
- *The panel endorses the FPA proposal to expand the Forest Practices Code to cover activities other than native forest silviculture such as land clearing for agriculture, plantation establishment and management (both existing and new) and non-wood production activities such as residential subdivisions. These expanded responsibilities should be resourced adequately.*
- *The panel recommends that their proposed measurable objectives for biodiversity and operational procedures for their application (see chapter six) be included in the revised structure.*

Definitions for the Forest Practices Code

- *Appendix C provides a set of suggested definitions for discussion for use by the forest practices system. The sources for definitions are also listed. As far as possible the panel have attempted to use definitions which are already accepted in the Tasmanian legislative and policy framework. Some terms such as 'critical habitat' have particular legal meaning in Tasmania and their use in the Forest Practices Code may incur obligations which are not relevant to the Forest Practices Code intentions and thus have not been included.*
- *The definitions proposed are suggested to assist in clarifying biodiversity provisions and may have implications or interpretations that need to be considered from alternative viewpoints by others with relevant expertise such as legal, policy and stakeholder groups. The FPA could convene a forum of suitably qualified people to assess these definitions and recommend on their adoption.*

Code planning tools

- *The panel recommends that the Fauna Manual is updated as an information resource for Forest Practices Officers.*
- *The panel considers that the TFM is very effective and supports the use of the web-based format. When changes are made they should be indicated immediately to FPOs. The FPA should be the agency responsible for the TFM. The TFM should eventually be superseded by a statewide planning tool for threatened species. However, there should be a six month transition period of concurrent use, after which the TFM should be archived.*
- *The panel considers that the TFA is a major initiative to assist Forest Practices Officers in planning for biodiversity conservation and supports the use of the web-based system. The panel recommends*
 - *that the current revision of the TFA be completed as a matter of priority*
 - *explicit and efficient mechanisms are developed to incorporate interim prescriptions and new prescriptions (e.g. for newly listed threatened species)*
 - *that the TFA progressively moves to address strategic and landscape issues*
 - *training and accreditation of users*
 - *consulting TFA/specialists remains an essential part of this process*
 - *sufficient resources are devoted to maintain the adviser system*
 - *that FPA examine feasibility of establishing the TFA on a more readily usable software platform to facilitate updating*
 - *that FPA examine the feasibility of expanding the TFA to include threatened flora and vegetation*
 - *that FPA examine the feasibility of linking the TFA with the Natural Values Atlas and to provide links to information sheets which can be printed*
 - *that TFA prescriptions be made capable of interpretation so they are operationally feasible and that contractors can follow prescriptions.*

- *The panel recommends that the FPA should examine the feasibility of incorporating information already available from other sources in the Technical Note series, such as from DPIW/PWS information sheets. Comments on individual Technical notes by FPET and others are in Appendix F. These should be taken into account in the revision of Biodiversity technical Notes.*
- *The panel considers the FBM is the key flora tool assisting forest practices planning. The panel commends the use of bioregional modules, but notes that the use of IBRA 4 bioregions, whilst in accordance with the RFA, is inconsistent with the more recent bioregionalisation which has been accepted for use in other parts of Government. The feasibility of updating the FBM to accord with current practice should be investigated and incorporated as part of the ongoing review and monitoring of the FBM as happens with vegetation mapping.*
- *The panel considers that the Vegetation Community section (2) of the FBM is very thorough—but:*
 - *Recommends training FPOs to ensure they are experienced and have knowledge of common species—including eucalypt identification, and especially for identification of threatened communities.*
 - *Notes from comments by FPOs that it is difficult to audit communities listed in FPP after some operations (e.g. conversion), and that some small areas of communities can be missed in coupes. This emphasises the importance of accurate vegetation mapping and highlights the need for good coverage in FPP assessment through the consideration of a range of other tools such as PI type maps, geology and topography.*
 - *It may be useful to have pictures of indicator species to assist FPOs.*
 - *There is potential to link to sheets/sites with more detailed community information (e.g. TASVEG; information sheets prepared by FPA for threatened native vegetation communities).*
 - *Notes that the Priority species section (3) is difficult to keep current and take into account:*
 - *Changes in TSPA and EPBC, and use of info from other lists (e.g. the RFA reviews).*
 - *Changes in basic information such as taxonomy and species distributions.*
- *The panel recommends that:*
 - *The FBM be updated to incorporate threatened non-forest vegetation communities.*
 - *The FPA advocate a whole of government approach to the reconciliation of RFA forest communities and TASVEG communities with an orderly transition to use of the latter in future reporting.*
 - *The FBM benchmark and move to the latest IBRA for Tasmania.*
 - *The electronic version of the FBM be developed so that it can be more dynamic and responsive to future changes requiring update of botanical knowledge provision of newly developed supporting tools (e.g. the Natural*

Values Atlas) , changes to IBRA, TASVEG and other whole of government approaches to flora conservation evaluation.

- *The panel recommends that the separate Flora and Fauna Evaluation Sheets be combined into a single Biodiversity Evaluation Sheet, to encourage an ecosystem approach, to avoid some duplication and to provide useful botanical information (e.g. about vegetation communities when fauna issues are being considered). A single sheet may also simplify the development and implementation of prescriptions. The nomenclature relating to the trigger process (eg staff titles etc) needs to be updated.*
- *The panel recommend that the FPA should liaise regularly with DPIW and maintain records of the number of relevant listed species, the number of Listing Statements and the number of finalised Recovery Plans.*
- *The panel considers that there are benefits to shifting to a state-based system managed by DPIW. However this is true only if the NVA has adequate support for its establishment and maintenance, and ready accessibility for FPA staff and FPOs. Some of the benefits include:*
 - *NVA can identify and accommodate recent information on range of natural and cultural values and can incorporate shapefiles which are better for industry.*
 - *NVA can set up templates for different users –for the forest practices system, there needs to be an appropriate layout and ready accessibility.*

The Forest Practices Advisory Council should be kept informed about how and when changes are to happen. There will also need to be FPO training on accessing and interrogating NVA and there should be at least 4-6 months of transition with concurrent use before TFM is switched off and archived.

- *The panel recommends that FPA adopt a more flexible FBM which can readily incorporate any agreed changes to vegetation mapping standards.*
- *The panel considers that active liaison of FPA staff with other agencies and industry stakeholders to maintain accurate and up to date databases is a high priority.*

Education and Training

- *The panel considers that effective implementation of the biodiversity provisions of the Forest Practices Code is heavily reliant on training program for operators as well as planners and therefore there should be a program to upgrade training by industry in the implementation of biodiversity aspects of the code for operators and contractors.*

Landscape Level Considerations

- *The potential for activities prescribed by the Forest Practices Code to impact on the biodiversity values within adjacent reserves, both formal and informal and other areas of conservation value could be further recognised in the code, and further guidance provided so that this can be considered at both the planning and operational levels with a view to integrating reserve and off reserve planning and management.*
- *The panel recommends that other strategic level measures, which are currently used in other contexts and which could usefully be incorporated into planning in the*

context of the forest practices system, be reviewed. Depending on the statutory responsibility, these measures should either be specifically recognised or be formally incorporated into Forest Practices Code prescriptions for landscape level planning along with specific mention of the benefits such measures bring, for example minimising habitat fragmentation, improving or maintaining downstream water quality.

- *The incorporation or recognition of these strategic level planning tools will require an enhanced capability within the FPA to provide for upgraded database and GPS skills and technology. A Basic Approach section should also be added to the Strategic Planning section of the Forest Practices Code, recognising the importance of such planning to the appropriate management of many natural and cultural values.*
- *The panel recommends that the FPA prepare a discussion paper on its role in the provision of strategic level planning, with a view to informing government on the need to clarify roles and responsibilities across government for the strategic level conservation of biodiversity outside of reserves. This paper should include discussion on strategies and processes to deal with emerging issues such as the effects of climate change.*
- *There are a number of fundamental strategic level issues for biodiversity conservation that are not explicitly recognised in the current Forest Practices Code and which could usefully be incorporated to assist understanding of the reasons for particular provisions. These include concepts such as habitat fragmentation and retention of old growth elements. Some of these key issues have been included in the proposed definitions in Appendix C for incorporation.*
- *The panel notes that there is no apparent ‘owner’ of data relating to, or responsibility for monitoring of non-forest vegetation losses and recommends that this function be adopted by the FPA who are already maintaining the data for forest vegetation.*
- *The panel recommends that a review of current forest structure by IBRA region is undertaken (see Attachment 4 to table 6) and that forest structure is monitored by the FPA.*
- *In June 2000, a workshop on Fauna Issues and Plantation Design was convened by the FPA and the CRC for Sustainable Forest Production (Munks and McArthur 2001). The outcomes of the workshop provide a set of principles and recommendations which could be incorporated into the Forest Practices Code after a review to clarify conflicts between some recommendations for browsing control and those for biodiversity maintenance.*
- *The panel recommends that the FPA review the suitability to managing of forest practices of tools and databases developed by other agencies for managing water quantity and risks to water quality. Of the tools currently being developed, the panel notes CFEV, WAFL and PIRI-Tas appear to have potential at one or more spatial scales, but a more systematic statewide and national review needs to be undertaken as well as the recommended review of terrestrial tools and databases.*
- *The panel recommends that the Forest Practices Code explicitly encourages the move away from native forest CBS harvesting systems.*
- *That in the first instance the Forest Practices Code prescription for maximum coupe size in native forest CBS operations be reduced to improve biodiversity outcomes and to be more in accord with best practice elsewhere. Given that operationally the*

average coupe size is about 40 ha (reference FPP database), the panel recommends a maximum coupe size of 60 ha, subject to safety fire management and environmental considerations. Where larger coupes are sought for these reasons there should be a transparent approval process documenting the biodiversity implications as well as the need and approval for variations.

- *The Forest Practices Code should flag when operational constraints may be applied to ensure the maintenance of structural diversity at multiple spatial scales through timing and dispersal of coupes.*
- *Rehabilitation to become a 'should be considered' requirement in general and a 'will' requirement where required to meet specified ecological objectives. For example, rehabilitation of stream side vegetation may be required where clear and positive biodiversity outcomes can be achieved in a practical way.*
- *In the absence of an integrated statewide approach to the conservation of remnant vegetation and paddock trees, the forest practices system should specifically address the retention and management of these components in different situations.*
- *Guidance on the principles for the retention and management of remnants and paddock trees can be drawn from the following references: (Lindenmayer and Franklin, 2002; Salt et al., 2004; Davidson et al., 2007).*
- *Proposed definitions for 'remnant vegetation' and 'paddock trees' are provided in Appendix C.*
- *The Forest Practices Code should contain provisions requiring strategic planning to consider issues such as the maintenance of habitat across tenures and the application of matrix management principles for biodiversity.*
- *FPPs should explicitly demonstrate that relevant strategic level biodiversity issues have been taken into account either by reference to appropriate tools or where necessary by consultation with FP specialists.*
- *Some values (e.g. threatened aquatic fauna) require minimising disturbance to a catchment. The Threatened Fauna Adviser makes some specific recommendations on how much of a catchment can be harvested in a particular time period (e.g. see recommendations for swan galaxias) but does not cater for general biodiversity values in this way. The panel recommends that practical, technological options be explored for monitoring catchment effects, irrespective of tenure.*
- *The panel recommend the following objective for the management of genetic resources in areas covered by the forest practices system– 'Maintain natural levels of genetic diversity and patterns of differentiation in forest species and species complexes to ensure their long-term evolutionary potential, retain natural values and retain genetic resources for human use '. A number of measurable objectives to meet this overall objective are provided in chapter six.*
- *The FPA should seek to ensure that there are clear links between its cross tenure biodiversity conservation measures and processes and the requirements of threatened species Recovery Plans and Listing Statements.*
- *The panel also recommends that FPA encourage the development of strategic level planning tools, that processes relevant to threatened species are revised to include a strategic level and that the Forest Practices Code specifically emphasise that the*

biodiversity provisions of the code emphasise the importance of ensuring that species currently not threatened do not become threatened through forestry actions.

- *The panel endorses the development of a planning framework to avoid the conversion of habitat of any threatened species.*
- *Clear landscape level strategic objectives at appropriate temporal and spatial scale need to be defined as do clear objectives for biodiversity conservation outside of reserves within the ambit of the forest practices system. The processes would need to acknowledge and cater for individual agency statutory responsibilities. However efficiency and effectiveness gains would only be possible with cross-agency participation and cooperation.*
- *On both private and public land there is a need to integrate forest planning with other planning processes such as those in place through NRM, whole farm planning, biodiversity hotspot planning, fire management, weed management, and other local government initiatives.*
- *A process is required for the development of prescriptions and updating of planning tools as well as for updating and implementing Agreed Procedures across agencies. Scientific and stakeholder endorsement and review would be needed.*
- *The FPA needs adequate GIS resources to audit and monitor the implementation of landscape level Forest Practices Code provisions (WHS, Biodiversity Spines, WHC, SSR).*
- *The panel recommends that forest within Biodiversity Spines should not be clearfelled until it has reached 80 years of age, ensuring coupe dispersal guidelines are met.*
- *Wherever possible, measures such as WHS, Biodiversity Spines and SSR should be used to meet multiple biodiversity objectives.*
- *Landscape level processes such as catchment planning and the use of surrogates, such as coarse woody debris and tree hollows, can assist dealing with issues such as habitat fragmentation as well as ameliorating dependence on coupe level prescriptions for individual species including threatened species.*
- *In producing an all-encompassing Forest Practices Code across multiple disciplines there are inevitably some actions (eg for fire management or OH&S concerns) where biodiversity considerations may need to be discounted or may be affected adversely. Such situations should be clearly documented and accounted for especially where they may be in breach of other policy or legislative responsibilities.*
- *The wording of the Forest Practices Code needs to clearly define that there are associated tools and which of those are mandatory and which are not. It also needs to reflect principles (which rarely change) and leave the detail of specific prescriptions (which may change on a more regular basis) to the specific planning tools. There may be a need also to develop new tools and protocols and a list of these should be drawn up, prioritised and developed by the FPA.*
- *The approvals process and especially the process of referrals by FPOs to FPA specialists needs to be reviewed to determine whether efficiencies can be made. The number of referrals has increased dramatically over the past ten years without any concomitant increase in numbers of FP Plans (see Figure 4.1).*

- *The panel supports the development of web-based decision support tools to facilitate this information transfer. The referral process also needs to be clearly set out so that FPOs know what's needed and can have ready access to the appropriate tools. The panel supports the recommendation of FPET, for the establishment of a web based system that clearly sets out all manuals and information that can assist in planning.*

Coupe level planning

- *The panel notes that there are some internal inconsistencies at the coupe level between biodiversity provisions and other considerations, including for example fire management, occupational health and safety and coupe dispersal.*
- *Such conflicts should be resolved through a co-ordinated documented advice process involving all FPA specialists which explicitly states the outcomes for each of the conflicting issues.*
- *The following recommendations are made by the panel to continue the incremental improvement of the forest practices system at a strategic level for biodiversity conservation of aquatic components.*
 - *Maintain aquatic habitats, including retaining habitat diversity, water quality and ecological flows so that their ecosystem values (including their biotic communities and biophysical characteristics) are maintained within the range of natural variation over time within CFEV catchments. Aquatic ecosystems are dynamic, and resilient to wide range of natural disturbances, so it is futile to aim for a 'static' configuration of species. Instead, the landscape mosaic should include a range of forest types and ages so that aquatic species are able to persist somewhere within the landscape.*
 - *Manage riparian zones so that ecosystem processes for aquatic systems are maintained or enhanced. Riparian protection of larger perennial streams has been important in reducing the inputs of sediment, nutrients and pesticides. Riparian zones also provide the bulk of the energy base and important in-stream habitat elements for aquatic biota. It will be particularly important in some areas to re-establish native riparian zones in farmland being converted to plantation or in older plantations where native riparian vegetation was removed during establishment.*
 - *Conserve a proportion of Class 4 stream catchments within a CFEV catchment during a rotation cycle. Because of the steep terrain of much of the headwaters of Tasmania's forested streams, extension of a formal streamside reserve network into the headwaters is unlikely to be practical. However, it is unlikely that MEZs by themselves will adequately conserve in-stream and riparian species that depend on the headwater portions of catchments. Accordingly, it will be necessary to conserve a portion of the headwater network within the rotation cycle of each catchment to ensure the persistence of any aquatic or semi-aquatic species that specialize in headwater streams or need to disperse across catchment boundaries. The panel recognises the potential for harmonizing this recommendation with existing provisions for formal and informal reservations (e.g. Wildlife Habitat Strips, Biodiversity Spines).*
 - *Maintain lateral connectivity between riparian zones with other habitats. There is a range of terrestrial and semi-aquatic species that require resources*

from terrestrial and riparian/aquatic components of the landscape in order to persist.

- *Maintain or restore longitudinal connectivity within river networks. Many aquatic species either migrate or disperse up- or down-stream in order to complete their life cycles (e.g. some migratory fish species). Some amphibious, semi-aquatic or terrestrial species may also require longitudinally connected riparian corridors to persist in the landscape. The panel recognises the potential for some specialized circumstances where threatened species may be persisting because of anthropogenic barriers in streams, and the provisions for threatened species or species of special conservation interest should have precedence over this recommendation.*
- *Ensure that refuges and habitats for threatened species and narrow-range endemics are retained. No generalised scheme of managing a 'mosaic' will capture all the biogeographic and evolutionary peculiarities of a region. Specific amendments to standard prescriptions will be necessary to protect listed, threatened species and other species or groups of species deemed to be of conservation significance.*
- *The Forest Practices Code and associated tools do not address issues related to ongoing management of WHS. The panel recommends that because the WHS are recognised component of the CAR reserve system their ongoing management requirements should be clarified.*
- *The panel considers that to provide for biodiversity at the management unit level at least 30% of mature forest elements needs to be maintained (see chapter six, table 6.1). The WHS are a useful tool to help to achieve this.*
- *The location and size of WHS and other habitat retention mechanisms should be reviewed to provide a range of alternative tools for planners and managers to use in catering for biodiversity outcomes. Thus rather than adopting a prescriptive approach which relies on for example 200 m wide WHS placed every 2 km in a particular landscape, biodiversity values in an area may be better served by wider strips placed more infrequently. The panel recommends that the FPA encourage the exploration and adoption of such flexible approaches to biodiversity planning.*
- *The panel recommends that the FPA undertake (facilitate) a review of the location and condition of WHS to determine whether guidelines are being met, and also to take into account new planning principles outlined above, and with due consideration to the requirement to maintain CAR values of bioregional representation of forest types and the retention of mature forest elements.*
- *There are some operational issues associated with the management of WHS which are outlined in Fauna Technical Note 8 because the Forest Practices Code itself does not provide specific guidance on how to manage WHS. Operational issues include accidental damage to retained vegetation (e.g. felled trees, machinery incursions), marking responsibility and protocols, steep country (cable) operations, regeneration burning management, roading through WHS. The panel recommends that the Forest Practices Code should include a General Principles and Basic Approach format for WHS.*

- *The panel recommends that the use of WHC in situations such as non-commercial operations and plantation establishment be investigated by the FPA and applied where relevant.*
- *The FPA should also investigate the ways to include provisions for individual paddock trees where their retention is appropriate.*
- *The current WHC provisions contain some ambiguities and inconsistencies which need clarification and clear guidelines for FPOs to allow ease of application.*
- *The Forest Practices Code should also incorporate clear objectives and guidelines arising from recent research on for example, hollow resources (see table 6.1). There are a number of ways of achieving structural habitat retention at the coupe level and the panel recommends that flexibility of prescription application be introduced to meet this objective, albeit with a reporting requirement to ensure that appropriate provisions have been made.*
- *Wildlife Habitat Clumps are classified as vulnerable land and their future clearance is subject to FPP. Therefore the panel recommends that a tracking system be put in place to record the location of WHC.*
- *The panel notes that the threatened species Agreed Procedures deal with 'wood production areas' and not non-forest and non-commercial forestry situations and recommends that the Agreed Procedures be reviewed to ensure they also adequately cater for the following issues: .*
 - *threatened native vegetation communities or inadequately reserved plant communities which the Forest Practices Code refers to in relation to these procedures*
 - *non-commercial operations or those involving threatened communities*
 - *the inconsistencies in approach between agencies with respect to prescriptions for dealing operationally with threatened species and communities.*
- *In particular the panel notes that the Forest Botany Manual is not current with respect to recent legislative changes under the Nature Conservation Act 2002 and suggest that these be updated as a matter of priority.*
- *The Agreed Procedures should be transparent and readily accessible to all involved, including being available on the web.*
- *The panel recommends that the Agreed Procedures be updated to recognise recent legislative and institutional changes and that a process is put in place for ongoing review and amendment of the Agreed Procedures as necessary. The review should incorporate clear statements of roles and responsibilities for actions as well as for monitoring and evaluation.*
- *The panel further recommends that in collaboration with DPIW, priority be given to the development of management prescriptions for threatened species where these are not already available in Listing Statements or Recovery Plans.*
- *The panel urges the relevant authorities to progress programs to integrate threatened species into landscape level planning using multi-species approaches such as the multi-species modelling project by Forestry Tasmania and Melbourne University as well as landscape level planning for particular species such as swift parrot and wedge-tailed eagle.*

- *The Forest Practices Code should also incorporate definitions of ‘habitat’ and ‘potential habitat’ to clarify the difference between these terms for planners and the public (see Appendix C).*
- *The panel supports the concept of salvage sampling where the habitat loss is irrevocable, but notes that for comparative purposes, such sampling ought to be accompanied by appropriate sampling of equivalent habitats in areas not subject to conversion and follow up monitoring.*
- *The panel’s view is that the establishment of suitable stream buffers is beneficial to biodiversity conservation, and accordingly feels that these areas should have minimal avoidable disturbance.*
- *See recommended additional mechanisms provided in table 4.1.*

Chapter 5: ToR 3 and 4—Review of research and monitoring activities related to the biodiversity provisions of the Forest Practices Code

- *The panel recognises that the Forest Practices Code prescribes ‘the manner in which forest practices are to be conducted so as to provide reasonable protection to the environment’ but the terms ‘reasonable’ or ‘protection’ should be defined. Their definition should be set within the broader objectives for biodiversity management in Tasmania so that strategies for research and monitoring activities are practical and meaningful (see table 6.1).*
- *The panel notes that the Agreed Procedures do not state the specific mechanisms on how these clauses of the procedures are to be met by the relevant parties and that whilst there is relevant forest research done by Tasmanian research providers (e.g. the CRC Forestry, University of Tasmania) and this has been part-funded by the forest industry, there has been no forest practices research fund since August 2005 when the FPA became an independent, government-funded authority.*
- *The panel notes that there is some relevant operational research undertaken and the opportunities for uptake of this should be investigated.*
- *The relatively small size of the FPA biodiversity specialist group and the lack of resources cause the panel some concern that research needs are not being met, and there appears to be no cohesive strategy to facilitate/coordinate the research agendas of parties to achieve FP goals.*
- *The panel recommends that FPA review the alternatives of increasing resourcing within the agency, whether by funding from industry or other source, or by consciously acting to out-source such research.*
- *The panel suggests the following scientific knowledge objective and sub-objectives:*
 - *improve scientific knowledge and access to information*
 - *improve scientific knowledge of forest biodiversity and assess the response to disturbance and recovery by native plants and fauna*
 - *identify species or ecological communities at risk from climate change*
 - *monitor the effectiveness of management actions*
 - *verify and make accessible existing knowledge*

- *communicate the knowledge to those involved in forest management.*
- *The panel endorses the need recognised in the above instruments and documents for strong R&D and monitoring programs in the forest practices context for biodiversity conservation. The primary research and monitoring needs for the FPA to fulfil its charter for biodiversity conservation are to increase understanding for management in the following areas:*
 - *threatened species and their habitats*
 - *threatened communities and their habitats*
 - *ecological processes*
 - *planning across landscapes and time for habitat maintenance and retention for forest dependent biodiversity, including forest structure*
 - *maintenance of habitat and or surrogates for biodiversity generally*
 - *monitoring of the efficacy of prescriptions for biodiversity maintenance*
 - *climate change.*
- *The limited capacity of the FPA to undertake such a broad research program underlines the need for creative development of processes across agencies, funding bodies and research providers to deliver the research agenda.*
- *The panel considers that there is not a well-coordinated approach to FPA's involvement in UTas research projects and much of the support provided has been opportunistic. It is noted that FPA's web page now supplies some details of potential student projects and support in the form of a Student Research Grant. However, uptake has been slow and more effort is needed to make UTas schools aware of FPA's research and monitoring priorities.*
- *The panel recommends that the FPA review the need to monitor other species, surrogate habitat approaches and processes as part of the overall effectiveness monitoring program.*
- *The panel agrees that research and monitoring are fundamental to the credibility of the forest practices system and strongly recommends that the FPA re-establish funding mechanisms for research and monitoring or find alternative ways of achieving the same ends via out-sourcing.*
- *The procedures specifically state that major changes to the Threatened Fauna Adviser require consultation between various parties and formal endorsement by FPAC and the Scientific Advisory Committee. The panel strongly endorses this approach.*
- *The panel considers that resources are not adequate to address the adaptive management process and should be increased.*
- *The panel considers that the issue of resource allocation is important at all levels of the adaptive management process, but that research, monitoring and translation of results into management prescriptions receive least attention.*
- *The panel recommends that mechanisms are put in place to provide surety of funding for research and monitoring and subsequent review, adoption of results and development of planning tools. These programs need to be set in the context of how*

the forest practices system relates to other state level biodiversity policy positions and a clearly delimited set of biodiversity objectives for the forest practices system.

- *The panel considers that there could be more effective coordination of research and monitoring effort especially across govt agencies—FT/DPIW (TSS)/FPA, but also with the relevant University schools and the CRC. This would require more time formally being dedicated to the appropriate position within the FPA. It is essential that the forest practices system be aware and where possible have some influence on relevant research and monitoring programs being undertaken by other agencies and be in a position to advise the FPA on the practicability and applicability of outcomes and recommended actions of non-FPA programs as well as joint and internal programs.*
- *The recent review of forest practices system research in the period 1987–2007 has highlighted the relative lack of internal resources and capacity of the FPA to fulfil its needs for research and monitoring generally and for biodiversity in particular.*
- *The panel recommends that FPA examine ways of increasing relevant research capacity to support the forest practices system, including research by the FPA, industry and other sources.*
- *The panel recommends that the FPA undertake an evaluation of the relevance and capacity of existing intra- and inter- agency systems to deliver forest practices system requirements. In particular the FPA needs to be assured that reliance on external systems has the capacity to deliver services to the FPA on a continuing basis.*
- *The concept of adaptive management, and its key components, should formally be recognised in the Forest Practices Act 1985 and Forest Practices Code. The panel recommends that the FPA adopts the panel’s proposal for a clear and transparent suitably resourced process to deal with the endorsement and adoption phase of the adaptive management system.*

Chapter six: Setting objectives for biodiversity conservation in the Tasmanian forest practices system

- *The panel proposes that the primary objective of the forest practices system and current theory/principles, the proposed primary objective for biodiversity conservation in areas covered by the forest practices system is **-To maintain biological diversity (biodiversity) across multiple spatial scales—from individual stands to entire regions—through sustainable forest use.** Where biological diversity is a concept encompassing the diversity of indigenous species and communities occurring in a given region. Also called 'biodiversity', it includes 'genetic diversity', which reflects the diversity within each species; 'species diversity', which is the variety of species; and 'ecosystem diversity', which is the diversity of different communities formed by living organisms and the relations between them. Biological diversity is the variety of all life forms—the plants, animals and micro-organisms—the genes they constitute, and the ecosystems they inhabit (Commonwealth of Australia, 1995). Where maintain means to provide the potential for the elements of biodiversity to survive and continue to evolve in areas covered by the forest practices system. Where sustainable forest use includes maintaining habitat and the ecological processes within forests (the formation of soil, energy flows, and the carbon, nutrient and water cycles), maintaining the biological diversity of forests and optimising the benefits to the*

community from all uses of forests within ecological constraints. (after The National Forest Policy Statement, 1995)

- *The panel recommends a secondary objective and a series of sub-objectives (desired outcomes, in table 6.1) that can be used to refine existing tools, or develop new ones, to improve the definition and measurement of progress towards meeting the primary objective for biodiversity in areas covered by the forest practices system.*
- *The proposed secondary objective is:
To complement the existing CAR reserve system by applying measures (taking a risk spreading approach and ensuring consistency with effective fire management, silvicultural practice and safety requirements) to:*
 - *maintain an extensive and permanent native forest estate and avoid or minimise any forest loss*
 - *maintain forest stand structural complexity, spatial complexity of habitats (diversity, size and spatial arrangement of habitat patches) and connectivity of habitats*
 - *maintain or improve the conservation status of forest species*
 - *maintain or improve the health of native habitats*
 - *maintain the resilience of freshwater ecosystems within the range of natural variation over time*
 - *maintain natural levels of genetic diversity and patterns of differentiation in species*
 - *maintain capacity for adaptability of the elements of biodiversity in the face of climate change.*

Table 6.1 provides the measurable sub-objectives, a summary of why they are useful, the scale at which they apply and the status of any current delivery mechanisms (e.g. policies, code provisions) to assist with achieving the secondary objective. The proposed performance indicators and the timing of reporting to assist with monitoring of these objectives are also summarised in table 6.1