



***FOREST BOTANY MANUAL***  
***MODULE 7***  
***CENTRAL HIGHLANDS REGION***



**2005**

**FPA**  
FOREST PRACTICES AUTHORITY

**FOREST BOTANY MANUAL:  
MODULE 7 – CENTRAL HIGHLANDS REGION**

**2005**

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## INTRODUCTION

Tasmania is divided into eight bioregions on the basis of the State's biogeography. Separate Forest Botany Modules have been developed for these regions.

This module deals with the Central Highlands Region. It covers subjects relevant to conservation of flora, as required by the Tasmanian *Forest Practices Code* (2000), the *Forest Practices Act* and other legislation and processes.

The module is designed to assist Forest Practices Officers (FPOs), and others involved with forest management, to prepare Forest Practices Plans (FPPs) for sites within the region. The information can also be used for other purposes (e.g. management planning for reserves, preparation of property plans).

The module is divided into six sections, which follow the format of the FPP *Flora Evaluation Sheet*:

**Section 1** gives a brief overview of Central Highlands Region.

**Section 2** provides keys to forest and non-forest vegetation, and more detailed keys to forest communities. Tables indicate conservation priorities for forest communities.

**Section 3** lists plant species that have a priority for conservation in the region - most of these are species listed on the Tasmanian *Threatened Species Protection Act 1995*.

**Section 4** indicates sites of potential significance for flora conservation. These are environments that are often associated with species or communities that have a priority for conservation.

**Section 5** discusses some other issues (e.g. weed and disease management) that may need to be considered by FPOs, to ensure that the operation complies with botanical requirements of the *Forest Practices Code* and other policies.

**Section 6** summarises the evaluation process and indicates the steps that need to be taken after a FPO has assessed the FPP area. It also indicates whether specialist advice is required.

The processes used to determine if communities, species and sites of potential significance are present in an area, will also capture those National Estate flora values (as identified in the Tasmanian Regional Forest Agreement) that have the potential to be affected by operations requiring FPPs.

Module 1 of the *Forest Botany Manual* gives background information relevant to users of the regional modules. The Manual is supported by information on the Forest Practices Authority (FPA) website, including a gallery containing images of many threatened species, and species used to identify vegetation types and forest communities. An ongoing series of Flora Technical Notes also covers aspects of vegetation management in Tasmanian forests. The Manual provides links to several external websites – the FPA website will maintain updates to these sites, and should be consulted if there are problems accessing the links given in the Manual.

Queries and comments about the format or content of the *Forest Botany Manual* should be referred to the FPA's Senior Botanist. Queries and notifications about vegetation in operational areas should generally be referred to the Senior Ecologist.

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## Section 1 OVERVIEW OF CENTRAL HIGHLANDS REGION

Central Highlands Region covers the highland plateau and associated uplands of central Tasmania. The region includes some of Tasmania's most spectacular and characteristic landscape features, including significant peaks and mountains, lakes and tarns, and the impressive bluffs of the Western Tiers.

The diversity of native vegetation within the region is largely correlated with variation in rock types and landforms, and climatic gradients operating at a regional scale (from the humid west and north to the drier south and east) and locally (relating to altitude and degree of exposure to insolation, wind and frost). Land use and fire history have also influenced the extent, structure and composition of the vegetation.

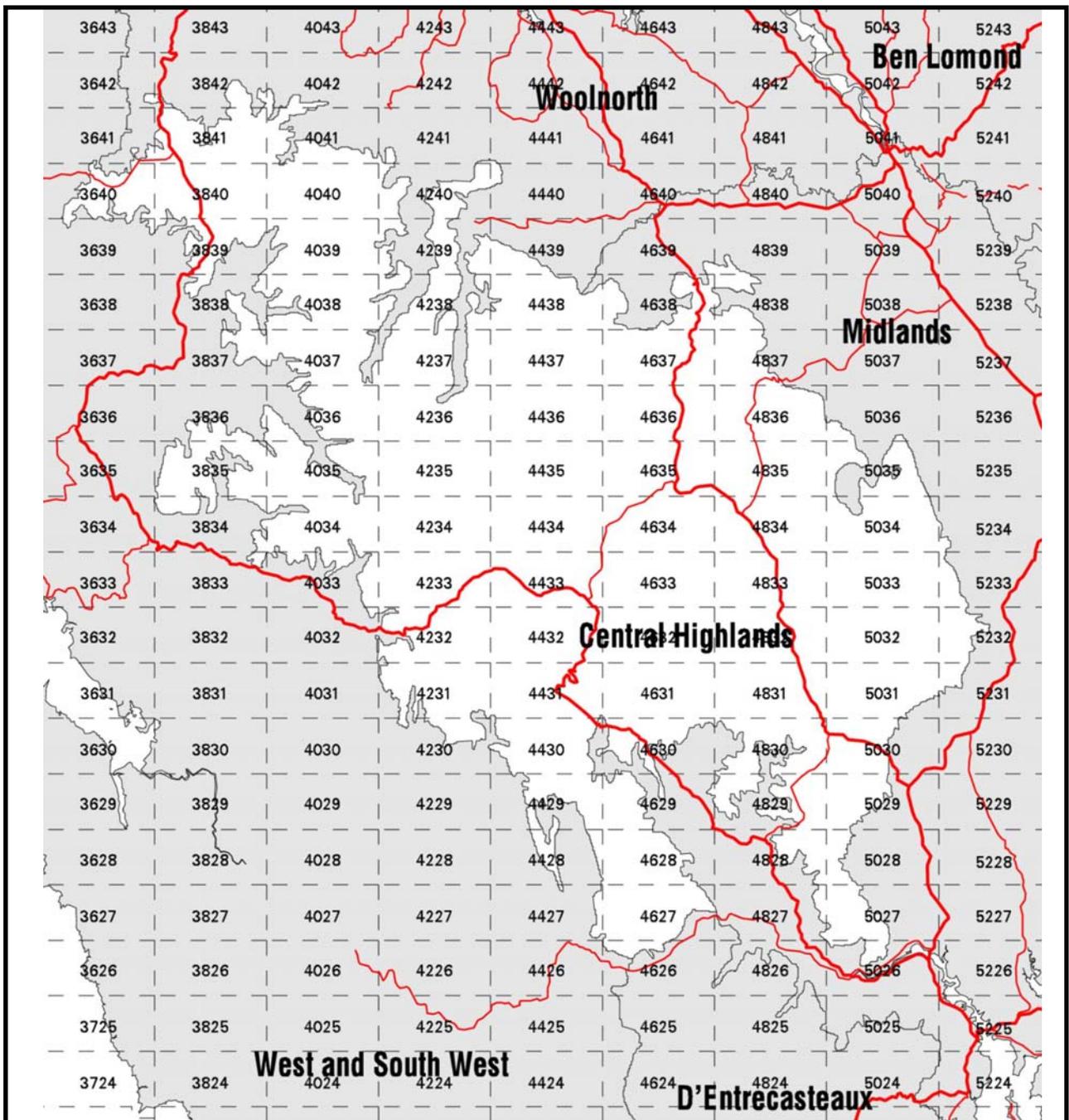
Rainforest and mixed forest (eucalypt forest with a rainforest understorey) are mainly found in moist environments in the west of the region. High altitude rainforest communities, dominated by endemic conifers or deciduous beech, occur in alpine and subalpine environments which have escaped wildfire. Wet sclerophyll forest is widespread on moist shaded sites at lower altitudes, and on the slopes of the Western Tiers, Surrey Hills and Mt Field. Dry sclerophyll forest is extensive on dry, exposed or less fertile sites at lower altitude areas, particularly in the southeastern part of the region. Subalpine dry sclerophyll communities also occur on exposed, rocky sites at higher altitudes, where they grade into various non-forest communities. Non-forest vegetation occurring in Central Highlands Region includes heath, scrub, moorland, native grasslands, and wetlands. As its name suggests, this region supports most of Tasmania's alpine vegetation.

Central Highlands Region contains over a thousand species of vascular plants that are native to Tasmania. The region contains over 25% of Tasmania's endemic species, with a high proportion being associated with subalpine and alpine environments and (at lower altitudes) dry or exposed sites on dolerite. Several species have their only recorded distribution in Central Highlands Region. The non-vascular flora of the region (i.e. mosses, liverworts and lichens) is poorly known compared to the vascular flora, though some taxa and groups have been researched more thoroughly in recent years. Non-vascular diversity is highest in rainforest, mixed forest and high altitude communities.

Clearance for agriculture has been largely confined to the southeastern lower plateau region. Elsewhere, less intensive grazing has occurred in native forests and woodlands, grasslands and other vegetation types. There has been a long history of logging in accessible forests, which has extended in the last few decades into more remote areas. More recently, there has been a substantial increase in establishment of plantations on public and private land, particularly in the upper Florentine Valley, slopes of the Western Tiers and Surrey Hills - Loongana area.

A substantial proportion of Central Highlands Region is formally reserved. Larger reserves containing native forest include Mount Field National Park and reserves contained in the Western Tasmania World Heritage Area. They include Cradle Mountain - Lake St Clair NP, Walls of Jerusalem NP, Central Plateau Conservation Area and Meander Forest Reserve. Recent additions to the public reserve system have improved the conservation status of some species and communities in the region. Some well reserved species and communities (e.g. high altitude rainforest communities) remain threatened because of their susceptibility to wildfire. Other threatened species and communities with a high priority for conservation are associated with commercial forests, and require additional protection through prescription or reservation on public land (e.g. through Special Management Zoning on State Forest) and private land (e.g. through agreements developed through the Private Forest Reserve Program).

An overview of the vegetation of Central Highlands Region and its relationship with the environment is given in Pemberton (1996). Jackson (1974) provided one of the first analyses of the vegetation of the Central Plateau. McKenny (2000) describes forest and non-forest vegetation in the region, particularly on sites above 900 m asl, and discusses management issues. Several other references describe the vegetation of sites within the region. Some useful references on plant species and vegetation types are given in *Flora Technical Note 2*.



### Location of Central Highlands Region

The region is bounded by the 600 m contour in the west, north and northeast. The eastern boundary follows the 600 m contour to Petherton Creek. This creek is followed downstream to the Jordan River, which is followed downstream till it is crossed by the 300 m contour line (near Red Sugarloaf). The 300 m contour forms the southeastern and southern boundary, encompassing the Mt Field region north of the Tyenna River (to Nicholls Spur 5 km west of Maydena). From here the Florentine Road is followed west to its junction with Chrisps Creek, which is followed upstream to the 600 m contour that forms the western boundary of the region.

The numbers refer to 1:25000 Tasmap sheets.



## Section 2 FOREST COMMUNITIES

This section provides keys to the native vegetation types and native forest communities occurring within Central Highlands Region. Tables indicate the potential conservation priority of forest communities. The explanatory notes should be read before the keys and tables are used. The FPP *Flora Evaluation Sheet* indicates when FPOs need specialist botanical advice, when communities that may have a priority for conservation could be affected by forestry operations.

The keys are based on species and other vegetation characteristics that should be familiar to FPOs and field workers. Illustrations of species used in the keys are given in several publications listed in *Flora Technical Note 2*. The FPA website also carries scanned images of diagnostic species. The common and scientific names of all species used in the keys are listed in Appendix 6 of Module 1.

This section does not cover existing plantations (hardwood or softwood) or areas of exotic vegetation (e.g. pasture). Botanical advice relating to communities is not needed if the proposed operation will only affect these vegetation types. However, FPOs need to consider if other botanical values (e.g. threatened species) have the potential to occur on such sites.

Some non-forest vegetation in Central Highlands Region has a high priority for conservation, contains threatened species or is very susceptible to disturbance or disease. There are guidelines in the *Forest Practices Code* to avoid disturbance to localised environments that contain these vegetation types. Seek botanical advice in all cases where native non-forest vegetation will be affected by forestry operations.

### USING THE KEYS AND TABLES

The forests occurring in Central Highlands Region have been divided into several broad forest types:

- Rainforest;
- Tea-tree forest or scrub;
- Other forest or scrub;
- Mixed forest (eucalypt forest with rainforest species also prominent);
- Wet sclerophyll forest;
- Dry sclerophyll forest and woodland.

Different researchers have classified each forest type into several communities, on the basis of the composition and structure of the overstorey and understorey. In the Manual these are called **floristic communities**. The floristic communities can be allocated to the forest communities that were described and mapped for the RFA - these are called **RFA communities** in the Manual. There is generally good correlation between floristic communities and RFA communities, but this is not always the case.

**Use the keys to determine:**

- **The forest types and non-forest vegetation types present in the area;**
- **The floristic communities present in each forest type.**

**Use the associated tables to determine:**

- **The RFA communities present (based on the floristic communities identified);**
- **The conservation priority of each of the floristic communities and RFA communities.**

A typical native forest coupe in Central Highlands Region is likely to contain 3 to 5 floristic communities, the number being largely related to variation in the environment (e.g. landform, rock type, disturbance history). There are usually more floristic communities than RFA communities in any given area, because the RFA communities are less finely differentiated. It is important to identify the floristic communities, as they give a much better picture of the variation in the region's forests than the RFA community classification. For example, in Central Highlands Region there are ten mixed forest or wet sclerophyll forest floristic communities dominated by *E. delegatensis*. These are all included in the RFA community "tall *E. delegatensis* forest." Most of the *E. delegatensis* floristic communities are well reserved in the region, but two are poorly reserved.

It is important to recognise that any system of vegetation classification imposes a taxonomy on something that varies continuously in nature. In addition, our knowledge of Tasmania's vegetation is far from complete. Consequently, FPOs will inevitably come across forest vegetation that does not key out easily. There are a few reasons for this. They include:

- the community may not have been previously recorded from Central Highlands Region;
- the community may be close to a particular community given in the key, but in the area assessed may lack a species or other characteristic that allows it to be keyed out to that community (this may happen if fire or other disturbance has altered the structure or composition of the vegetation);
- the community may be intermediate between two communities given in the keys (this may happen if vegetation is sampled in transition zones).

**It is essential that proposed operational areas are field assessed to determine the range of forest and non-forest vegetation that they contain.** Using a combination of the RFA vegetation map, PI maps, aerial photographs, geology maps, topographic maps and local information, will give a good indication of where different communities may occur in an FPP area.

Contact the FPA Botanist or FPA Ecologist if you have problems identifying communities, providing details of the vegetation and site. References given for each forest type also contain useful information.

## CONSERVATION PRIORITIES

Conservation priorities for forest communities are based on the requirements and findings of the RFA and associated processes (e.g. identification of communities as Rare, Vulnerable or Endangered) and known distribution of communities in formal reserves (see Module 1).

FPA advice regarding a priority community in an operational area will depend on many factors. They include: conservation status and distribution of the community; the condition of the vegetation; the nature of the proposed operation; presence of other values; and legislative or policy requirements. In some cases, no changes to plans will be needed, in others prescriptions or reservation will be required.

### Conservation priorities for floristic communities

| Priority                 | Explanation  | General course of action  |
|--------------------------|--|---|
| <b>A</b>                 | Community may be inadequately reserved in Tasmania, and/or may have a very high conservation priority in the region. | Seek botanical advice in all cases if an area is thought to contain a Priority A community.   |
| <b>B</b>                 | Community may be inadequately reserved in the region, but is adequately reserved elsewhere in Tasmania.              | Seek botanical advice if an area is thought to contain a Priority B community <u>and</u> the site will not be regenerated to native forest.   |
| <b>Non-priority (np)</b> | Community is adequately reserved in Tasmania and in the region.  | Unless priority species (Section 3) or other flora values are thought to be present, there is generally no need to seek botanical advice if an area only contains non-priority communities. |

### Conservation priorities for RFA communities

| Priority                | Explanation  | General course of action  |
|-------------------------|--|---|
| <b>Y</b>                | The RFA has identified that additional Statewide conservation is required for the community (oldgrowth and non-oldgrowth). | Seek botanical advice in all cases if an area is thought to contain a Priority Y community.   |
| <b>Yog</b>              | The RFA has identified that additional Statewide conservation is required for the oldgrowth component of the community.    | Seek botanical advice where the community is oldgrowth, or other flora values are thought to be present.  |
| <b>Non-priority (N)</b> | The RFA has not identified that additional Statewide conservation is required for the community.                           | Unless priority species (Section 3) or other flora values are thought to be present, there is generally no need to seek botanical advice if an area only contains non-priority communities. |

RFA processes have identified communities that are Rare (R), Vulnerable (V) or Endangered (E) at a Statewide level. These are identified (\*) in the tables that indicate the conservation priorities and attributes of the different forest types (see column dealing with conservation status of the RFA community). RVE communities in Tasmania are listed in Module 1 (Appendix 3).

The RFA lists several forest communities that require further protection on public land in Tasmania. Most of these communities also have a high priority for conservation on private land.

The table below lists all RVE communities, and other communities that require protection on public land, that have been recorded from Central Highlands Region.

- R E *Notelaea ligustrina* and/or *Pomaderris apetala* closed forest
- E *E. viminalis* wet forest
- E Shrubby *E. ovata* - *E. viminalis* forest
- R V King Billy pine - deciduous beech forest
- R V Pencil pine forest
- R V Pencil pine - deciduous beech forest
- V King Billy pine forest
- V *E. amygdalina* forest on sandstone
- V *E. brookeriana* forest
- V Inland *E. amygdalina* - *E. viminalis* - *E. pauciflora* forest / woodland on Cainozoic deposits
- V Inland *E. tenuiramis* forest
- E. viminalis* grassy forest / woodland
- E. rodwayi* forest
- Allocasuarina verticillata* forest
- E. amygdalina* forest on mudstone (oldgrowth only)
- E. pauciflora* forest on dolerite (oldgrowth only)
- E. viminalis* - *E. ovata* - *E. amygdalina* - *E. obliqua* damp sclerophyll forest (oldgrowth only).

The tables in this section of the Central Highlands Module indicate that all occurrences of these communities need to be referred to FPA. The other RFA communities that require referral to FPA have been identified through other analyses as having some priority for conservation within the region.

There are constraints on conversion of RVE forest communities (and RVE non-forest communities). There will be restrictions on further conversion of other forest communities if their clearance approaches the limits set by Tasmania's Permanent Forest Estate Policy (monitored by FPA).

## EXPLANATORY NOTES

Some additional notes that will help FPOs to assess areas and use the keys and tables are given below.

### Sources of information

There are many sources of information to indicate which vegetation types and forest communities occur in a FPP area. Assessments and surveys conducted prior to preparing FPPs will generally provide enough information to identify the communities. Published and unpublished reports and botanical data from various databases may also be useful. Distribution notes given in the tables may help confirm community identifications.

Broad scale vegetation maps such as the RFA Forest Communities Map and TASVEG maps are available through DPIWE GTSpot database and Forestry Tasmania's NewCONSERVE database. Details for accessing these databases are given in Module 1. These maps may give a useful indication of the vegetation in a FPP area, but the scale of mapping means that they are often inaccurate at the coupe level. They rarely pick up localised occurrences of communities (which may have high conservation significance), and they will not allow floristic communities to be identified.

Further information about the different forest types is provided in the major references cited in the text. *Flora Technical Note 2* provides other references on forest and non-forest vegetation.

## How big is a forest community?

In preparing FPPs, the **minimum** area of forest that should be identified as a distinct community is **1 ha** (this includes contiguous areas of the community that extend beyond the FPP boundary). However, botanical advice should be sought for smaller areas of non-forest vegetation (e.g. *Sphagnum* peatlands).

Small areas of communities can be easily missed during surveys of FPP areas, though the chances of this are reduced by good sampling across the range of environments in the area. It is important to survey localised habitats within the FPP area. Communities with a high priority for conservation often occupy distinctive habitats (e.g. rocky knolls, poorly drained flats) or have fairly distinctive features (e.g. the white trunks of *E. viminalis* in *E. viminalis* wet forests contrast with the fibrous trunks of *E. obliqua* and *E. delegatensis*, the more widespread wet eucalypt forest dominants).

FPOs should try to identify a community occupying a small area (<1 ha) if:

- the forest in the small area is significantly different to the adjacent forest; or
- the forest community in the small area may be a priority community.

FPOs can subsume a community occupying a small area into the adjacent community if:

- the forest in the small area has obvious affinities to the forest community in the adjacent area (e.g. the same canopy dominants); and
- the forest community in the small area is not a priority community.

For RFA communities that only require additional conservation of oldgrowth occurrences, FPA should be notified for all oldgrowth patches exceeding 3 ha (including areas that extend beyond the FPP area).

There are particular problems in dealing with transitional vegetation and the RFA damp sclerophyll forest community (see discussion below). FPOs should take care not to confuse vegetation in transition zones with distinct communities.

When small areas of priority forest communities are referred to FPA, the advice given will be determined on a case-by-case basis. Factors that may be relevant include: requirements under the RFA and other policies; location within coupe (e.g. whether adjacent to streamside reserve or in the middle of a proposed plantation); proposed silvicultural practices; presence of other values; and the local context of the community.

## Qualifications in the tables

There are many grey areas in classifying vegetation and determining conservation priorities. The tables give qualifications for some communities, when the conservation priority of the community will depend on particular circumstances. For example, some floristic communities can be allocated to more than one RFA community, depending on vegetation characteristics (e.g. tree height) and site characteristics (e.g. rock type). Floristic communities dominated by *E. amygdalina*, in particular, can be allocated to several RFA communities.

## More on community names and relationships

The systems of classifying floristic communities differ between forest types. This is because the classifications were undertaken by different researchers at different times. Most communities have an abbreviated name (used in the keys) and a more detailed name (used in the tables) that indicates some typical species or characteristics of the community. However, some stands of a particular community may not contain all the “typical” species given in the more detailed name of the community.

Most floristic communities can be readily allocated to RFA communities, but this is not always the case. Most RFA communities contain two or more floristic communities. In some cases, the RFA community names may seem inappropriate: for example, areas of wet sclerophyll forest dominated by *E. dalrympleana* are included in the RFA community “*E. delegatensis* tall forest”.

## Dominance in forest communities

Accurate determination of the dominant canopy (overstorey) species and understorey characteristics is needed to classify communities. Most areas of forest contain one or more shrub layers below the canopy, and a ground layer of grasses, sedges, ferns or some combination of these. The dominant component of a vegetation layer is the species (or group of species) that supply most of the cover.

### Overstorey dominance

Identifying the dominant overstorey species is one of the first steps in keying out most forest communities. This can be difficult in forests containing more than one species of eucalypt. However, in most situations, one species is clearly dominant while the others are subdominant or minor. An example: *E. rodwayi* provides about 60% cover on a poorly drained flat with an understorey dominated by sedges; the flat also carries *E. pauciflora* and *E. dalrympleana*. The floristic community is sedgy *E. rodwayi* dry sclerophyll forest and the correlated RFA community is *E. rodwayi* forest.

Two species occasionally occur as codominants, having about equal cover in the community. The community should be keyed out using both dominants as options. Botanical advice may be needed if one of those options is a priority community. An example: if *E. delegatensis* and *E. viminalis* are codominant in a wet sclerophyll forest, the community can be identified as an *E. delegatensis* wet sclerophyll forest community or an *E. viminalis* wet sclerophyll forest community. The latter community has a high priority for protection in all regions of Tasmania, and the operation needs to be referred to FPA. If neither community is a priority community (e.g. *E. obliqua* and *E. delegatensis* codominant in wet sclerophyll forest), the operation does not need to be referred to FPA unless other flora values are present. FPOs should exercise their own judgement (e.g. by taking account of associated vegetation and site characteristics) when allocating such forest to floristic and RFA communities.

### Understorey dominance

Within a broad forest type, some communities key out simply on the basis of their overstorey dominants. However, most floristic communities are keyed out by the presence or absence of understorey species (e.g. most wet sclerophyll forest communities) or by characteristics of the dominant understorey layer (e.g. most dry sclerophyll forest communities). For example, shrubs exceeding 2 m in height will be the most conspicuous understorey layer in a shrubby dry sclerophyll forest community. Grasses or sags are the most conspicuous understorey components in a grassy dry sclerophyll forest.

Several subalpine eucalypt forests also contain a mixture of dry sclerophyll, wet sclerophyll or rainforest species. Use the dominant understorey characteristics to identify the community using the mixed forest, wet sclerophyll forest or dry sclerophyll forest keys. In cases where no understorey type is clearly dominant, the community will key out using the key to any of these forest types. Examples of subalpine communities include dry shrubby *E. delegatensis* forest (DRY-shDEL) and *E. delegatensis* – *Hakea lissosperma* – *Monotoca glauca* subalpine mixed forest (WET-DEL1110).

FPOs may need to make allowance if land uses or events have temporarily changed the nature of the understorey. For example, a recent fire may remove the shrub layer from a heathy forest, but if the vegetation in nearby areas or other evidence suggests that short shrubs are typically present, the community should be allocated to a heathy dry sclerophyll forest community. Section 2.6 gives more information on identifying the dominant understorey characteristics in dry sclerophyll communities.

### **Distinguishing eucalypt species**

Correct identification of eucalypt species is essential as they are the main tree species used to identify most dry sclerophyll, wet sclerophyll and mixed forest communities. Identification can sometimes be difficult because eucalypts hybridise readily. Seek botanical advice if you find unusual or outlying occurrences of eucalypts, as these may be genetically important.

The FPA website contains scanned images of Tasmanian eucalypts; a key to species and notes on distinguishing between some closely-related species (*E. viminalis* and *E. dalrympleana*; and *E. brookeriana* and *E. ovata*) associated with communities with a high priority for conservation. Useful references for identifying eucalypts are also listed in *Flora Technical Note 2*.

FPOs may need to collect material or take notes to determine the identity of a species. Bark characteristics, fruit, buds and adult and juvenile leaves can all be important for diagnosis. Juvenile leaves may be needed to identify some species (e.g. *E. viminalis* and *E. dalrympleana*).

### **Oldgrowth**

Oldgrowth forests have over-mature to senescent trees contributing over 30% of the crown cover to the overstorey, and have not been significantly affected by man-made disturbance. Fire does not preclude classification as oldgrowth, providing other oldgrowth characteristics are present. Oldgrowth forests generally contain a greater range of habitats than regrowth forests and consequently support a different (and generally more diverse) suite of species. Oldgrowth forest is discussed in *Flora Technical Note 7*.

Generally, oldgrowth forests have a higher conservation value than non-oldgrowth forests of the same community. Areas of oldgrowth forest, or areas containing oldgrowth trees, should be preferentially located in retained areas, if this is an option under the proposed silvicultural regime. Some RFA communities require additional protection for the oldgrowth component of the community only. For these communities, the practical minimum patch size that requires notification to FPA is 3 hectares (including areas extending beyond the coupe boundary).

### Transition zones

Transition zones often occur between adjacent forest types or adjacent forest communities, with vegetation of these zones being intermediate in structure and composition. Transition zones should be avoided when communities are being identified. Some forest communities (e.g. damp sclerophyll forest communities) are inherently intermediate in character and occupy relatively large areas - see below.

### Damp sclerophyll forest communities

Some eucalypt-dominated forests have an understorey with a similar proportion of wet sclerophyll species (e.g. broad-leaved shrubs and wet ferns) and dry sclerophyll species (e.g. narrow-leaved shrubs and grasses). An example of a damp sclerophyll understorey could include dogwood, blanket bush, prickly mo, prickly beauty, guitar plant and sagg. Such vegetation is sometimes described as damp sclerophyll forest. In this section, it should be keyed to its floristic community using the dry sclerophyll forest key (where it will generally key out as a shrubby dry sclerophyll community).

One of the RFA communities is *E. viminalis* - *E. ovata* - *E. amygdalina* - *E. obliqua* damp sclerophyll forest (DSC). The community has a damp sclerophyll understorey and *E. amygdalina* and/or *E. obliqua* are both prominent in the overstorey. *E. viminalis* and *E. ovata* may be present as subdominant or minor species or may dominate very small patches within a mosaic of forest dominated by *E. amygdalina* or *E. obliqua*. This community is mapped inconsistently on the RFA Forest Communities Map. On most sites mapped as DSC, the vegetation can be better allocated to other RFA communities (e.g. dry *E. obliqua* forest, tall *E. obliqua* forest, *E. amygdalina* forest on dolerite, shrubby *E. ovata* - *E. viminalis* forest).

### Inland *E. amygdalina* forest

In 2005, the RFA community Inland *E. amygdalina* forest (AI) was split into two distinct communities. Inland *E. amygdalina* - *E. viminalis* - *E. pauciflora* forest/woodland on Cainozoic deposits (AIC) is associated with Recent and Tertiary sediments – it occurs mainly on private land and is listed as a Vulnerable community. It is abbreviated to Inland *E. amygdalina* forest on Cainozoic deposits in tables in Section 2.6. *E. amygdalina* forest on mudstone (AM) occurs on dry mudstone sites – it is not identified as a threatened community, though oldgrowth stands require protection on public land. Both communities have a localised distribution on low altitude slopes and flats in Central Highlands Region.

### Forest communities that are susceptible to *Phytophthora cinnamomi*

Some Tasmanian forest communities are very susceptible to the root rot pathogen *Phytophthora cinnamomi*. *Phytophthora* is considered in the FPP *Flora Evaluation Sheet*, other sections of this module and in *Flora Technical Note 8*. Although susceptible communities and species occur in Central Highlands Region, cool soil temperatures in the region inhibit the establishment of *Phytophthora* and the risk of infection is low.

### Non-forest vegetation

Native non-forest vegetation (e.g. moorland, heath, wetland and native grassland) may be associated with native forests (and sometimes plantations). Some of these vegetation types have a high priority for conservation, contain threatened species or are very susceptible to disturbance or disease. There are specific guidelines in the *Forest Practices Code* to avoid disturbance to localised environments (e.g. swamps, rocky knolls, streambanks) that often contain these vegetation types. The key on the following page will allow FPOs to identify broad non-forest vegetation types. Seek botanical advice in all cases where native non-forest vegetation will be affected by forestry operations.

### When to seek advice

This section of the module, and the FPP *Flora Evaluation Sheet*, indicates when botanical advice is needed because of the presence of particular communities in areas proposed for forestry operations. However, there is no shortage of grey areas in the natural world. Specialist advice should be sought if FPOs are uncertain about identification of communities or their conservation priority.

## KEY TO VEGETATION TYPES AND FOREST COMMUNITIES

Use the key to forest and non-forest types to identify the vegetation types present in the coupe, then go to the indicated section (forest types only) to identify the floristic communities. The table following the key will allow the floristic communities to be related to the RFA communities.

Each key should be followed through sequentially. A true/false decision should be made for each statement bearing the same number (e.g. ❶). If true, proceed to the next numbered statement immediately below (❷). If false (or there is some degree of doubt), proceed to the next statement of the same number (❶) in the key.

The keys are based on species or understorey types that will be familiar to most field workers. Understoreys are defined by their dominant species, although species typical of other vegetation types may be present. Information on species and other characteristics used to distinguish communities is provided in Module 1, *Flora Technical Note 2* and on the FPA Website.

Transitional vegetation may not key out easily. If the forest is intermediate between two recognisable floristic communities, assess the conservation priorities for both communities. Contact the FPA Botanist or Ecologist if a vegetation type or forest community does not key out.

### KEY TO FOREST TYPES

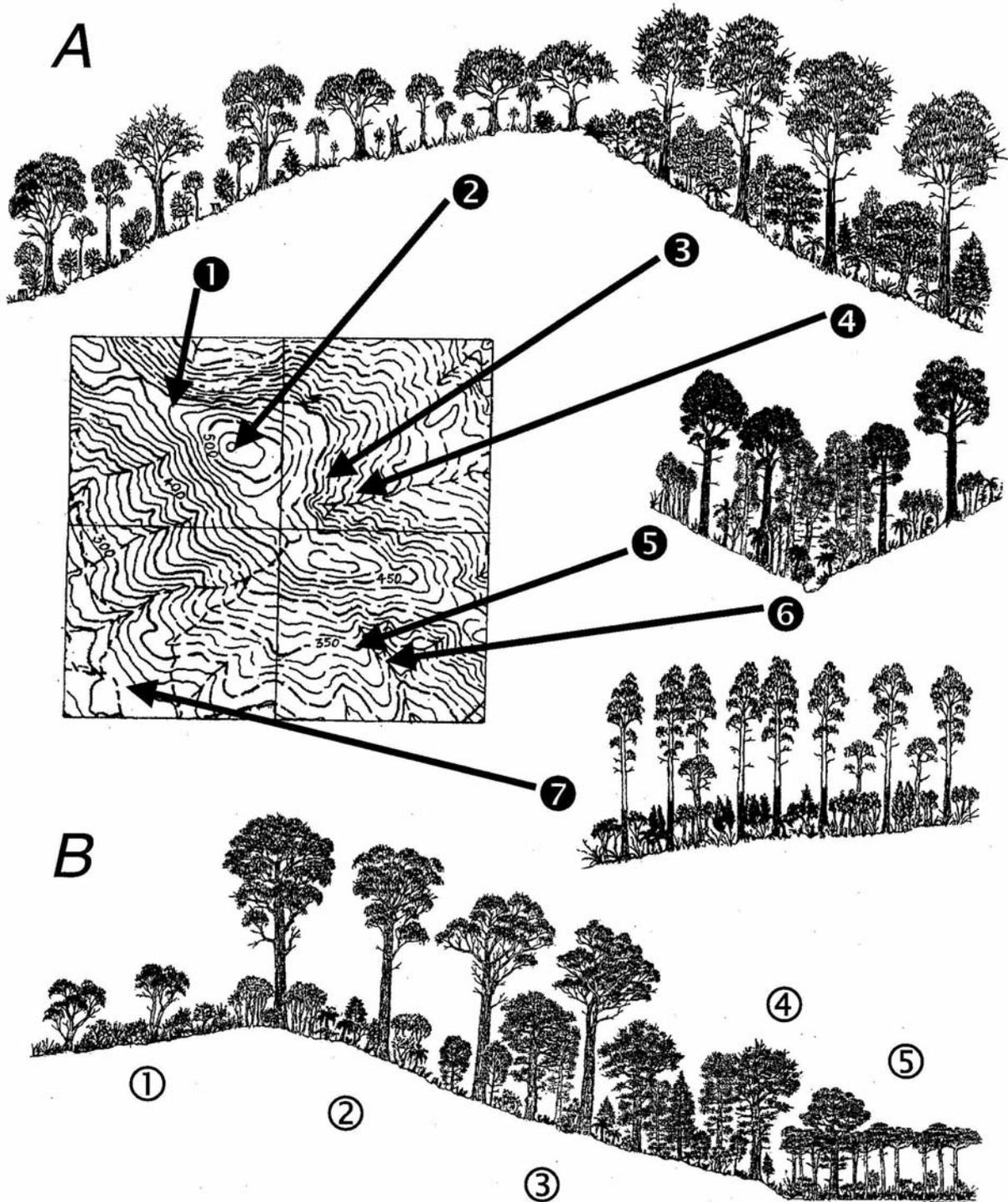
*Use when vegetation is dominated by trees exceeding 5 metres, or with potential to exceed 5 metres*

- ❶ **Eucalypts absent or less than 5% cover**
  - ❷ Myrtle, sassafras, leatherwood, celery-top pine, horizontal, deciduous beech, King Billy pine, pencil pine or Cheshunt pine or dominant..... Rainforest (go to 2.1)
  - ❷ Tea-trees dominant ..... Tea-tree forest or scrub (go to 2.2)
  - ❷ Forest or tall scrub with other species dominant..... Other forest or scrub (go to 2.3)
- ❶ **Eucalypts present with greater than 5% cover**
  - ❷ Rainforest species (above) prominent as secondary trees or shrubs ..... Mixed forest (go to 2.4)
  - ❷ Understorey dominated by tall tea-trees or paperbarks..... Wet sclerophyll forest (go to 2.5)
  - ❷ Understorey dominated by broad-leaved (soft-leaved) shrubs ..... Wet sclerophyll forest (go to 2.5)
  - ❷ Understorey dominated by an equal mixture of broad-leaved and narrow-leaved shrubs ..... Dry sclerophyll forest/woodland (go to 2.6)
  - ❷ Understorey dominated by grasses, sedges, heaths or narrow-leaved (hard-leaved) shrubs (often under 2 m in height)..... Dry sclerophyll forest/woodland (go to 2.6)

### KEY TO NON-FOREST TYPES

*Seek advice from FPA in all cases if operations may affect native non-forest vegetation.*

- ❶ Dominated by shrubs over 2 m.....Scrub
- ❶ Dominated by shrubs under 2 m, usually infertile or exposed sites .....Heathland
- ❶ High altitude sites dominated by a mixture of low species such as cushion plants .....Alpine vegetation
- ❶ Dominated by sedges or buttongrass; low to high altitudes, often on the boundary of sedgy woodland or tea-tree scrub forest..... Moorland/sedgeland
- ❶ Dominated by native grasses and saggis; often herb-rich; generally fertile sites ..... Native grassland
- ❶ Dominated by *Sphagnum* moss; shrubs (e.g. tea-tree or richea) may be sparse or locally dense; often in high altitude soaks or drainage lines .....*Sphagnum* peatland
- ❶ Aquatic vegetation or vegetation submerged seasonally, generally dominated by graminoids or herbs .....Wetland



Diagrams showing relationships between forest types and typical Tasmanian forest environments:

*A: Moderate rainfall site: soils of moderate fertility (e.g. dolerite); site varying in landform and fire history*

1 – shrubby *E. amygdalina* dry sclerophyll forest (exposed slope); 2 – grassy *E. amygdalina* dsf (exposed ridgeline); 3 – *E. delegatensis* wet sclerophyll forest (shaded slopes at higher altitudes); 4 – *E. delegatensis* mixed forest (humid slope, infrequently burnt); 5 – *E. obliqua* wsf and mixed forest (shaded slopes at lower altitudes); 6 – callidendrous rainforest (humid fire-shadow gully); 7 – *E. regnans* wsf (regrowth on humid site after wildfire or intensive logging).

*B: High rainfall site, low altitude: site varying greatly in soil fertility and drainage*

1 – heathy *E. amygdalina* dry sclerophyll forest (infertile substrate); 2 – *E. obliqua* wet sclerophyll forest (shaded slope); 3 – *E. obliqua* mixed forest (humid slope, infrequently burnt); 4 – callidendrous rainforest (humid, well-drained lower slope; fire-shadow site); 5 – *Leptospermum lanigerum* swamp forest (poorly-drained flat).

## 2.1 RAINFOREST COMMUNITIES

*Major References:* Jarman, Brown and Kantvilas (1984); Jarman, Kantvilas and Brown (1991)

Tasmanian cool temperate rainforest is defined as vegetation with trees taller than 8 m, dominated by the following species: myrtle, deciduous beech, sassafras, leatherwood, horizontal, celery-top pine, King Billy pine, Huon pine, Cheshunt pine or pencil pine. Callidendrous rainforest dominated by myrtle and sassafras is found on relatively fertile and moist sites in Central Highlands Region, generally at lower altitudes. It forms mosaics with mixed forest and wet sclerophyll forest in high rainfall areas such as Surrey Hills and the Florentine Valley, but is largely restricted to fire-shadow situations (e.g. gullies and creeklines) in drier parts of the region (e.g. parts of the Western Tiers).

Thamnic rainforest, characterised by the presence of endemic species, is extensive and diverse in the humid western part of the region. It grades into montane rainforest, dominated by pencil pine or deciduous beech, at higher altitudes. Wildfires have reduced the extent of montane rainforest on the Central Plateau, with large areas of this fire-sensitive vegetation type being replaced by scrub and heath. Most rainforest communities in Central Highlands Region are well reserved. However, the susceptibility of rainforest communities to fire, particularly in high altitude areas, needs to be taken into account in planning for forestry operations in the region.

### KEY TO RAINFOREST COMMUNITIES

- ❶ **Generally forest of tall to moderate height (>20m, except at high altitudes or exposed situations); myrtle or sassafras dominant; understorey open**
  - ❷ Myrtle dominant or common; sassafras often present
    - ❸ Ground ferns common
      - ❹ Musk common..... RAIN-C3.1
      - ❹ Musk sparse or absent..... RAIN-C1.1
    - ❸ Ground ferns sparse; woolly tea-tree or native pepper often present ..... RAIN-C2.1
  - ❷ Sassafras dominant; myrtle usually sparse or absent
    - ❸ Musk common..... RAIN-C3.2
    - ❸ Musk sparse or absent ..... RAIN-C1.2
- ❶ **Generally forest of moderate height; myrtle usually dominant or subdominant, leatherwood or celery-top pine usually prominent; understorey shrubby but distinct from tree layer**
  - ❷ King Billy pine dominant or codominant; myrtle often subdominant
    - ❸ Understorey dominated by horizontal .....RAIN-T1.3
    - ❸ Understorey dominated by archeria .....RAIN-T4.3
    - ❸ Understorey dominated by dwarf leatherwood .....RAIN-T5.2
    - ❸ Understorey dominated by deciduous beech.....RAIN-T5.3
    - ❸ Understorey dominated by trochocarpa .....RAIN-T6.2
    - ❸ Understorey dominated by scoparia.....RAIN-T9.1
  - ❷ King Billy pine not dominant or codominant; myrtle generally dominant
    - ❸ Understorey dominated by horizontal
      - ❹ Pandani present.....RAIN-T1.2
      - ❹ Pandani absent.....RAIN-T1.1
    - ❸ Understorey dominated by native laurel
      - ❹ Pandani present.....RAIN-T3.3
      - ❹ Pandani absent.....RAIN-T3.1
    - ❸ Understorey dominated by trochocarpa
      - ❹ Understorey dominated by *Trochocarpa gunnii*; sassafras present.....RAIN-T5.1
      - ❹ Understorey dominated by *Trochocarpa cunninghamii*; sassafras absent.....RAIN-T6.1

- ❶ **Low forests in highland situations; canopy dominated by pencil pine and often open**
  - ❷ Deciduous beech and pandani prominent in understorey ..... RAIN-M1.1
  - ❷ Cheshunt pine prominent in understorey
    - ❸ Myrtle absent; understorey diverse and shrubby ..... RAIN-M2.1
    - ❸ Myrtle present; understorey relatively open ..... RAIN-M2.2
  - ❷ Cheshunt pine not prominent in understorey
    - ❸ Understorey dense and shrubby with mountain tea-tree and orites prominent ..... RAIN-M3.1
    - ❸ Understorey open with herbs and tussock grass prominent ..... RAIN-M4.1
    - ❸ Understorey open with sphagnum or sedges prominent; poorly drained sites ..... RAIN-M5.1

**CONSERVATION PRIORITIES AND ATTRIBUTES OF RAINFOREST COMMUNITIES**

Note: \* – Community identified as Rare, Vulnerable or Endangered at a Statewide level through RFA processes

| Floristic community code and name |  | Qualification            | RFA community code and name |   | Conservation priority |     | Distribution in Central Highlands Region   |
|-----------------------------------|--|--------------------------|-----------------------------|---|-----------------------|-----|--|
|                                   |  |                          |                             |   | Floristic             | RFA |  |
| RAIN-C1.1<br>Callidendrous        | <i>Nothofagus cunninghamii</i> -<br><i>Atherosperma moschatum</i> over<br><i>Dicksonia antarctica</i> and/or <i>Polystichum proliferum</i>                             |                          | M+                          | Callidendrous & thamnic rainforest on fertile sites | np                    | N   | Common on basalt and other fertile sites below 700 m in west of region; localised in humid sites (e.g. gullies) in drier areas (e.g. Western Tiers, Mt Field). |
| RAIN-C1.2<br>Callidendrous        | <i>Atherosperma moschatum</i> over<br><i>Dicksonia antarctica</i> - <i>Polystichum proliferum</i> - <i>Blechnum wattsii</i>  |                          | M+                          | Callidendrous & thamnic rainforest on fertile sites | B                     | N   | Occasional in protected gullies and along creeks, mainly on fertile sites below 700 m in north of region.  |
| RAIN-C2.1<br>Callidendrous        | <i>Nothofagus cunninghamii</i> -<br>( <i>Leptospermum lanigerum</i> ) over clear understorey or <i>Telopea truncata</i> or <i>Tasmania lanceolata</i>                  |                          | M+                          | Callidendrous & thamnic rainforest on fertile sites | np                    | N   | Locally common on benches and flats on the Western Tiers and less exposed parts of the Central Plateau.  |
| RAIN-C3.1<br>Callidendrous        | <i>Nothofagus cunninghamii</i> -<br><i>Atherosperma moschatum</i> over <i>Olearia argophylla</i> with <i>Dicksonia antarctica</i> and/or <i>Polystichum proliferum</i> |                          | M+                          | Callidendrous & thamnic rainforest on fertile sites | B                     | N   | Occasional in gullies and along rivers on fertile sites at lower altitudes; usually below 600 m (e.g. Liffey FR).  |
| RAIN-C3.2<br>Callidendrous        | <i>Atherosperma moschatum</i> over <i>Olearia argophylla</i> with <i>Dicksonia antarctica</i> - and/or <i>Polystichum proliferum</i>                                   |                          | M+                          | Callidendrous & thamnic rainforest on fertile sites | B                     | N   | Local in the east and northeast of region, in gullies and along rivers on fertile sites below 700 m.   |
| RAIN-M1.1<br>Montane              | <i>Athrotaxis selaginoides</i> / <i>Athrotaxis cupressoides</i> over <i>Nothofagus gunnii</i> - <i>Richea pandanifolia</i>   | King Billy pine dominant | F                           | King Billy pine with deciduous beech forest         | A                     | Y*  | Sheltered sites at altitude >1000 m; King Billy pine mainly on steep, rocky slopes; pencil pine near streams and lakes (e.g. Labyrinth and Mount Field).       |
|                                   |  | Pencil pine dominant     | PD                          | Pencil pine with deciduous beech forest             |                       |     |  |
| RAIN-M2.1<br>Montane              | <i>Athrotaxis cupressoides</i> over mixed coniferous shrubbery   |                          | PP                          | Pencil pine forest                                  | A                     | Y*  | Local at high altitude on dolerite (e.g. Labyrinth).   |
| RAIN-M2.2<br>Montane              | <i>Athrotaxis cupressoides</i> over <i>Diselma archeri</i> in a park like understorey  |                          | PP                          | Pencil pine forest                                  | A                     | Y*  | Very local at high altitude on dolerite (e.g. Lake Ophion).  |
| RAIN-M3.1<br>Montane              | <i>Athrotaxis cupressoides</i> over proteaceous - myrtaceous shrubbery   |                          | PP                          | Pencil pine forest                                  | A                     | Y*  | Local at high altitudes on dolerite with high cover of boulders (e.g. Pine Lake).  |

**Forest Botany Manual: Module 7 – Central Highlands Region**

| Floristic community code and name |  | Qualification                 | RFA community code and name |   | Conservation priority |     | Distribution in Central Highlands Region   |
|-----------------------------------|--|-------------------------------|-----------------------------|---|-----------------------|-----|--|
|                                   |  |                               |                             |   | Floristic             | RFA |  |
| RAIN-M4.1<br>Montane              | <i>Athrotaxis cupressoides</i> over <i>Poa</i> grassland   |                               | PP                          | Pencil pine forest                                  | A                     | Y*  | Scattered on relatively flat sites with deeper soils (e.g. Dixons Kingdom).  |
| RAIN-M5.1<br>Montane              | <i>Athrotaxis cupressoides</i> over <i>Sphagnum</i>  |                               | PP                          | Pencil pine forest                                  | A                     | Y*  | Flats and margins of lakes and tarns with poor drainage, at altitudes above 900 m.   |
| RAIN-T1.1<br>Thamnic              | <i>Nothofagus cunninghamii</i> - <i>Eucryphia lucida</i> - ( <i>Phyllocladus aspleniifolius</i> ) over <i>Anodopetalum biglandulosum</i>                                   | Trees >20 m over sparse u/s   | M+                          | Callidendrous & thamnic rainforest on fertile sites | np                    | N   | Widespread on less fertile sites at lower altitudes (usually below 600 m); often associated with creeks (e.g. Deep Gully, Old Park). |
|                                   |  | Trees <20 m over dense u/s    | M-                          | Thamnic rainforest on less fertile sites            |                       |     |  |
| RAIN-T1.2<br>Thamnic              | <i>Nothofagus cunninghamii</i> - <i>Eucryphia lucida</i> - ( <i>Phyllocladus aspleniifolius</i> ) over <i>Anodopetalum biglandulosum</i> - <i>Richea pandanifolia</i>      |                               | M-                          | Thamnic rainforest on less fertile sites            | np                    | N   | Occasional in the south and southwest of region at 600-800 m altitude; recorded from Wild Rivers NP.                                 |
| RAIN-T1.3<br>Thamnic              | <i>Athrotaxis selaginoides</i> over <i>Anodopetalum biglandulosum</i> - <i>Richea pandanifolia</i>   |                               | X                           | King Billy pine forest                              | A                     | Y*  | May extend into west of region on less fertile sites below 700 m.  |
| RAIN-T3.1<br>Thamnic              | <i>Nothofagus cunninghamii</i> - <i>Eucryphia lucida</i> - ( <i>Phyllocladus aspleniifolius</i> ) over <i>Anopterus glandulosus</i>  | Trees >20 m over a sparse u/s | M+                          | Callidendrous & thamnic rainforest on fertile sites | np                    | N   | May extend into the south and west of the region on low altitude sites of low to moderate fertility. Often associated with creeks.   |
|                                   |  | Trees <20 m over dense u/s    | M-                          | Thamnic rainforest on less fertile sites            |                       |     |  |
| RAIN-T3.3<br>Thamnic              | <i>Nothofagus cunninghamii</i> - <i>Eucryphia lucida</i> - ( <i>Phyllocladus aspleniifolius</i> ) over <i>Anopterus glandulosus</i> - <i>Richea pandanifolia</i>           | Trees >20 m over a sparse u/s | M+                          | Callidendrous & thamnic rainforest on fertile sites | np                    | N   | May extend into the south and west of the region on low to moderate fertility sites to 700 m (e.g. Mt Arrowsmith).                   |
|                                   |  | Trees <20 m over dense u/s    | M-                          | Thamnic rainforest on less fertile sites            |                       |     |  |
| RAIN-T4.3<br>Thamnic              | <i>Athrotaxis selaginoides</i> - <i>Nothofagus cunninghamii</i> - <i>Eucryphia</i> species over <i>Archeria eriocarpa</i> /A. <i>hirtella</i> – <i>Richea pandanifolia</i> | Myrtle dominant               | M-                          | Thamnic rainforest on less fertile sites            | np                    | N   | May extend into the south and west of the region on moderate fertility sites above 600 m.  |
|                                   |  | King Billy pine dominant      | X                           | King Billy pine forest                              | A                     | Y*  |  |

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| Floristic community code and name |   | Qualification                 | RFA community code and name |   | Conservation priority |     | Distribution in Central Highlands Region   |
|-----------------------------------|---|-------------------------------|-----------------------------|---|-----------------------|-----|--|
|                                   |   |                               |                             |   | Floristic             | RFA |  |
| RAIN-T5.1<br>Thamnic              | <i>Nothofagus cunninghamii</i> -<br><i>Atherosperma moschatum</i> - <i>Eucryphia lucida</i> over <i>Trochocarpa gunnii</i>  | Trees >20 m over a sparse u/s | M+                          | Callidendrous & thamnic rainforest on fertile sites | np                    | N   | Local in western part of Central Plateau on moderate fertility sites below 700 m.                      |
|                                   |   | Trees <20 m over dense u/s    | M-                          | Thamnic rainforest on less fertile sites            |                       |     |  |
| RAIN-T5.2<br>Thamnic              | <i>Athrotaxis selaginoides</i> (and/or <i>Nothofagus cunninghamii</i> ) - <i>Eucryphia milliganii</i> over <i>Trochocarpa gunnii</i> - <i>Richea pandanifolia</i> | Myrtle dominant               | M-                          | Thamnic rainforest on less fertile sites            | B                     | N   | Occasional in west of region on mountain slopes above 700 m.   |
|                                   |   | King Billy pine dominant      | X                           | King Billy pine forest                              | B                     | N   |  |
| RAIN-T5.3<br>Thamnic              | <i>Athrotaxis selaginoides</i> - <i>Nothofagus gunnii</i> over <i>Trochocarpa gunnii</i> (- <i>Richea pandanifolia</i> )  |                               | F                           | King Billy pine with deciduous beech forest         | A                     | Y*  | Local on dolerite on relatively protected sites at higher altitudes (e.g. Cradle Valley, Lake Meston). |
| RAIN-T6.1<br>Thamnic              | <i>Nothofagus cunninghamii</i> - <i>Phyllocladus aspleniifolius</i> over <i>Trochocarpa cunninghamii</i>  |                               | M-                          | Thamnic rainforest on less fertile sites            | B                     | N   | Local at mid to high altitude on less fertile sites in west of region.                                 |
| RAIN-T6.2<br>Thamnic              | <i>Athrotaxis selaginoides</i> over <i>Trochocarpa cunninghamii</i>   |                               | X                           | King Billy pine forest                              | B                     | N   | Local at mid to high altitude on less fertile sites in west of region.                                 |
| RAIN-T9.1<br>Thamnic              | <i>Athrotaxis selaginoides</i> over <i>Richea scoparia</i> - <i>Nothofagus cunninghamii</i> (- <i>Eucryphia milliganii</i> )                                      |                               | X                           | King Billy pine forest                              | B                     | N   | May extend to dolerite mountains in south of region at altitudes above 750 m.                          |

## 2.2 TEA-TREE FOREST OR SCRUB COMMUNITIES

Major Reference: Pannell (1992); Kirkpatrick, Barker, Brown, Harris and Mackie (1995)

Swamp forests are defined as having a closed canopy consisting of blackwood, tea-trees and paperbarks, with an absence of eucalypts. Most communities are confined to low altitude parts of Tasmania, with their greatest extent and diversity being found in the far Northwest (Woolnorth Region). In Central Highlands Region, montane tea-tree forests dominated by *Leptospermum lanigerum* occur locally, generally on sites with somewhat impeded drainage. They may occur in a matrix of rainforest, mixed forest or wet eucalypt forest, sometimes also forming a boundary with sedgeland, native grassland or subalpine herbfield. Low forest and scrub communities dominated by other species of tea-tree occur locally in the western part of the region, where they are well reserved.

### KEY TO TEA-TREE FOREST OR SCRUB COMMUNITIES

- ❶ **Woolly tea-tree dominant**
  - ❷ Myrtle sparse or absent
    - ❸ Silver wattle codominant or common ..... SWAMP-E1
    - ❸ Silver wattle sparse or absent ..... SWAMP-E1
  - ❷ Myrtle codominant or common (silver wattle sparse or absent) ..... SWAMP-E2
- ❶ **Shiny tea-tree dominant** ..... OTHER-01
- ❶ **Glaucous tea-tree dominant or codominant with tea-tree (manuka)** ..... OTHER-02

**CONSERVATION PRIORITIES AND ATTRIBUTES OF TEA-TREE FOREST OR SCRUB COMMUNITIES**

Note: \* – Community identified as Rare, Vulnerable or Endangered at a Statewide level through RFA processes

| Floristic community code and name |   | Qualification                  | RFA community code and name |   | Conservation priority |     | Distribution in Central Highlands Region  |
|-----------------------------------|---|--------------------------------|-----------------------------|---|-----------------------|-----|---|
|                                   |   |                                |                             |   | Floristic             | RFA |   |
| OTHER-01                          | <i>Leptospermum nitidum</i><br>closed forest/scrub  |                                | —                           | Non-forest  | np                    | —   | Riparian vegetation, extending onto slopes, mainly at lower altitudes in west of region.  |
| OTHER-02                          | <i>Leptospermum glaucescens</i><br>- <i>Leptospermum scoparium</i><br>closed forest/scrub |                                | L                           | <i>Leptospermum</i> species - <i>Melaleuca squarrosa</i> swamp forest | B                     | N   | Relatively infertile slopes and flats, mainly at lower altitudes in west of region.   |
| SWAMP-E1                          | Depauperate montane tea-tree forest   | Silver wattle common           | SI                          | <i>Acacia dealbata</i> forest   | B                     | N   | Local on disturbed flats; mainly on dolerite benches, particularly in north of region (e.g. Western Tiers).   |
|                                   |   | Silver wattle sparse or absent | L                           | <i>Leptospermum</i> species - <i>Melaleuca squarrosa</i> swamp forest | B                     | N   | Local on poorly drained upland benches and tier surfaces (e.g. Western Tiers, Surrey Hills, Tarraleah, Wentworth Hills).  |
| SWAMP-E2                          | Montane myrtle tea-tree forest  |                                | M+                          | Callidendrous & thamnic rainforest on fertile sites                   | A                     | N   | Local on poorly drained upland sites, less frequently or recently disturbed than sites supporting SWAMP-E1 forest. Often associated with rainforest and mixed forest. |

## 2.3 OTHER FOREST OR SCRUB COMMUNITIES

*Major Reference:* Kirkpatrick, Barker, Brown, Harris and Mackie (1995)

This section covers an array of forest communities that are not dominated by rainforest species, eucalypts, tea-trees or paperbarks. They occupy a wide environmental range, from humid sites capable of supporting rainforest, to dry rocky gorges. Most of these communities occur as localised patches in other forest types. Examples include small stands (or groves) of native olive associated with rocky sites in wet sclerophyll forest. Most of the communities have a high priority for conservation, because of their localised distribution. Some are associated with threatened species. The exception is silver wattle (*Acacia dealbata*) forest, which is found locally where inadequate regeneration of eucalypts has followed land clearing, wildfire or logging.

Some communities covered in this section have not been recorded from Central Highlands Region, but may occur locally at lower altitudes within the region.

### KEY TO OTHER FOREST OR SCRUB COMMUNITIES

*Note:* These communities may have a sparse (<5%) cover of eucalypts or other tree species.

- ❶ Dogwood (native pear) dominant ..... OTHER-03
- ❶ Blanket bush dominant ..... OTHER-06
- ❶ Native olive (dorrel) dominant..... OTHER-07
- ❶ Silver wattle dominant..... OTHER-10
- ❶ Yellow bottlebrush (*Callistemon pallidus*) dominant ..... OTHER-11
- ❶ She-oak dominant ..... DRY-VERT-inland

## CONSERVATION PRIORITIES AND ATTRIBUTES OF OTHER FOREST OR SCRUB COMMUNITIES

Note: \* – Community identified as Rare, Vulnerable or Endangered at a Statewide level through RFA processes

| Floristic community code and name |   | Qualification                               | RFA community code and name |   | Conservation priority |     | Distribution in Central Highlands Region   |
|-----------------------------------|---|---|-----------------------------|---|-----------------------|-----|--|
|                                   |   |   |                             |   | Floristic             | RFA |  |
| DRY-VERT inland                   | Inland <i>Allocasuarina verticillata</i> low forest   |   | AV                          | <i>Allocasuarina verticillata</i> forest                                      | A                     | Y   | May occur locally at low altitudes on exposed and rocky dolerite sites which are drought-prone (e.g. northern slopes of Ram Paddock Hill).   |
| OTHER-03                          | <i>Pomaderris apetala</i> - <i>Beyeria viscosa</i> - <i>Asterotrichion discolor</i> closed forest/scrub | Site disturbed by heavy logging or clearing | varies                      | Treat as associated forest community or non-forest scrub (no referral needed) | np                    | N   | Occasional where very poor eucalypt regeneration has occurred following logging or clearing of wet forest.   |
|                                   |   | Not as above                                | NP                          | <i>Notelaea ligustrina</i> and/or <i>Pomaderris apetala</i> closed forest     | A                     | Y*  | Shaded creeks and gullies in drier areas, but also occurring as localised patches on moist slopes.   |
| OTHER-06                          | <i>Bedfordia salicina</i> - <i>Olearia argophylla</i> closed forest/ scrub                              | Site disturbed by heavy logging or clearing | varies                      | Treat as associated forest community or non-forest scrub (no referral needed) | np                    | N   | Occasional where very poor eucalypt regeneration has occurred following logging or clearing of wet forest.   |
|                                   |   | Not as above                                | —                           | None appropriate  | A                     | —   | Shaded creeks and gullies in drier areas, but also occurring as localised patches on moist slopes. Mainly on dolerite, in upland areas (e.g. slopes of Western Tiers, Mountain Creek). |
| OTHER-07                          | <i>Notelaea ligustrina</i> closed forest  |   | NP                          | <i>Notelaea ligustrina</i> and/or <i>Pomaderris apetala</i> closed forest     | A                     | Y*  | Occurs locally in rocky fire-shadow gullies and on rocky sites in wet forest (e.g. Wentworth Hills, Wayatinah area).   |
| OTHER-10                          | <i>Acacia dealbata</i> forest   |   | SI                          | <i>Acacia dealbata</i> forest   | np                    | N   | Usually created by successive fires, poor eucalypt regeneration or failed attempts at clearing on moist sites. (e.g. lower slopes of Western Tiers, Quamby Bluff).                     |
| OTHER-11                          | <i>Callistemon pallidus</i> closed forest   |   | —                           | None appropriate  | A                     | —   | Local on upland dolerite or basalt sites associated with <i>E. delegatensis</i> forest (e.g. Cluan Tier).  |

## 2.4 MIXED FOREST COMMUNITIES

*Major Reference:* Kirkpatrick, Peacock, Cullen and Neyland (1988)

Mixed forest comprises vegetation with an understorey of rainforest species and an overstorey of eucalypts that becomes sparse as the forest approaches maturity. Often only one species of eucalypt is present, with trees frequently exceeding 50 m in mature forest. The eucalypts tend to be even-aged, and are usually of one or two age classes, which relate to period since fire or other major disturbance. Mixed forests have a minimum eucalypt canopy cover of 5% - if eucalypt cover is less than 5% the forest is considered as rainforest. Mixed forests represent a transition (in space or time) between the rainforests and the wet sclerophyll forests into which they grade.

Mixed forests are extensive and diverse in Central Highlands Region. They are widespread in high rainfall areas, including Surrey Hills, the Florentine Valley and parts of the World Heritage Area. In drier parts of the region, they mainly occur on humid, fire-shadow sites. Most mixed forest communities are adequately reserved in the region.

### KEY TO MIXED FOREST COMMUNITIES

- ❶ Dominated by *E. amygdalina* ..... WET-AM0
- ❶ Dominated by *E. coccifera*
  - ❷ *E. coccifera* growing as a shrub with dwarf myrtle..... WET-COC00
  - ❷ *E. coccifera* growing as a tree (myrtle also usually present)
    - ❸ Cutting grass common
      - ❹ Horizontal, dwarf leatherwood or climbing heath present ..... WET-COC11
      - ❹ Horizontal, dwarf leatherwood or climbing heath absent ..... WET-COC10
    - ❸ Cutting grass sparse or absent
      - ❹ Tussock grass (*Poa*) often present; sassafras and bauera absent..... WET-COC01
      - ❹ Tussock grass (*Poa*) absent; sassafras and bauera often present..... WET-COC10
- ❶ Dominated by *E. dalrympleana* ..... WET-DAL10
- ❶ Dominated by *E. delegatensis*
  - ❷ Leatherwood, horizontal or native laurel common
    - ❸ Goldeywood or lancewood present; cutting grass absent. .... WET-DEL1011
    - ❸ Goldeywood and lancewood absent; cutting grass present..... WET-DEL1010
  - ❷ Leatherwood, horizontal and native laurel sparse or absent
    - ❸ Silver wattle, manfern or musk common; waratah and pink mountain berry sparse or absent
      - ❹ Celery-top pine or cutting grass common
        - ❺ Dogwood, musk or bracken common
          - ❻ Stinkwood, goldeywood or lancewood present; blanket bush and musk absent ..... WET-DEL0111
          - ❻ Stinkwood, goldeywood and lancewood absent; blanket bush and musk often present..... WET-DEL0110
        - ❺ Dogwood, musk and bracken sparse or absent..... WET-DEL1001
      - ❹ Celery-top pine and cutting grass sparse or absent
        - ❺ Silver wattle or bracken common; epiphytic ferns sparse or absent
          - ❻ Stinkwood, goldeywood or lancewood present; blanket bush and musk absent ..... WET-DEL0111
          - ❻ Stinkwood, goldeywood and lancewood absent; blanket bush or musk often present..... WET-DEL0110
        - ❺ Silver wattle and bracken sparse or absent; epiphytic ferns often common... WET-DEL1000

- ③ Silver wattle, manfern and musk sparse or absent ; waratah, pink mountain berry or mountain currant common
  - ④ Hakea, blanket bush, cheeseberry or bauera common; cathead fern usually absent
    - ⑤ Lancewood, prickly beauty, bauera or cutting grass common ..... WET-DEL1110
    - ⑤ Lancewood, prickly beauty, bauera and cutting grass sparse or absent
      - ⑥ Dogwood, musk, blanket bush or cheeseberry common; *E. coccifera* and *E. subcrenulata* absent ..... WET-DEL2
      - ⑥ Dogwood, musk, blanket bush and cheeseberry sparse or absent; *E. coccifera* or *E. subcrenulata* often present ..... WET-DEL1111
  - ④ Hakea, blanket bush, cheeseberry and bauera sparse or absent; cathead fern present
    - ⑤ Woolly tea-tree, prickly beauty, flax lily or tussock grass (*Poa*) present; lancewood absent ..... WET-DEL1101
    - ⑤ Woolly tea-tree, prickly beauty, flax lily and tussock grass (*Poa*) absent; lancewood usually present ..... WET-DEL1100
- ① Dominated by *E. gunnii*
  - ② King Billy pine, pandani or cathead fern present; silver wattle, goldeywood, prickly beauty, cutting grass and hakea absent .....WET-GUN00
  - ② King Billy pine, pandani and cathead fern absent; silver wattle, goldeywood, prickly beauty, cutting grass or hakea present .....WET-GUN01
- ① Dominated by *E. johnstonii*..... WET-JOHN1
- ① Dominated by *E. nitida*
  - ② Horizontal, trochocarpa or native pepper present; manfern and dogwood absent .....WET-NIT0
  - ② Horizontal, trochocarpa and native pepper absent; manfern or dogwood present .....WET-NIT1
- ① Dominated by *E. obliqua*
  - ② Manfern, cathead fern or leathery shield fern present
    - ③ Cutting grass usually common; epiphytic ferns usually sparse or absent
      - ④ Leatherwood, celery-top pine, horizontal or native laurel common; dogwood, musk, lancewood and prickly mo sparse or absent ..... WET-OB1100
      - ④ Leatherwood, celery-top pine, horizontal and native laurel sparse or absent; dogwood, musk, lancewood or prickly mo common ..... WET-OB101
    - ③ Cutting grass sparse or absent; epiphytic ferns usually common
      - ⑤ Leatherwood, celery-top pine, horizontal or native laurel present; musk absent; usually less fertile sites ..... WET-OB1001
      - ⑤ Leatherwood, celery-top pine, horizontal and native laurel absent; musk often present; usually more fertile sites ..... WET-OB1000
  - ② Manfern, cathead fern and leathery shield fern absent
    - ③ Tea-tree, bauera, coral fern or cutting grass present; flax lily absent
      - ④ Leatherwood or horizontal common.....WET-OB11010
      - ④ Leatherwood and horizontal sparse or absent
        - ⑤ Prickly mo, lancewood or coral fern common; native willow sparse or absent ..... WET-OB1110
        - ⑤ Prickly mo, lancewood and coral fern sparse or absent ; native willow common ..... WET-OB1111
    - ③ Tea-tree, bauera, coral fern and cutting grass absent; flax lily present .....WET-OB2

- ❶ Dominated by *E. regnans*
  - ❷ Silver wattle or blackwood present; dogwood common; epiphytic ferns sparse or absent ..... WET-REG101
  - ❷ Silver wattle and blackwood absent; dogwood sparse or absent; epiphytic ferns common
    - ❸ Leathery shield fern, musk or kangaroo fern present; celery-top pine and lancewood absent; more fertile sites ..... WET-REG110
    - ❸ Leathery shield fern, musk and kangaroo fern absent; celery-top pine or lancewood present; less fertile sites ..... WET-REG111
- ❶ Dominated by *E. subcrenulata*
  - ❷ Hard water fern or cutting grass common
    - ❸ Native plum, pandani, waratah or native pepper common; leatherwood usually absent ..... WET-SUB1000
    - ❸ Native plum, pandani, waratah and native pepper sparse or absent; leatherwood often present ..... WET-SUB1001
  - ❷ Hard water fern and cutting grass sparse or absent
    - ❸ Prickly beauty, lancewood or woolly tea-tree common, *E. coccifera* and hakea usually absent ..... WET-SUB01
    - ❸ Prickly beauty, lancewood and woolly tea-tree sparse or absent, *E. coccifera* or hakea usually present ..... WET-SUB00
- ❶ Dominated by *E. urnigera* ..... WET-URN1
- ❶ Dominated by *E. viminalis* ..... WET-VIM111

## CONSERVATION PRIORITIES AND ATTRIBUTES OF MIXED FOREST COMMUNITIES

Note: \* – Community identified as Rare, Vulnerable or Endangered at a Statewide level through RFA processes

| Floristic community code and name |  | Qualification   | RFA community code and name |  | Conservation priority |       | Distribution in Central Highlands Region  |
|-----------------------------------|--|---|-----------------------------|--|-----------------------|-------|---|
|                                   |  |   |                             |  | Floristic             | RFA   |   |
| WET-AM0                           | <i>E. amygdalina</i> – <i>Monotoca glauca</i> - <i>Pomaderris apetala</i> – <i>Dicksonia antarctica</i> wsf/mixed forest |   | varies                      | Can be allocated to various communities – contact FPA Botanist | check                 | check | Local on fertile sites at lower altitudes in the north and northwest of the region.   |
| WET-COC00                         | <i>E. coccifera</i> - <i>Orites revoluta</i> - <i>Olearia phlogopappa</i> subalpine mixed forest                         |   | C                           | <i>E. coccifera</i> forest                                     | np                    | N     | Below dolerite escarpments at >1000 m; <i>E. coccifera</i> is a shrub in this community (e.g. Western Tiers).   |
| WET-COC01                         | <i>E. coccifera</i> / <i>E. delegatensis</i> - <i>Geranium potentilloides</i> subalpine mixed forest                     |   | C                           | <i>E. coccifera</i> forest                                     | np                    | N     | Lower altitudes than WET-COC00; <i>E. coccifera</i> typically a tree to 25 m (e.g. Mt Dromedary, Central Plateau).  |
| WET-COC10                         | <i>E. coccifera</i> / <i>E. delegatensis</i> - <i>Trochocarpa cunninghamii</i> subalpine mixed forest                    |   | C                           | <i>E. coccifera</i> forest                                     | np                    | N     | More humid sites than WET-COC01.  |
| WET-COC11                         | <i>E. coccifera</i> – <i>Trochocarpa cunninghamii</i> - <i>Cyathodes glauca</i> subalpine mixed forest                   |   | C                           | <i>E. coccifera</i> forest                                     | np                    | N     | High altitude sites on dolerite in south of region (e.g. Mt Field).   |
| WET-DAL10                         | <i>E. dalrympleana</i> - <i>Tasmannia lanceolata</i> - <i>Dicksonia antarctica</i> mixed forest                          | Make sure dominant is not <i>E. viminalis</i> – contact FPA if unsure | DT                          | Tall <i>E. delegatensis</i> forest                             | A                     | N     | Local at lower altitudes on dolerite (e.g. Western Tiers, Cluan Tier) and possibly basalt.  |
| WET-DEL0110                       | <i>E. delegatensis</i> - <i>Atherosperma moschatum</i> - <i>Olearia argophylla</i> wsf/mixed forest                      |   | DT                          | Tall <i>E. delegatensis</i> forest                             | np                    | N     | Widespread on moist, shaded slopes, gullies and drainage headwaters on fertile sites in upland areas (e.g. Borradaile, Maggs Mountain, Meander FR, Tarraleah, Wentworth Creek). |
| WET-DEL0111                       | <i>E. delegatensis</i> - <i>Zieria arborescens</i> - <i>Hydrocotyle sibthorpioides</i> wsf/mixed forest                  |   | DT                          | Tall <i>E. delegatensis</i> forest                             | np                    | N     | Generally on less fertile substrates such as sandstone, conglomerate and granite, particularly in northwest (e.g. Lemonthyme area).   |
| WET-DEL1000                       | <i>E. delegatensis</i> - <i>Nothofagus cunninghamii</i> - <i>Grammitis billardiarei</i> mixed forest                     |   | DT                          | Tall <i>E. delegatensis</i> forest                             | np                    | N     | Moist, shaded slopes, gullies and drainage headwaters on very humid, fire-shadow sites (e.g. Maggs Mountain, Quamby Bluff, Marakoopa,).   |

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| Floristic community code and name |  | Qualification                             | RFA community code and name |                                    | Cons. priority |     | Distribution in Central Highlands Region   |
|-----------------------------------|--|---|-----------------------------|------------------------------------|----------------|-----|--|
|                                   |  |   |                             |                                    | Floristic      | RFA |  |
| WET-DEL1001                       | <i>E. delegatensis</i> - <i>Nothofagus cunninghamii</i> - <i>Gahnia grandis</i> mixed forest                     |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Humid sites on less fertile substrates than WET-DEL1000 often on flatter sites with poorer drainage (e.g. Mt Field, Winterbrook Falls).                              |
| WET-DEL1010                       | <i>E. delegatensis</i> - <i>Phyllocladus aspleniifolius</i> - <i>Anodopetalum biglandulosum</i> mixed forest     |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Relatively infertile sites in wettest parts of the region (e.g. Mt Pearce, Mt Arrowsmith).   |
| WET-DEL1011                       | <i>E. delegatensis</i> - <i>Monotoca glauca</i> - <i>Hymenophyllum rarum</i> mixed forest                        |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Infertile Precambrian sediments and quartzite; mainly in west of region.   |
| WET-DEL1100                       | <i>E. delegatensis</i> - <i>Telopea truncata</i> - <i>Pittosporum bicolor</i> subalpine mixed forest             |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Higher altitudes, mainly on dolerite (e.g. Maggs Mountain, Mt Field, Central Plateau).   |
| WET-DEL1101                       | <i>E. delegatensis</i> - <i>Pultenaea juniperina</i> - <i>Poa labillardierei</i> subalpine mixed forest          |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Higher altitudes, mainly on dolerite, often resulting from disturbance by logging or fire (e.g. Surrey Hills, Millers Bluff)..                                       |
| WET-DEL1110                       | <i>E. delegatensis</i> - <i>Hakea lissosperma</i> - <i>Monotoca glauca</i> subalpine mixed forest                |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Rocky or somewhat acidic sites, often with poor drainage (e.g. Western Tiers).   |
| WET-DEL1111                       | <i>E. delegatensis</i> / <i>E. coccifera</i> - <i>Gaultheria hispida</i> subalpine mixed forest                  |   | DT                          | Tall <i>E. delegatensis</i> forest | np             | N   | Occupies the highest altitudes of the <i>E. delegatensis</i> wet forest communities; usually on steep rocky dolerite slopes (e.g. Lemonthyme, Cradle Mountain area). |
| WET-DEL2                          | <i>E. delegatensis</i> - <i>Phyllocladus aspleniifolius</i> - <i>Cyathodes juniperina</i> mixed forest           |   | DT                          | Tall <i>E. delegatensis</i> forest | B              | N   | Localised on rocky dolerite knolls at 600-800 m (e.g. Wylds Craig area).   |
| WET-GUN00                         | <i>E. gunnii</i> - <i>Phyllocladus aspleniifolius</i> - <i>Trochocarpa cunninghamii</i> subalpine mf             |   | C                           | <i>E. coccifera</i> forest         | np             | N   | Local on infertile, poorly drained sites at high altitudes on Central Plateau and northwest of region (e.g. Cradle Mountain area).                                   |
| WET-GUN01                         | <i>E. gunnii</i> / <i>E. delegatensis</i> / <i>E. rodwayi</i> - <i>Monotoca linifolia</i> subalpine mixed forest |   | C                           | <i>E. coccifera</i> forest         | np             | N   | Lower altitudes than GUN00.  |
| WET-JOHN1                         | <i>E. johnstonii</i> mixed forest  | Grades into <i>E. subcrenulata</i> forest | SU                          | <i>E. subcrenulata</i> forest      | B              | N   | Local on wet, acid soils mainly on sandstone at 500 - 800 m (e.g. Lake Dobson Rd).   |

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| Floristic community code and name |  | Qualification                             | RFA community code and name |                               | Conservation priority |     | Distribution in Central Highlands Region  |
|-----------------------------------|--|---|-----------------------------|-------------------------------|-----------------------|-----|---|
|                                   |  |   |                             |                               | Floristic             | RFA |   |
| WET-JOHN1                         | <i>E. johnstonii</i> mixed forest  | Grades into <i>E. subcrenulata</i> forest | SU                          | <i>E. subcrenulata</i> forest | B                     | N   | Local on wet, acid soils mainly on sandstone at 500 - 800 m (e.g. Lake Dobson Rd).  |
| WET-NIT0                          | <i>E. nitida</i> - <i>Anodopetalum biglandulosum</i> - <i>Leptospermum glaucescens</i> wsf/mixed forest                            |   | NT                          | Tall <i>E. nitida</i> forest  | B                     | N   | May occur locally on Precambrian substrate in far west of region.   |
| WET-NIT1                          | <i>E. nitida</i> - <i>Pomaderris apetala</i> - <i>Dicksonia antarctica</i> wsf/mixed forest  |   | NT                          | Tall <i>E. nitida</i> forest  | B                     | N   | May occur locally on Cambrian substrate in far west of region; intergrades with <i>E. coccifera</i> forest at higher altitudes.             |
| WET-OB1000                        | <i>E. obliqua</i> - <i>Nothofagus cunninghamii</i> - <i>Polystichum proliferum</i> - <i>Hymenophyllum flabellatum</i> mixed forest |   | OT                          | Tall <i>E. obliqua</i> forest | np                    | N   | Lower altitudes on humid slopes and gullies with deep soils and good drainage (e.g. Quamby Bluff).  |
| WET-OB1001                        | <i>E. obliqua</i> - <i>Nothofagus cunninghamii</i> - <i>Anopterus glandulosus</i> - <i>Hymenophyllum flabellatum</i> mixed forest  |   | OT                          | Tall <i>E. obliqua</i> forest | np                    | N   | Humid slopes and gullies on less fertile sites than WET-OB1000, mainly in west and northwest of region.                                     |
| WET-OB101                         | <i>E. obliqua</i> - <i>Nothofagus cunninghamii</i> - <i>Monotoca glauca</i> mixed forest   |   | OT                          | Tall <i>E. obliqua</i> forest | np                    | N   | Low to mid altitude sites often on drier sites and less fertile sites (e.g. sandstone) than WET-OB1000.                                     |
| WET-OB1100                        | <i>E. obliqua</i> - <i>Atherosperma moschatum</i> - <i>Cenarrhenes nitida</i> mixed forest   |   | OT                          | Tall <i>E. obliqua</i> forest | np                    | N   | Occasional at low altitudes on less fertile sites in west of region.  |
| WET-OB11010                       | <i>E. obliqua</i> - <i>Orites diversifolia</i> - <i>Cyathodes juniperina</i> mixed forest  |   | OT                          | Tall <i>E. obliqua</i> forest | B                     | N   | Less fertile, rocky sites, but with seasonal poor drainage.   |
| WET-OB1110                        | <i>E. obliqua</i> - <i>Anopterus glandulosus</i> - <i>Acacia verticillata</i> mixed forest   |   | OT                          | Tall <i>E. obliqua</i> forest | B                     | N   | May extend into west of region on less fertile sites with poor drainage.  |
| WET-OB1111                        | <i>E. obliqua</i> - <i>Acacia mucronata</i> - <i>Nothofagus cunninghamii</i> - mixed forest  |   | OT                          | Tall <i>E. obliqua</i> forest | B                     | N   | Less fertile sites with poor drainage. in west of region. May extend into region.   |
| WET-OB2                           | <i>E. obliqua</i> - <i>Monotoca glauca</i> - <i>Dianella tasmanica</i> wsf/mixed forest  |   | OT                          | Tall <i>E. obliqua</i> forest | A                     | N   | Recorded from Hellyer Gorge area on relatively dry sites on slopes and ridges (Precambrian and Cambrian sediments). May extend into region. |

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| Floristic community code and name |   | Qualification                          | RFA community code and name |                                    | Cons. priority |     | Distribution in Central Highlands Region  |
|-----------------------------------|---|--|-----------------------------|------------------------------------|----------------|-----|---|
|                                   |   |  |                             |                                    | Floristic      | RFA |   |
| WET-REG101                        | <i>E. regnans</i> - <i>Atherosperma moschatum</i> - <i>Acacia dealbata</i> - <i>Olearia argophylla</i> wsf/mixed forest         |  | R                           | <i>E. regnans</i> forest           | np             | N   | Low altitude sheltered valleys with deep soils and good drainage (e.g. Mount Field NP).   |
| WET-REG110                        | <i>E. regnans</i> - <i>Nothofagus cunninghamii</i> - <i>Atherosperma moschatum</i> mixed forest                                 |  | R                           | <i>E. regnans</i> forest           | B              | N   | Sheltered valleys with deep soils and good drainage at low altitudes in the south of the region (e.g. Mount Field NP, Florentine Valley). |
| WET-REG111                        | <i>E. regnans</i> - <i>Atherosperma moschatum</i> mixed forest  |  | R                           | <i>E. regnans</i> forest           | B              | N   | Sheltered valleys with deep soils and good drainage at low altitudes in the south of the region (e.g. Mount Field NP, Florentine Valley). |
| WET-SUB00                         | <i>E. subcrenulata</i> - <i>Telopea truncata</i> - <i>Rubus gunnianus</i> mixed forest  |  | SU                          | <i>E. subcrenulata</i> forest      | np             | N   | Higher altitude sites near the treeline, mainly on dolerite (e.g. Lemonthyme area).   |
| WET-SUB01                         | <i>E. subcrenulata</i> - <i>E. delegatensis</i> - <i>Cyathodes parvifolia</i> mixed forest                                      |  | SU                          | <i>E. subcrenulata</i> forest      | np             | N   | Lower altitudes than WET-SUB00 around margins of poorly drained flats.  |
| WET-SUB1000                       | <i>E. subcrenulata</i> - <i>Richea pandanifolia</i> - <i>Cyathodes glauca</i> mixed forest                                      |  | SU                          | <i>E. subcrenulata</i> forest      | np             | N   | Local at high altitude benches on sandstone, drainage impeded (e.g. Mt Field area).   |
| WET-SUB1001                       | <i>E. subcrenulata</i> / <i>E. delegatensis</i> - <i>Grammitis billardiarei</i> mixed forest                                    |  | R                           | <i>E. regnans</i> forest           | np             | N   | Moderately infertile sites, where drainage is better than SUB1000 (e.g. Mt Field, Winterbrook Falls).                                     |
| WET-URN1                          | <i>E. urnigera</i> subalpine mixed forest   | Associated with <i>E. coccifera</i>    | C                           | <i>E. coccifera</i> forest         | A              | N   | Very localised community, recorded from poorly drained dolerite site in the Brown Mountain area.  |
|                                   |   | Associated with <i>E. delegatensis</i> | DT                          | Tall <i>E. delegatensis</i> forest |                |     |   |
| WET-VIM111                        | <i>E. viminalis</i> - <i>Nothofagus cunninghamii</i> - <i>Atherosperma moschatum</i> - <i>Dicksonia antarctica</i> mixed forest |  | VW                          | <i>E. viminalis</i> wet forest     | A              | Y*  | Very local in humid, fire-shadow sites associated with gullies and fertile river flats (e.g. Myrtle Creek, Cluan Tier).                   |

## 2.5 WET SCLEROPHYLL FOREST COMMUNITIES

*Major Reference:* Kirkpatrick, Peacock, Cullen and Neyland (1988)

Wet sclerophyll forests are typically dominated by eucalypts and have an understorey dominated by broad-leaved (soft-leaved) shrubs. Trees in mature forest generally exceed 40 m in height. As with the related mixed forest, wet sclerophyll forests typically contain only one or two eucalypt age classes - these relate to period since fire or other major disturbance (including intensive logging and regeneration burning). Often only one species of eucalypt is present. The shrub understorey is dominated by broad-leaved shrubs and is generally dense, preventing continuous regeneration of shade-intolerant species such as eucalypts. Ferns are often prominent in the ground layer.

Wet sclerophyll communities are extensive in Central Highlands Region, particularly at lower altitudes in higher rainfall areas. They are also common in shaded and fire-shadow environments in drier parts of the region. Wet sclerophyll forest grades into mixed forest (as rainforest species become more prominent in the understorey) and into dry sclerophyll forest (often through a damp sclerophyll transition zone) as sites become more exposed to drought and fire.

Most wet sclerophyll forest communities are well reserved in the region. Some communities that may occur locally at lower altitudes (e.g. wet sclerophyll forest dominated by *E. viminalis*, *E. brookeriana* and *E. ovata*) have a high priority for conservation.

### KEY TO WET SCLEROPHYLL FOREST COMMUNITIES

- ❶ Dominated by *E. amygdalina*
  - ❷ Manfern, dogwood or goldeywood common; rainforest species may be present; narrow-leaved shrubs and sagg sparse or absent; moister sites ..... WET-AM0
  - ❷ Manfern, dogwood and goldeywood sparse or absent; rainforest species absent; narrow-leaved shrubs or sagg usually common; drier sites ..... WET-AM1
- ❶ Dominated by *E. brookeriana* ..... WET-BR11
- ❶ Dominated by *E. dalrympleana*
  - ❷ Guitar plant, prickly beauty or sagg common; manfern and musk absent ..... WET-DAL00
  - ❷ Guitar plant, prickly beauty and sagg sparse or absent; manfern or musk often present .... WET-DAL01
- ❶ Dominated by *E. delegatensis*
  - ❷ Guitar plant or prickly beauty common
    - ❸ Mountain currant, waratah or tussock grass common; rocky subalpine sites
      - ❹ Waratah present; viscid daisy bush and flax lily absent ..... WET-DEL0011
      - ❹ Waratah sparse or absent; viscid daisy bush or flax lily present ..... WET-DEL0010
    - ❸ Mountain currant, waratah and tussock grass sparse or absent; not on rocky subalpine sites
      - ❹ Dogwood, manfern or cutting grass common
        - ❺ Stinkwood or goldeywood common; blanket bush absent ..... WET-DEL0111
        - ❺ Stinkwood and goldeywood sparse or absent; blanket bush often present .... WET-DEL0100
      - ❹ Dogwood, manfern and cutting grass sparse or absent
        - ❺ Silver wattle or native currant common; blackwood, kangaroo fern, dwarf musk or dollybush sparse or absent ..... WET-DEL0000
        - ❺ Silver wattle and native currant sparse or absent; blackwood, kangaroo fern, dwarf musk and dollybush common ..... WET-DEL0001
  - ❷ Guitar plant and prickly beauty sparse or absent
    - ❸ Cutting grass or sword sedge common
      - ❹ Woolly tea-tree common; goldeywood or stinkwood sparse or absent ..... WET-DEL3
      - ❹ Woolly tea-tree sparse or absent; goldeywood or stinkwood common ..... WET-DEL0111

- ③ Cutting grass and sword sedge sparse or absent
  - ④ Mountain currant, waratah or tussock grass common; rocky subalpine sites
    - ⑤ Waratah present; viscid daisy bush and flax lily absent ..... WET-DEL0011
    - ⑤ Waratah sparse or absent; viscid daisy bush or flax lily present ..... WET-DEL0010
  - ④ Mountain currant, waratah and tussock grass sparse or absent; not on rocky subalpine sites
    - ⑤ Dwarf musk, viscid daisy bush or bracken common; drier sites ..... WET-DEL0101
    - ⑤ Dwarf musk, viscid daisy bush and bracken sparse or absent; moister sites (myrtle or sassafras may be present) ..... WET-DEL0110
- ① Dominated by *E. johnstonii* ..... WET-JOHN2
- ① Dominated by *E. nitida*
  - ② Dogwood, manfern or bracken common ..... WET-NIT1
  - ② Dogwood, manfern and bracken sparse or absent ..... WET-NIT0
- ① Dominated by *E. obliqua*
  - ② Bauera common ..... WET-OB3
  - ② Bauera sparse or absent
    - ③ Guitar plant or prickly beauty common; drier sites ..... WET-OB010
    - ③ Guitar plant and prickly beauty sparse or absent; moister sites
      - ④ Paperbark, tea-tree, sword sedge or cutting grass common ..... WET-OB0111
      - ④ Paperbark, tea-tree, sword sedge and cutting grass sparse or absent
        - ⑤ Flax lily common; silver wattle and blackwood absent..... WET-OB2
        - ⑤ Flax lily sparse or absent; silver wattle and blackwood often present..... WET-OB0110
- ① Dominated by *E. ovata*
  - ② Understorey dominated by paperbark or tea-tree; cutting grass or sword sedge usually common ..... WET-OV00
  - ② Understorey dominated by broad-leaved shrubs; cutting grass and sword sedge usually sparse or absent..... WET-OV01
- ① Dominated by *E. radiata* ..... WET-RAD1
- ① Dominated by *E. regnans*
  - ② Bracken, cutting grass or sword sedge common; (myrtle or sassafras generally absent)
    - ③ Dwarf musk, prickly mo, stinkwood or goldeywood common..... WET-REG1000
    - ③ Dwarf musk, prickly mo, stinkwood and goldeywood sparse or absent..... WET-REG1001
  - ② Bracken, cutting grass and sword sedge sparse or absent; (myrtle or sassafras often present)..... WET-REG101
- ① Dominated by *E. rodwayi*..... WET-ROD1
- ① Dominated by *E. urnigera* ..... WET-URN2
- ① Dominated by *E. viminalis*
  - ② Paperbark or tea-tree common; *E. ovata* often present; poorly drained sites ..... WET-VIM2
  - ② Paperbark or tea-tree sparse or absent; *E. ovata* absent; well-drained sites
    - ③ Native cherry, guitar plant or little prickly common; drier sites..... WET-VIM0011
    - ③ Native cherry, guitar plant and little prickly sparse or absent; moister sites
      - ④ Prickly mo or dollybush common; blanket bush and manfern sparse or absent .. WET-VIM0100
      - ④ Prickly mo and dollybush sparse or absent; blanket bush or manfern common .. WET-VIM0101

## CONSERVATION PRIORITIES AND ATTRIBUTES OF WET SCLEROPHYLL FOREST COMMUNITIES

Note: \* – Community identified as Rare, Vulnerable or Endangered at a Statewide level through RFA processes

| Floristic community code and name |  | Qualification  | RFA community code and name |   | Conservation priority |       | Distribution in Central Highlands Region   |
|-----------------------------------|--|--|-----------------------------|---|-----------------------|-------|--|
|                                   |  |  |                             |   | Floristic             | RFA   |  |
| WET-AM0                           | <i>E. amygdalina</i> - <i>Monotoca glauca</i> - <i>Pomaderris apetala</i> - <i>Dicksonia antarctica</i> wsf/mf |  | check                       | check                                   | check                 | check | Local on fertile sites at lower altitudes in the north and northwest of the region.  |
| WET-AM1                           | <i>E. amygdalina</i> - <i>E. viminalis</i> - <i>Lomandra longifolia</i> wsf                                    | On dolerite  | AD                          | <i>E. amygdalina</i> forest on dolerite | np                    | N     | Local on damp dolerite slopes (e.g. Quamby Bluff area).  |
|                                   |  | On other substrates  | check                       | check                                   | check                 | check | Localised, mainly in moist sites in drier areas.   |
| WET-BR11                          | <i>E. brookeriana</i> - <i>E. obliqua</i> - <i>Bedfordia salicina</i> wsf                                      |  | BA                          | <i>E. brookeriana</i> wet forest        | A                     | Y*    | May occur locally in region in damp but well drained gullies near base of Western Tiers.   |
| WET-DAL00                         | <i>E. dalrympleana</i> / <i>E. delegatensis</i> - <i>Lomatia tinctoria</i> wsf                                 | Make sure dominant is not <i>E. viminalis</i> – contact FPA if unsure. | DT                          | Tall <i>E. delegatensis</i> forest      | B                     | N     | Rocky dolerite gullies in dry escarpments in north and east of region.   |
| WET-DAL01                         | <i>E. dalrympleana</i> - <i>Pomaderris apetala</i> - <i>Bedfordia salicina</i> wsf                             |  | DT                          | Tall <i>E. delegatensis</i> forest      | B                     | N     | Uncommon in region, mainly on river flats (e.g. Lake River catchment). Also occurs locally in <i>E. delegatensis</i> wet forest (e.g. Lemonthyme area) |
| WET-DEL0000                       | <i>E. delegatensis</i> - <i>Bedfordia salicina</i> - <i>Lomatia tinctoria</i> wsf                              |  | DT                          | Tall <i>E. delegatensis</i> forest      | np                    | N     | Common on rocky dolerite slopes, knolls and scree (e.g. Mt Penny, Western Tiers, Table Mountain).  |
| WET-DEL0001                       | <i>E. delegatensis</i> - <i>Acacia melanoxydon</i> - <i>Bedfordia salicina</i> wsf                             |  | DT                          | Tall <i>E. delegatensis</i> forest      | B                     | N     | Lower altitudes in region, often on rocky dolerite slopes (e.g. slopes of Drys Bluff, Millers Bluff, Den Hill).  |
| WET-DEL0010                       | <i>E. delegatensis</i> - <i>Olearia phlogopappa</i> - <i>Olearia viscosa</i> subalpine wsf                     |  | DT                          | Tall <i>E. delegatensis</i> forest      | np                    | N     | High altitude block streams and screes on drier mountains (e.g. Drys Bluff, Mountain Creek, Mount Dromedary, Quamby Bluff).                            |
| WET-DEL0011                       | <i>E. delegatensis</i> - <i>Telopea truncata</i> subalpine wsf   |  | DT                          | Tall <i>E. delegatensis</i> forest      | np                    | N     | Rocky dolerite sites at mid to high altitudes (e.g. Borradaile, Maggs Mountain, Millers Bluff).  |
| WET-DEL0100                       | <i>E. delegatensis</i> – <i>E. viminalis</i> - <i>Acacia melanoxydon</i> wsf                                   |  | DT                          | Tall <i>E. delegatensis</i> forest      | B                     | N     | Lower altitudes in north, east and southeast of region, often on flats (e.g. Western Tiers, Poatina area, Tarraleah, Wentworth Creek).                 |
| WET-DEL0110                       | <i>E. delegatensis</i> - <i>Atherosperma moschatum</i> - <i>Olearia argophylla</i> wsf/mixed forest            |  | DT                          | Tall <i>E. delegatensis</i> forest      | np                    | N     | Local in deep dolerite valleys or gullies at lower altitudes (e.g. Meander FR, Maggs Mountain, Tarraleah area, Wentworth Creek).                       |

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| Floristic community code and name |   | Qualification                             | RFA community code and name |  | Conservation priority |     | Distribution in Central Highlands Region   |
|-----------------------------------|---|---|-----------------------------|--|-----------------------|-----|--|
|                                   |   |   |                             |  | Floristic             | RFA |  |
| WET-DEL0111                       | <i>E. delegatensis</i> - <i>Zieria arborescens</i> - <i>Hydrocotyle sibthorpioides</i> wsf/mixed forest |   | DT                          | Tall <i>E. delegatensis</i> forest                   | np                    | N   | Occasional on less fertile sites such as sandstone (e.g. Drys Bluff, Maracoopa area).  |
| WET-DEL3                          | <i>E. delegatensis</i> - <i>Leptospermum lanigerum</i> - <i>Gahnia grandis</i> wsf                      |   | DT                          | Tall <i>E. delegatensis</i> forest                   | B                     | N   | Local in drainage headwaters and poorly drained saddles (e.g. base of Western Tiers).  |
| WET-JOHN2                         | <i>E. johnstonii</i> wsf  | Grades into <i>E. subcrenulata</i> forest | SU                          | <i>E. subcrenulata</i> forest                        | B                     | N   | Local on wet, acid soils mainly on sandstone at 500 - 800 m (e.g. Mount Field).  |
| WET-NIT0                          | <i>E. nitida</i> - <i>Anodopetalum biglandulosum</i> - <i>Leptospermum glaucescens</i> wsf/mixed forest |   | NT                          | Tall <i>E. nitida</i> forest                         | np                    | N   | May occur locally on Precambrian substrate in far west of region.  |
| WET-NIT1                          | <i>E. nitida</i> - <i>Pomaderris apetalata</i> - <i>Dicksonia antarctica</i> wsf/mf                     |   | NT                          | Tall <i>E. nitida</i> forest                         | np                    | N   | May occur locally on Cambrian substrate in far west of region; intergrades with <i>E. coccifera</i> forest at higher altitudes.                      |
| WET-OB010                         | <i>E. obliqua</i> - <i>Olearia lirata</i> - <i>Pultenaea juniperina</i> wsf                             |   | OT                          | Tall <i>E. obliqua</i> forest                        | np                    | N   | Local on relatively dry lowland sites in north and east of region (e.g., Drys Bluff, Strickland).  |
| WET-OB0110                        | <i>E. obliqua</i> - <i>Acacia dealbata</i> - <i>Olearia argophylla</i> wsf                              |   | OT                          | Tall <i>E. obliqua</i> forest                        | np                    | N   | Widespread on moist slopes and gully flanks at lower altitudes (e.g. Drys Bluff, Mt Field).  |
| WET-OB0111                        | <i>E. obliqua</i> - <i>Melaleuca squarrosa</i> - <i>Monotoca glauca</i> wsf                             |   | OT                          | Tall <i>E. obliqua</i> forest                        | np                    | N   | Occasional on wet or poorly drained sites at lower altitude; also found on less fertile sites (e.g. Mt Roland).                                      |
| WET-OB2                           | <i>E. obliqua</i> - <i>Monotoca glauca</i> - <i>Dianella tasmanica</i> wsf/mixed forest                 |   | OT                          | Tall <i>E. obliqua</i> forest                        | A                     | N   | Recorded from Hellyer Gorge area on relatively dry and fire prone sites on slopes and ridges. May extend into region.                                |
| WET-OB3                           | <i>E. obliqua</i> - <i>Phebalium squameum</i> - <i>Bauera rubioides</i> wsf                             |   | OT                          | Tall <i>E. obliqua</i> forest                        | B                     | N   | May occur locally on slopes on less fertile sites at low altitudes.  |
| WET-OV00                          | <i>E. ovata</i> - <i>Leptospermum</i> species - <i>Melaleuca</i> species wsf                            |   | OV                          | Shrubby <i>E. ovata</i> - <i>E. viminalis</i> forest | A                     | Y*  | Local on poorly drained lowland flats, which have escaped fire for a long period.  |
| WET-OV01                          | <i>E. ovata</i> - <i>Acacia dealbata</i> - <i>Pomaderris apetalata</i> wsf                              |   | OV                          | Shrubby <i>E. ovata</i> - <i>E. viminalis</i> forest | A                     | Y*  | Local on shaded or fertile lowland flats; drainage less impeded than most <i>E. ovata</i> communities (e.g. base of Western Tiers, Strickland area). |

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| Floristic community code and name |   | Qualification   | RFA community code and name |  | Cons. priority |       | Distribution in Central Highlands Region  |
|-----------------------------------|---|---|-----------------------------|--|----------------|-------|---|
|                                   |   |   |                             |  | Floristic      | RFA   |   |
| WET-RAD1                          | <i>E. radiata</i> wsf   |   | check                       | check  | A              | check | May extend into region on slopes and river flats in upper Forth Valley (e.g. Patons Road). Mainly associated with wet sclerophyll forest dominated by <i>E. delegatensis</i> or <i>E. obliqua</i> . |
| WET-REG1000                       | <i>E. regnans</i> - <i>E. obliqua</i> - <i>Pomaderris apetala</i> - <i>Olearia lirata</i> wsf                           |   | R                           | <i>E. regnans</i> forest   | B              | N     | Local on shaded slopes and gully flanks, between wetter <i>E. regnans</i> communities and <i>E. obliqua</i> wsf. Mainly occurs as a regrowth community.   |
| WET-REG1001                       | <i>E. regnans</i> - <i>Acacia dealbata</i> - <i>Pomaderris apetala</i> wsf  |   | R                           | <i>E. regnans</i> forest   | B              | N     | Occupies moist sheltered slopes with more sheltered aspects than WET-REG1000. Mainly occurs as a regrowth community.  |
| WET-REG101                        | <i>E. regnans</i> - <i>Atherosperma moschatum</i> - <i>Acacia dealbata</i> - <i>Olearia argophylla</i> wsf/mixed forest |   | R                           | <i>E. regnans</i> forest   | np             | N     | Moist, sheltered sites with deep soils and good drainage at low altitudes (e.g. Mount Field NP). Grades into mixed forest.  |
| WET-ROD1                          | <i>E. rodwayi</i> wsf   |   | RO                          | <i>E. rodwayi</i> forest   | A              | Y     | Very localised on fertile flats in cooler inland areas (e.g. Bronte area).  |
| WET-URN2                          | <i>E. urnigera</i> wsf  | Associated with <i>E. coccifera</i>                                 | C                           | <i>E. coccifera</i> forest   | A              | N     | Local on rocky dolerite sites, often poorly drained, at 800-1000 m altitude (e.g. Brown Mountain).  |
|                                   |   | Associated with <i>E. delegatensis</i>                              | DT                          | Tall <i>E. delegatensis</i> forest   |                |       |   |
| WET-VIM0011                       | <i>E. viminalis</i> - <i>Bedfordia salicina</i> - <i>Pultenaea juniperina</i> wsf                                       | <i>E. amygdalina</i> or <i>E. obliqua</i> codominant or subdominant | DSC                         | <i>E. viminalis</i> - <i>E. ovata</i> - <i>E. amygdalina</i> - <i>E. obliqua</i> damp sclerophyll forest | A              | Yog   | Wet sclerophyll - dry sclerophyll transition community found locally on dolerite slopes (e.g. base of Millers Bluff).   |
|                                   |   | Not DSC   | VW                          | <i>E. viminalis</i> wet forest   | A              | Y*    |   |
| WET-VIM0100                       | <i>E. viminalis</i> - <i>Acacia dealbata</i> - <i>Pomaderris apetala</i> wsf  |   | VW                          | <i>E. viminalis</i> wet forest   | A              | Y*    | Local on moist, fertile sites often associated with creeks or rivers (e.g. Maracoopa area).   |
| WET-VIM0101                       | <i>E. viminalis</i> - <i>Acacia dealbata</i> - <i>Dicksonia antarctica</i> wsf  |   | VW                          | <i>E. viminalis</i> wet forest   | A              | Y*    | Local on humid slopes or gullies, mainly at low altitudes in north of region.   |
| WET-VIM2                          | <i>E. viminalis</i> - <i>Leptospermum lanigerum</i> - <i>Melaleuca squarrosa</i> wsf                                    |   | OV                          | Shrubby <i>E. ovata</i> - <i>E. viminalis</i> forest   | A              | Y*    | May occur locally in lowland areas on better drained sites adjacent to flats with <i>E. ovata</i> forest.   |

## 2.6 DRY SCLEROPHYLL FOREST AND WOODLAND COMMUNITIES

*Major Reference:* Duncan and Brown (1985)

Dry sclerophyll forests and woodlands are typically dominated by eucalypts under 40 m in height, and have a multi-layered understorey dominated by hard-leaved shrubs, including eucalypt regeneration. The eucalypts often form mixed species stands, and generally several age classes of eucalypts are present. The ground layer varies, but bracken, grasses and graminoids (sedges) are typical components. Many grassy communities are described in Kirkpatrick, Gilfedder and Fensham (1988).

Dry sclerophyll forest communities are classified by their overstorey dominants and the broad characteristics of their understorey. The understorey types are grassy (g), sedgy (sd), scrubby (sc), shrubby (sh) and heathy (h); they are described below. Inevitably, many areas will support vegetation with intermediate understoreys. FPOs need to use a precautionary approach when determining the conservation priority of such forests.

Land use practices (e.g. frequent or recent firing) can modify the structure or composition of dry sclerophyll understoreys. For example, frequent firing can lead to bracken displacing a diverse heathy understorey. FPOs should allow for land use practices when determining floristic communities.

Dry sclerophyll communities are moderately widespread and diverse in the drier eastern part of Central Highlands Region, with dominants and understorey species varying in response to substrate and drainage. In the more humid western part of the region, they are mainly found on infertile and exposed sites. At lower altitudes, dry sclerophyll forest grades into wet sclerophyll forest as sites become progressively more humid and less frequently burnt. At higher altitudes, subalpine dry sclerophyll communities form mosaics with wet eucalypt forest, rainforest and non-forest communities.

Most dry sclerophyll communities within Central Highlands Region are well reserved, but some communities in the southeastern part of the region have been extensively cleared or modified, and have a high priority for conservation.

There are difficulties with allocating some dry sclerophyll floristic communities to RFA communities. These problem communities are not encountered in many FPP areas. The tables indicate when FPOs need to check with FPA for guidance on community affinities, priorities and prescriptions.

### RECOGNISING THE DIFFERENT DRY SCLEROPHYLL UNDERSTOREYS

Each understorey type is recognised by the dominance or prominence of a distinctive suite of species. Species from other understorey types may also be present, and these communities will grade into one another in some situations, so it is important to note which species are the most dominant, rather than just which species are present. Eucalypt regrowth can be present in all understorey types.

#### Grassy forests

Grasses or sags are the dominant or most prominent feature of the understorey. Typical species include tussock grass and wallaby grass and graminoids (e.g. flag iris). Kangaroo grass and other typical lowland species are found at lower altitudes in the southeast of the region. Note that buttongrass and cutting grass are actually sedges, and forests and woodlands with understoreys dominated by these species should be considered as sedgy communities. The ground layer generally contains a high diversity of herbs, most evident when they are flowering in spring and summer. The eucalypt canopy is often fairly open; common species in Central Highlands Region include *E. delegatensis* and *E. pauciflora*. Grassy forests and woodlands, and associated native grasslands, are associated with more fertile substrates (e.g. dolerite, basalt) and well drained sites, and have very high conservation value.

#### Sedgy forests

Sedges or rushes are the dominant or most prominent feature of the understorey. Typical species include sword sedge, cutting grass, buttongrass and rushes. Coral ferns are often present. Shrubs such as tea-trees and paperbarks are present on many sites. The eucalypt canopy is often fairly open. Common species in Central Highlands Region include *E. amygdalina*, *E. rodwayi* and *E. gunnii*. Sedgy forests grade into scrubby forests as shrub cover increases (in the absence of fire) and sedges reduce in cover. Sedgy forests occur on sites with impeded drainage, often on sites burnt frequently or recently.

### Scrubby forests

Shrubs (typically tea-trees and paperbarks) are the dominant or most prominent feature of the understorey. They form a moderately dense to dense cover, generally over a sedgy ground layer. Other common shrub species include prickly mo, banksia, hakea and a range of legumes and heath species. The ground layer contains species typical of sedgy forest, though it is generally sparser, particularly under a dense shrub layer. The eucalypt canopy is typically fairly open. Common species in Central Highlands Region include *E. amygdalina*, *E. rodwayi* and *E. gunnii*. Scrubby forests mainly occur on flats with impeded drainage, generally on sites that have not been burnt or severely disturbed for many years. They often intergrade or form a mosaic with sedgy communities.

### Heathy forests

Shrubs less than 2 m in height are the dominant or most prominent feature of the understorey, though in frequently burnt sites this shrub layer can be displaced by bracken. Occasional taller shrubs are also often present in heathy forests. Shrub species include many heaths (e.g. *Epacris* species), legumes, *Allocasuarina* species, banksia, tea-trees and paperbarks. Bracken is the most widespread ground layer species, but sags, sedges and colourful herbs (e.g. orchids, lilies) are often conspicuous. Eucalypt height and density varies in response to site conditions. Most heathy forest communities in Tasmania occur on siliceous sites in coastal and subcoastal environments. In Central Highlands Region, heathy forests, mainly dominated by *E. amygdalina*, *E. tenuiramis* or *E. pauciflora*, occur locally on sandstone, mainly in the southeast. Heathy communities dominated by *E. nitida* may extend into the region on infertile siliceous substrates in the west and northwest.

### Shrubby forests

Shrubs more than 2 m in height are the dominant or most prominent feature of the understorey. Several shrub layers are often present, often containing a mixture of wet sclerophyll (broad-leaved) and dry sclerophyll (narrow-leaved) shrubs. Shrubby forests are synonymous with damp sclerophyll forests when wet sclerophyll and dry sclerophyll shrubs are present in similar proportions. Shrub species present vary greatly, depending on site conditions. Common species include native cherry, wattles, blanket bush, mountain berry, banksia, prickly beauty, guitar plant and hakea. Ground layer species include bracken and other ferns, flax lily, sagg and grasses, though their cover is often sparse. Eucalypts are typically taller and denser than in other dry sclerophyll forest communities. In Central Highlands Region they include *E. delegatensis* (widespread), *E. obliqua* and *E. amygdalina* (lower altitudes), and *E. coccifera* (high altitudes). At lower altitudes, shrubby forests tend to occupy more fertile sites, or more shaded and humid environments, than other dry sclerophyll types.

## KEY TO DRY SCLEROPHYLL FOREST AND WOODLAND COMMUNITIES

*Note: Exclude eucalypt regeneration in assessing dominance of understorey layers.*

- ❶ Understorey dominated by grasses and sags; small trees or shrubs generally sparse; mainly on drier sites on basalt, dolerite or other fertile substrates
  - ❷ *E. amygdalina* dominant ..... DRY-gAM
  - ❷ *E. coccifera* dominant ..... DRY-gCOC
  - ❷ *E. dalrympleana* dominant ..... DRY-gDAL
  - ❷ *E. delegatensis* dominant ..... DRY-gDEL
  - ❷ *E. gunnii* or *E. archeri* dominant ..... DRY-gGUN
  - ❷ *E. ovata* dominant ..... DRY-gOV
  - ❷ *E. pauciflora* dominant ..... DRY-gPAUC
  - ❷ *E. pulchella* dominant ..... DRY-gPUL
  - ❷ *E. rodwayi* dominant ..... DRY-gROD
  - ❷ *E. rubida* dominant ..... DRY-gRUB
  - ❷ *E. tenuiramis* dominant ..... DRY-gTEN
  - ❷ *E. viminalis* dominant ..... DRY-gVIM

- ❶ Understorey dominated by sedges, cutting grass or buttongrass or tea-trees or paperbarks; mainly on sites with impeded drainage (e.g. flats and marsh edges)
- ❷ Sedges, cutting grass or buttongrass prominent
- ❸ *E. amygdalina* dominant..... DRY-sdAM
  - ❸ *E. gunnii* or *E. archeri* dominant..... DRY-sdGUN
  - ❸ *E. nitida* dominant..... DRY-sdNIT
  - ❸ *E. ovata* dominant..... DRY-sdOV
  - ❸ *E. perriniana* dominant..... DRY-sdPER
  - ❸ *E. rodwayi* dominant..... DRY-sdROD
- ❷ Tea-trees or paperbarks prominent
- ❸ *E. amygdalina* dominant..... DRY-scAM
  - ❸ *E. gunnii* or *E. archeri* dominant..... DRY-scGUN
  - ❸ *E. nitida* dominant..... DRY-scNIT
  - ❸ *E. ovata* dominant..... DRY-scOV
  - ❸ *E. perriniana* dominant..... DRY-scPER
  - ❸ *E. rodwayi* dominant..... DRY-scROD
- ❶ Understorey dominated by bracken or low shrubs (generally less than 2 m), notably heaths, legumes, wattles, tea-trees, bull-oak and banksia; mainly on well drained sites on gravels, sandstone or quartzite
- ❷ *E. amygdalina* dominant..... DRY-hAM
  - ❷ *E. nitida* dominant..... DRY-hNIT
  - ❷ *E. obliqua* dominant..... DRY-hOB
  - ❷ *E. pauciflora* dominant..... DRY-hPAUC
  - ❷ *E. pulchella* dominant..... DRY-gPUL or DRY-shPUL
  - ❷ *E. rubida* dominant..... DRY-hRUB
  - ❷ *E. tenuiramis* dominant..... DRY-hTEN
  - ❷ *E. viminalis* dominant..... DRY-hVIM
- ❶ Understorey dominated by shrubs over 2 m (excluding tea-trees and paperbarks), often including broad-leaved species; bracken or other ferns sometimes dense; mainly on well drained or sheltered sites of moderate fertility (e.g. dolerite)
- ❷ *E. amygdalina* dominant..... DRY-shAM
  - ❷ *E. coccifera* dominant..... DRY-shCOC
  - ❷ *E. dalrympleana* dominant..... DRY-shDAL
  - ❷ *E. delegatensis* dominant..... DRY-shDEL
  - ❷ *E. gunnii* or *E. archeri* dominant..... DRY-shGUN
  - ❷ *E. nitida* dominant..... DRY-shNIT
  - ❷ *E. obliqua* dominant..... DRY-shOB
  - ❷ *E. ovata* dominant..... DRY-shOV
  - ❷ *E. pauciflora* dominant..... DRY-shPAUC
  - ❷ *E. pulchella* dominant..... DRY-shPUL
  - ❷ *E. radiata* dominant..... DRY-shRAD
  - ❷ *E. subcrenulata* dominant..... DRY-shSUB
  - ❷ *E. viminalis* dominant..... DRY-shVIM

**CONSERVATION PRIORITIES AND ATTRIBUTES OF DRY SCLEROPHYLL FOREST / WOODLAND COMMUNITIES**

Notes: # – Community highly susceptible to *Phytophthora cinnamomi* – specialist advice needed if prescriptions in *Flora Technical Note 8* cannot be applied

\* – Community identified as Rare, Vulnerable or Endangered at a Statewide level through RFA processes

| Floristic community code and name |   | Qualification   | RFA community code and name |  | Cons. priority |       | Distribution in Central Highlands Region   |
|-----------------------------------|---|---|-----------------------------|--|----------------|-------|--|
|                                   |   |   |                             |  | Floristic      | RFA   |  |
| DRY-gAM                           | Grassy <i>E. amygdalina</i> forest/woodland   | Substrate dolerite or basalt  | AD                          | <i>E. amygdalina</i> forest on dolerite  | np             | N     | Local on tier surfaces and around margins of frost hollows in east of region (e.g. Tunbridge Tier).  |
|                                   |   | Substrate sand or alluvium or Tertiary gravels or ironstone   | AIC                         | Inland <i>E. amygdalina</i> forest on Cainozoic deposits                             | A              | Y*    | May occur locally on flats and lower slopes adjacent to northern Midlands (e.g. Poatina, Auburn area).   |
|                                   |   | Substrate mudstone  | AM                          | <i>E. amygdalina</i> forest on mudstone  | check          | check | Local at low altitudes on flats and lower slopes adjacent to Midlands and Derwent Valley.  |
|                                   |   | Substrate other   | check                       | check  | check          | check |  |
| DRY-gCOC                          | Grassy <i>E. coccifera</i> forest/woodland    |   | C                           | <i>E. coccifera</i> forest   | np             | N     | High altitude dolerite flats and knolls, often subject to frost, grazing or fire (e.g. Den Hill).  |
| DRY-gDAL                          | Grassy <i>E. dalrympleana</i> forest/woodland | Make sure dominant is not <i>E. viminalis</i> – contact FPA if unsure.  | D                           | Dry <i>E. delegatensis</i> forest  | B              | N     | Local on dry dolerite flats, often growing with <i>E. delegatensis</i> forest. Often in areas subject to grazing or frequent fire (e.g. Cross Marsh, Bronte).  |
| DRY-gDEL                          | Grassy <i>E. delegatensis</i> forest/woodland |   | D                           | Dry <i>E. delegatensis</i> forest  | np             | N     | Occasional on dry dolerite and basalt sites at altitudes of 600-1000 m. Often in areas subject to frost, grazing or frequent fire (e.g., Lake Lea, Surrey Hills, Steppes, Bronte area).                      |
| DRY-gGUN                          | Grassy <i>E. gunnii</i> forest/woodland       | <i>E. gunnii</i> grades into <i>E. archeri</i> towards N of Central Plateau. Check if <i>E. gunnii</i> subsp. <i>divaricata</i> is present. | C                           | <i>E. coccifera</i> forest   | np             | N     | Poorly drained flats and frost hollows, at higher altitudes (e.g. Middlesex Plains, Great Lake). Note: <i>E. gunnii</i> subsp. <i>divaricata</i> is endangered – occurs around Miena, Alma Tier, Great Lake. |
| DRY-gOV                           | Grassy <i>E. ovata</i> forest/woodland        |   | OV                          | Shrubby <i>E. ovata</i> - <i>E. viminalis</i> forest                                 | A              | Y*    | May occur locally on poorly drained flats adjacent to Midlands and Derwent Valley.   |
| DRY-gPAUC                         | Grassy <i>E. pauciflora</i> forest/woodland   | Substrate dolerite (or basalt)  | PJ                          | <i>E. pauciflora</i> forest on Jurassic dolerite                                     | B              | Yog   | Frost hollows and flats, mainly on well drained sites (e.g. Skullbone Plains, Steppes, Bronte).  |
|                                   |   | Substrate other   | check                       | check  | check          | check | Occasional, mainly on sediments.   |
| DRY-gPUL                          | Grassy <i>E. pulchella</i> forest/woodland    | May occur locally with a heathy understorey   | P                           | <i>E. pulchella</i> - <i>E. globulus</i> - <i>E. viminalis</i> grassy-shrubby forest | B              | N     | Local on dry dolerite knolls and slopes at low altitudes in southeast of region (e.g. Wadamanna, Den Hill).  |

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| Floristic community code and name |   | Qualification   | RFA community code and name |  | Cons. priority |       | Distribution in Central Highlands Region  |
|-----------------------------------|---|---|-----------------------------|--|----------------|-------|---|
|                                   |   |   |                             |  | Floristic      | RFA   |   |
| DRY-gROD                          | Grassy <i>E. rodwayi</i> forest/woodland    |   | RO                          | <i>E. rodwayi</i> forest                                 | A              | Y     | Mid to high altitudes on flats and hollows subject to frosts and cold air drainage (e.g. Lake Binney).  |
| DRY-gRUB                          | Grassy <i>E. rubida</i> forest/woodland     |   | V                           | <i>E. viminalis</i> grassy forest/woodland               | A              | Y     | Local on flats, saddles and frost hollows on dolerite in the southeast of region (e.g. Gaol Hill, Ouse River).  |
| DRY-gTEN                          | Grassy <i>E. tenuiramis</i> forest/woodland | Substrate dolerite  | TD                          | <i>E. tenuiramis</i> forest on dolerite                  | B              | N     | May occur locally on rocky dolerite sites in southeast of region.   |
|                                   |   | Substrate mudstone or sandstone                             | TI                          | Inland <i>E. tenuiramis</i> forest                       | A              | Y*    | Restricted to southeast of region, mainly on dry mudstone sites, often frequently burnt.  |
| DRY-gVIM                          | Grassy <i>E. viminalis</i> forest/woodland  | Substrate sand or alluvium or Tertiary gravels or ironstone | AIC                         | Inland <i>E. amygdalina</i> forest on Cainozoic deposits | A              | Y*    | May occur locally on flats and lower slopes adjacent to northern Midlands (e.g. Poatina, Auburn area).  |
|                                   |   | Substrate dolerite (or basalt)                              | V                           | <i>E. viminalis</i> grassy forest/woodland               | A              | Y     | Local on dry dolerite knolls and slopes at low altitudes adjacent to Midlands and Derwent Valley (e.g. Den Hill, Mt Spode).                           |
| DRY-hAM                           | Heathy <i>E. amygdalina</i> forest          | Substrate sandstone (mainly Triassic)                       | AS                          | <i>E. amygdalina</i> forest on sandstone                 | A              | Y*    | Local at low altitudes adjacent to Midlands and Derwent Valley (e.g. Strickland area).  |
|                                   |   | Substrate mudstone (mainly Permian)                         | check                       | check  | check          | check | Local on dry slopes at lower altitudes in southeast of region (e.g. Lanes Tier).  |
| DRY-hNIT                          | Heathy <i>E. nitida</i> forest/woodland     |   | N                           | Dry <i>E. nitida</i> forest                              | B              | N     | Common on infertile sites in west and northwest of region (e.g. Eldon Peak). Also local on Ordovician quartzite in north (e.g. Mt Roland, Mt Claude). |
| DRY-hOB                           | Heathy <i>E. obliqua</i> forest             |   | O                           | Dry <i>E. obliqua</i> forest                             | np             | N     | Local on dry slopes at low altitudes on sandstone, particularly in southeast of region (e.g. Strickland).   |
| DRY-hPAUC                         | Heathy <i>E. pauciflora</i> forest          | Substrate sandstone or mudstone                             | PS                          | <i>E. pauciflora</i> forest on sediments                 | B              | N     | Tier surfaces and flats receiving cold air drainage in southeast of region (e.g. Bothwell). Extensively cleared for agriculture.                      |
|                                   |   | Substrate sand or alluvium or Tertiary gravels or ironstone | AIC                         | Inland <i>E. amygdalina</i> forest on Cainozoic deposits | A              | Y*    | May occur locally on flats and lower slopes adjacent to northern Midlands (e.g. Poatina, Auburn area).  |
| DRY-hRUB                          | Heathy <i>E. rubida</i> forest              |   | check                       | check  | A              | check | Local in southeast of region, usually associated with <i>E. tenuiramis</i> or <i>E. pauciflora</i> forest   |

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| Floristic community code and name |  | Qualification   | RFA community code and name |  | Conservation priority |       | Distribution in Central Highlands Region   |
|-----------------------------------|--|---|-----------------------------|--|-----------------------|-------|--|
|                                   |  |   |                             |  | Floristic             | RFA   |  |
| DRY-hTEN                          | Heathy <i>E. tenuiramis</i> forest   |   | TI                          | Inland <i>E. tenuiramis</i> forest                   | A                     | Y*    | Lowland slopes and flats on mudstone and sandstone in southeast of region (e.g. Strickland, Lanes Tier). Extensively cleared for agriculture.  |
| DRY-sdAM<br>and<br>DRY-scAM       | Sedgy <i>E. amygdalina</i> forest/woodland<br>Scrubby <i>E. amygdalina</i> forest/woodland | Substrate dolerite or basalt  | AD                          | <i>E. amygdalina</i> forest on dolerite              | np                    | N     | Local around drainage lines and margins of marshes on a range of substrates in the north, east and southeast of the region.  |
|                                   |  | Substrate sandstone (mainly Triassic)   | AS                          | <i>E. amygdalina</i> forest on sandstone             | A                     | Y*    |  |
|                                   |  | Substrate other   | check                       | check  | check                 | check |  |
| DRY-sdGUN<br>and<br>DRY-scGUN     | Sedgy <i>E. gunnii</i> forest/woodland<br>Scrubby <i>E. gunnii</i> forest/woodland         | <i>E. gunnii</i> grades into <i>E. archeri</i> towards the northern rim of the Central Plateau.<br>Check if <i>E. gunnii</i> subsp. <i>divaricata</i> is present. | C                           | <i>E. coccifera</i> forest                           | np                    | N     | Poorly drained flats and frost hollows, generally at higher altitudes (e.g. Middlesex Plains, Hatfield Plain, Great Lake).<br>Note: <i>E. gunnii</i> subsp. <i>divaricata</i> is endangered – occurs around Miena, Alma Tier, Great Lake.          |
| DRY-sdNIT<br>and<br>DRY-scNIT     | Sedgy <i>E. nitida</i> forest/woodland<br>Scrubby <i>E. nitida</i> forest/woodland         |   | N                           | Dry <i>E. nitida</i> forest                          | B                     | N     | Mainly on drainage lines and poorly drained flats in the west of region. Usually associated with wet heath, scrub or moorland.   |
| DRY-sdOV<br>and<br>DRY-scOV       | Sedgy <i>E. ovata</i> forest/woodland<br>Scrubby <i>E. ovata</i> forest/woodland           |   | OV                          | Shrubby <i>E. ovata</i> - <i>E. viminalis</i> forest | A                     | Y*    | Local on poorly drained flats, at low altitudes in southeast of region (e.g. Gretna area).   |
| DRY-sdPER<br>and<br>DRY-scPER     | Sedgy <i>E. perriniana</i> forest/woodland<br>Scrubby <i>E. perriniana</i> forest/woodland | <i>E. rodwayi</i> prominent   | RO                          | <i>E. rodwayi</i> forest                             | A                     | Y     | Local on poorly drained flats on sandstone or mudstone. Known only from Strickland area (e.g. Duckholes Lagoon) and Espies Crag. May be associated with <i>E. tenuiramis</i> forest, <i>E. rodwayi</i> forest or <i>Sphagnum</i> peatland.         |
|                                   |  | <i>E. tenuiramis</i> prominent  | TI                          | Inland <i>E. tenuiramis</i> forest                   | A                     | Y*    |  |
| DRY-sdROD<br>and<br>DRY-scROD     | Sedgy <i>E. rodwayi</i> forest/woodland<br>Scrubby <i>E. rodwayi</i> forest/woodland       |   | RO                          | <i>E. rodwayi</i> forest                             | A                     | Y     | Common on poorly drained flats on dolerite (e.g. Lake St Clair, Bronte, Lagoon of Islands). Local on other substrates, including basalt (e.g. Surrey Hills) and sediments (e.g. Duckholes Lagoon). Often associated with <i>Sphagnum</i> peatland. |

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| Floristic community code and name |                                       | Qualification   | RFA community code and name |  | Conservation priority |       | Distribution in Central Highlands Region  |
|-----------------------------------|---------------------------------------|---|-----------------------------|--|-----------------------|-------|---|
|                                   |                                       |   |                             |  | Floristic             | RFA   |   |
| DRY-shAM                          | Shrubby <i>E. amygdalina</i> forest   | Understorey with similar amount of wet and dry sclerophyll shrubs and <i>E. obliqua</i> or <i>E. viminalis</i> subdominant or codominant                    | DSC                         | <i>E. viminalis</i> - <i>E. ovata</i> - <i>E. amygdalina</i> - <i>E. obliqua</i> damp sclerophyll forest | np                    | Yog   | Found on sites intermediate between wet and dry sclerophyll forest. May occur locally on shaded slopes in drier parts of the region.  |
|                                   |                                       | Not DSC and substrate dolerite  | AD                          | <i>E. amygdalina</i> forest on dolerite  | np                    | N     | Widespread at low to mid-altitudes on dolerite in the northeast east and southeast of region. Sites often rocky (e.g. Drys Bluff, Black Tier).  |
|                                   |                                       | Not DSC and substrate sandstone   | AS                          | <i>E. amygdalina</i> forest on sandstone   | A                     | Y*    | Local on moderately shaded slopes on sandstone in east of region (e.g. Cluan Tier area).  |
|                                   |                                       | Not DSC and substrate mudstone  | AM                          | <i>E. amygdalina</i> forest on mudstone  | check                 | check | Local on moderately shaded slopes, particularly in adjacent to Midlands and Derwent Valley.   |
|                                   |                                       | Not DSC and substrate other   | check                       | check  | check                 | check |   |
| DRY-shCOC                         | Shrubby <i>E. coccifera</i> forest    |   | C                           | <i>E. coccifera</i> forest   | np                    | N     | Widespread on well drained dolerite sites, often rocky. Occurs as the treeline forest community throughout much of the region (e.g. Lake Dobson, Cradle Mountain, Table Mountain).  |
| DRY-shDAL                         | Shrubby <i>E. dalrympleana</i> forest | Make sure dominant is not <i>E. viminalis</i> - contact FPA if unsure   | D                           | Dry <i>E. delegatensis</i> forest  | B                     | N     | Local on rocky dolerite sites, often growing with <i>E. delegatensis</i> forest (e.g. Steppes, Maggs Mountain).   |
| DRY-shDEL                         | Shrubby <i>E. delegatensis</i> forest |   | D                           | Dry <i>E. delegatensis</i> forest  | np                    | N     | Widespread on well drained slopes and tier surfaces, particularly in drier parts of the region (e.g. Den Hill, Lanes Tier, Tiger Rise, Tunbridge Tier, Quamby Bluff). Generally above 500 m, but extends downslope on sites with cold air drainage. |
| DRY-shGUN                         | Shrubby <i>E. gunnii</i> forest       | <i>E. gunnii</i> grades into <i>E. archeri</i> towards the northern rim of the Central Plateau. Check if <i>E. gunnii</i> subsp. <i>divaricata</i> present. | C                           | <i>E. coccifera</i> forest   | np                    | N     | Flats and frost hollows, generally at higher altitudes (e.g. Walls of Jerusalem, Great Lake). Note: <i>E. gunnii</i> subsp. <i>divaricata</i> is endangered species – occurs around Miena, Alma Tier, Great Lake.                                   |
| DRY-shNIT                         | Shrubby <i>E. nitida</i> forest       |   | N                           | Dry <i>E. nitida</i> forest  | B                     | N     | Infertile substrate in west and northwest of region and may also occur locally on Ordovician quartzite in north (e.g. Mt Roland area).  |

**Forest Botany Manual: Module 7 – Central Highlands Region**

| Floristic community code and name |                                       | Qualification  | RFA community code and name |  | Cons. priority |       | Distribution in Central Highlands Region  |
|-----------------------------------|---------------------------------------|--|-----------------------------|--|----------------|-------|---|
|                                   |                                       |  |                             |  | Floristic      | RFA   |   |
| DRY-shOB                          | Shrubby <i>E. obliqua</i> forest      | Understorey with similar amount of wet and dry sclerophyll shrubs <u>and</u> <i>E. amygdalina</i> or <i>E. viminalis</i> subdominant or codominant | DSC                         | <i>E. viminalis</i> - <i>E. ovata</i> - <i>E. amygdalina</i> - <i>E. obliqua</i> damp sclerophyll forest   | np             | Yog   | Found on sites intermediate between wet and dry forest. May occur locally on shaded slopes in drier parts of the region.  |
|                                   |                                       | Not DSC  | O                           | Dry <i>E. obliqua</i> forest   | np             | N     | Occasional at low altitudes in north, east and southeast of region (e.g. Strickland area).  |
| DRY-shOV                          | Shrubby <i>E. ovata</i> forest        |  | OV                          | Shrubby <i>E. ovata</i> - <i>E. viminalis</i> forest   | A <sup>#</sup> | Y*    | May occur locally on lowland sites intermediate between DRY-scOV and wet sclerophyll forest.  |
| DRY-shPAUC                        | Shrubby <i>E. pauciflora</i> forest   | Substrate dolerite (or basalt)   | PJ                          | <i>E. pauciflora</i> forest on Jurassic dolerite   | np             | Yog   | Locally common on dolerite on tiers and margins of frost hollows adjacent to broad flats (e.g. Skullbone Plains, Dunnys Dam, Monpeelyatta).   |
|                                   |                                       | Substrate other  | check                       | check  | check          | check | May occur locally at low altitudes on various sediments, mainly adjacent to Midlands.   |
| DRY-shPUL                         | Shrubby <i>E. pulchella</i> forest    | May occur locally with a heathy understorey  | P                           | <i>E. pulchella</i> - <i>E. globulus</i> - <i>E. viminalis</i> grassy-shrubby forest                       | B              | N     | Local on dry dolerite knolls and slopes at low altitudes in southeast of region (e.g. Wadamanna, Den Hill).   |
| DRY-shRAD                         | Shrubby <i>E. radiata</i> forest      |  | check                       | check  | A              | check | May extend into region on slopes and river flats in upper Forth Valley (e.g. Patons Road). Mainly associated with <i>E. delegatensis</i> or <i>E. obliqua</i> wsf.                                  |
| DRY-shSUB                         | Shrubby <i>E. subcrenulata</i> forest |  | SU                          | <i>E. subcrenulata</i> forest  | np             | N     | High altitude dolerite and sandstone areas below the tree line (e.g. Lake Dobson area, Cradle Mtn).   |
| DRY- shVIM                        | Shrubby <i>E. viminalis</i> forest    | Understorey with similar amount of wet and dry sclerophyll shrubs <u>and</u> <i>E. amygdalina</i> or <i>E. obliqua</i> subdominant or codominant   | DSC                         | <i>E. viminalis</i> - <i>E. ovata</i> - <i>E. amygdalina</i> - <i>E. obliqua</i> - damp sclerophyll forest | A              | Yog   | Local in dry sclerophyll - wet sclerophyll transition zones at low altitudes, sometimes along creeklines in drier areas.  |
|                                   |                                       | Not DSC and substrate dolerite (or basalt)   | V                           | <i>E. viminalis</i> grassy forest/woodland   | A              | Y     | Local on low altitude sites that would normally support grassy <i>E. viminalis</i> forest, but because of moister aspect or a long period without fire a shrub-dominated understorey has developed. |
|                                   |                                       | Not DSC and substrate other  | check                       | check  | check          | check | Occasional on low altitude flats and creeklines.  |

## Section 3 PRIORITY SPECIES

Species listed in this section have some priority for conservation, and are known or likely to occur within Central Highlands Region. Most are listed on Schedules of the Tasmanian *Threatened Species Protection Act* 1995, with a small proportion also being listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. This section also includes a few species (e.g. outliers of biogeographic interest) that are not listed under either Act. Priority species are arranged on the basis of the timber quality of the forests that they typically occupy, but may also occur in other vegetation types. Some priority species have been recorded from plantations.

Much more information is available on the taxonomy, distribution and conservation status of vascular species (ferns, conifers and flowering plants) than non-vascular species (mosses, liverworts and lichens). This is partly because more texts are available on vascular plants, and partly because identification of non-vascular species often requires microscopic examination of specimens.

Our knowledge of the distribution and ecology of threatened species is improving as new information is obtained from targeted studies and from surveys in different areas of Tasmania (including surveys conducted by forest workers).. Information from all sources allows the conservation status and requirements of listed species to be reviewed and better prescriptions to be developed.

In many cases, assessments can be directed towards particular environments (e.g. dry rocky knolls) because many threatened species have narrow habitat ranges, and potential occurrences can be predicted from conditions of the physical environment (e.g. geology, aspect, altitude) or biological environment (e.g. dominant tree species, plant community). Many sites containing listed species will be flagged as priority communities (Section 2) or sites of potential significance for flora (Section 4).

Many threatened species are known or likely (based on taxonomic affinities) to be susceptible to *Phytophthora cinnamomi*. These species are indicated in the tables of priority species. Many of these species are found on lowland areas of the state, particularly on siliceous sites. Some of the species play an important role in ecosystem functioning. However, as mentioned in Section 2, low soil temperatures mean that there is a low risk of infection in the Central Highlands Region.

The FPP flora evaluation requires that FPOs use databases to determine if threatened species have been recorded from within or close to proposed operational areas. The nominated databases are GTSpot (DPIWE) and NewCONSERVE (Forestry Tasmania). Details of how to access these databases are given in Module 1. Both databases provide other information that may be useful in preparing FPPs. The databases are updated regularly to incorporate new records of threatened species. Updated information on threatened species in this bioregion may also be found on the FPA Website.

The absence of records does not mean that threatened species are not present – many FPP areas will not have been surveyed previously. If new sites containing threatened species are found, details on site location, abundance of the species, and other potentially useful information (e.g. habitat, land use and fire history) should be forwarded to FPA. Material (e.g. photos or scans) can also be sent to the FPA Botany or Ecology programs for confirmation.

Many priority species will not be familiar to FPOs, but some are readily identifiable. Information to help identify many of the listed species is available on the FPA Website and in some of the references in *Flora Technical Note 2*. Further information on threatened plant species can be obtained from the Threatened Flora of Tasmania website (<http://www.gisparks.tas.gov.au/ThreatenedFloraCD/>). This site contains individual PDF files of all plant species listed on Schedules of the *Threatened Species Protection Act*. The files contain an image of the species (which could be useful in field verification) as well as information on habitat, distribution and conservation management.

Contact FPA if any priority species are identified or are likely to occur in an area that could be affected by a forestry operation. Recommendations to take account of such occurrences will be developed in conjunction with DPIWE (Threatened Species Unit). They will depend on characteristics of the species, site and proposed operation. Some sites may need to be excluded from operations, but often the values can be maintained by management prescriptions. In some cases (e.g. for opportunistic species) no changes to the proposed operation will be needed.

**PRIORITY SPECIES ARRANGED BY BROAD VEGETATION TYPES**

Priority species are arranged by broad vegetation type: corresponding PI typing is also indicated. More information on distribution and habitat can be obtained from the Threatened Flora of Tasmania website (<http://www.gisparks.tas.gov.au/ThreatenedFloraCD/>).

The status of the species refers to its presence on Schedules of the *Threatened Species Protection Act*:

- X Presumed extinct in Tasmania (Schedule 3)
- E Endangered in Tasmania (Schedule 3)
- V Vulnerable in Tasmania (Schedule 4)
- R Rare and at risk in Tasmania (Schedule 5)

Susceptibility of species (in their natural habitat) to *Phytophthora cinnamomi* (Pc) is indicated. This is based on Barker and Wardlaw (1995) and Schahinger *et al.* (2003):

- Hs Highly susceptible: expect >75% mortality of infected plants to be killed
- Ms Moderately susceptible: expect 25-75% mortality of infected plants
- Prb Probably highly or moderately susceptible but no records of *Phytophthora* infection
- Ss Slightly susceptible: symptomless but reduced vigour
- S Susceptible but unable to make a rating
- Rh Resistant host: *Phytophthora* persists but host shows no symptoms.

**FOREST QUALITY MODERATE TO HIGH (e.g. E3+, E2, M+)**

| Life form      | Status | Pc | Botanical name                                       | Common name                  |
|----------------|--------|----|--|------------------------------|
| Trees & shrubs | R      |    | <i>Brachyglottis brunonis</i>                        | Brown's tree daisy           |
|                | R      |    | <i>Eucalyptus radiata</i>                            | Narrow leaf peppermint       |
|                | R      | Hs | <i>Persoonia muelleri</i> subsp. <i>angustifolia</i> | Mueller's geebung            |
|                | R      |    | <i>Pimelea curviflora</i> var. <i>gracilis</i>       | Curved rice flower           |
| Ferns          | V      |    | <i>Asplenium hookerianum</i>                         | Spleenwort                   |
| Herbs          | R      |    | <i>Australina pusilla</i> subsp. <i>muelleri</i>     | Mueller's small shade nettle |
|                | R      |    | <i>Senecio velleioides</i>                           | Forest groundsel             |
| Grasses        | R      |    | <i>Deyeuxia benthamiana</i>                          | Bent grass                   |
| Other monocots | R      |    | <i>Carex gunniana</i>                                | Mountain sedge               |
|                | R      |    | <i>Thismia rodwayi</i>                               | Fairy lanterns               |

**FOREST QUALITY LOW TO MODERATE (e.g. E4, E3-)**

Note that many species listed above for moderate to high quality forests extend to lower quality forests.

| Life form      | Status | Pc  | Botanical name                                   | Common name                    |
|----------------|--------|-----|--|--------------------------------|
| Trees & shrubs | V      | Ms  | <i>Acacia axillaris</i>                          | Small spike wattle             |
|                | R      | Hs  | <i>Acacia mucronata</i> subsp. <i>dependens</i>  | Variable sallow wattle         |
|                | R      | Ss  | <i>Epacris acuminata</i>                         | Clasping leaf heath            |
|                | V      | Ms  | <i>Epacris exserta</i>                           | South Esk heath                |
|                | R      | S   | <i>Monotoca submutica</i> var. <i>autumnalis</i> | Roundleaf broom heath          |
|                | R      |     | <i>Olearia hookeri</i>                           | Hooker's daisy bush            |
|                | R      | Prb | <i>Pentachondra ericifolia</i>                   | Matted pentachondra            |
|                | V      |     | <i>Pomaderris elachophylla</i>                   | Small leaf pomaderris          |
|                | V      |     | <i>Pultenaea humilis</i>                         | Dwarf bushpea                  |
|                | R      |     | <i>Spyridium vexilliferum</i>                    | Winged spyridium               |
|                | R      |     | <i>Westringia angustifolia</i>                   | Scabrous westringia            |
| Herbs          | R      |     | <i>Brachyscome radicata</i>                      | Rooted daisy                   |
|                | V      |     | <i>Glycine latrobeana</i>                        | Dwarf clover or purple glycine |
|                | V      |     | <i>Glycine microphylla</i>                       | Small leafed glycine           |
| Grasses        | R      |     | <i>Teucrium corymbosum</i>                       | Forest germander               |
|                | R      |     | <i>Deyeuxia brachyathera</i>                     | Short bent grass               |
| Other monocots | R      |     | <i>Rytidosperma procerum</i>                     | Tall wallaby grass             |
|                | R      |     | <i>Arthropodium strictum</i>                     | Chocolate lily                 |
|                | R      |     | <i>Uncinia elegans</i>                           | Handsome hook sedge            |

**FOREST QUALITY VERY LOW OR NON-FOREST (e.g. E5, S, Vz)**

Note that many species listed above for low quality forests extend to very low quality forest or non-forest vegetation. Some species listed below have also been recorded within or adjacent to FPP areas.

| Life form      | Status | Pc                                | Botanical name                                       | Common name             |
|----------------|--------|-----------------------------------|--|-------------------------|
| Trees & shrubs | R      | Ms                                | <i>Acacia siculiformis</i>                           | Dagger wattle           |
|                | E      |                                   | <i>Cryptandra amara</i>                              | Bitter cryptandra       |
|                | E      |                                   | <i>Discaria pubescens</i>                            | Thorn bush              |
|                | E      |                                   | <i>Eucalyptus gunnii</i> subsp. <i>divaricata</i>    | Miena cider gum         |
|                | R      |                                   | <i>Eucalyptus perriniana</i>                         | Spinning gum            |
|                | R      |                                   | <i>Hovea montana</i>                                 | Mountain hovea          |
|                | R      |                                   | <i>Hovea tasmanica</i>                               | Hill hovea              |
|                | V      |                                   | <i>Microstrobos niphophilus</i>                      | Creeping pine           |
|                | R      |                                   | <i>Muehlenbeckia axillaris</i>                       | Matted lignum           |
|                | R      |                                   | <i>Orites milliganii</i>                             | Milligan's orites       |
|                | X      |                                   | <i>Ozothamnus selaginoides</i>                       | Clubmoss everlasting    |
|                | R      |                                   | <i>Pimelea milliganii</i>                            | Milligan's rice flower  |
|                | R      |                                   | <i>Planocarpa nitida</i>                             | Shiny cheeseberry       |
|                | R      |                                   | <i>Planocarpa sulcata</i>                            | Furrowed cheeseberry    |
|                | V      | Hs                                | <i>Pultenaea prostrata</i>                           | Bush pea                |
| E              |        | <i>Rhytidosporum inconspicuum</i> | Alpine appleberry                                    |                         |
| Ferns          | R      |                                   | <i>Anogramma leptophylla</i>                         | Annual fern             |
|                | X      |                                   | <i>Botrychium australe</i>                           | Parsley fern            |
|                | R      |                                   | <i>Isoetes drummondii</i>                            | Plain quillwort         |
|                | R      |                                   | <i>Isoetes humilior</i>                              | Rock quillwort          |
|                | R      |                                   | <i>Pellaea calidirupium</i>                          | Hot rock fern           |
|                | R      |                                   | <i>Pilularia novae-hollandiae</i>                    | Austral pillwort        |
| Herbs          | R      |                                   | <i>Asperula minima</i>                               | Grassy woodruff         |
|                | R      |                                   | <i>Asperula scoparia</i> var. <i>scoparia</i>        | Prickly woodruff        |
|                | R      |                                   | <i>Asperula subsimplex</i>                           | Water woodruff          |
|                | E      |                                   | <i>Barbarea australis</i>                            | Native wintercress      |
|                | V      |                                   | <i>Brachyscome</i> aff. <i>radicans</i>              | Snow daisy              |
|                | V      |                                   | <i>Brachyscome rigidula</i>                          | Hairy cutleaf daisy     |
|                | R      |                                   | <i>Callitriche umbonata</i>                          | Water starwort          |
|                | R      |                                   | <i>Calocephalus lacteus</i>                          | Milky beauty heads      |
|                | R      |                                   | <i>Colobanthus curtisiae</i>                         | Curtis's colobanth      |
|                | R      |                                   | <i>Colobanthus pulvinatus</i>                        | Cushion colobanth       |
|                | R      |                                   | <i>Epilobium pallidiflorum</i>                       | Showy willowherb        |
|                | R      |                                   | <i>Epilobium willisii</i>                            | Carpet willowherb       |
|                | R      |                                   | <i>Euchiton fordianus</i>                            | Soft cudweed            |
|                | R      |                                   | <i>Euchiton poliochlorus</i>                         | Grey-green cudweed      |
|                | R      |                                   | <i>Euphrasia collina</i> subsp. <i>gunnii</i>        | Gunns purple eyebright  |
|                | E      |                                   | <i>Euphrasia collina</i> subsp. <i>tetragona</i>     | Hill eyebright          |
|                | E      |                                   | <i>Euphrasia gibbsiae</i> subsp. <i>pulvinestris</i> | Cushion plant eyebright |
|                | E      |                                   | <i>Euphrasia scabra</i>                              | Yellow eyebright        |
|                | R      |                                   | <i>Glossostigma elatinoides</i>                      | Small mudmat            |
|                | R      |                                   | <i>Haloragis heterophylla</i>                        | Variable raspwort       |
|                | X      |                                   | <i>Hutchinsia tasmanica</i>                          | Hutchinsia              |
|                | E      |                                   | <i>Lepidium hyssopifolium</i>                        | Peppercress             |
|                | R      |                                   | <i>Lepidium pseudotasmanicum</i>                     | Peppercress             |
|                | E      |                                   | <i>Leptorhynchos elongatus</i>                       | Lanky buttons           |
|                | E      |                                   | <i>Leucochrysum albicans</i> var. <i>albicans</i>    | Hoary sunray            |
|                | V      |                                   | <i>Lobelia pratioides</i>                            | Poison lobelia          |
|                | R      |                                   | <i>Lotus australis</i>                               | Austral trefoil         |
|                | R      |                                   | <i>Milligania longifolia</i>                         | Pendant milligania      |
|                | V      |                                   | <i>Myriophyllum integrifolium</i>                    | Water milfoil           |
|                | V      |                                   | <i>Phyllangium divergens</i>                         | Wiry mitrewort          |
|                | R      |                                   | <i>Plantago gracilis</i>                             | Small star plantain     |
|                | R      |                                   | <i>Ranunculus collicola</i>                          | Lake Augusta buttercup  |
|                | R      |                                   | <i>Ranunculus jugosus</i>                            | Twinned buttercup       |
| R              |        | <i>Ranunculus pumilio</i>         | Ferny buttercup                                      |                         |

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|                     |                       |           |   |  |                          |
|---------------------|-----------------------|-----------|---|--|--------------------------|
|                     | R                     |           | <i>Ranunculus sessiliflorus</i>                   | Small flowered buttercup                           |                          |
|                     | R                     |           | <i>Rhodanthe anthemoides</i>                      | Chamomile sunray                                   |                          |
|                     | R                     |           | <i>Rumex bidens</i>                               | Mud dock   |                          |
| <b>Life form</b>    | <b>Status</b>         | <b>Pc</b> | <b>Botanical name</b>                             | <b>Common name</b>                                 |                          |
| <b>Herbs</b>        | E                     |           | <i>Scaevola aemula</i>                            | Fan flower   |                          |
|                     | R                     |           | <i>Scleranthus brockiei</i>                       | Brock knawel                                       |                          |
|                     | V                     |           | <i>Scleranthus diander</i>                        | Tufted knawel                                      |                          |
|                     | V                     |           | <i>Scleranthus fasciculatus</i>                   | Spreading knawel                                   |                          |
|                     | R                     |           | <i>Senecio squarrosus</i>                         | Leafy groundsel                                    |                          |
|                     | R                     |           | <i>Stackhousia pulvinaris</i>                     | Alpine stackhousia                                 |                          |
|                     | R                     |           | <i>Stellaria multiflora</i>                       | Rayless starwort                                   |                          |
|                     | R                     |           | <i>Taraxacum aristum</i>                          | Austral dandelion                                  |                          |
|                     | R                     |           | <i>Utricularia tenella</i>                        | Pink bladderwort                                   |                          |
|                     | R                     |           | <i>Viola cunninghamii</i>                         | Cunningham's violet                                |                          |
|                     | R                     |           | <i>Viola hederacea</i> subsp. <i>curtisiae</i>    | Curtis' violet                                     |                          |
|                     | R                     |           | <i>Vittadinia cuneata</i>                         | Fuzzy New Holland daisy                            |                          |
|                     | R                     |           | <i>Vittadinia gracilis</i>                        | Graceful New Holland daisy                         |                          |
|                     | R                     |           | <i>Vittadinia muelleri</i>                        | Narrow leaf New Holland daisy                      |                          |
|                     | <b>Orchids</b>        | R         |   | <i>Xerochrysum bicolor</i>                         | White alpine everlasting |
| R                   |                       |           | <i>Corunastylis nuda</i>                          | Tiny midge orchid                                  |                          |
| E                   |                       |           | <i>Prasophyllum montanum</i>                      | Mountain leek orchid                               |                          |
| R                   |                       |           | <i>Prasophyllum sphacelatum</i>                   | Subalpine leek orchid                              |                          |
| R                   |                       |           | <i>Prasophyllum tadgellianum</i>                  | Tadgell's leek orchid                              |                          |
| E                   |                       |           | <i>Pterostylis cucullata</i>                      | Leafy greenhood                                    |                          |
| R                   |                       |           | <i>Pterostylis falcata</i>                        | Sickle greenhood                                   |                          |
| R                   |                       |           | <i>Pterostylis furcata</i>                        | Forked greenhood                                   |                          |
| R                   |                       |           | <i>Pterostylis pratensis</i>                      | Liawenee greenhood                                 |                          |
| E                   |                       |           | <i>Pterostylis wapstrarum</i>                     | Fleshy greenhood                                   |                          |
| <b>Grasses</b>      | R                     |           | <i>Agrostis australiensis</i>                     | Southern bent grass                                |                          |
|                     | R                     |           | <i>Agrostis propinqua</i>                         | Alpine winter bent                                 |                          |
|                     | E                     |           | <i>Amphibromus macrorhinus</i>                    | Long-nosed swamp wallaby grass                     |                          |
|                     | R                     |           | <i>Amphibromus neesii</i>                         | Swamp wallaby grass                                |                          |
|                     |                       |           | <i>Amphibromus sinuatus</i>                       | Sinuate swamp wallaby grass                        |                          |
|                     | R                     |           | <i>Australopyrum velutinum</i>                    | Mountain wheat grass                               |                          |
|                     | R                     |           | <i>Austrostipa nodosa</i>                         | Knotty spear grass                                 |                          |
|                     | R                     |           | <i>Deyeuxia densa</i>                             | Bent grass   |                          |
|                     | R                     |           | <i>Deyeuxia brachyathera</i>                      | Bent grass   |                          |
|                     | R                     |           | <i>Deschampsia gracillima</i>                     | Slender hair grass                                 |                          |
|                     | R                     |           | <i>Lachnagrostis aequata</i>                      | Southern rough bent                                |                          |
|                     | R                     |           | <i>Poa mollis</i>                                 | Soft poa grass                                     |                          |
|                     | <b>Other monocots</b> | R         |   | <i>Aphelia pumilio</i>                             | Dwarf aphelia            |
|                     |                       | R         |   | <i>Baumea gunnii</i>                               | Slender twig rush        |
| R                   |                       |           | <i>Caesia calliantha</i>                          | Blue grass lily                                    |                          |
| R                   |                       |           | <i>Carex capillacea</i>                           | Yellow-leaf sedge                                  |                          |
| R                   |                       |           | <i>Carex cephalotes</i>                           | Mt Eliza sedge                                     |                          |
| R                   |                       |           | <i>Carex hypandra</i>                             | Dark fen sedge                                     |                          |
| R                   |                       |           | <i>Carex longebrachiata</i>                       | Drooping sedge                                     |                          |
|                     |                       |           | <i>Carex tasmanica</i>                            | Curly sedge  |                          |
|                     |                       | Prb       | <i>Dianella amoena</i>                            | Matted flax lily                                   |                          |
| R                   |                       | Hs        | <i>Dianella longifolia</i> var. <i>longifolia</i> | Pale or smooth flax lily                           |                          |
| R                   |                       |           | <i>Hypoxis vaginata</i>                           | Purple star  |                          |
| R                   |                       |           | <i>Isolepis habra</i>                             | Habra club rush                                    |                          |
| R                   |                       |           | <i>Juncus amabilis</i>                            | Gentle rush  |                          |
| R                   |                       |           | <i>Juncus prismatocarpus</i>                      | Branching rush                                     |                          |
| R                   |                       |           | <i>Luzula atrata</i>                              | Dark woodrush                                      |                          |
| V                   |                       |           | <i>Tricoryne elatior</i>                          | Yellow rush lily                                   |                          |
| <b>Non-vascular</b> |                       | R         |   | <i>Calycideum cuneatum</i>                         | Lichen                   |
|                     |                       | R         |   | <i>Cetraria islandica</i> subsp. <i>antarctica</i> | Lichen                   |
|                     |                       | R         |   | <i>Parmeliopsis ambigua</i>                        | Lichen                   |
|                     | R                     |           | <i>Parmeliopsis hyperopta</i>                     | Lichen   |                          |
|                     | V                     |           | <i>Pseudocephalozia paludicola</i>                | Liverwort  |                          |
|                     | R                     |           | <i>Xanthoparmelia amphixantha</i>                 | Lichen   |                          |
|                     | R                     |           | <i>Xanthoparmelia willisii</i>                    | Lichen   |                          |

## Section 4 SITES OF POTENTIAL SIGNIFICANCE FOR FLORA

Information in this section is oriented towards sites rather than communities or species. It concentrates on environments within the region that have the potential to be directly or indirectly affected by forestry operations. This provides another approach to conservation of flora, which could be particularly useful for gaining an overview of potential botanical issues or values in an area. It could also be useful when there are problems with identifying species or communities in an area of proposed operations. However, it should not be used as a substitute for determining communities (Section 2) and priority species (Section 3) in a FPP area.

Species and communities of high conservation significance are often associated with particular environments. Sites can be identified by features of the physical environment (e.g. geology, altitude, landform) or the vegetation (e.g. dominant eucalypts, P.I. type). Local knowledge, coupled with use of aerial photographs and topographic, geology and P.I. maps, will help identify sites of potential significance. Many of these sites are of low or marginal timber value, and are not suitable for forestry activities or agricultural development. Such sites include high altitude rainforest and rocky river gorges. Other sites may be of greater commercial interest, for example *E. ovata* and *E. tenuiramis* forests occupying arable land in the southeast of the region.

Table 4A and 4B indicate forest and woodland sites that have the greatest potential to contain significant flora values.

**Table 4A: Sites that are often associated with priority communities or species.**

**Contact FPA in all cases if proposed operations could affect these sites.** The botanical significance of the site can then be evaluated from available information, or a vegetation survey may be needed. Areas of remnant forest that are proposed for conversion are included in this table, though they may not always contain priority communities or species.

**Table 4B: Sites that are occasionally associated with priority communities or species.**

**Assess these environments carefully. Contact FPA if priority species or communities are found in areas that could be affected by proposed operations.**

### Notes:

1. Sites supporting native non-forest vegetation (e.g. heath, wetland, native grassland) have not been included in the table, though they may co-occur with forests and woodlands on many of the sites listed. Such vegetation often contains rare species, particularly in areas of the region where little non-forest vegetation remains. Contact FPA if areas of native non-forest vegetation could be affected by the proposed operation.
2. Management of remnant forests and woodlands, which often have important flora values, is treated in Section 6.

**Section 4 SITES OF POTENTIAL SIGNIFICANCE FOR FLORA**

The sites listed in this section are associated with species or communities with a priority for conservation in Central Highlands Region. Information in the tables is not a substitute for information given in Section 2 and Section 3 of this module. Botanical advice should be sought for all sites with native non-forest vegetation.

**Table 4A: Sites often associated with priority communities or species. Contact FPA in all cases if these sites could be affected by operations.**

| Site of potential significance   | Main dominants  | Main understorey  | Main PI type                | Reason for significance   | Example locations  |
|--|---|---|-----------------------------|---|--|
| <b>High altitude rainforest and scrub</b>  | King Billy pine, pencil pine, deciduous beech   | Variable, often shrubby or grassy                                 | S                           | Priority communities and species (e.g. <i>Microstrobos niphophilus</i> ). Environment sensitive to disturbance.             | Tarn Shelf, Pine Lake, Walls of Jerusalem  |
| <b>Forests and woodlands on Tertiary ironstone (laterite), gravels or Recent sand or alluvium</b>            | <i>E. amygdalina</i> , <i>E. viminalis</i> , <i>E. ovata</i> , <i>E. pauciflora</i>             | Heathy, sedgy, or grassy  | E4                          | Priority communities and species (e.g. <i>Brunonia australis</i> , <i>Uncinia elegans</i> )                                 | Adjacent to Midlands Region e.g. Auburn, Poatina   |
| <b>Flats, frost hollows and marshes</b> (not buttongrass)  | <i>E. rodwayi</i> , <i>E. ovata</i> , <i>E. pauciflora</i> , <i>E. rubida</i> , woolly tea-tree | Variable – grassy, sedgy, scrubby, <i>Sphagnum</i> may be present | Variable, often E4, S or Wg | Priority communities and species (e.g. <i>Eucalyptus perriniana</i> , <i>Acacia axillaris</i> , <i>Discaria pubescens</i> ) | Netherby Marsh, Tods Corner, Miena, Alma Tier, Baker Tier, Lagoon of Islands area, Silver Plains, Duckholes Lagoon, Black Bobs Creek |
| <b>Alma Tier area</b> (country between Woods Lake and Lake Sorell)   | <i>E. delegatensis</i> , <i>E. amygdalina</i> , <i>E. tenuiramis</i> , <i>E. gunnii</i>         | Variable, often shrubby   | E3, E4                      | Unusual forms of eucalypts and priority species (e.g. <i>Eucalyptus gunnii</i> subsp. <i>divaricata</i> )                   | Alma Tier  |
| <b>Rocky outcrops</b> including plates, large boulders, cliffs and scree fields                              | Variable  | Variable  | E5, S, Wr                   | Localised vascular and non-vascular species; susceptibility to disturbance  | Table Mountain, Quamby Bluff, upper slopes of Western Tiers  |
| <b>Rocky gorges and creeklines</b> particularly with N or W orientation or aspect (often basalt or dolerite) | Variable, often <i>E. amygdalina</i> , <i>E. dalrympleana</i> , <i>E. delegatensis</i>          | Variable, often scrubby or shrubby                                | Variable, often E4 or S     | Priority species (e.g. <i>Barbarea australis</i> , <i>Acacia axillaris</i> , <i>Hovea tasmanica</i> )                       | Micks Creek, Clyde River Gorge, Ouse River Gorge   |

**Table 4B: Sites occasionally associated with priority communities or species. Assess these environments carefully. Contact FPA if priority communities or species could be affected by operations.**

| Site of potential significance   | Main dominants  | Main understorey          | Main PI type  | Reason for significance   | Example locations                                 |
|--|---|---------------------------|---------------|---|---|
| <b>Eucalypt-dominated forests in upper catchment of Forth River</b>                                    | <i>E. radiata</i>   | Wet sclerophyll           | E3            | Priority communities and species (e.g. <i>Eucalyptus radiata</i> )    | Patons Road                                       |
| <b>Dry sclerophyll and damp sclerophyll forest and woodland at the base of the Great Western Tiers</b> | <i>E. obliqua</i> , <i>E. amygdalina</i> , <i>E. viminalis</i> , <i>E. ovata</i> , <i>E. pauciflora</i> | Shrubby or sedgy          | E3            | Priority communities in transition zones between lowlands and uplands | Western Creek, Poatina                            |
| <b>Grassy forests, woodlands and other ecosystems</b>  | <i>E. viminalis</i> , <i>E. rubida</i> , <i>E. gunnii</i> , <i>E. pauciflora</i>                        | Grassy                    | E4, E5, Vz    | Priority communities and species (e.g. <i>Leucochrysum albicans</i> ) | Surrey Hills, Middlesex Plains, Steppes area      |
| <b>Forests and woodlands on sediments (sandstone, mudstone) in southeast of region</b>                 | <i>E. tenuiramis</i> , <i>E. rubida</i> , <i>E. pauciflora</i>  | Scrubby, heathy or grassy | E4            | Priority communities  | Bothwell area, Abyssinia                          |
| <b>Exposed peaks, tiers and knolls, particularly at higher altitudes</b>                               | <i>E. coccifera</i> , <i>E. delegatensis</i> , <i>E. subcrenulata</i>                                   | Heathy or scrubby         | E4, E5, S, Wr | Priority communities and species (e.g. <i>Brachylottis brunonis</i> ) | Mt Field, Alma Tier, Table Mountain, Mt Dromedary |

## Section 5 EVALUATION OF OTHER FLORA ISSUES

Section 5 covers issues that need to be considered by FPOs to ensure that operations comply with the *Forest Practices Code* and other current legislation and policies. Issues discussed in this section will not be relevant to all FPP areas.

Some topics have already been covered to some extent in previous sections of the module. However, they are also treated in Section 5, because they are dealt with separately in the FPP *Flora Evaluation Sheet*. Reference to *Flora Technical Notes* may be needed.

Additional topics may be introduced to this section (and the *Flora Evaluation Sheet*) as information becomes available from research, and if there are changes to legislation, policies and codes of practice.

### WEED AND DISEASE MANAGEMENT

Flora values in many forest and scrub communities can be adversely affected by the introduction of disease and exotic plants. Section D3.1 of the *Forest Practices Code* gives guidelines to reduce the risk of weeds and disease being introduced through forestry operations. Quarrying, roading and road use are generally of more concern than logging and regeneration activities.

Diseases and weeds that can seriously threaten flora (and fauna) values are discussed below. Many other weeds and disease can affect wood production and plant species and communities – some of these are detailed in information available from Forestry Tasmania.

#### *Phytophthora cinnamomi*

*Phytophthora cinnamomi* (often called root rot fungus) is a disease that attacks the roots of many native species. Some plants die rapidly (e.g. banksias, grassstrees), while others (e.g. several eucalypt species) only show signs of disease in periods of drought or other stress. Many threatened species are highly susceptible. Open vegetation in relatively moist, lowland environments, such as dry sclerophyll forest, scrub, heath and moorland, are most at risk from *Phytophthora*. The resultant reduction in plant diversity and resources (e.g. nectar, pollen and shelter) has flow-on effects to fauna. Information on *Phytophthora* is given in *Flora Technical Note 8*.

Although some susceptible communities and species occur in Central Highlands Region, the risk of infection is relatively low because cool soil temperatures in the region inhibit the establishment of *Phytophthora*. Vegetation at low altitudes in the region, particularly on siliceous or poorly drained sites, is more at risk than wetter forest types and non-forest vegetation at higher altitudes.

*Phytophthora* has been introduced to many areas by soil carried on vehicles and machinery, but other sources include the boots of wandering people and the feet of wandering animals. Once established, it is impossible to eradicate, and can spread rapidly in surface run-off and groundwater percolation. The risk of spreading *Phytophthora* can be reduced by machinery hygiene, use of *Phytophthora*-free material in road construction, and attention to infrastructure planning (e.g. roads located on ridgelines will place a larger area of susceptible vegetation at risk than roads located on lower slopes).

Over sixty *Phytophthora* Management Areas, containing species or communities that are particularly susceptible to the pathogen, have been delineated – mainly on public land in lowland areas of the State. No *Phytophthora* Management Areas are currently located in Central Highlands Region.

Location of *Phytophthora* Management Areas and records of *Phytophthora* are given in databases that FPOs need to use to complete the FPP *Flora Evaluation Sheet* (Module 1 details how to access these databases). Forest communities that are susceptible to *Phytophthora* are indicated in *Flora Technical Note 8*. Some of these communities occur in the Central Highlands Region, but only a few are highly susceptible in this region – these are indicated (#) in the community tables in Section 2 of this module.

FPOs need to refer to *Flora Technical Note 8* if:

- *Phytophthora* has been recorded from the proposed operational area;
- the operation will affect a highly susceptible forest community; or
- the operation is located within a *Phytophthora* Management Area.

Specialist advice should be sought if prescriptions in *Flora Technical Note 8* cannot be applied. Non-forest vegetation that could be affected by *Phytophthora* should routinely be referred to FPA.

## Myrtle wilt

Myrtle wilt is a disease of myrtle (*Nothofagus cunninghamii*) caused by the fungus *Chalara australis*. It kills infected trees, and can spread to other trees by root contact. Myrtle wilt occurs naturally in undisturbed forest. Damage to stems increases the chance of infection. *Flora Technical Note 9* provides guidelines to reduce the risk of infection to retained myrtles in operational areas. Operations with the potential to adversely affect rainforest in formal reserves or Special Management Zones (Flora) should be routinely referred to FPA. Buffering and other prescriptions designed to minimise disturbance from operations, including regeneration or plantation establishment treatments, may be needed.

## Threatening weed species

Weed species can colonise disturbed sites associated with forestry operations, particularly when operations are close to agricultural land. Some weed species (e.g. thistles) decrease in abundance as understoreys re-establish in the regenerating forest. Other weed species are more persistent in forest – they include species with seeds that remain viable for a long time (e.g. gorse and broom), and species that are capable of vegetative regeneration (e.g. blackberry). Open sites, such as road verges, tracks, landings, quarries and bridge approaches, provide good environments for weeds to establish and persist. Weeds can also take advantage of disturbance (including burns associated with forest management) to establish in areas of non-forest vegetation (e.g. moorlands and native grasslands). Any infestation provides a launching pad, which allows the weed species to colonise other sites in the general area – through seeds dispersed by wind, birds, water movement, livestock or other land use (including road construction and use, and forestry operations).

There are legislative requirements under the Tasmanian *Weed Management Act* for land managers to control declared weed species. The required course of action will depend on the circumstances, including characteristics of the species, and extent of infestation at the site and in the municipality. The DPIWE website ([www.dpiwe.tas.gov.au](http://www.dpiwe.tas.gov.au)) gives details of the Act and Statutory Weed Management Plans for declared weed species. Declared weed species of most concern in forest environments include gorse, Scotch broom, Spanish heath, ragwort, blackberry and pampas grass. A greater range of declared weed species may be present on plantation sites, or areas of previously cleared land proposed for plantation establishment. Control through hygiene and active management is particularly important where threatening exotics have the potential to spread into reserves or other areas of native forest where they are rare or absent.

## REMNANT FOREST AND WOODLAND

The *Forest Practices Code* supports the maintenance of remnant forest in those parts of the state where native vegetation has been extensively cleared. The RFA also requires that the values of remnant vegetation are considered at a regional level as a part of forest practices planning.

For the purpose of assessing FPP flora values, remnant forests and woodlands comprise stands that are:

- greater than 1 ha in area, and
- separated by more than 2 km from the closest area of native forest or woodland that exceeds 20 ha in area.

In some cases, remnant forests in Central Highlands Region contain communities (e.g. *E. rubida* forest) and species that have a high priority for conservation. Other remnants contain communities that are widespread and well reserved. Remnant vegetation will differ greatly in its condition – from sites with an understorey dominated by native species, to sites with understoreys having a high proportion of exotic shrubs or pasture grasses. In parts of the region with a long history of modification from agriculture (e.g. flat and undulating terrain in the southeast part of the Central Plateau) remnant vegetation may be scattered and degraded by a combination of land use, edge effects and attrition of species over the years. However, even substantially disturbed remnants can play an important role in maintaining flora and fauna at a local to subregional scale.

In all cases, remnants in FPP areas need to be carefully evaluated. Those containing communities (Section 2), species (Section 3) or sites of potential significance (Section 4) need to be referred to FPA for specialist advice. In addition, FPA needs to be contacted for any proposed operation (typically

clearance for plantation or agriculture) involving conversion of remnant vegetation. Advice concerning the operation will take account of the composition, extent, condition and context of the remnant.

## MANAGEMENT OF FORESTRY OPERATIONS IN VICINITY OF RESERVES

This section deals with forestry operations (logging, roading, quarrying, plantation establishment, regeneration treatments) that are within or adjacent to formal reserves. Formal reserves are gazetted reserves on public land (e.g. National Parks, State Reserves, Forest Reserves) and reserves on private land that have been registered on property titles (e.g. reserves established through the Private Forest Reserves Program). This section also deals with operations that could affect areas categorised by Forestry Tasmania as Special Management Zones (Flora). Comments may also be relevant for other areas being managed for conservation on public and private land.

Botanical values in reserves adjacent to proposed operational areas will often be identified in the assessments of plant communities (Section 2); priority species (Section 3) and sites of potential significance (Section 4).

Some reserves incorporate buffers or have management systems that are designed to prevent, absorb or reduce disturbance associated with adjacent or nearby land use. However, good forest practices planning needs to take account of potentially adverse effects on botanical values (and other values) in all reserves. Such effects could include:

- introduction or increased incidence of weeds (including wildlings of pines or non-indigenous eucalypts sown or planted in the FPP area);
- introduction or increased incidence of disease (*Phytophthora* and myrtle wilt are of most concern – see above);
- change in microclimate in reserve [this is of most concern when vegetation along the reserve boundary contains localised wet forest vegetation (e.g. rainforest) which is susceptible to warmer and drier conditions];
- increased risk of fire entering the reserve (particularly when vegetation in the reserve is upslope of the forestry operation, and contains fire-sensitive plant communities or species).

The effect of forestry operations will depend on:

- attributes of the FPP area;
- attributes of the adjacent reserve and its vegetation (plant species and communities);
- the type of operation;
- regeneration treatment or post-operational land use.

FPOs need to consider carefully all these factors. Advice should be sought from FPA if the vegetation in the reserve has the potential to be adversely affected by an adjacent forestry operation and subsequent land use. FPA must be notified in all cases where a proposed operation is within a formal reserve or Special Management Zone (Flora).

## Section 6 ASSESSING THE FLORA VALUES OF AN AREA

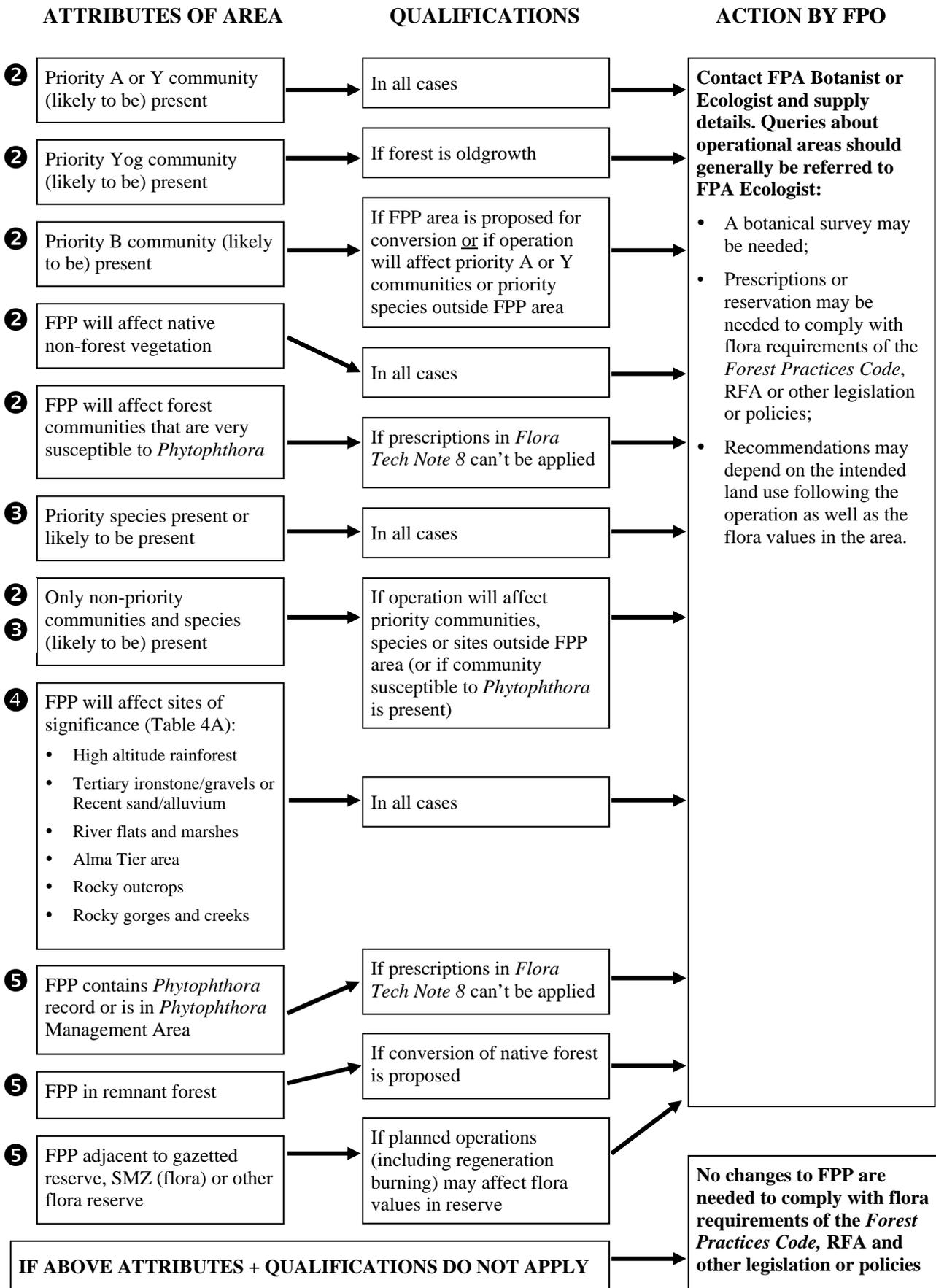
The main aim of the *Forest Botany Manual* is to allow Forest Practices Officers, and others involved with preparing Forest Practices Plans, to comply with the requirements of the *Forest Practices Code* and other policies and legislation. A similar assessment process can also be used for other areas where botanical values need to be considered.

This section uses a flow diagram to summarise the actions FPOs should take after they have assessed the vegetation of an area. It is based on information contained in sections of the module dealing with forest communities (Section 2), priority species (Section 3), sites of potential significance for flora (Section 4) and other flora issues (Section 5). Relevant sections of the manual are indicated on the left side of the flow diagram. The FPP *Flora Evaluation Sheet* has a similar format to the diagram. An example of a completed *Flora Evaluation Sheet* is given in Module 1.

Note the following points:

1. The term 'FPP area' is used to describe the area under assessment – this may extend outside the proposed harvest area (e.g. cable tailhold areas).
2. The flora evaluation needs to determine if the operation will affect flora values in adjacent areas. Conversion of native vegetation has greater potential to affect nearby vegetation than native forest operations. The FPA needs to be contacted for any FPP where conversion of native vegetation is proposed next to gazetted reserves (public or private) or Special Management Zones or other informal reserves established to protect flora values.
3. If the assessment indicates that FPA should be contacted:
  - Advice on botanical issues can be sought from the FPA Botany or Ecology programs. A discussion by phone or email may allow the botanical issues to be resolved, or clarified prior to more formal notification.
  - The normal notification process will need to be followed in most situations. Forward the FPP *Flora Evaluation Sheet* to the FPA Ecologist. Additional information that will be useful includes maps showing distribution of priority communities or priority species in the FPP area. Other information that may be needed includes past and proposed land use, site characteristics (e.g. geology) and other natural or cultural values in the area. Some of this information is required for the FPP cover sheet.
  - FPOs need to consider, and discuss with FPA if necessary, if values protected by reservation or prescription would be adversely affected by logging, regeneration practices or other activities related to the forestry operation (e.g. if regeneration burning in a coupe could affect a threatened species in an exclusion zone.)
4. **It is essential that relevant forest planners and workers are aware of agreed recommendations (e.g. exclusion of areas from coupes or roadline; procedures for control of weeds and diseases; fire management prescriptions).**

**Section 6 ASSESSING THE FLORA VALUES OF AN AREA**



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