

Field Key to Forest Ecosystems



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Purpose and use of this field key to forest ecosystems

Purpose of this key

The purpose of this key is to provide a process for determining, either in the field or with site data, which forest ecosystem is present at a particular location. There are, however, considerable limitations to achieving this outcome for any given site location. Some of these are discussed in more detail below.

The key relies on the user having a reasonable knowledge of the vegetation of the area. At a minimum the user will need to be able to identify all the hardwood tree species that are used in the key. It will also be necessary to identify understorey species in many cases. The terms dominant, co-dominant and sub-dominant refer to the contribution of the species in question to the cover of the canopy layer of the vegetation. If a single species clearly contributes more than any other species to the canopy cover of the stand, it is dominant; if one or more species contribute equally they are co-dominant; and species that contribute less than a dominant species are sub-dominant.

In this key, common names have been used for tree species where possible, but scientific names are used for most understorey species. Appendix 1 lists the scientific names and common names of species referred to in the key.

How to use this key

The key is in two parts.

Part one is a preliminary multiple choice key that either leads directly to an ecosystem if it is easily differentiated, or to one of a number of other keys (key 1 to 17 for coastal and eastern tableland areas). This key includes non-forest vegetation and other non-vegetated features. For this key Brown Barrel is considered to be a stringybark and Messmate to be a 'rough-bark'. Work through this key first.

Part two contains a number of dichotomous keys to groups of ecosystems based on broader forest types (such as Blackbutt or Spotted Gum forest), or other general characteristics, as described in the first part. These keys give a number of either/or choices until an end point is reached.

Species lists used to distinguish between closely related forest ecosystems were derived by including all of the species used to describe the similar ecosystems in the forest ecosystem report (RACD 1999) then deleting species common to both lists.

Descriptions of forest types which were not subject to any subdivision or amalgamation are indicated with an asterix (*). It is important to note that they are descriptive characteristics and will not necessarily be diagnostic.

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1 Introduction

1.1 Background

Forest ecosystem classification in North East NSW followed an approach recommended by a Forest Ecosystem Workshop convened by the Environment and Heritage Technical Committee (EHTC) in July 1997. Different approaches were approved by EHTC for three distinct biogeographic regions which are present within the North East regions: the area south of the Hunter Valley, the area west of the New England highway, and the north-east area north of the Hunter Valley and east of the New England highway.

This key includes only the distinct forest ecosystems occurring in the area east of the New England Highway and north of the Hunter Valley (Figure 1). These forest ecosystem are the product of an analysis of variation within existing Forest Types in New South Wales, described in Research Note 17 (RN17) (Forestry Commission of New South Wales 1989) or which are equivalent to existing RN17 Forest Types with no further analysis or derivation having been conducted and for which the original RN17 name has been retained.

For the North East area, the approach entailed:

- the derivation of a forest ecosystem classification by splitting and amalgamating existing RN17 forest types based on analysis of variation between field survey plots in relation to environmental variables;
- mapping of derived ecosystems within the existing mapped area (public lands) using decision rules relating variation to abiotic environmental variables; and
- predictive mapping of derived ecosystems across unmapped forest and cleared land (mostly private lands) based on modelling of the relationship between the mapped distribution of the ecosystem and abiotic variables.

One hundred and fifty-seven forest ecosystems were classified and mapped for the North East area, comprising 141 dominated by eucalypts, and 16 dominated by non-eucalypt vegetation. Ninety-eight of the eucalypt dominated ecosystems were derived from splitting and amalgamating forest types. The remaining 43 ecosystems comprised RN17 forest types on which no splitting or amalgamation was conducted.

1.2 Comprehensive Regional Assessment (CRA)

As part of the Regional Forest Agreement (RFA) process, a Comprehensive Regional Assessment (CRA) was carried out to evaluate the economic, social, cultural, environmental and heritage values of the Upper North East and Lower North East CRA regions. The CRA provided scientific information needed to develop a comprehensive, adequate and representative (CAR) forest reserve system, to facilitate an agreed RFA and to address a commitment of the National Forest Policy Statement (Commonwealth of Australia 1992).

The conservation status of biodiversity in the CRA was assessed against conservation criteria¹ at several agreed levels including ecosystems, species, wilderness and old growth (JANIS 1997). The

¹ Biodiversity criteria used in the NSW CRA/RFA process are specified in a report prepared by the Joint ANZECC / MCFFA National Forest Policy Statement Implementation Sub-committee (JANIS), *Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia* (1997).

criteria placed considerable emphasis on using 'forest ecosystems' as a general surrogate for biodiversity.

1.3 Forest Ecosystems

During the Comprehensive Regional Assessment/Regional Forest Agreement process the forest vegetation of North East NSW was classified into ecosystems based on their floristic and abiotic variation. These ecosystems were then mapped using a probability assignment procedure and Aerial Photographic Interpretation (API).

A forest ecosystem is defined as:

'An indigenous ecosystem with an overstorey of trees that are greater than 20% canopy cover. These ecosystems should normally be discriminated at a resolution requiring a map-standard scale of 1:100,000. Preferably these units should be defined in terms of floristic composition in combination with substrate and position within the landscape.'

JANIS (1997) also provides criteria for the recognition of rare, endangered and vulnerable ecosystems as follows:

- an **endangered ecosystem** is one where its distribution has contracted to less than 10% of its former range or the total area has contracted to less than 10% of its former area, or where 90% of its area is in small patches which are subject to threatening processes and unlikely to persist;
- a **rare ecosystem** is one where its geographic distribution involves a total range of generally less than 10,000ha, a total area of generally less than 1,000ha or patch sizes of generally less than 100ha, where such patches do not aggregate to significant areas; and
- a **vulnerable ecosystem** is one which is approaching a reduction in areal extent of 70% within a bioregional context and which remains subject to threatening processes or [which is] not depleted but subject to continuing and significant threatening processes which may reduce its extent.

JANIS (1997) also specified minimum benchmarks for the proportion of each forest ecosystem which should be protected in the CAR reserve system as follows:

- as a general criterion, 15% of the pre-1750 distribution of each forest ecosystem should be protected in the CAR reserve system;
- where forest ecosystems are recognised as vulnerable, then at least 60% of their remaining extent should be reserved;
- all remaining occurrences of rare and endangered forest ecosystems should be reserved or protected by other means as far as is practicable; and
- to ensure representativeness, the reserve system should, as far as possible, sample the full range of biological variation within each forest ecosystem, by sampling the range of environmental variation typical of its geographic range.

1.4 Applying CRA Conservation Targets

As detailed above regional targets were set during the CRA process for biodiversity features including old growth forests, forest ecosystems and threatened flora and fauna.

Two types of forest ecosystem target information are relevant to natural resources management vegetation planning as follows:

1. targets set by JANIS criteria for the CRA process; and
2. the level to which these targets were met for each forest ecosystem as part of the CRA and RFA process.

Based on the above framework an analysis was made of the forest ecosystems derived for the Upper and Lower North East of NSW using both the CRA targets set for each of forest ecosystem and the percentage of the set targets that were met as part of the outcome of the CRA and RFA processes. This information provides a list of forest ecosystems and their conservation status across all tenures, including private lands (refer to Appendix 3). This process is limited, however, in terms of providing a spatially accurate map of the occurrence of forest ecosystems at a property scale.

1.5 Recommended Process for Field Identification

It is recommended that the process below be used for identification of forest ecosystems in the field.

1. Desk top stratification of vegetation at the subject site based on:
 - API from most recent colour aerial photographs, preferably at 1:25 000 scale, to delineate broad vegetation units; and
 - CRAFTI GIS layer or other available vegetation mapping to predict mapped or modelled vegetation boundaries.
2. Site inspection to sample each vegetation unit/type based on:
 - homogeneity of stratified vegetation unit/type; and
 - identification of each vegetation unit/type to forest ecosystem level using this field key.
3. Assess conservation significance of the identified forest ecosystem (refer to Appendix 3). Where a vegetation unit does not fit solely into one forest ecosystem type, a precautionary approach should be taken with respect to conservation status (i.e. the closest fit forest ecosystem of the highest conservation value should be assumed).

1.6 Limitations

The major limitation to classifying vegetation as discrete units, and then trying to describe, map, and provide keys to these units, is that vegetation, in general, is a continuum. It does not fit neatly into boxes, and there are many ecotone (or overlap) areas.

Most forest vegetation is a complex combination of many species. Because of this, distinct boundaries in the field may not always be clear, and many ecosystems, or variants of ecosystems, may not be included in this classification.

Therefore in using this key different options (pathways) should be compared to assist in achieving a 'best' fit. For instance, if both Sydney Blue Gum and Tallowwood are prominent in a forest stand, try both the Sydney Blue Gum and Tallowwood keys. If a 'best' fit can not be achieved, it may be that the vegetation composition present is not adequately dealt with in this key. Where the dominant tree species present is not covered in this key, the site may represent a variant of an existing ecosystem, or, if there is a unique combination of floristics, may represent an undescribed ecosystem.

Vegetation communities which may not be adequately covered in the forest ecosystem classification and this key include:

- Large-fruited Grey Gum in the Barrington area;
- areas dominated by *Eucalyptus ophitica* on serpentinite near Baryugil;
- areas dominated by *Eucalyptus olida* in the Gibraltar Range-Timbarra area; and
- mallee communities dominated by *Eucalyptus serpentinicola* on the lower North Coast, and *Eucalyptus approximans* further north.

Additionally, as the focus of the CRA process was on forest vegetation, many distinct non-forest ecosystems were grouped together, and much variation in this sort of vegetation is not recognised in this classification.

Site data used in the CRA ecosystems analysis was generally based on 20m by 20m or 20m by 50m plot samples. It is recommended, therefore, that field sampling using this key be based on 50m by 50m plots located in a relatively consistent and representative example of the vegetation community away from disturbance and edge effects.

As detailed above, caution should be used when comparing a field-identified ecosystem to the CRAFTI ecosystems map. Mapping should be used as indicative as for many areas the mapping is based on modelling of probabilities, and is not necessarily spatially accurate. If the ecosystem that has been identified in the field has been mapped somewhere nearby, but not at the exact locality, it is more likely that the field identification is correct.

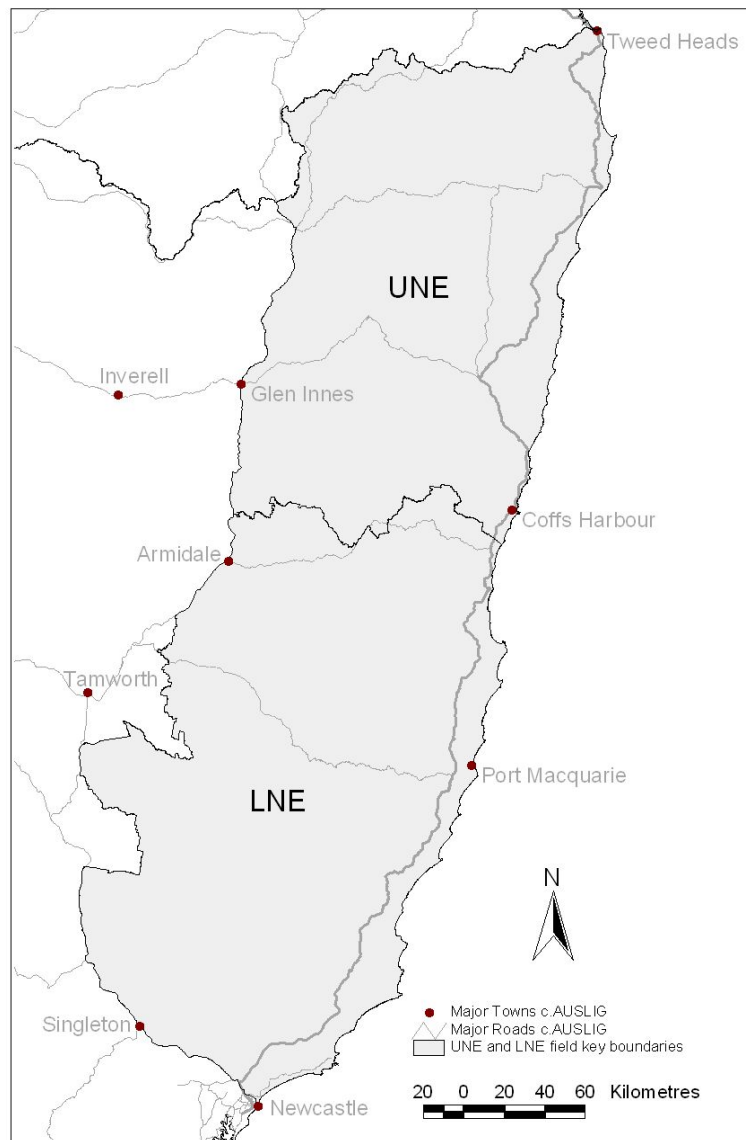


Figure 1: Map showing extent of field key and Upper North East (UNE) and Lower North East (LNE) regions.

2 Field Key – Part 1

2.1 FOREST VEGETATION OF COASTAL AREAS AND EASTERN NEW ENGLAND TABLELAND (east of New England Highway)

Banksia	FE: 5	
Blackbutt	see KEY 1	page 13
Brush Box	see KEY 2	page 15
Casuarina Woodland	FE: 18	
Coast Cypress	FE: 22	
Forestry Plantations	FE: 165	
Gum Barked Eucalypts		
Blue Gum group		
Sydney Blue Gum	see KEY 3	page 16
Round-leaved Gum (Note: FE: 124 not treated separately as only 30ha mapped in Marengo SF)	FE: 123	
Dunn's White Gum	FE: 45	
Flooded Gum	see KEY 4	page 17
Dorrigo White Gum	FE: 31	
Blue Mountain Ash	FE: 12	
Grey gums	see KEY 5	page 18
Red gums	see KEY 6	page 19
Scribbly Gum	see KEY 7	page 20
Smooth-barked Apple	see KEY 8	page 20
Spotted Gum	see KEY 9	page 21
Tablelands gums	see KEY 10	page 23
Mallees	see KEY 11	page 25
Mangroves	FE: 77	
Rainforest	FE: 168	
River Oak	FE: 120	
Rough-barks		
Box species	see KEY 12	page 26
New England Blackbutt	see KEY 13	Page 27
Other rough-barked species	see KEY 14	page 30
Stringybarks (Note Bailey's Stringybark (which has an atypical bark for a stringybark) is considered in the previous Key 14)	see KEY 15	page 33

Swamp Forest	see KEY 16	page 35
Tallowwood	see KEY 17	page 36
Wattle	FE: 151	

2.2 NON-FOREST VEGETATION

Agricultural Plantations, Orchards	FE: 164
Cleared, Partially Cleared	FE: 173
Heath	FE: 64
Improved Pasture, Croplands	FE: 166
Introduced Scrub	FE: 167
Natural Grassland	FE: 96
Riparian Shrubland	FE: 199
Saltmarsh	FE: 125
Scrub	FE: 169
Swamp	FE: 141

2.3 NON-VEGETATED FEATURES

Rock	FE: 121
Sand Ridges	FE: 172
Settlements, Roads, Gravel	FE: 170
Water Surfaces	FE: 171

3 Field Key – Part 2

3.1 KEY 1: Forest in which Blackbutt (or Large-fruited Blackbutt) is dominant or co-dominant

- 1 Restricted to the far north-east ranges (north-east of Lismore).
FE: 95 Northern Moist Blackbutt
- 1* Elsewhere
 - 2 Widespread (Ballina to Hunter River) but restricted to coastal sands.
FE: 27 Coastal Sands Blackbutt
 - 2* Not occurring on coastal sands.
 - 3 Main occurrence north of Red Rock-Glenreagh (but **FE: 97** has disjunct occurrence near Wauchope).
 - 4 Stand dominated by Needlebark Stringybark and/or Large-fruited Blackbutt.
FE: 97 Needlebark Stringybark – Large-fruited Blackbutt.
 - 4* Stand not dominated by Needlebark Stringybark and/or Large-fruited Blackbutt.
 - 5 Blackbutt always present, and Large-leaved Spotted Gum, Grey Ironbark and/or Pink Bloodwood often present.
FE: 126 Sandstone Spotted Gum - Blackbutt
 - 5* Stand dominated by Blackbutt and/or Turpentine.
 - 6 Geology quartz sandstone. More species from List A than List B in understorey.
FE: 40 Dry Heathy Sandstone Blackbutt
 - 6* Geology not quartz sandstone. More species from List B than List A in understorey.
FE: 101 Northern Open Grassy Blackbutt

List A *Aristida vagans*, *Pomax umbellata*.

List B *Imperata cylindrica*, *Pteridium esculentum*, *Lomandra longifolia*, *Glycine clandestina*, *Pratia purpurescens*, *Panicum simile*, *Themeda australis*.

3* Main occurrence south of Red Rock-Glenreagh.

7 Altitude above about 430 metres.

8 Blackbutt and Tallowwood co-dominant. More species present from List C than List D.

FE: 67 High Elevation Ferny Blackbutt

8* Blackbutt dominant with Tallowwood, Brush Box and/or Turpentine sub-dominant. More species present from List D than List C.

FE: 83 Mid Elevation Wet Blackbutt

List C *Trochocarpa laurina*, *Breynia oblongifolia*, *Hibbertia scandens*, *Imperata cylindrica*.

List D *Cyathea australis*, *Synoum glandulosum*, *Elaeocarpus reticulatus*.

7* Altitude below about 430 metres.

9 Brush Box often present and dense shrubby understorey.

FE: 155 Wet Foothills Blackbutt – Turpentine

9* Brush Box not present and understorey more open and grassy.

10 Stand with Pink Bloodwood and/or Red Mahogany co-dominant with Blackbutt.

FE: 72 Low Relief Coastal Blackbutt

10* Stand without Pink Bloodwood and/or Red Mahogany co-dominant with Blackbutt.

11 Turpentine often co-dominant with Blackbutt. More species present from List E than List F.

FE: 32 Dry Foothills Blackbutt – Turpentine

11* Tallowwood often co-dominant with Blackbutt. More species present from List F than List E.

FE: 34 Dry Grassy Blackbutt – Tallowwood

List E *Polyscias sambucifolia*, *Trochocarpa laurina*, *Dianella caerulea*, *Hibbertia scandens*, *Smilax australis*, *Cissus hypoglauca*, *Pandorea pandorana*.

List F *Breynia cernua*, *Ozothamnus diosmifolius*, *Vernonia cinerea*, *Glycine clandestina*, *Lepidosperma laterale*, *Themeda australis*, *Hardenbergia violacea*.

3.2 KEY 2: Forest in which Brush Box is the dominant tree species

1 Wet forest with dense understorey of rainforest species.

2 Stand clearly dominated by Brush Box.

3 Bangalow Palm not often present, and ground layer of ferns and forbs. More species present from List A than List B. Geology low quartz sediments.

FE: 103 Northern Wet Brush Box

3* Bangalow Palm often present, and ground layer sparse. More species present from List B than List A. Geology not low quartz sediments.

FE: 50 Wet Bangalow - Brush Box

List A *Cryptocarya microneura*, *Rhodamnia rubescens*, *Polyscias elegans*, *Croton verauxii*, *Dioscorea transversa*, *Adiantum formosum*, *Blechnum cartilagineum*, *Geitonoplesium cymosum*, *Dianella caerulea*, *Pseuderanthemum variabile*, *Parsonia straminea*.

List B *Archontophoenix cunninghamiana*, *Guioa semiglaucula*, *Citriobatus pauciflorus*, *Diploglottis australis*, *Sarcopteryx stipata*, *Dendrocnide excelsa*, *Morinda jasminoides*.

2* Stand dominated by Brush Box, but Tallowwood and/or Sydney Blue Gum co-dominant or sub-dominant.

4 Occurrence on escarpment ranges and foothills north of Jackadgery.

FE: 150 Washpool Tallowwood – Blue Gum

4* Occurrence on escarpment ranges and foothills south of Nymboida.

5 Stand with Brush Box, Tallowwood and/or Sydney Blue Gum co-dominant. More species present from List C than List D.

FE: 84 Mid North Coast Wet Brush Box - Tallowwood - Blue Gum

5* Stand dominated by Brush Box, with Tallowwood and/or Sydney Blue Gum sub-dominant. More species present from List D than List C.

FE: 157 Wet Shrubby Brush Box – Tallowwood

List C *Elaeocarpus reticulatus*, *Cyathea australis*, *Citriobatus pauciflorus*, *Pittosporum revolutum*, *Endiandra sieberi*, *Acmena smithii*, *Cephalalaria*

cephalobotrys, *Pandorea pandorana*, *Geitonoplesium cymosum*, *Lomandra longifolia*, *Hibbertia scandens*.

List D *Asplenium australasicum*, *Cryptocarya microneura*, *Morinda jasminoides*, *Doodia aspera*.

1* Drier forest with open shrubby understorey.

6 Occurrence on coastal foothills south of Glenreagh/Red Rock.

FE: 106 Open Coastal Brush Box

6* Occurrence north of Glenreagh/Red Rock, mainly in the upper Clarence and Richmond valleys.

FE: 109 Open Shrubby Brush Box – Tallowwood

3.3 KEY 3: Forests with Sydney Blue Gum dominant or co-dominant

1 Forest with a dense shrubby understorey or sub-canopy of rainforest species.

2 Stand dominated by Sydney Blue Gum, with rainforest species such as Lilly Pilly and Guioa frequent. Occurrence on ranges and foothills at low to moderate altitudes south of Taree.

FE: 137 Southern Wet Sydney Blue Gum

2* Stand with Sydney Blue Gum and Tallowwood co-dominant, with rainforest species such as Corkwood and Crabapple frequent. Occurrence at higher altitudes along the escarpment or eastern edge of New England Tableland.

FE: 29 Corkwood - Crabapple and Mixed Stringybarks

1* Forest without a dense shrubby understorey or sub-canopy of rainforest species.

3 Stand with Tallowwood co-dominant with Sydney Blue Gum.

4 Occurrence on ranges south from Chaelundi. More species present from List A than List B.

FE: 69 High Elevation Moist Open Tallowwood - Blue Gum

4* Occurrence on ranges north from Chaelundi. More species present from List B than List A. Some overlap in distribution occurs with previous ecosystem.

FE: Northern Grassy Sydney Blue Gum

List A *Synoum glandulosum*, *Psychotria loniceroides*, *Allocasuarina torulosa*, *Breynia cernua*, *Cryptocarya rigida*, *Hibbertia scandens*, *Blechnum cartilagineum*, *Caloclaena dubia*, *Smilax australis*, *Cissus antarctica*, *Doodia aspera*, *Cissus hypoglauca*.

List B *Acacia maidenii*, *Trochocarpa laurina*, *Angophora subvelutina*, *Lepidosperma laterale*, *Imperata cylindrica*, *Desmodium varians*, *Oplismenus aemulus*, *Sorghum leiocladum*.

3* Stand without Tallowwood as a significant component.

5 Stand with Sydney Blue Gum clearly the dominant tree species. Widespread on ranges and escarpment from northern Barrington to Nymboida.

FE: 19 Coastal Mid Elevation Sydney Blue Gum

5* Stand with Sydney Blue Gum co-dominant with other tree species. Occurrence between Taree and southern Barrington.

6 Sydney Blue Gum co-dominant with Narrow-leaved White Mahogany and/or Forest Red Gum. More species present from List C than List D.

FE: 7 Barrington Moist Blue Gum - White Mahogany

6* Sydney Blue Gum co-dominant with New England Blackbutt. More species present from List D than List C.

FE: 8 Barrington Wet New England Blackbutt - Blue Gum

List C *Breynia cernua*, *Allocasuarina torulosa*, *Cymbidium suave*, *Citriobatus pauciflorus*, *Rapanea variabilis*, *Guioa semiglaucula*, *Persoonia linearis*, *Cissus antarctica*, *Pellaea falcata*, *Poa labillardieri*, *Imperata cylindrica*.

List D *Synoum glandulosum*, *Rubus parvifolius*, *Pteridium esculentum*, *Doodia aspera*, *Eustrephus latifolius*, *Viola hederacea*, *Smilax australis*.

3.4 KEY 4: Forest in which Flooded Gum is either dominant or co-dominant

1 Stand with Brush Box sub-dominant. More species present from List A than List B. Widespread on coastal foothills south of Port Macquarie, and in upper Clarence and Richmond valleys. Scattered elsewhere.

FE: 26 Coastal Flooded Gum

1* Stand with Tallowwood, Turpentine and/or Brush Box sub-dominant. More species present from List B than List A. Widespread on coastal foothills and ranges in the Tweed/Brunswick area and Coffs Harbour/Bellinger area. Scattered elsewhere.

FE: 154 Wet Flooded Gum - Tallowwood

List A *Neolitsea dealbata*, *Polyscias elegans*, *Citriobatus pauciflorus*, *Linospadix monostachya*, *Mallotus philippensis*, *Sarcopteryx stipata*, *Alpinia caerulea*,

Diospyros pentamera, *Cissus antarctica*, *Doodia aspera*, *Ripogonum elseyanum*, *Oplismenus imbecillis*.

List B *Eucalyptus microcorys*, *Syncarpia glomulifera*, *Wilkia huegeliana*, *Lantana camara*, *Cordyline stricta*, *Cryptocarya rigida*, *Acmena smithii*, *Cryptocarya microneura*, *Trochocarpa laurina*, *Morinda jasminoides*, *Blechnum cartilagineum*, *Cissus hypoglauca*, *Dianella caerulea*, *Smilax glyciphylla*, *Hibbertia scandens*.

3.5 KEY 5: A Grey Gum species dominant or co-dominant in stand

1 Occurrence on coastal lowlands and foothills south of Taree.

FE: 134 South Coast Shrubby Grey Gum

1* Occurrence north of Taree.

2 Occurring on lowlands and foothills, below about 330 metres, between about Coffs Harbour and Woodburn.

3 Stand with Spotted Gum co-dominant and Broad-leaved White Mahogany sub-dominant. More species present from List A than List B.

FE: 55 Foothills Grey Gum - Spotted Gum

3* Stand with Grey Gum, Grey Ironbark, Turpentine, Pink Bloodwood and/or Spotted Gum co-dominant. More species present from List B than List A.

FE: 52 Foothills Grey Gum - Ironbark - Spotted Gum

List A *Cissus hypoglauca*, *Cissus antarctica*, *Lantana camara*, *Smilax australis*, *Desmodium varians*, *Geitonoplesium cymosum*, *Cymbopogon refractus*.

List B *Alphitonia excelsa*, *Trochocarpa laurina*, *Eustrephus latifolius*.

2* Occurring on foothills, ranges and gorges between upper Clarence and Taree/Nundle.

4 Grey Gum is Small-fruited Grey Gum, and Grey Ironbark, Tallowwood, Pink Bloodwood and/or Narrow-leaved White Mahogany are co- or sub-dominant.

FE: 59 Gorge Ironbark - Grey Gum

4* Grey Gum is *E. biturbinata*, and a stringybark species is co- or sub-dominant.

5 Broad-leaved Apple and/or Broad-leaved Stringybark sub-dominant. Restricted to area between northern Guy Fawkes National Park and Washpool National Park.

FE: 58 Gorge Grey Gum

5* Broad-leaved Apple not sub-dominant, and stringybark often Thin-leaved Stringybark. Widespread from northern Guy Fawkes National Park south to Taree/Nundle.

FE: 63 Grey Gum - Stringybark

3.6 KEY 6: Forest with a Red Gum species prominent

1 Occurrence on coastal lowlands and foothills (mainly below about 250 metres altitude). Mainly north of Coffs Harbour but scattered occurrences further south.

2 Stand with Swamp Box dominant or co-dominant with Forest Red Gum..

FE: 73 Lowland Red Gum

2* Stand dominated by a red gum other than Forest Red Gum (Narrow-leaved Red Gum, Orange Gum, Slaty Red Gum and/or Cabbage Gum).

FE: 46 Eastern Red Gums

1* Occurrence on gorges, ranges and foothills (mainly above about 250 metres altitude, although occasionally lower in south). Red gum species is Forest Red Gum or Cabbage Gum.

3 Occurrence in gorges or nearby tableland edge.

4 Occurrence on dry gorge areas from Mann River Nature Reserve to Oxley Wild Rivers National Park, often with the shrub *Jacksonia scoparia* present. Forest Red Gum usually present.

FE: 44 Dry Open Red Gum - Broad-leaved Apple

4* Occurrence on plateau areas on the eastern edge of the tablelands, particularly areas surrounded by gorges. Cabbage Gum, Round-leaved Gum and/or Dorrig White Gum usually present.

FE: 46 Eastern Red Gums

3* Occurrence on ranges and foothills.

5 Forest Red Gum co-dominant with Pink Bloodwood and/or Rough-barked Apple. More species present from List A than List B.

FE: 42 Dry Red Gum - Bloodwood - Apple

5* Forest Red Gum dominant with Pink Bloodwood, Broad-leaved Apple and/or Grey Ironbark sub-dominant. More species present from List B than List A.

FE: 47 Escarpment Red Gum

List A *Allocasuarina torulosa*, *Rubus parvifolius*, *Glycine clandestina*, *Hibbertia scandens*, *Sigesbeckia orientalis*, *Pteridium esculentum*, *Doodia aspera*.

List B *Themeda australis*, *Dichondra repens*, *Vernonia cinerea*, *Desmodium rhytidophyllum*, *Dianella caerulea*, *Oplismenus aemulus*.

3.7 KEY 7: Forests in which Scribbly Gum is either dominant or sub-dominant

- 1 Stand dominated by Broad-leaved Apple, with Scribbly Gum and/or Thin-leaved Stringybark sub-dominant. Located on steep rugged topography, in the gorge country, escarpment or possibly foothills.

FE: 48 Escarpment Scribbly Gum

- 1* Stand dominated by Scribbly Gum, not Broad-leaved Apple. Located on relatively flat terrain east of the escarpment.

- 2 Stand with Red Bloodwood sub-dominant. Heathy understorey with more species present from List A than List B.

FE: 65 Heathy Scribbly Gum Forest

- 2* Stand with Scribbly Gum clearly dominant. More species present from List B than List A.

FE: 74 Lowlands Scribbly Gum

List A *Pimelea linifolia*, *Persoonia stradbokensis*, *Gompholobium pinnatum*, *Banksia oblongifolia*, *Allocasuarina littoralis*, *Banksia spinulosa*, *Pultenaea myrtoides*, *Imperata cylindrica*, *Lepidosperma laterale*, *Glycine clandestina*, *Themeda australis*.

List B *Leptospermum polygalifolium*, *Lomandra longifolia*.

3.8 KEY 8: Forest dominated by Smooth-barked Apple

- 1 Smooth-barked Apple clearly the dominant tree species. Occurs in far south, particularly in Myall Lakes National Park area, and also in Crowdy Bay and Yuraygir National Parks.

FE: 129 Smooth-barked Apple

- 1* Smooth-barked Apple co-dominant with Sydney Peppermint and/or White Stringybark. Occurs in far south, particularly in Karuah/Wallaroo area.

FE: 130 Smooth-barked Apple - Sydney Peppermint - Stringybark

3.9 KEY 9: Forest with a Spotted Gum species either dominant or co-dominant

1 Main area of occurrence north-east and north of the Clarence River

2 Large-leaved Spotted Gum present as dominant or co-dominant.

3 Large-leaved Spotted Gum clearly dominant with Grey Box sub-dominant, and Red Ash and/or *Acacia concurrens* frequent. Mainly restricted to area between Grafton and Casino.

FE: 75 Lowlands Spotted Gum - Box

3* Large-leaved Spotted Gum co-dominant with Grey Ironbark, Small-fruited Grey Gum, Spotted Gum and/or Pink Bloodwood. Red Ash and/or *Acacia concurrens* not frequent. Widespread in lowlands and foothills.

FE: 24 Clarence Lowlands Spotted Gum

2* Spotted Gum present as dominant or co-dominant, and occurring on or near the Richmond Range.

4 Understorey drier and more grassy. More species present from List A than List B.

FE: 119 Richmond Range Spotted Gum - Box

4* Understorey moister and more shrubby. More species present from List B than List A.

FE: 118 Richmond Range Spotted Gum

List A *Lantana camara*, *Alphitonia excelsa*, *Themeda australis*, *Lepidosperma laterale*, *Oplismenus aemulus*, *Dianella caerulea*, *Imperata cylindrica*.

List B *Eucalyptus siderophloia*, *Alyxia ruscifolia*, *Alectryon subcinereus*, *Maytenus bilocularis*, *Cissus antarctica*, *Pandorea pandorana*.

1* Main area of occurrence south-west and south of the Clarence River

5 Dry forest with open grassy understorey.

6 Occurs on foothills and ranges generally above about 220 metres.

7 Stand dominated by Spotted Gum with Grey Ironbark, Broad-leaved White Mahogany and/or Tallowwood sub-dominant. Mainly occurs in the Nymboida-Chaelundi area, but also in southern areas south of about Taree. More species present from List C than List D.

FE: 33 Dry Foothills Spotted Gum

7* Spotted Gum and Tallowwood co-dominant. More species present from List D than List C. Mainly occurs in the Nymboida-Chaelundi area.

FE: 70 High Elevation Open Spotted Gum

List C *Breynia cernua*, *Glycine clandestina*, *Oplismenus aemulus*, *Eustrephus latifolius*, *Sigesbeckia orientalis*, *Lomandra filiformis*.

List D *Leucopogon lanceolatus*, *Rubus parvifolius*, *Desmodium varians*, *Cymbopogon refractus*, *Viola betonicifolia*, *Billardiera scandens*, *Themeda australis*, *Lomandra longifolia*, *Dichelachne micrantha*, *Hypericum gramineum*, *Desmodium brachypodium*.

6* Occurs on lowlands generally below about 220 metres.

8 Other tree species in stand include Tallowwood, Blackbutt, Smooth-barked Apple and/or Large-fruited Blackbutt. Scattered small areas on Coast Range north of Coffs Harbour, and west of Grafton.

FE: 25 Coast Range Spotted Gum – Blackbutt

8* Other tree species include Small-fruited Grey Gum and/or Grey Ironbark.

9 More species present from List E than List F. Widespread on Clarence lowlands.

FE: 24 Clarence Lowlands Spotted Gum

9* More species present from List F than List E. Mainly Coast Range and Orara Valley.

FE: 55 Foothills Grey Gum - Spotted Gum

List E *Corymbia henryi*, *Corymbia intermedia*, *Desmodium rhytidophyllum*, *Eustrephus latifolius*, *Hardenbergia violacea*, *Vernonia cinerea*, *Aristida vagans*, *Themeda australis*, *Cheilanthes sieberi*.

List F *Eucalyptus carnea*, *Syncarpia glomulifera*, *Breynia cernua*, *Cissus hypoglauca*, *Cissus antarctica*, *Lantana camara*, *Smilax australis*, *Desmodium varians*, *Geitonoplesium cymosum*, *Entolasia stricta*.

5* Moist forest with shrubby understorey and Brush Box co-dominant.

10 Widespread in foothills and ranges including areas south of Taree. More species present from List G than List H

FE: 89 Moist Foothills Spotted Gum

10*Very restricted occurrence in central Clarence area (eg Washpool SF). More species present from List H than List G.

FE: 158 Wet Spotted Gum - Tallowwood

List G *Eucalyptus siderophloia*, *Eucalyptus propinqua*, *Allocasuarina torulosa*, *Rubus parvifolius*, *Doodia aspera*, *Lomandra longifolia*, *Cissus hypoglauca*, *Gymnostachys anceps*, *Hardenbergia violacea*.

List H *Livistona australis*, *Alpinia caerulea*, *Rhodamnia rubuscens*, *Celastrus subspicatus*, *Guioa semiglauca*, *Rapanea variabilis*, *Acacia irrorata*, *Synoum glandulosum*, *Hibbertia scandens*, *Solanum densevestitum*, *Desmodium varians*, *Sigesbeckia orientalis*, *Pseuderanthemum variabile*, *Oplismenus aemulus*, *Hydrocotyle peduncularis*, *Desmodium rhytidophyllum*, *Adiantum formosum*, *Cayratia clematidea*.

3.10 KEY 10: Forest dominated by a gum species and occurring on the eastern part of the New England Tableland or high altitude parts of the escarpment

1 Snow Gum either dominant or sub-dominant in stand.

2 Black Sally present as dominant or co-dominant. Restricted to small areas on low lying frost hollows or lower slopes near creek lines.

FE: 10 Black Sally or FE: 133 Snow Gum-Black Sally

2* Black Sally not present.

3 Candlebark present in stand. Small areas on Northern Tablelands north of about Guyra. The Candlebark is *E. rubida* ssp *barbigerorum* which is listed as Vulnerable on the schedule to the *Threatened Species Conservation (TSC) Act*, 1995.

FE: 17 Candlebark

3* Candlebark not present.

4 Stand clearly dominated by Snow Gum.

FE: 131 Snow Gum

4* Stand not clearly dominated by Snow Gum.

5 Mainly occurring on eastern part of tableland, and Mountain Ribbon Gum, Mountain Gum and/or Diehard Stringybark sub-dominant.

FE: 2 Alpine Gum

5*Widespread on tablelands and Barrington Tops. Snow Gum and Mountain Gum co-dominant.

FE: 132 Snow Gum - Mountain/Manna Gum

1*Snow Gum not dominant or co-dominant in stand.

6 Stand dominated by Mountain Gum, rather than Ribbon (Manna) Gum or Mountain Ribbon Gum.

7 Drier forest with Broad-leaved Stringybark as sub-dominant. Occurs on tableland north from Walcha (more extensive north from Guyra).

FE: 93 Montane Stringybark - Gum

7*Moister forest with Brown Barrel as sub-dominant. Restricted to Barrington Tops area.

FE: 94 Mountain Gum - Brown Barrel

6*Stand dominated by Ribbon (Manna) Gum or Mountain Ribbon Gum, rather than Mountain Gum.

8 Occurrence mainly west of New England Highway.

9 Grassy woodland with tree species present Ribbon (Manna) Gum, Rough-barked Apple and/or Yellow Box.

FE: 195 Apple - Manna Gum Woodland

9*Open forest with shrubby understorey, and tree species present Mountain Ribbon Gum, Broad-leaved Stringybark and/or Narrow-leaved Peppermint.

FE: 200 Broad - leaved Stringybark - Ribbon Gum

8*Occurrence east of New England Highway.

10 Stand in which sub-dominant tree species are Broad-leaved, Diehard and/or Silver-top Stringybark.

FE: 79 Manna Gum – Stringybark

10*Stand in which sub-dominant tree species are Messmate and/or New England Blackbutt.

11 Dominant gum species is Ribbon (Manna) Gum. More species present from List A than List B.

FE: 80 Manna Gum

11*Dominant gum species is Mountain Ribbon Gum. More species present from List B than List A.

FE: 108 Open Ribbon Gum

List A *Pimelea curviflora*, *Dichondra repens*, *Galium propinquum*, *Geranium potentilloides*, *Themeda australis*, *Acaena novae-zelandiae*.

List B *Leucopogon lanceolatus*, *Acacia melanoxydon*, *Pteridium esculentum*, *Poa sieberiana*, *Lomandra longifolia*, *Viola betonicifolia*, *Hibbertia scandens*, *Desmodium varians*, *Viola hederacea*, *Wahlenbergia stricta*, *Gonocarpus teucrioides*.

3.11 KEY 11: Mallee or very stunted eucalypts present, and understorey often dominated by heath shrubs

1 Occurrence on coastal lowlands, mainly on quaternary sands.

FE: 76 Coastal Mallee

1* Occurrence on escarpment ranges or eastern tableland.

2 Occurrence mainly in the Warra National Park area and around the edges of the Macleay Gorges. Wattle-leaved Peppermint often present with Bell-fruited Mallee in Warra, and stand dominant in Macleay area.

FE: 149 Mallee - Peppermint Mosaic

2* Occurrence on granites in the Gibraltar Range area and Butterleaf State Forest with Bell-fruited Mallee dominant or co-dominant. Often closely associated with **FE 57 Highland Granite Stringybarks**.

3 Stand dominated by Bell-fruited Mallee. More species present from List A than List B.

FE: 56 Granite Mallee

3* Stand with Diehard Stringybark and/or New England Blackbutt sub-dominant. More species present from List B than List A.

FE: 140 Stringybark - Mallee

List A *Persoonia rufa*, *Allocasuarina rigida*, *Phebalium squamulosum*, *Acacia suaveolens*, *Mirbelia conferta*, *Xanthorrhoea glauca*, *Gahnia sieberiana*, *Austrostipa scabra*, *Lomandra longifolia*.

List B *Persoonia cornifolia*, *Mirbelia rubiifolia*, *Leucopogon neo-anglica*, *Leucopogon microphylla*, *Acacia brunonioides*, *Laxmannia compacta*, *Schoenus melanostachys*, *Aristida ramosa*, *Trachymene incisa*, *Calytrix tetragona*, *Cassytha filiformis*, *Callistemon comboynensis*.

3.12 **KEY 12: A box species as stand dominant or sub-dominant**

1 Stand with Grey Box dominant or co-dominant.

2 Occurrence on far northern ranges between about Woodenbong and Kyogle. Sub-dominant species include Small-fruited Grey Gum, Grey Ironbark, Tallowwood and/or Brush Box. Often associated with Hoop Pine dry rainforest.

FE: 62 Grey Box - Northern Grey Gum

2* Not as above.

3 Occurrence on the foothills and lowlands of the Clarence and Richmond Valleys, mainly below about 250 metres altitude.

4 Grey Ironbark co-dominant and Swamp Box sub-dominant in stand, and Red Ash always present.

FE: 21 Lowlands Grey Box

4* Grey Ironbark co-dominant but Swamp Box not sub-dominant in stand.

FE: 61 Grey Box – Ironbark

3* Occurrence on the upper valleys and gorges from upper Clarence to upper Hunter, mainly above about 250m altitude.

5 Stand with Pink Bloodwood as sub-dominant. More species present from List A than List B.

FE: 53 Gorge Grey Box

5* Stand with Forest Red Gum, Grey Ironbark and/or Small-fruited Grey Gum as sub-dominant. More species present from List B than List A

FE: 54 Grey Box - Red Gum - Grey Ironbark

List A *Allocasuarina torulosa*, *Jacksonia scoparia*, *Acacia implexa*, *Sigesbeckia orientalis*, *Hardenbergia violacea*, *Cheilanthes sieberi*, *Desmodium brachypodium*, *Dianella caerulea*.

List B *Lantana camara*, *Oplismenus aemulus*, *Pratia purpurescens*, *Geitonoplesium cymosum*, *Imperata cylindrica*, *Eustrephus latifolius*.

1* Stand with box species other than Grey Box dominant or co-dominant.

6 Occurrence on escarpment ranges and box species present is White-topped Box.

FE: 162 White - topped Box

- 6* Occurrence on ranges or foothills with box species either Steel Box north of about Coffs Harbour, and Craven Grey Box in far south (Dungog/Gloucester area).

FE: 138 Steel Box - Craven Grey Box

3.13 KEY 13: Forests with New England Blackbutt either dominant or co-dominant

- 1 Moist forests with shrubby understorey (tree ferns sometimes common).
- 2 Dense understorey or sub-canopy of rainforest species.
- 3 Tallowwood sub-dominant in stand. Occurrence on ranges between Werrikimbe and Washpool National Parks. More species present from List A than List B.

FE: 148 Very Wet New England Blackbutt - Tallowwood

- 3* No other tree species clearly sub-dominant in stand. Restricted to the lower Mann River (eg Nymboida National Park area). More species present from List B than List A.

FE: 78 Mann River Wet New England Blackbutt

List A *Elaeocarpus reticulatus*, *Cyathea australis*, *Endiandra sieberi*, *Orites excelsa*, *Allocasuarina torulosa*, *Trochocarpa laurina*, *Caldcluvia paniculosa*, *Tasmannia insipida*, *Lomandra longifolia*, *Gymnostachys anceps*, *Smilax glycyphylla*, *Calochlaena dubia*.

List B *Rhodamnia rubescens*, *Cryptocarya rigida*, *Psychotria loniceroides*, *Cordyline stricta*, *Acacia irrorata*, *Geitonoplesium cymosum*, *Smilax australis*, *Tetrastigma nitens*, *Cissus hypoglauca*, *Morinda jasminoides*, *Cissus antarctica*, *Lastreopsis decomposita*.

- 2* Understorey shrubby.
- 4 Occurrence in Barrington Tops area. Stand with Silver-top Stringybark and/or Sydney Blue Gum sub-dominant.

FE: 156 Wet New England Blackbutt - Silver-top Stringybark

- 4* Occurrence north of the Barrington Tops area.

- 5 Stand with Tallowwood and/or Sydney Blue Gum as co-dominants.

FE: 88 Moist Escarpment New England Blackbutt

- 5* Stand with Messmate and/or Round-leaved Gum as co-dominants.

- 6 More species present from List C than List D.

FE: 90 Moist Messmate - Gum

6* More species present from List D than List C.

FE: 92 Moist Shrubby Stringybark - Gum

List C *Eucalyptus laevopinea*, *Polyscias sambucifolia*, *Rubus parvifolius*, *Lomatia silaifolia*, *Viola betonicifolia*, *Pratia purpurascens*, *Eustrephus latifolius*, *Calochlaena dubia*.

List D *Eucalyptus microcorys*, *Acacia irrorata*, *Hibbertia scandens*, *Imperata cylindrica*, *Blechnum cartilagineum*, *Billardiera scandens*.

1* Drier open forests either with open grassy or heathy understorey.

7 Occurrence mainly ranges, escarpment and moister parts of the tableland edge. Sub-dominants include Sydney Blue Gum, Tallowwood, Messmate and/or Round-leaved Gum.

8 Occurrence in Barrington Tops area.

9 Stand with Sydney Blue Gum as sub-dominant. Blady Grass, Bracken, *Glycine clandestina* and *Hibbertia scandens* always present.

FE: 6 Barrington Dry Shrubby New England Blackbutt - Blue Gum

9* Stand with Messmate as sub-dominant. Blady Grass, Bracken, *Glycine clandestina* and *Hibbertia scandens* not always present.

FE: 107 Open Messmate - New England Blackbutt

8* Occurrence north of Barrington Tops area.

10 Stand clearly dominated by New England Blackbutt, with Tallowwood and/or Sydney Blue Gum sub-dominant. Occurrence mainly on higher parts of escarpment ranges.

FE: 60 Grassy New England Blackbutt - Tallowwood - Blue Gum

10* Stand with New England Blackbutt, Messmate, Round-leaved Gum, Silver-top Stringybark, Mountain Gum and/or Mountain Ribbon Gum as co-dominants. Occurrence mainly on eastern part of tableland.

FE: 87 Mixed Tableland Stringybark - Gum Open Forest

7* Occurrence mainly gorges and drier parts of the tableland edge. Sub-dominants include Diehard Stringybark, Broad-leaved Stringybark, Grey Gum, Narrow-leaved Peppermint and/or Mountain Gum.

11 Understorey without a significant shrub component, and sub-dominant tree species are Broad-leaved Stringybark, Tallowwood, Diehard Stringybark and/or Grey Gum.

FE: 35 Dry Grassy Stringybark

11* Understorey with a significant shrub component.

12 Occurrence at high altitude on eastern tableland edge. Shrub species present include *Monotoca scoparia*, *Petrophile canescens*, *Pimelea linifolia*, *Melichrus procumbens* and/or *Hovea linearis*.

FE: 38 Dry Heathy New England Blackbutt

12* Occurrence widespread on eastern parts of tableland and escarpment. Shrub species present do not include *Monotoca scoparia*, *Petrophile canescens*, *Pimelea linifolia*, *Melichrus procumbens* and/or *Hovea linearis*.

13 Stand with Diehard Stringybark as sub-dominant, and occurrence mainly on escarpment ranges south of Ebor. More species present from List E than List F.

FE: 30 Diehard Stringybark - New England Blackbutt

13* Stand without Diehard Stringybark as sub-dominant, and widespread occurrence mainly on eastern parts of tableland. More species present from List F than List E.

FE: 41 Dry Open New England Blackbutt

List E *Persoonia linearis*, *Podolobium ilicifolium*, *Persoonia media*, *Hibbertia scandens*, *Billardiera scandens*, *Hibbertia dentata*.

List F *Lomatia silaifolia*, *Allocasuarina rigida*, *Hardenbergia violacea*, *Pratia purpurascens*, *Glycine clandestina*, *Themeda australis*, *Viola betonicifolia*, *Imperata cylindrica*.

3.14 KEY 14: Forests with various rough-barked tree species dominant or co-dominant

1 Occurrence on coastal lowlands or occasionally foothills.

2 Bailey's Stringybark dominant or co-dominant in stand, with Needlebark Stringybark, Smudgy Apple and/or Red Bloodwood.

FE: 3 Bailey's Stringybark

2* Bailey's Stringybark not present as a significant component.

3 A bloodwood present as either the dominant or co-dominant tree.

4 Red Bloodwood dominant in stand.

FE: 115 Red Bloodwood

4* Pink Bloodwood dominant or co-dominant in stand.

5 Smudgy Apple co-dominant in stand. More species present from List A than List B. Main occurrence on Coast Range north of Coffs Harbour but also Maria River area south of Kempsey.

FE: 23 Coast Range Bloodwood - Mahogany

5* Turpentine co-dominant in stand. More species present from List B than List A.

FE: 37 Dry Heathy Blackbutt - Bloodwood

List A *Allocasuarina torulosa*, *Cymbopogon refractus*, *Pratia purpurascens*, *Digitaria parviflora*, *Patersonia glabrata*, *Aristida vagans*, *Echiopogon ovatus*.

List B *Hibbertia vestita*, *Pteridium esculentum*, *Lomandra longifolia*, *Themeda australis*, *Glycine clandestina*.

3* A bloodwood not present as either the dominant or co-dominant tree.

6 Stand dominated by an ironbark species.

7 Silver-leaved Ironbark dominant or sub-dominant in stand. Occurrence on foothills of the mid Clarence valley.

FE: 128 Silver-leaved Ironbark

7* Ironbark species present not Silver-leaved Ironbark. Occurrence either Richmond lowlands, upper Clarence or Hunter lowlands. Various ironbark species occur as stand dominants including Broad-leaved, Nambucca, Square-fruited and Narrow-leaved Ironbark, and *Eucalyptus fergusonii* ssp *fergusonii* and *Eucalyptus paniculata*.

FE: 71 Ironbark

6* Stand not dominated by an ironbark species.

8 Occurrence on poorly drained coastal sites always below 100 metres altitude and mostly below 10 metres. Swamp Mahogany present as dominant or co-dominant tree species.

FE: 142 Swamp Mahogany

8* Not as 7.

- 9 Stand dominated by a rough-barked apple (either Rough-barked Apple, Broad-leaved Apple, Smudgy Apple, Sandstone Apple or Narrow-leaved Apple)

FE: 122 Rough-barked Apples

- 9* Stand not dominated by a rough-barked apple.

- 10 Stand dominated by Turpentine. Common in far north-east but scattered further south.

FE: 147 Turpentine

- 10* Stand not dominated by Turpentine.

- 11 Sydney Peppermint dominant or co-dominant tree species.

FE: 145 Sydney Peppermint-Stringybark

- 11* Red Mahogany dominant or co-dominant tree species.

FE: 117 Red Mahogany

- 1* Occurrence on ranges, escarpment, gorges or eastern tableland edge.

- 12 Moist forests with Messmate as the dominant or co-dominant species.

- 13 Moist shrubby forest with rainforest species and Rough Tree Fern present. Mainly southern tableland edge.

FE: 28 Cool Moist Messmate

- 13* Open understorey with scattered shrubs and Snow Grass nearly always prominent.

- 14 Stand clearly dominated by Messmate, widespread.

FE: 81 Messmate

- 14* Stand with other species as well as Messmate.

- 15 Brown Barrel and Mountain Ribbon Gum sub-dominant. Main occurrence on Barrington Tops, with small areas north to Cathedral Rocks. More species present from List C than List D.

FE: 68 High Elevation Messmate - Brown Barrel

- 15* Mountain Gum and Snow Gum sub-dominant. Occurs from about Ben Hall's Gap to Mummel Gulf National Park. More species present from List D than List C.

FE: 82 Messmate - Mountain Gum Forest

List C *Leucopogon lanceolatus*, *Acacia melanoxylon*, *Rubus parvifolius*, *Lomandra longifolia*, *Viola hederacea*, *Geranium potentilloides*, *Poranthera microphylla*, *Dichondra repens*, *Glycine clandestina*, *Coprosma quadrifida*, *Hydrocotyle laxiflora*, *Lagenifera stipitata*, *Viola betonicifolia*, *Pratia pedunculata*, *Asperula conferta*.

List D *Dicksonia antarctica*, *Tasmannia purpurascens*, *Polystichum proliferum*.

12* Drier forests without Messmate as the dominant or co-dominant species.

16 Occurrence on dry parts of escarpment gorges and rainshadow areas of upper river valleys such as upper Clarence and upper Hunter. Broad-leaved Apple dominant or co-dominant.

17 Stand with Silver-top Stringybark and/or Forest Red Gum as sub-dominants. More species present from List E than List F.

FE: 43 Dry Silver-top Stringybark - Apple

17* Stand with Thin-leaved Stringybark as sub-dominant. More species present from List F than List E.

FE: 139 Stringybark - Apple

List E *Jacksonia scoparia*, *Acacia implexa*, *Allocasuarina torulosa*, *Themeda australis*, *Desmodium brachypodum*, *Hardenbergia violacea*, *Lepidosperma laterale*, *Chrysocephalum apiculatum*.

List F *Breynia cernua*, *Rubus parvifolius*, *Pratia purpurascens*, *Dichondra repens*, *Microlaena stipoides*, *Imperata cylindrica*, *Cymbopogon refractus*, *Adiantum aethiopicum*.

16* Occurrence on eastern part of New England Tableland.

18 Stand dominated by New England Peppermint. Mainly in “frost hollow” areas.

FE: 98 New England Peppermint

18* Stand not dominated by New England Peppermint.

19 Stand clearly dominated by Narrow-leaved Peppermint.

FE: 113 Peppermint

19* Stand with Narrow-leaved Peppermint dominant but Mountain Gum, Ribbon (Manna) Gum and/or Mountain Ribbon Gum sub-dominant.

FE: 114 Peppermint - Mountain/Manna Gum

Note. FE: 85 Mixed Moist Hardwood not included in key as there are only small areas mapped (about 500ha). The main areas are RN17 Type 55, which is a local allocation code, and some of this is on Boonoo Boonoo National Park and some is on lowlands in the Bellinger Valley. It is unlikely that these areas represent a recognisable ecosystem. Other areas mapped as **FE: 85** have RN17 codes for plantation and wattle. Some of these areas mapped as wattle represent distinct ecosystems not recognised by this classification.

3.15 KEY 15: Forests in which a stringybark species is dominant or sub-dominant

1 Locality in coastal lowlands or foothills.

2 Stand dominated by Blue-leaved Stringybark. Restricted to small areas on Mid North Coast.

FE: 13 Blue-leaved Stringybark

2*Stand not dominated by Blue-leaved Stringybark, and with Needlebark Stringybark dominant or sub-dominant.

3 Needlebark Stringybark dominant and Turpentine sub-dominant in stand. More species present from List A than List B.

FE: 20 Clarence Lowlands Needlebark Stringybark

3*Needlebark Stringybark dominant and Red Bloodwood sub-dominant in stand. More species present from List B than List A.

FE: 127 Sherwood Needlebark Stringybark

List A *Leptospermum polygalifolium*, *Banksia spinulosa*, *Lomatia silaifolia*, *Leucopogon lanceolatus*, *Ceratopetalum gummiferum*, *Pimelea linifolia*, *Gompholobium pinnatum*, *Patersonia sericea*, *Pteridium esculentum*, *Lepidosperma laterale*.

List B *Hakea dactyloides*, *Leptospermum trinervium*, *Petrophile canescens*, *Xanthorrhoea latifolia*, *Boronia rosmarinifolia*, *Melichrus procumbens*, *Hibbertia vestita*, *Persoonia tenuifolia*, *Themeda australis*.

1*Locality on eastern edge New England Tableland, or in gorges and upper valley areas.

4 Dry open forests with stringybark species present one or more of Diehard, Broad-leaved, Privet-leaved, William's, Needlebark and Thin-leaved Stringybark.

5 Occurrence restricted to high altitude granites in the Gibraltar Range area.

6 More species present from List C than List D.

FE: 39 Dry Heathy New England Stringybarks

6* More species present from List D than List C.

FE: 57 Highland Granite Stringybarks

List C *Eucalyptus cameronii*, *Eucalyptus ligustrina*, *Eucalyptus williamsiana*, *Hakea dactyloides*, *Pimelea linifolia*, *Monotoca scoparia*, *Mirbelia speciosa*, *Petrophile canescens*, *Acacia barringtonensis*, *Dianella caerulea*, *Goodenia hederacea*, *Dampiera stricta*, *Poa sieberiana*.

List D *Eucalyptus planchoniana*, *Eucalyptus codonocarpa*, *Acacia obtusifolia*, *Callistemon comboynensis*, *Phebalium squamulosum*, *Allocasuarina rigida*, *Kunzea bracteolata*, *Boronia anethifolia*, *Pteridium esculentum*, *Cassytha filiformis*, *Lepidosperma gunnii*.

5* Occurrence not restricted to high altitude granites in the Gibraltar Range area.

7 Stand with Broad-leaved Stringybark, Broad-leaved Apple and/or Blakely's Red Gum dominant or co-dominant. Occurrence on drier parts of gorge and upper valley areas from upper Hunter to upper Clarence.

FE: 99 New England Stringybark - Blakely's Red Gum

7* Stand with Diehard, Silver-top or Privet-leaved Stringybark present, often with New England Blackbutt co-dominant. Occurrence restricted to the far north-east of the New England Tableland.

FE: 86 Mixed New England Stringybarks

4* Moist forests with Brown Barrel or Silver-top Stringybark dominant, and often a sub-dominant gum species.

8 Stand with Brown Barrel as the dominant tree species.

9 Stand clearly dominated by Brown Barrel.

FE: 14 Brown Barrel

9* Stand with a gum species (Mountain Gum, Mountain Ribbon Gum and/or Sydney Blue Gum) as sub-dominant.

FE: 15 Brown Barrel - Gum

8* Stand with Silver-top Stringybark as the dominant tree species.

10 Sydney Blue Gum sub-dominant with Silver-top Stringybark. More species present from List E than List F.

FE: 110 Open Silver-top Stringybark - Blue Gum

- 10* Tallowwood sub-dominant with Silver-top Stringybark. More species present from List F than List E.

FE: 111 Open Silver-top Stringybark - Tallowwood

List E *Poa labillardieri*, *Acaena novae-zelandiae*, *Dichondra repens*, *Hibbertia scandens*.

List F *Cyathea australis*, *Breynia cernua*, *Polyscias sambucifolia*, *Eustrephus latifolius*, *Viola hederacea*, *Hibbertia scandens*, *Poa sieberiana*, *Sigesbeckia orientalis*, *Smilax australis*, *Hibbertia dentata*, *Imperata cylindrica*, *Blechnum cartilagineum*.

3.16 KEY 16: Swamp Forest

These ecosystems usually occur on poorly drained coastal lowlands below ten metres altitude. There are occasional occurrences at higher altitudes, and these are sometimes dominated by other species of paperbark than those mentioned below.

- 1 Stand dominated by a species of paperbark (most commonly Broad-leaved Paperbark, but also Snow-in Summer and Tea-Tree).

FE: 112 Paperbark

- 1* Stand dominated by Swamp Oak.

FE: 143 Swamp Oak

3.17 KEY 17: Forest in which Tallowwood is either dominant or co-dominant

- 1 Dense well developed sub-canopy of rainforest species, in particular Corkwood, Crabapple and Forest Maple.

FE: 29 Corkwood - Crabapple and Mixed Stringybarks

- 1* Dense well developed sub-canopy of rainforest species not present.

- 2 Occurrence north of Grafton/Nymboida

- 3 Dry open forest with sparse shrub layer and grassy ground layer.

FE: 102 Northern Ranges Dry Tallowwood

- 3* Forests with shrubby understoreys.

- 4 Stand with Spotted Gum as sub-dominant. Occurrence in foothills and ranges between Nymboida and Tabulam.

FE: 158 Wet Spotted Gum - Tallowwood

4* Stand without Spotted Gum

5 Stand with Sydney Blue Gum sub-dominant. More species present from List A than List B.

FE: 104 Northern Wet Tallowwood - Blue Gum

5* Stand with Pink Bloodwood co-dominant or sub-dominant. More species present from List B than List A.

FE: 152 Wet Bloodwood - Tallowwood

List A *Synoum glandulosum*, *Neolitsea dealbata*, *Psychotria loniceroides*, *Polyscia elegans*, *Eupomatia laurina*.

List B *Eucalyptus siderophloia*, *Eucalyptus acmenoides*, *Eucalyptus propinqua*, *Lantana camara*, *Euroschinus falcata*, *Polyscias elegans*, *Psychotria daphnoides*, *Breynia cernua*, *Allocasuarina torulosa*, *Citriobatus pauciflorus*, *Eustrephus latifolius*, *Imperata cylindrica*, *Celastrus subspicatus*, *Lomandra longifolia*, *Doodia aspera*.

2* Occurrence south of Grafton/Nymboida

6 Forests with moist shrubby understorey.

7 Stand with Blackbutt either co-dominant or sub-dominant.

FE: 153 Wet Coastal Tallowwood - Brush Box

7* Stand without Blackbutt as a significant component.

8 Stand with Turpentine and/or Narrow-leaved White Mahogany sub-dominant. Mainly occurring on coastal foothills and lowlands.

9 Stand also with Brush Box and/or Sydney Blue Gum sub-dominant. Widespread south of about Glenreagh.

FE: 135 South Coast Tallowwood - Blue Gum

9* Stand without Brush Box and/or Sydney Blue Gum sub-dominant. Restricted to northern parts of Dorrig Plateau, especially Nymboi-Binderay National Park.

FE: 105 Nymboida Tallowwood - Turpentine

8* Stand without Turpentine and/or Narrow-leaved White Mahogany sub-dominant, and Sydney Blue Gum co-dominant. Mainly occurring on coastal ranges.

FE: 69 High Elevation Moist Open Tallowwood - Blue Gum

6* Forests without moist shrubby understorey.

10 Occurrence in inland gorge areas, eg Guy Fawkes River National Park.

FE: 146 Tallowwood

10* Occurrence not in inland gorge areas.

11 Occurrence above about 550 metres on escarpment ranges, and Sydney Blue Gum and/or Narrow-leaved White Mahogany sub-dominant.

FE: 91 Moist Open Escarpment White Mahogany

11* Occurrence widespread below about 550 metres on coastal ranges foothills and lowlands, and Sydney Blue Gum not sub-dominant.

12 More species present from List C than List D.

FE: 36 Dry Grassy Tallowwood - Grey Gum

12* More species present from List D than List C.

FE: 49 Escarpment Tallowwood - Bloodwood

List C *Eucalyptus proprinqua*, *Eucalyptus siderophloia*, *Eucalyptus carnea*, *Lantana camara*, *Pseuderanthemum variabile*, *Themeda australis*.

List D *Rubus parvifolius*, *Maytenus silvestris*, *Persoonia linearis*, *Poa sieberiana*, *Geitonoplesium cymosum*, *Cissus hypoglauca*, *Pratia purpurascens*, *Pteridium esculentum*, *Doodia aspera*, *Oplismenus imbecillus*.

4 Forest Ecosystem Descriptions

Brief ecosystem descriptions are provided below. These descriptions were derived by subjective interpretation of percentage frequency and mean abundance data for each species within each ecosystem. Common names have been included where they exist.

Descriptions of forest types which were not subject to any subdivision or amalgamation are indicated by an asterisk(*). It is important to note that they are descriptive characterisations and will not necessarily be diagnostic. Height classes used in the descriptions follow McDonald *et. al.* (1990) and are shown in Table 1.

A table listing the floristic composition of the upper, middle and lower layers of the vegetation follows each description. The figures in brackets denote the percentage frequency of occurrence of that species in that ecosystem.

Table 1: Height classes and names for various growth forms

Height (m)	Trees, vines, palms	Shrubs, heath shrubs, chenopod shrubs, mallee (tree or shrub form), cycads
>35.01	Extremely tall	NA
20.01-35	Very tall	NA
12.01-20	Tall	NA
6.01-12	Mid-high	Extremely tall
3.01-6	Low	Very tall
1.01-3	Dwarf (trees must be > 2m)	Tall
0.51-1	NA	Mid-high
0.26-.5	NA	Low
<.25	NA	Dwarf

(From McDonald *et. al.* (1990, Table 15, p.67)

Ecosystem 2: Alpine Gum

Low to mid-high forest or woodland generally dominated by Snow Gum (*Eucalyptus pauciflora*) with sub-dominant occurrences of other gums such as Mountain Gum (*E. dalrympleana*) or Mountain Ribbon Gum (*E. nobilis*). There is a sparse understorey of species such as Lance Beard Heath (*Leucopogon lanceolatus*) and Native Raspberry (*Rubus parvifolius*), and a relatively dense ground layer dominated by Snow Grass (*Poa sieberiana*) and Spiny-headed Mat-rush (*Lomandra longifolia*) along with various forbs.

This ecosystem is primarily mapped and predicted at higher altitudes on the eastern edge of the New England Tablelands with major occurrences on the Dorrigo Plateau and Barrington Tops.

Upper	Mid	Lower
<i>Eucalyptus pauciflora</i> (60), <i>Eucalyptus nobilis</i> (40), <i>Eucalyptus dalrympleana</i> (40), <i>Eucalyptus cameronii</i> (40)	<i>Leucopogon lanceolatus</i> (60), <i>Rubus parvifolius</i> (60)	<i>Viola betonicifolia</i> (80), <i>Poa sieberiana</i> (80), <i>Lomandra longifolia</i> (60), <i>Gonocarpus micranthus</i> (60), <i>Pratia pedunculata</i> (60), <i>Glycine clandestina</i> (60)

Ecosystem 3: Bailey's Stringybark

Mid-high to tall forest with an overstorey in which Bailey's Stringybark (*Eucalyptus baileyana*) is co-dominant with Needlebark Stringybark (*E. planchoniana*), and Smudgy Apple (*Angophora*

woodsiana) frequently occurs as a sub-dominant species. There is a dense heath understorey that is dominated by Grass Tree (*Xanthorrhoea latifolia*) and other heath species such as banksias (*Banksia oblongifolia* and *B. spinulosa*), Flat-stemmed Wattle (*Acacia complanata*), *Leptospermum trinervium* and Mountain Devil (*Lambertia formosa*). The ground layer is usually a mixture of grasses, sedges and small shrubs, with Wiry Panic (*Entolasia stricta*), *Persoonia tenuifolia* and Red-fruited Saw-sedge (*Gahnia sieberiana*) occurring frequently.

This ecosystem is widely distributed in the Upper North East on the Clarence-Glenreagh sandstones with the most extensive stands occurring in Fortis Creek National Park.

Upper	Mid	Lower
<i>Eucalyptus baileyana</i> (82), <i>Eucalyptus planchoniana</i> (70), <i>Angophora woodsiana</i> (63), <i>Corymbia gummifera</i> (48)	<i>Xanthorrhoea latifolia</i> (85), <i>Banksia oblongifolia</i> (67), <i>Acacia complanata</i> (68), <i>Leptospermum trinervium</i> (63), <i>Lambertia formosa</i> (56), <i>Pultenaea villosa</i> (56), <i>Persoonia stradbrokeensis</i> (52)	<i>Entolasia stricta</i> (93), <i>Persoonia tenuifolia</i> (70), <i>Gahnia sieberiana</i> (68), <i>Phyllanthus hirtellus</i> (56), <i>Hardenbergia violacea</i> (52)

*Ecosystem 5: Banksia

Generally low to mid-high woodland or open forest with the overstorey clearly dominated by White Banksia (*Banksia integrifolia*) or less commonly Saw Banksia (*B. serrata*). There are two variants of this ecosystem. One occurs on coastal sands and rainforest species such as Lilly Pilly (*Acmena smithii*) and Tuckeroo (*Cupaniopsis anacardioides*) as well as Broad-leaved Paperbark (*Melaleuca quinquenervia*) are sometimes present in the overstorey. The shrubby understorey includes species such as Sydney Golden Wattle (*Acacia longifolia*), Bitou Bush (*Chrysanthemoides monilifera*) and Lantana (*Lantana camara*), while the ground layer includes species such as Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), and Tall Saw-sedge (*Gahnia clarkei*). The other variant occurs at high elevation along the escarpment edge, and emergent or associated tree species include Pink Bloodwood (*Corymbia intermedia*), Silver-top Stringybark (*Eucalyptus laevopinea*), Mountain Ribbon Gum (*E. nobilis*) and Messmate (*E. obliqua*). Understorey shrub and small tree species include Blackwood (*Acacia melanoxylon*), Blackthorn (*Bursaria spinosa*) and *Leucopogon hookeri*, while the ground layer is dominated by Snow Grass (*Poa sieberiana*).

The coastal variant of this ecosystem is well developed on coastal sands in both CRA Regions (e.g. Richmond River and Moonee Beach Nature Reserves, Broadwater, Hat Head and Crowdy Bay National Parks), while the escarpment variant is scattered at higher elevations.

Upper	Mid	Lower
<i>Banksia integrifolia</i> , <i>Banksia serrata</i> , <i>Cupaniopsis anacardioides</i> , <i>Acmena smithii</i> , <i>Corymbia intermedia</i> , <i>Eucalyptus laevopinea</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus obliqua</i>	<i>Acacia longifolia</i> , <i>Chrysanthemoides monilifera</i> , <i>Smilax australis</i> , <i>Acacia melanoxylon</i> , <i>Bursaria spinosa</i> , <i>Leucopogon hookeri</i>	<i>Lomandra longifolia</i> , <i>Pteridium esculentum</i> , <i>Gahnia clarkei</i> , <i>Poa sieberiana</i>

Ecosystem 6: Barrington Dry Shrubby New England Blackbutt-Blue Gum

Mid-high to tall dry forest with an overstorey dominated by New England Blackbutt (*Eucalyptus campanulata*) with Sydney Blue Gum (*E. saligna*) frequently sub-dominant. There is a relatively open midstorey or tall shrub layer dominated by Forest Oak (*Allocasuarina torulosa*) and Narrow-leaved

Geebung (*Persoonia linearis*). The grassy understorey is dominated by Blady Grass (*Imperata cylindrica*), Bracken (*Pteridium esculentum*), Tussock Grass (*Poa labillardieri*), Spiny-headed Mat-rush (*Lomandra longifolia*) and a number of vines and small forbs.

This ecosystem is restricted to the south-western and eastern foothills of the Barrington Tops with the most extensive stand reserved in Mount Royal National Park.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (100), <i>Eucalyptus saligna</i> (78)	<i>Allocasuarina torulosa</i> (78), <i>Persoonia linearis</i> (78)	<i>Imperata cylindrica</i> (100), <i>Glycine clandestina</i> (100), <i>Hibbertia scandens</i> (100), <i>Pteridium esculentum</i> (100), <i>Hardenbergia violacea</i> (89), <i>Lomandra longifolia</i> (89), <i>Desmodium varians</i> (89), <i>Viola betonicifolia</i> (78), <i>Rubus parvifolius</i> (78), <i>Vernonia cinerea</i> (67), <i>Pratia purpurascens</i> (67), <i>Dichondra repens</i> (67), <i>Poa labillardieri</i> (67), <i>Lagenifera stipitata</i> (67), <i>Microlaena stipoides</i> (67), <i>Dianella caerulea</i> (67)

Ecosystem 7: Barrington Moist Blue Gum-White Mahogany

Tall to very tall moist forest with an overstorey dominated by Sydney Blue Gum (*Eucalyptus saligna*) and Narrow-leaved White Mahogany (*E. acmenoides*). The moderately dense shrub layer is dominated by moist or semi-moist species such as Coffee Bush (*Breynia oblongifolia*), Orange Thorn (*Citriobatus pauciflorus*), Guioa (*Guioa semiglauc*), and Scrub Turpentine (*Rhodamnia rubescens*). Vines such as Water Vine (*Cissus antarctica*) and Five-leaf Water Vine (*Cissus hypoglauc*) are common and the understorey contains grasses, forbs and ferns such as Tussock Grass (*Poa labillardieri*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Sickie Ferns (*Pellaea falcata* and *P. paradoxa*).

This ecosystem is mapped and predicted as scattered occurrences from the south-western foothills of the Barrington Tops east to the Myall River and south into the Hunter Valley. It has small stands reserved in Mount Royal and Ghin-doo-ee National Parks and in The Glen Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus saligna</i> (50), <i>Eucalyptus acmenoides</i> (40), <i>Eucalyptus tereticornis</i> (30)	<i>Breynia oblongifolia</i> (90), <i>Cissus hypoglauc</i> (90), <i>Cissus antarctica</i> (70), <i>Allocasuarina torulosa</i> (60), <i>Citriobatus pauciflorus</i> (60), <i>Rapanea variabilis</i> (60), <i>Psychotria loniceroides</i> (60), <i>Guioa semiglauc</i> (60), <i>Persoonia linearis</i> (60)	<i>Dianella caerulea</i> (90), <i>Hibbertia scandens</i> (80), <i>Dichondra repens</i> (70), <i>Lomandra longifolia</i> (70), <i>Pellaea falcata</i> (70), <i>Desmodium varians</i> (70), <i>Poa labillardieri</i> (70), <i>Imperata cylindrica</i> (70)

Ecosystem 8: Barrington Wet New England Blackbutt-Blue Gum

Tall to very tall moist forest with an overstorey dominated by New England Blackbutt (*Eucalyptus campanulata*) and Sydney Blue Gum (*E. saligna*). The shrub layer, although relatively open, contains moist species such as Scentless Rosewood (*Synoum glandulosum*), Hairy Psychotria (*Psychotria loniceroides*) and Socketwood (*Daphnandra* sp. A). The ground layer is a mixture of Spiny-headed Mat-rush (*Lomandra longifolia*), grasses such as Blady Grass (*Imperata cylindrica*), forbs and fern species such as Giant Maidenhair (*Adiantum formosum*), Common Ground Fern (*Calochlaena dubia*), Tender Brake (*Pteris tremula*) and Rasp Fern (*Doodia aspera*).

This ecosystem is mapped and predicted extensively on the south-western and eastern foothills of the Barrington Tops and is reserved in Barrington and Mount Royal National Parks.

Upper	Mid	Lower
<i>Eucalyptus saligna</i> (77), <i>Eucalyptus campanulata</i> (77)	<i>Synoum glandulosum</i> (65), <i>Psychotria loniceroides</i> (59), <i>Cissus hypoglauca</i> (53), <i>Smilax australis</i> (53)	<i>Lomandra longifolia</i> (77), <i>Hibbertia scandens</i> (77), <i>Pteridium esculentum</i> (77), <i>Dianella caerulea</i> (77), <i>Doodia aspera</i> (77), <i>Desmodium varians</i> (65), <i>Eustrephus latifolius</i> (65), <i>Viola hederacea</i> (65), <i>Rubus parvifolius</i> (59),

***Ecosystem 10: Black Sally**

Typically occurs as a low to mid-high woodland with the overstorey dominated by Black Sally (*Eucalyptus stellulata*). Associates include Snow Gum (*E. pauciflora*) and New England Peppermint (*E. nova-anglica*), and in the Warra National Park area Broad-leaved Sally (*E. camphora* ssp *relicta*). The ground layer is often dominated by grasses such as Snow Grass (*Poa sieberiana*) and Tussock Grass (*Poa labillardieri*).

This ecosystem occurs at scattered localities on the Tablelands in both CRA Regions (e.g. Warra and Cathedral Rocks National Parks).

Upper	Lower
<i>Eucalyptus stellulata</i> , <i>Eucalyptus pauciflora</i> , <i>Eucalyptus nova-anglica</i> , <i>Eucalyptus camphora</i> ssp <i>relicta</i>	<i>Poa sieberiana</i> , <i>Poa labillardieri</i>

***Ecosystem 11: Blackbutt-Sydney Peppermint-Smooth-barked Apple**

Tall to very tall forest in which Blackbutt (*Eucalyptus pilularis*), Sydney Peppermint (*E. piperita*) and Smooth-barked Apple (*Angophora costata*) are characteristic dominants in the overstorey. Associates include Swamp Mahogany (*E. robusta*) and Red Bloodwood (*Corymbia gummifera*). Understorey trees and shrubs include tea-tree (*Leptospermum polygalifolium*), paperbarks (e.g. *Melaleuca nodosa*, *M. sieberi*) and egg and bacon peas (e.g. *Pultenaea myrtoidea*, *P. retusa*). Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*), Horned Sedge (*Ptilothrix deusta*) and Common Bog Rush (*Schoenus apogon*) are examples of ground layer species.

This ecosystem occurs in coastal areas of the southern part of the LNE CRA Region (e.g. Wallingat National Park).

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> , <i>Eucalyptus piperita</i> , <i>Angophora costata</i> , <i>Eucalyptus robusta</i> , <i>Corymbia gummifera</i>	<i>Leptospermum polygalifolium</i> , <i>Melaleuca nodosa</i> , <i>Melaleuca sieberi</i> , <i>Pultenaea myrtoidea</i> , <i>Pultenaea retusa</i>	<i>Imperata cylindrica</i> , <i>Themeda australis</i> , <i>Ptilothrix deusta</i> , <i>Schoenus apogon</i>

***Ecosystem 12: Blue Mountain Ash**

Tall to very tall moist forest with the overstorey dominated by Blue Mountain Ash (*Eucalyptus oreades*). Associates include New England Blackbutt (*E. campanulata*) and stringybarks. The understorey may support a variety of rainforest trees, shrubs and vines.

This ecosystem has a scattered distribution along the escarpment in both CRA Regions (e.g. Timbarra and Werrikimbee National Parks).

Upper	Mid
<i>Eucalyptus oreades</i> , <i>Eucalyptus campanulata</i>	<i>Acacia elata</i>

***Ecosystem 13: Blue-leaved Stringybark**

Mid-high to tall forest with the overstorey dominated by Blue-leaved Stringybark (*Eucalyptus agglomerata*). Associates include other stringybarks, Rough-barked Apple (*Angophora floribunda*) and Red Bloodwood (*Corymbia gummifera*).

This ecosystem has very scattered distribution in the LNE CRA Region (e.g. Dooragan National Park near Port Macquarie and near Waucope).

Upper
<i>Eucalyptus agglomerata</i> , <i>Angophora floribunda</i> , <i>Corymbia gummifera</i>

***Ecosystem 14: Brown Barrel**

Very tall to extremely tall moist forest in which Brown Barrel (*Eucalyptus fastigata*) clearly dominates the overstorey. Associates include Mountain Ribbon Gum (*E. nobilis*), Messmate (*E. obliqua*), Narrow-leaved Peppermint (*E. radiata*) and Diehard Stringybark (*E. cameronii*). The understorey may comprise a fairly dense cover of rainforest species, or alternatively sclerophyllous shrubs such as Lance Beard-heath (*Leucopogon lanceolatus*), and the ground layer usually includes Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*) and various forbs.

This ecosystem predominantly occurs in the LNE CRA Region (e.g. Mummel Gulf National Park).

Upper	Mid	Lower
<i>Eucalyptus fastigata</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus obliqua</i> , <i>Eucalyptus radiata</i> , <i>Eucalyptus cameronii</i>	<i>Leucopogon lanceolatus</i>	<i>Poa sieberiana</i> , <i>Lomandra longifolia</i>

***Ecosystem 15: Brown Barrel – Gum**

Very tall to extremely tall moist forest in which Brown Barrel (*Eucalyptus fastigata*) co-dominates the overstorey with a range of associates, for example Mountain Ribbon Gum (*E. nobilis*), Mountain Gum (*E. dalrympleana*), Snow Gum (*E. pauciflora*), Messmate (*E. obliqua*), and New England Blackbutt (*E. campanulata*). Rainforest species including Coachwood (*Ceratopetalum apetalum*), Sassafras (*Doryphora sassafras*) and Antarctic Beech (*Nothofagus moorei*) may occur in the understorey, or alternatively sclerophyllous shrubs such as Silver Wattle (*Acacia dealbata*) and beard-heaths (*Leucopogon hookeri* and *L. lanceolatus*). The ground layer is usually dominated by Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*) and various forbs.

This ecosystem predominantly occurs in the LNE CRA Region (e.g. Mummel Gulf and Barrington Tops National Parks).

Upper	Mid	Lower
<i>Eucalyptus fastigata</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus pauciflora</i> , <i>Eucalyptus obliqua</i> , <i>Eucalyptus campanulata</i>	<i>Ceratopetalum apetalum</i> , <i>Doryphora sassafras</i> , <i>Nothofagus moorei</i> , <i>Acacia dealbata</i> , <i>Leucopogon hookeri</i> , <i>Leucopogon lanceolatus</i>	<i>Poa sieberiana</i> , <i>Lomandra longifolia</i> , <i>Pteridium esculentum</i>

*Ecosystem 16: Bull Oak

Low to mid-high forest dominated by Bull Oak (*Allocasuarina luehmannii*), often as dense stands with few associates and a poorly developed understorey.

This ecosystem has very few isolated occurrences in CRA Regions (Cottan-Bimbang National Park in LNE, and Chaelundi National Park in UNE)

Upper
<i>Allocasuarina luehmannii</i>

*Ecosystem 17: Candlebark

Characteristically a mid-high to tall woodland with a well-developed grassland understorey. Candlebark (*Eucalyptus rubida* ssp *barbigerorum*) dominates the overstorey, although associates may include Snow Gum (*E. pauciflora*), Manna Gum (*E. viminalis*) and New England Peppermint (*E. nova-anglica*).

Eucalyptus rubida ssp *barbigerorum* is listed on the Schedules of the *Threatened Species Conservation Act* as Vulnerable.

This ecosystem occurs at scattered localities on the Tablelands of the Upper CRA Region (e.g. Capoompeta NP).

Upper	Lower
<i>Eucalyptus rubida</i> ssp <i>barbigerorum</i> , <i>Eucalyptus pauciflora</i> , <i>Eucalyptus viminalis</i> , <i>Eucalyptus nova-anglica</i>	<i>Poa sieberiana</i>

*Ecosystem 18: Casuarina woodland

Low to mid-high woodland and forest, with Black Oak (*Allocasuarina littoralis*) clearly dominant in the overstorey. Minor associates (sometimes emergent) include Rough-barked Apple (*Angophora floribunda*), White Banksia (*Banksia integrifolia*), Forest Red Gum (*Eucalyptus tereticornis*), Snow Gum (*E. pauciflora*) and Wattle-leaved Peppermint (*E. acaciiformis*). Examples of understorey shrubs are banksias (e.g. *Banksia oblongifolia*, *B. spinulosa*), geebungs (*Persoonia* spp.) and Epacrids (e.g. *Leucopogon lanceolatus*). Ground layer species include Kangaroo Grass (*Themeda australis*), mat-rushes (*Lomandra* spp.), Wiry Panic (*Entolasia stricta*), Bracken (*Pteridium esculentum*), Horned Sedge (*Ptilothrix deusta*) and sword sedges (*Lepidosperma* spp.).

This ecosystem has several variants depending on location, and a scattered distribution in both CRA Regions, and extends from sea level to the Tablelands (e.g. Werrikimbe and Yuraygir National Parks, Kattang Nature Reserve).

Upper	Mid	Lower
<i>Allocasuarina littoralis</i> , <i>Angophora floribunda</i> , <i>Eucalyptus tereticornis</i> , <i>Eucalyptus acaciiformis</i> , <i>Eucalyptus pauciflora</i> , <i>Banksia integrifolia</i>	<i>Banksia oblongifolia</i> , <i>Banksia spinulosa</i> , <i>Persoonia</i> spp., <i>Leucopogon lanceolatus</i>	<i>Themeda australis</i> , <i>Lomandra longifolia</i> , <i>Entolasia stricta</i> , <i>Pteridium esculentum</i> , <i>Ptilothrix deusta</i> , <i>Lepidosperma</i> spp.

Ecosystem 19: Central Mid Elevation Sydney Blue Gum

Tall to extremely tall moist forest with an overstorey dominated by Sydney Blue Gum (*Eucalyptus saligna*) and with Tallowwood (*E. microcorys*) frequently present as a sub-dominant species. The

understorey is generally dense and contains shrub species such as Orange Thorn (*Citriobatus pauciflorus*) and Tree Heath (*Trochocarpa laurina*), as well as one or more of the warm temperate rainforest species Corkwood (*Caldcluvia paniculosa*), Coachwood (*Ceratopetalum apetalum*) or Crabapple (*Schizomeria ovata*). The ground layer is a mix of forbs, ferns and vines such as Blue Flax Lily (*Dianella caerulea*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Climbing Guinea Flower (*Hibbertia scandens*).

This ecosystem occurs on the escarpment ranges from the Nymboida River in the north to the Barrington Tops in the south. It is reserved in Nymboi-Binderay and Cottan-Bimbang National Parks.

Upper	Mid	Lower
<i>Eucalyptus saligna</i> (91)	<i>Cissus hypoglauca</i> (65), <i>Smilax australis</i> (65), <i>Persoonia media</i> (52), <i>Citriobatus pauciflorus</i> (52), <i>Trochocarpa laurina</i> (52).	<i>Dianella caerulea</i> (65), <i>Lomandra longifolia</i> (65), <i>Hibbertia scandens</i> (65), <i>Geitonoplesium cymosum</i> (61).

Ecosystem 20: Clarence Lowland Needlebark Stringybark

Mid-high to tall dry forest which is dominated by Needlebark Stringybark (*Eucalyptus planchoniana*) or Turpentine (*Syncarpia glomulifera*) with Red Bloodwood (*Corymbia gummifera*) sometimes occurring as a sub-dominant species. This ecosystem has a very dense heathy understorey that is dominated by banksias (*Banksia oblongifolia* and *B. spinulosa*), tea-trees (*Leptospermum trinervium* and *L. polygalifolium*), Geebung (*Persoonia stradbokensis*) and Mountain Devil (*Lambertia formosa*). The ground layer is a mix of grasses, forbs and ferns with frequently occurring species including Wiry Panic (*Entolasia stricta*), Patersonia sericea, and Bracken (*Pteridium esculentum*).

This ecosystem is restricted to the sandstones and associated geologies of the Coast Range in the Lower Clarence area. It is reserved in Yuraygir National Park and Sherwood Nature Reserve.

Upper	Mid	Lower
<i>Syncarpia glomulifera</i> (58), <i>E. planchoniana</i> (37),	<i>Leptospermum polygalifolium</i> (90), <i>Banksia oblongifolia</i> (84), <i>Banksia spinulosa</i> (68), <i>Persoonia stradbokensis</i> (68), <i>Lambertia formosa</i> (63), <i>Lomatia silaifolia</i> (58), <i>Leucopogon lanceolata</i> (58), <i>Ceratopetalum gummifera</i> (47)	<i>Pimelia linifolia</i> (90), <i>Entolasia stricta</i> (74), <i>Gompholobium pinnatum</i> (74), <i>Patersonia sericea</i> (68), <i>Pteridium esculentum</i> (58), <i>Lepidosperma laterale</i> (58)

Ecosystem 21: Lowlands Grey Box

Tall to very tall forest in which Grey Box (*Eucalyptus moluccana*) and Grey Ironbark (*E. siderophloia*) are generally co-dominant with Swamp Box (*Lophostemon suaveolens*) also frequently occurring as a sub-dominant species. This ecosystem an open understorey of Red Ash (*Alphitonia excelsa*) and Lantana (*Lantana camara*), and has a ground layer dominated by a variety of small forbs and grasses with the most prominent being Blady Grass (*Imperata cylindrica*), Barbed Wire Grass (*Cymbopogon refractus*) and Kangaroo Grass (*Themeda australis*).

This ecosystem is predicted extensively in valleys of the Clarence-Moreton Basin from the lower Clarence Valley around Glenreagh-Coaldale north to the Koreelah Valley. The ecosystem is very restricted on public land with the most notable occurrence in Braemar State Forest.

Upper	Mid	Lower
<i>Eucalyptus moluccana</i> (100), <i>Eucalyptus siderophloia</i> (100), <i>Lophostemon suaveolens</i> (75)	<i>Alphitonia excelsa</i> (100), <i>Lantana camara</i> (63)	<i>Imperata cylindrica</i> (100), <i>Aristida vagans</i> (78), <i>Jasminum suavissimum</i> (78), <i>Cymbopogon refractus</i> (75), <i>Cheilanthes sieberi</i> (75), <i>Themeda australis</i> (75), <i>Dichondra repens</i> (63), <i>Oplismenus aemulus</i> (63), <i>Panicum simile</i> (63), <i>Eustrephus latifolius</i> (63)

*Ecosystem 22: Coast Cypress Pine

Mid-high to tall dry forest in which Coast Cypress Pine (*Callitris columellaris*) clearly dominates the overstorey, and associates include Smooth-barked Apple (*Angophora costata*), Narrow-leaved Apple (*Angophora paludosa*), Saw Banksia (*Banksia serrata*), White Banksia (*B. integrifolia*) and Pink Bloodwood (*Corymbia intermedia*). Understorey species include wattles (e.g. *Acacia suaveolens*, *A. ulicifolia*), banksias (*Banksia aemula*, *B. serrata*) and Black Oak (*Allocasuarina littoralis*). The ground layer is often sparse due to heavy shading, but Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*) and Spiny-headed Mat-rush (*Lomandra longifolia*) are often present.

This ecosystem occurs on coastal sand masses in the Upper CRA Region (e.g. Broadwater and Yuraygir National Parks).

Upper	Mid	Lower
<i>Callitris columellaris</i> , <i>Angophora costata</i> , <i>Angophora paludosa</i> , <i>Banksia serrata</i> , <i>Banksia integrifolia</i> , <i>Corymbia intermedia</i>	<i>Acacia suaveolens</i> , <i>Acacia ulicifolia</i> , <i>Banksia aemula</i> , <i>Banksia serrata</i> , <i>Allocasuarina littoralis</i>	<i>Imperata cylindrica</i> , <i>Themeda australis</i> , <i>Lomandra longifolia</i> .

Ecosystem 23: Coast Range Bloodwood-Mahogany

Tall to very tall dry forest dominated by Red Mahogany (*Eucalyptus resinifera*), Pink Bloodwood (*Corymbia intermedia*) or Smudgy Apple (*Angophora woodsiana*). There is usually a midstorey of Forest Oak (*Allocasuarina torulosa*) and a dry shrubby understorey dominated by various egg and bacon peas (*Pultenaea* spp.), Geebung (*Persoonia stradbokensis*), and Riceflower (*Pimelea linifolia*). The ground layer is dominated by grasses such as Wiry Panic (*Entolasia stricta*), mat-rushes (*Lomandra* spp.), Bracken (*Pteridium esculentum*), and various forbs.

This ecosystem is restricted to the sandstones and associated geologies of the Coast Range in the lower Clarence Valley north of the Corindi River. It is reserved in Yuraygir National Park.

Upper	Mid	Lower
<i>Corymbia intermedia</i> (50), <i>Angophora woodsiana</i> (40)	<i>Allocasuarina torulosa</i> (80), <i>Pimelea linifolia</i> (80), <i>Persoonia stradbokensis</i> (80), <i>Gompholobium pinnatum</i> (70), <i>Leucopogon lanceolatus</i> (50)	<i>Entolasia stricta</i> (90), <i>Cymbopogon refractus</i> (80), <i>Dianella caerulea</i> (80), <i>Imperata cylindrica</i> (80), <i>Lepidosperma laterale</i> (70), <i>Pratia purpurascens</i> (70), <i>Panicum simile</i> (70), <i>Digitaria parviflora</i> (60), <i>Patersonia glabrata</i> (60), <i>Aristida vagans</i> (60)

Ecosystem 24: Clarence Lowlands Spotted Gum

Tall to very tall dry forest which is dominated by a Spotted Gum (*Corymbia henryi* or *C. variegata*) and Grey Ironbark (*Eucalyptus siderophloia*), and often includes Small-fruited Grey Gum (*E. propinqua*) as a sub-dominant. The ecosystem has a midstorey of Forest Oak (*Allocasuarina torulosa*) and is mostly lacking a shrub layer. There is a grassy ground layer dominated by Blady Grass

(*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*) and Barbed Wire Grass (*Cymbopogon refractus*) along with various forbs and slender vines.

This ecosystem is extensively mapped and predicted on the foothills and lowlands of the Clarence-Moreton Basin and extending north along the Richmond Range. It is reserved in Ramornie and Richmond Range National Parks.

Upper	Mid	Lower
<i>Eucalyptus siderophloia</i> (60), <i>Corymbia henryi</i> (43), <i>Eucalyptus propinqua</i> (43), <i>Corymbia variegata</i> (40), <i>Corymbia intermedia</i> (40)	<i>Allocasuarina torulosa</i> (61)	<i>Imperata cylindrica</i> (79), <i>Cymbopogon refractus</i> (75), <i>Pratia purpurascens</i> (71), <i>Desmodium rhytidophyllum</i> (68), <i>Eustrephus latifolius</i> (68), <i>Hardenbergia violacea</i> (68), <i>Glycine clandestina</i> (64), <i>Vernonia cinerea</i> (61), <i>Aristida vagans</i> (57), <i>Lomandra longifolia</i> (57), <i>Themeda australis</i> (54), <i>Cheilanthes sieberi</i> (54), <i>Dianella caerulea</i> (54)

Ecosystem 25: Coast Range Spotted Gum-Blackbutt

Tall to very tall dry forest characterised by a Spotted Gum (*Corymbia henryi* or *C. variegata*) occurring as a co-dominant with either Large-fruited Blackbutt (*Eucalyptus pyrocarpa*), Blackbutt (*E. pilularis*) or Tallowwood (*E. microcorys*). There is usually a midstorey of Forest Oak (*Allocasuarina torulosa*) and shrub layer is sparse. The ground layer is a mixture of grasses and forbs such as Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*), False Sarsaparilla (*Hardenbergia violacea*) and Kangaroo Grass (*Themeda australis*).

This ecosystem has a very restricted and patchy distribution along the Coast Range in the lower Clarence Valley, with a disjunct western occurrence in Grange State Forest. A single stand is reserved in Yuraygir National Park.

Upper	Mid	Lower
<i>Corymbia variegata</i> (77), <i>Eucalyptus microcorys</i> (56), <i>Syncarpia glomulifera</i> (56), <i>Eucalyptus pilularis</i> (56), <i>Angophora costata</i> (44), <i>Eucalyptus pyrocarpa</i> (44)	<i>Allocasuarina torulosa</i> (78), <i>Leucopogon lanceolatus</i> (56)	<i>Imperata cylindrica</i> (100), <i>Dianella caerulea</i> (100), <i>Hardenbergia violacea</i> (78), <i>Glycine clandestina</i> (67), <i>Themeda australis</i> (56), <i>Entolasia stricta</i> (57),

Ecosystem 26: Coastal Flooded Gum

Very tall to extremely tall wet forest which is dominated by Flooded Gum (*Eucalyptus grandis*), Brush Box (*Lophostemon confertus*) and Tallowwood (*E. microcorys*). The ecosystem has a subtropical rainforest understorey which includes species such as Bangalow Palm (*Archontophoenix cunninghamii*) and Celery Wood (*Polyscias elegans*), along with a great diversity of other rainforest species. Vines such as Water Vine (*Cissus antarctica*) and Native Yam (*Dioscorea transversa*) are common, and the ground layer is dominated by Rasp Fern (*Doodia aspera*), *Oplismenus aemulus* and Giant Maidenhair (*Adiantum formosum*).

This ecosystem is distributed extensively on the Richmond and Tweed Ranges with scattered occurrences on other near coastal ranges south to Bulahdelah. Major occurrences are protected in Mebbin and Toonumbar National Parks.

Upper	Mid	Lower
<i>Eucalyptus grandis</i> (75), <i>Lophostemon confertus</i> (75)	<i>Neolitsea dealbata</i> (75), <i>Polyscias elegans</i> (75), <i>Smilax australis</i> (75), <i>Cissus antarctica</i> (75), <i>Dioscorea transversa</i> (67), <i>Synoum glandulosum</i> (67), <i>Archontophoenix cunninghamiana</i> (67), <i>Citriobatus pauciflorus</i> (67), <i>Guioa semiglauca</i> (67), <i>Alpinia caerulea</i> (58), <i>Linospadix monostachya</i> (58), <i>Mallotus philippensis</i> (58), <i>Ripogonum elseyanum</i> (58), <i>Sarcopteryx stipata</i> (58)	<i>Doodia aspera</i> (75), <i>Oplismenus imbecillis</i> (58)

Ecosystem 27: Coastal Sands Blackbutt

Tall to very tall forest dominated by Blackbutt (*Eucalyptus pilularis*) which often includes Needlebark Stringybark (*E. planchoniana*) and/or Smooth-barked Apple (*Angophora costata*) as sub-dominants. The ecosystem contains a relatively dense heathy shrub layer which includes various wattles (*Acacia* spp.), Wallum Banksia (*Banksia aemula*), Lance Beard Heath (*Leucopogon lanceolatus*) and grass trees (*Xanthorrhoea* spp.). The ground layer is dominated by the small shrub *Hibbertia vestita*, Bracken (*Pteridium esculentum*) and Feather Plant (*Baloskion tetraphyllum*).

This ecosystem is mapped and predicted on coastal sands from the Esk River south to the Hunter River. Significant stands are reserved in Yuraygir and Myall Lakes National Parks.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (64), <i>Eucalyptus planchoniana</i> (57), <i>Angophora costata</i> (57)	<i>Persoonia virgata</i> (79), <i>Leucopogon lanceolatus</i> (64), <i>Banksia aemula</i> (50), <i>Xanthorrhoea latifolia</i> (43)	<i>Hibbertia vestita</i> (71), <i>Pteridium esculentum</i> (64), <i>Baloskion tetraphyllum</i> (64)

Ecosystem 28: Cool Moist Messmate

Very tall to extremely tall wet forest dominated by Messmate (*Eucalyptus obliqua*) with occasional occurrences of Silver-top Stringybark (*E. laevopinea*) and Diehard Stringybark (*E. cameronii*). The understorey is a well developed layer of species often associated with warm temperate rainforest such as Corkwood (*Caldcluvia paniculosa*), Crabapple (*Schizomeria ovata*), Sassafras (*Doryphora sassafras*) and Rough Tree Fern (*Cyathea australis*). Vines such as Sarsaparilla (*Smilax australis*) and Five-leaf Water Vine (*Cissus hypoglaucula*) are common. The ground layer is a mix of forbs, slender vines and grasses with *Dyrmophila moorei*, Spiny-headed Mat-rush (*Lomandra longifolia*), Climbing Guinea Flower (*Hibbertia scandens*), Gristle Fern (*Blechnum cartilagineum*) and Snow Grass (*Poa sieberiana*) common.

This ecosystem is restricted to high elevations on the eastern edge of the New England Tablelands south-east of Walcha. A stand is reserved in Mummel Gulf National Park.

Upper	Mid	Lower
<i>Eucalyptus obliqua</i> (83)	<i>Cyathea australis</i> (100), <i>Smilax australis</i> (100), <i>Tasmannia insipida</i> (83), <i>Acacia melanoxylon</i> (67), <i>Bursaria spinosa</i> (67), <i>Caldcluvia paniculosa</i> (67), <i>Cissus hypoglaucula</i> (67), <i>Elaeocarpus reticulatus</i> (67), <i>Schizomeria ovata</i> (50), <i>Doryphora sassafras</i> (50), <i>Ceratopetalum apetalum</i> (50)	<i>Dyrmophila moorei</i> (100), <i>Lomandra longifolia</i> (83), <i>Hibbertia scandens</i> (83), <i>Pteridium esculentum</i> (67), <i>Eustrephus latifolius</i> (67), <i>Blechnum cartilagineum</i> (67), <i>Poa sieberiana</i> (67)

Ecosystem 29: Corkwood-Crabapple and Mixed Stringybarks.

Very tall to extremely tall wet forest with a canopy comprised of Silver-top Stringybark (*Eucalyptus laevopinea*), Sydney Blue Gum (*E. saligna*), Tallowwood (*E. microcorys*) and/or New England Blackbutt (*E. campanulata*) and a well-developed warm temperate rainforest understorey dominated by Corkwood (*Caldcluvia paniculosa*) and Crabapple (*Schizomeria ovata*). Vines are common in the understorey, and the ground layer comprises mainly ferns and forbs such as Gistle Fern (*Blechnum cartilagineum*), Native Violet (*Viola hederacea*), Common Ground Fern (*Calochlaena dubia*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem occurs on the eastern rim of the New England Tablelands from Tenterfield south to the Barnard River. It is reserved in the western portion of Washpool National Park and in Mummel Gulf National Park.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (50), <i>Eucalyptus saligna</i> (50), <i>Eucalyptus laevopinea</i> (42), <i>Eucalyptus campanulata</i> (42)	<i>Cryptocarya rigida</i> (83), <i>Caldcluvia paniculosa</i> (75), <i>Cephalalaria cephalobotrys</i> (75), <i>Cissus hypoglauca</i> (75), <i>Synoum glandulosum</i> (75), <i>Trochocarpa laurina</i> (75), <i>Schizomeria ovata</i> (75), <i>Cyathea australis</i> (75), <i>Cissus antarctica</i> (67), <i>Tasmannia insipida</i> (67), <i>Psychotria loniceroides</i> (67), <i>Smilax australis</i> (67), <i>Endiandra sieberi</i> (58), <i>Pittosporum revolutum</i> (50)	<i>Blechnum cartilagineum</i> (75), <i>Hibbertia scandens</i> (67), <i>Viola hederacea</i> (67), <i>Calochlaena dubia</i> (67), <i>Dianella caerulea</i> (67), <i>Lomandra spicata</i> (67), <i>Morinda jasminoides</i> (58), <i>Geitonoplesium cymosum</i> (58), <i>Gymnostachys anceps</i> (58), <i>Hibbertia dentata</i> (58), <i>Dictymia brownii</i> (58)

Ecosystem 30: Diehard Stringybark-New England Blackbutt

Tall to very tall forest dominated by New England Blackbutt (*Eucalyptus campanulata*) usually with Diehard Stringybark (*E. cameronii*) as a sub-dominant. The ecosystem contains a relatively open shrubby understorey which is dominated by Lance Beard Heath (*Leucopogon lanceolatus*), *Persoonia media*, and Prickly Shaggy Pea (*Podolobium ilicifolium*). The ground layer is dominated by Bracken (*Pteridium esculentum*), Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem occurs on the eastern edge and fall of the New England Tablelands from the Doyles River north to the Styx River and is concentrated around Mount Seaview and Mount Werrikimbe. The ecosystem is reserved in Werrikimbe, Carrai and Cottan-Bimbang National Parks.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (89), <i>Eucalyptus cameronii</i> (61)	<i>Leucopogon lanceolatus</i> (80), <i>Persoonia linearis</i> (61), <i>Podolobium ilicifolium</i> (59), <i>Persoonia media</i> (47)	<i>Lomandra longifolia</i> (96), <i>Pteridium esculentum</i> (89), <i>Poa sieberiana</i> (78), <i>Dianella caerulea</i> (67), <i>Hibbertia scandens</i> (65), <i>Billardiera scandens</i> (57), <i>Hibbertia dentata</i> (52)

*Ecosystem 31: Dorrigo White Gum

Tall to very tall woodland and forest in which Dorrigo White Gum (*Eucalyptus dorrigoensis*) is usually present and often dominant in the overstorey. Associated overstorey species include Forest Red Gum (*E. tereticornis*), Sydney Blue Gum (*E. saligna*), Tallowwood (*E. microcorys*) and New England Blackbutt (*E. campanulata*). The understorey may include oaks (*Allocasuarina littoralis*, *A. torulosa*), Port Jackson Cypress Pine (*Callitris rhomboidea*), wattles (*Acacia* spp.), grass trees (*Xanthorrhoea* spp.) and various sclerophyllous shrubs. The ground layer is mainly grasses and forbs.

This ecosystem is concentrated near the boundary of both CRA Regions (e.g. Nymboi-Binderay and Guy Fawkes River National Parks).

Upper	Mid
<i>Eucalyptus dorrigoensis</i> , <i>Eucalyptus tereticornis</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus microcorys</i> , <i>Eucalyptus campanulata</i> ,	<i>Allocasuarina littoralis</i> , <i>Allocasuarina torulosa</i> , <i>Callitris rhomboidea</i> , <i>Acacia</i> spp. <i>Xanthorrhoea</i> spp.

Ecosystem 32: Dry Foothills Blackbutt-Turpentine

Tall to very tall forest dominated by Blackbutt (*Eucalyptus pilularis*) and Turpentine (*Syncarpia glomulifera*) with Tallowwood (*E. microcorys*) sometimes an associate. There is usually a midstorey of Forest Oak (*Allocasuarina torulosa*) and a sparse, patchy shrub layer which usually includes Elderberry *Panax* (*Polyscias sambucifolia*) and Tree Heath (*Trochocarpa laurina*). The ground layer is dominated by Blue Flax Lily (*Dianella caerulea*), Climbing Guinea Flower (*Hibbertia scandens*), Bracken (*Pteridium esculentum*), Blady Grass (*Imperata cylindrica*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem is patchily distributed in coastal foothills and escarpment ranges from Dingo Tops north the Corindi River. It is reserved in Ulidarra, Willi Willi and Kumbatine National Parks.

Upper	Mid	Lower
<i>Syncarpia glomulifera</i> (92), <i>Eucalyptus pilularis</i> (80), <i>Eucalyptus microcorys</i> (52)	<i>Allocasuarina torulosa</i> (92), <i>Polyscias sambucifolia</i> (72), <i>Smilax australis</i> (64), <i>Cissus hypoglauca</i> (60), <i>Trochocarpa laurina</i> (60)	<i>Dianella caerulea</i> (92), <i>Hibbertia scandens</i> (76), <i>Lomandra longifolia</i> (64), <i>Pteridium esculentum</i> (56), <i>Imperata cylindrica</i> (52), <i>Pandorea pandorana</i> (52)

Ecosystem 33: Dry Foothills Spotted Gum

Tall to very tall forest dominated by Spotted Gum (*Corymbia variegata* or *C. maculata*) with Grey Ironbark (*Eucalyptus siderophloia*) and Broad-leaved White Mahogany (*E. carnea*) frequently occurring as sub-dominants. The ecosystem has a midstorey of Forest Oak (*Allocasuarina torulosa*) and generally an open shrub layer. The ground layer is dominated by Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*) and Blue Flax Lily (*Dianella caerulea*) with a diversity of other small forbs and slender twiners.

This ecosystem is predominantly distributed on the ranges and foothills of the Great Escarpment from the Guy Fawkes and Nymboida River gorges east to the Orara Valley with northern extensions to the Cataract River. It also occurs further south in the LNE CRA area. Large areas are reserved in Chaelundi and Nymboi-Binderay National Parks.

Upper	Mid	Lower
<i>Corymbia variegata</i> (86), <i>Eucalyptus siderophloia</i> (69), <i>Eucalyptus carnea</i> (61), <i>Eucalyptus microcorys</i> (59)	<i>Allocasuarina torulosa</i> (92), <i>Breynia oblongifolia</i> (61)	<i>Dianella caerulea</i> (92), <i>Hardenbergia violacea</i> (75), <i>Imperata cylindrica</i> (74), <i>Glycine clandestina</i> (72), <i>Desmodium rhytidophyllum</i> (72), <i>Vernonia cinerea</i> (71), <i>Oplismenus aemulus</i> (71), <i>Eustrephus latifolius</i> (69), <i>Pratia purpurascens</i> (69), <i>Sigesbeckia orientalis</i> (59), <i>Lomandra filiformis</i> (56), <i>Dichondra repens</i> (56)

Ecosystem 34: Dry Grassy Blackbutt-Tallowwood

Tall to very tall forest dominated by Blackbutt (*Eucalyptus pilularis*) with Tallowwood (*E. microcorys*) occurring as a sub-dominant. There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and there is often an open shrub layer of species such as Coffee Bush (*Breynia oblongifolia*), Hopbush (*Dodonea triquetra*) and White Dogwood (*Ozothamnus diosmifolius*). The ground layer is dominated by Blady Grass (*Imperata cylindrica*), Bracken (*Pteridium esculentum*), Kangaroo Grass (*Themeda australis*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem is concentrated on coastal lowlands and foothills of the Nambucca and Macleay Valleys, although it is also scattered more patchily from the Myall Lakes north to the Wooli River. It is reserved in Wallingat National Park, and Khappingat and Ngambaa Nature Reserves.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (90), <i>Eucalyptus microcorys</i> (90)	<i>Allocasuarina torulosa</i> (90), <i>Breynia oblongifolia</i> (90), <i>Ozothamnus diosmifolius</i> (53)	<i>Imperata cylindrica</i> (90), <i>Lomandra longifolia</i> (74), <i>Pteridium esculentum</i> (74), <i>Vernonia cinerea</i> (68), <i>Glycine clandestina</i> (68), <i>Lepidosperma laterale</i> (68), <i>Themeda australis</i> (63), <i>Hardenbergia violacea</i> (63)

Ecosystem 35: Dry Grassy Stringybark

Mid-high to tall forest or woodland dominated by one or more stringybark or rough-barked eucalypt species. There is usually a sparse Forest Oak (*Allocasuarina torulosa*) midstorey and occasional shrubs. The ground layer is predominantly grassy, dominated by Snow Grass (*Poa sieberiana*) and Blady Grass (*Imperata cylindrica*), along with forbs such as Blue Flax Lily (*Dianella caerulea*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem is distributed throughout the dry rugged gorges of the Great Escarpment from the Cataract River through the Guy Fawkes River gorge and south to the Barnard River. It is reserved in Washpool, Barool, Guy Fawkes River and Oxley Wild Rivers National Parks.

Upper	Lower
<i>Eucalyptus campanulata</i> (45), <i>Eucalyptus caliginosa</i> (26), <i>Eucalyptus microcorys</i> (24), <i>Eucalyptus cameronii</i> (24), <i>Eucalyptus biturbinata</i> (24)	<i>Dianella caerulea</i> (74), <i>Lomandra longifolia</i> (74), <i>Poa sieberiana</i> (69), <i>Imperata cylindrica</i> (60)

Ecosystem 36: Dry Grassy Tallowwood-Grey Gum

Tall to very tall forest which generally includes a mixed canopy of species such as Tallowwood (*Eucalyptus microcorys*), Small-fruited Grey Gum (*E. propinqua*), Grey Ironbark (*E. siderophloia*), Broad-leaved White Mahogany (*E. carnea*) and Turpentine (*Syncarpia glomulifera*). This ecosystem has a midstorey of Forest Oak (*Allocasuarina torulosa*) and a scattered shrub layer of species such as Coffee Bush (*Breynia oblongifolia*) and Lantana (*Lantana camara*). The ground layer is a mixture of forbs and grasses with species such as Blue Flax Lily (*Dianella caerulea*), Spiny-headed Mat-rush (*Lomandra longifolia*), Climbing Guinea Flower (*Hibbertia scandens*), Kangaroo Grass (*Themeda australis*) and Blady Grass (*Imperata cylindrica*) common.

This ecosystem is distributed throughout the coastal lowlands and foothills of the mid-north coast from the Manning Valley north to the Corindi River. Extensive stands are protected in Kumbatine and Bago Bluff National Parks and Ngambaa Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (70), <i>Eucalyptus proprinqua</i> (67), <i>Eucalyptus siderophloia</i> (63), <i>Syncarpia glomulifera</i> (61), <i>Eucalyptus carnea</i> (61), <i>Corymbia intermedia</i> (58)	<i>Allocasuarina torulosa</i> (87), <i>Breynia oblongifolia</i> (70), <i>Lantana camara</i> (54), <i>Smilax australis</i> (54), <i>Solanum densevestitum</i> (54)	<i>Dianella caerulea</i> (93), <i>Lomandra</i> <i>longifolia</i> (82), <i>Imperata</i> <i>cylindrica</i> (78), <i>Glycine</i> <i>clandestina</i> (67), <i>Hibbertia</i> <i>scandens</i> (67), <i>Vernonia cinerea</i> (63), <i>Desmodium rhytidophyllum</i> (57), <i>Pseuderantherum variabile</i> (57), <i>Themeda australis</i> (56), <i>Desmodium varians</i> (53)

Ecosystem 37: Dry Heathy Blackbutt - Bloodwood

Tall to very tall forest in which Blackbutt (*Eucalyptus pilularis*) is dominant and Red Bloodwood (*Corymbia gummifera*) and Red Mahogany (*Eucalyptus resinifera*) occur as sub-dominants. This ecosystem has a moderately dense understorey composed of predominantly heathy shrubs elements such as banksias (*Banksia* spp.), egg and bacon peas (*Pultenaea* spp.), Rice Flower (*Pimelea linifolia*) and Geebung (*Persoonia stradbokensis*). The ground layer is a mixture of forbs, ferns and grasses such as Wiry Panic (*Entolasia stricta*), Blue Flax Lily (*Dianella caerulea*) and Bracken (*Pteridium esculentum*).

This ecosystem is concentrated on the Clarence-Glenreagh sandstones from Mt Belmore east to the ocean. It is protected in Yuraygir National Park and Mount Neville Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> , <i>Eucalyptus resinifera</i> , <i>Corymbia gummifera</i> , <i>Syncarpia glomulifera</i> (53), <i>Corymbia</i> <i>intermedia</i> (38)	<i>Pimelea linifolia</i> (69), <i>Persoonia stradbokensis</i> (69), <i>Leucopogon</i> <i>lanceolatus</i> (55), <i>Hibbertia</i> <i>vestita</i> (52), <i>Gompholobium</i> <i>pinnatum</i> (50)	<i>Entolasia stricta</i> (93), <i>Imperata</i> <i>cylindrica</i> (76), <i>Dianella caerulea</i> (72), <i>Pteridium esculentum</i> (64), <i>Lepidosperma laterale</i> (64), <i>Lomandra longifolia</i> (62), <i>Themeda</i> <i>australis</i> (60), <i>Panicum simile</i> (60), <i>Glycine clandestina</i> (57)

Ecosystem 38: Dry Heathy New England Blackbutt

Mid-high to tall woodland or forest in which New England Blackbutt (*Eucalyptus campanulata*) is associated with Diehard Stringybark (*E. cameronii*) or a peppermint (*E. acaciaformis* or *E. radiata*). There is usually a midlayer of oak (*Allocasuarina littoralis* or *A. torulosa*) and a moderately dense shrub understorey dominated by heath plants such as *Monotoca scoparia*, Conestick (*Petrophile canescens*) and Jam Tarts (*Melichrus procumbens*). The ground layer is a mix of forbs and grasses with *Goodenia bellidifolia*, Mat-rush (*Lomandra filiformis*), Snow Grass (*Poa sieberiana*) and Kangaroo Grass (*Themeda australis*) common.

This ecosystem is distributed on granitic geologies around Boonoo Boonoo, on the Timbarra Plateau and the Gibraltar Range. It is reserved in Gibraltar Range National Park.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (75), <i>Eucalyptus radiata</i> (50), <i>Eucalyptus cameronii</i> (50), <i>Eucalyptus dalrympleana</i> (50)	<i>Monotoca scoparia</i> (75), <i>Petrophile canescens</i> (50), <i>Pimelea linifolia</i> (50), <i>Melichrus procumbens</i> (50), <i>Hovea linearis</i> (50)	<i>Goodenia bellidifolia</i> (75), <i>Pratia purpurascens</i> (75), <i>Lomandra filiformis</i> (75), <i>Themeda australis</i> (50), <i>Poa</i> <i>sieberiana</i> (50)

Ecosystem 39: Dry Heathy New England Stringybarks

Mid-high to tall woodland or forest which has a mixed canopy comprised of one or more of New England Blackbutt (*Eucalyptus campanulata*), Diehard Stringybark (*E. cameronii*), *E. olida* and Privet-leaved Mallee (*E. ligustrina*). There is usually a dense heathy understorey with *Hakea dactyloides*, Paper-barked Tea-tree (*Leptospermum trinervium*), *Monotoca scoparia* and *Persoonia rufa* common. The ground layer is a mix of grasses, forbs and sedges such as Wiry Panic (*Entolasia stricta*), Blue Flax Lily (*Dianella caerulea*) and Sword Sedge (*Lepidosperma laterale*).

This ecosystem is confined to coarse granites in Gibraltar Range National Park.

Upper	Mid	Lower
<i>Eucalyptus cameronii</i> (57), <i>Eucalyptus campanulata</i> (43), <i>Eucalyptus ligustrina</i> (43), <i>Eucalyptus williamsianus</i> (29), <i>Eucalyptus cameronii</i> (29)	<i>Hakea dactyloides</i> (86), <i>Leptospermum trinervium</i> (71), <i>Pimelea linifolia</i> (71), <i>Monotoca scoparia</i> (71), <i>Persoonia rufa</i> (71), <i>Bossiaea neo-anglica</i> (71), <i>Mirbelia speciosa</i> (57), <i>Petrophile canescens</i> (57), <i>Acacia barringtonensis</i> (57)	<i>Entolasia stricta</i> (86), <i>Dianella caerulea</i> (71), <i>Lepidosperma laterale</i> (71), <i>Lomandra longifolia</i> (71), <i>Goodenia hederacea</i> (71), <i>Dampiera stricta</i> (57), <i>Poa sieberiana</i> (57)

Ecosystem 40: Dry Heathy Sandstone Blackbutt

Tall to very tall forest dominated by Blackbutt (*Eucalyptus pilularis*) usually occurring in association with Turpentine (*Syncarpia glomulifera*). There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and a dry shrubby understorey which includes species such as Tree Heath (*Trochocarpa laurina*), wattles (*Acacia irrorata* and *A. melanoxylon*) and Geebung (*Persoonia stradbrokeensis*). The ground layer is comprised of various forbs, sedges and grasses such as Blue Flax Lily (*Dianella caerulea*), Sword Sedge (*Lepidosperma laterale*) and Three-awned Grass (*Aristida vagans*).

This ecosystem is distributed on sandstone geologies of the Clarence-Moreton Basin from the southern Richmond Range east to the Coast Range. Large stands are reserved in Mount Neville Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (50), <i>Syncarpia glomulifera</i> (50)	<i>Persoonia stradbrokeensis</i> (88), <i>Trochocarpa laurina</i> (83), <i>Monotoca scoparia</i> (63), <i>Allocasuarina torulosa</i> (50), <i>Leucopogon lanceolatus</i> (50), <i>Leptospermum polygalifolium</i> (50)	<i>Dianella caerulea</i> (88), <i>Lepidosperma laterale</i> (88), <i>Aristida vagans</i> (75), <i>Entolasia stricta</i> (63), <i>Pomax umbellata</i> (50)

Ecosystem 41: Dry Open New England Blackbutt

Tall to very tall forest dominated by New England Blackbutt (*Eucalyptus campanulata*) with other eucalypts (mainly stringybarks) occurring occasionally. The understorey may contain scattered shrubs of Black Oak (*Allocasuarina littoralis*), Lance Beard Heath (*Leucopogon lanceolatus*) and Crinkle Bush (*Lomatia siliaifolia*), and the ground layer is dominated by a mix of forbs, ferns and grasses such as Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), Snow Grass (*Poa sieberiana*), Kangaroo Grass (*Themeda australis*), and Blady Grass (*Imperata cylindrica*).

This ecosystem is extensively distributed on the New England Tablelands from the Queensland border south to the Barnard River. Extensive stands are reserved in Bald Rock and Boonoo Boonoo National Parks with smaller stands reserved elsewhere.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (73)	<i>Leucopogon lanceolatus</i> (70), <i>Lomatia siliaifolia</i> (46), <i>Allocasuarina littoralis</i> (45)	<i>Lomandra longifolia</i> (76), <i>Pteridium esculentum</i> (73), <i>Poa sieberiana</i> (70), <i>Hardenbergia violacea</i> (62), <i>Dianella caerulea</i> (60), <i>Pratia purpurascens</i> (60), <i>Glycine clandestina</i> (58), <i>Themeda australis</i> (58), <i>Viola betonicifolia</i> (56), <i>Imperata cylindrica</i> (54),

Ecosystem 42: Dry Red Gum-Bloodwood-Apple

Tall to very tall forest with a mixed canopy comprised of Forest Red Gum (*Eucalyptus tereticornis*), Pink Bloodwood (*Corymbia intermedia*) and Rough-barked Apple (*Angophora floribunda*). Forest Oak (*Allocasuarina torulosa*) occurs as a midstorey and there may be a few scattered shrubs in the understorey. The ground layer is dominated by Blady Grass (*Imperata cylindrica*), Bracken (*Pteridium esculentum*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem has scattered occurrences at higher elevations on the ranges of the Great Escarpment with major occurrences in the Doyles River, Bulga Tops and Styx River areas. It is reserved in Cunnawarra and Biriwal Bulga National Parks.

Upper	Mid	Lower
<i>Corymbia intermedia</i> (55), <i>Angophora floribunda</i> (55), <i>Eucalyptus tereticornis</i> (55)	<i>Allocasuarina torulosa</i> (82), <i>Breynia oblongifolia</i> (73), <i>Rubus parvifolius</i> (64)	<i>Imperata cylindrica</i> (82), <i>Lomandra longifolia</i> (73), <i>Glycine clandestina</i> (73), <i>Hibbertia scandens</i> (64), <i>Sigesbeckia orientalis</i> (55), <i>Pteridium esculentum</i> (55), <i>Pratia purpurascens</i> (55), <i>Doodia aspera</i> (55), <i>Hardenbergia violacea</i> (55)

Ecosystem 43: Dry Silver-top Stringybark-Apple

Mid-high to tall forest with a canopy comprised of Broad-leaved Apple (*Angophora subvelutina*), Forest Red Gum (*Eucalyptus tereticornis*) and/or Silver-top Stringybark (*E. laevopinea*). Forest Oak (*Allocasuarina torulosa*) sometimes occurs as a midstorey and there may be an open shrub layer of Dogwood (*Jacksonia scoparia*) and Hickory (*Acacia implexa*). The ground layer is dominated by Kangaroo Grass (*Themeda australis*) and various forbs.

This ecosystem is concentrated in the rugged Guy Fawkes River gorge and is also predicted to occur in the Oxley Wild Rivers National Park and Barnard River gorge. It is reserved in Guy Fawkes River National Park.

Upper	Mid	Lower
<i>Angophora subvelutina</i> (58), <i>Eucalyptus laevopinea</i> (42), <i>Eucalyptus tereticornis</i> (42)	<i>Jacksonia scoparia</i> (58), <i>Acacia implexa</i> (50), <i>Allocasuarina torulosa</i> (50)	<i>Themeda australis</i> (92), <i>Desmodium varians</i> (83), <i>Desmodium brachypodium</i> (75), <i>Hardenbergia violacea</i> (67), <i>Lepidosperma laterale</i> (58), <i>Chrysocephalum apiculatum</i> (58)

Ecosystem 44: Dry Open Red Gum-Broad-leaved Apple

Tall to very tall forest with a canopy dominated by Forest Red Gum (*Eucalyptus tereticornis*) with Broad-leaved Apple (*Angophora subvelutina*) usually present as a sub-dominant, and a number of other eucalypts such as Grey Box (*E. moluccana*) and New England Stringybark (*E. caliginosa*) are also occasionally present. There is a sparse shrub layer of Dogwood (*Jacksonia scoparia*) present and

the ground layer is dominated by grasses such as Kangaroo Grass (*Themeda australis*) and Sorghum (*Sorghum leiocladum*) with various small forbs also abundant.

This ecosystem occurs in rugged gorges of the Great Escarpment from the Mann River, through Guy Fawkes River gorge and south to the Apsley River gorge. It is reserved in Guy Fawkes River and Oxley Wild Rivers National Parks and Mann River Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus tereticornis</i> (78), <i>Angophora subvelutina</i> (69), <i>Eucalyptus moluccana</i> (39)	<i>Jacksonia scoparia</i> (69)	<i>Bidens pilosa</i> (85), <i>Themeda australis</i> (85), <i>Dichondra repens</i> (77), <i>Desmodium brachypodum</i> (77), <i>Cymbopogon refractus</i> (69), <i>Sorghum leiocladum</i> (62), <i>Cheilanthes sieberi</i> (54), <i>Commelina cyanea</i> (54), <i>Hardenbergia violacea</i> (54), <i>Chrysocephalum apiculatum</i>

*Ecosystem 45: Dunn's White Gum

Typically a very tall to extremely tall moist forest in which Dunn's White Gum (*Eucalyptus dunnii*) dominates or co-dominates the overstorey. Associates include Flooded Gum (*E. grandis*), Sydney Blue Gum (*E. saligna*), Tallowwood (*E. microcorys*) and Brush Box (*Lophostemon confertus*). Rainforest trees and shrubs characterise the understorey, for example Native Cascarilla (*Croton verreauxii*), Scrub Turpentine (*Rhodamnia rubescens*) and Celery Wood (*Polyscias elegans*). Vines such as Water Vine (*Cissus antarctica*) are common, and ferns such as Giant Maidenhair (*Adiantum formosum*) and Rasp Fern (*Doodia aspera*) occur in the ground layer.

This ecosystem has a restricted and scattered distribution in the Upper CRA Region (e.g. Richmond Range National Park).

Upper	Mid	Lower
<i>Eucalyptus dunnii</i> , <i>Eucalyptus grandis</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus microcorys</i> , <i>Lophostemon confertus</i>	<i>Croton verreauxii</i> , <i>Rhodamnia rubescens</i> , <i>Polyscias elegans</i> , <i>Rubus rosifolius</i> , <i>Cissus antarctica</i>	<i>Adiantum formosum</i> , <i>Doodia aspera</i>

*Ecosystem 46: Eastern Red Gums

Tall to very tall forest usually with a red gum species as the dominant tree. Canopy species include Cabbage Gum (*Eucalyptus amplifolia*), Bancroft's Red Gum (*E. bancrofti*), Narrow-leaved Red Gum (*E. seeana*), Broad-leaved Apple (*Angophora subvelutina*) and Grey Box (*E. moluccana*). The midstorey often includes Green Wattle (*Acacia irrorata*) and Black Oak (*Allocasuarina littoralis*) and the ground layer is dominated by Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This unit includes at least two ecosystems. The one described above occurs mainly on the coastal lowlands in both CRA regions. It also includes tall to very tall forest in which the overstorey consists of Cabbage Gum (*E. amplifolia*), Round-leaved Gum (*E. brunnea*), Dorrigo White Gum (*E. dorrigoensis*) and Broad-leaved Stringybark (*E. caliginosa*). The understorey and ground layer may also differ and Snow Grass (*Poa sieberiana*) or Tussock Grass (*Poa labillardieri*) are often common species. This variant occurs on plateau areas in the gorge systems of the UNE, for example Guy Fawkes National Park.

Upper	Mid	Lower
<i>Eucalyptus amplifolia</i> , <i>Eucalyptus bancroftii</i> , <i>Eucalyptus seeana</i> , <i>Angophora subvelutina</i> , <i>Eucalyptus moluccana</i> , <i>Eucalyptus brunnea</i> , <i>Eucalyptus dorrigoensis</i> , <i>Eucalyptus caliginosa</i>	<i>Acacia irrorata</i> , <i>Allocasuarina littoralis</i>	<i>Themeda australis</i> , <i>Imperata cylindrica</i> , <i>Lomandra longifolia</i> , <i>Pratia purpurascens</i> , <i>Desmodium varians</i> , <i>Poa sieberiana</i> , <i>Poa labillardieri</i>

Ecosystem 47: Escarpment Red Gum

Tall to very tall forest which is similar to Ecosystem 44 but occurs at lower altitudes with coastal rather than tablelands associates. The canopy is dominated by Forest Red Gum (*Eucalyptus tereticornis*) with associated species including Broad-leaved Apple (*Angophora subvelutina*), Grey Ironbark (*E. siderophloia*) and Pink Bloodwood (*Corymbia intermedia*). There is no shrub layer apart from a few scattered shrubs of Coffee Bush (*Breynia oblongifolia*) and occasional other species and the ground layer is dominated by Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*) and various forbs.

This ecosystem is distributed on escarpment ranges from Chandlers Creek north to the MacPherson Range. It is reserved in Chaelundi National Park.

Upper	Mid	Lower
<i>Eucalyptus tereticornis</i> (83), <i>Angophora subvelutina</i> (50), <i>Corymbia intermedia</i> (43), <i>Eucalyptus siderophloia</i> (33)	<i>Breynia oblongifolia</i> (53)	<i>Imperata cylindrica</i> (90), <i>Themeda australis</i> (83), <i>Pratia purpurascens</i> (73), <i>Dichondra repens</i> (63), <i>Vernonia cinerea</i> (63), <i>Lomandra longifolia</i> (60), <i>Desmodium rhytidophyllum</i> (60), <i>Hardenbergia violacea</i> (60), <i>Dianella caerulea</i> (60), <i>Oplismenus aemulus</i> (57)

Ecosystem 48: Escarpment Scribbly Gum-Apple

Mid-high to tall forest dominated by Broad-leaved Apple (*Angophora subvelutina*) with Thin-leaved Stringybark (*Eucalyptus eugenioides*) and Scribbly Gum (*E. signata*) usually present as sub-dominants. There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and often a sparse shrub-layer comprised of Lance Beard Heath (*Leucopogon lanceolatus*), Crinkle Bush (*Lomatia silaifolia*) and Dogwood (*Jacksonia scoparia*). The ground layer is a mix of grass, forb and vine species. Frequently occurring species include Kangaroo Grass (*Themeda australis*), False Sarsaparilla (*Hardenbergia violacea*), Blue Flax Lily (*Dianella caerulea*) and mat-rush (*Lomandra longifolia* or *L. filiformis*).

This ecosystem has restricted occurrences in the Sara River and Chandlers Creek gorges. It is reserved in the Guy Fawkes River National Park.

Upper	Mid	Lower
<i>Angophora subvelutina</i> (90), <i>Eucalyptus eugenioides</i> (60), <i>Eucalyptus signata</i> (60)	<i>Allocasuarina torulosa</i> (80), <i>Leucopogon lanceolatus</i> (60), <i>Lomatia silaifolia</i> (60)	<i>Hardenbergia violacea</i> (70), <i>Themeda australis</i> (70), <i>Desmodium rhytidophyllum</i> (70), <i>Desmodium varians</i> (70), <i>Dianella caerulea</i> (70), <i>Glycine clandestina</i> (70), <i>Gonocarpus tetragynus</i> (70), <i>Lomandra longifolia</i> (60), <i>Lomandra filiformis</i> (60)

Ecosystem 49: Escarpment Tallowood-Bloodwood

Tall to very tall forest dominated by Tallowood (*Eucalyptus microcorys*) which may be associated with a number of other tree species of which the most common associates are Pink Bloodwood (*Corymbia intermedia*), Turpentine (*Syncarpia glomulifera*) and Broad-leaved White Mahogany (*E.*

carnea). There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and a relatively open shrub layer which includes Narrow-leaved Orange Bark (*Maytenus silvestris*), Coffee Bush (*Breynia oblongifolia*) and Narrow-leaved Geebung (*Persoonia linearis*). The ground layer is dominated by species such as Blady Grass (*Imperata cylindrica*), Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), Blue Flax Lily (*Dianella caerulea*), Tick-trefoils (*Desmodium* spp.) and a number of ground ferns such as the Rasp Fern (*Doodia aspera*).

This ecosystem is distributed along the Great Escarpment from the Manning Valley north to the Bellinger River. It is reserved in Biriwal Bulga, Willi Willi and New England National Parks.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (82), <i>Corymbia intermedia</i> (65), <i>Syncarpia glomulifera</i> (59)	<i>Allocasuarina torulosa</i> (94), <i>Cissus hypoglauca</i> (65), <i>Maytenus silvestris</i> (65), <i>Breynia oblongifolia</i> (65), <i>Persoonia linearis</i> (53), <i>Smilax australis</i> (53), <i>Solanum densevestitum</i> (53)	<i>Dianella caerulea</i> (88), <i>Imperata cylindrica</i> (82), <i>Lomandra longifolia</i> (82), <i>Poa sieberiana</i> (82), <i>Hibbertia scandens</i> (77), <i>Desmodium varians</i> (71), <i>Rubus parvifolius</i> (71), <i>Geitonoplesium cymosum</i> (71), <i>Pratia purpurascens</i> (65), <i>Pteridium esculentum</i> (65), <i>Glycine clandestina</i> (65), <i>Doodia aspera</i> (59), <i>Oplismenus imbecillis</i> (59), <i>Desmodium rhytidophyllum</i> (53), <i>Vernonia cinerea</i> (53)

Ecosystem 50: Wet Bangalow-Brush Box

Very tall to extremely tall moist forest dominated by Brush Box (*Lophostemon confertus*) which is characterised by a dense understorey in which Bangalow Palm (*Archontophoenix cunninghamii*) occurs frequently, in association with a great diversity of other predominantly rainforest species. Vines such as Water Vine (*Cissus antarctica*) are also common, and the ground layer is mainly ferns such as Gristle Fern (*Blechnum cartilagineum*) and Rasp Fern (*Doodia aspera*).

This ecosystem is patchily distributed on the ranges of the Great Escarpment from Mt Boss to the Border Ranges. Scattered stands are reserved in Werrikimbe, New England and Washpool National Parks.

Upper	Mid	Lower
<i>Lophostemon confertus</i> (87)	<i>Archontophoenix cunninghamii</i> (80), <i>Guioa semiglaucula</i> (73), <i>Alpinia caerulea</i> (67), <i>Synoum glandulosum</i> (67), <i>Cissus antarctica</i> (60), <i>Neolitsea dealbata</i> (60), <i>Cordyline petiolaris</i> (60), <i>Citriobatus pauciflorus</i> (53), <i>Diploglottis australis</i> (57), <i>Smilax australis</i> (53), <i>Citriobatus pauciflorus</i> (50), <i>Sarcopteryx stipitata</i> (50), <i>Dendrocnide excelsa</i> (50), <i>Eupomatia laurina</i> (50)	<i>Morinda jasminoides</i> (53), <i>Blechnum cartilagineum</i> , <i>Doodia aspera</i>

*Ecosystem 51: Eurabbie

Tall to very tall dry or moist forest with the overstorey dominated by Eurabbie (*Eucalyptus bicostata*). Associates include Mountain Gum (*E. dalrympleana*), Snow Gum (*E. pauciflora*), Narrow-leaved Peppermint (*E. radiata*) and Diehard Stringybark (*E. cameronii*). Understorey species vary, but may include shrubs or small trees such as Black Oak (*Allocasuarina littoralis*) and White Banksia (*Banksia integrifolia*), Snow Grass (*Poa sieberiana*), Button Grass (*Gymnoschoenus sphaerocephalus*) and a range of forbs.

This ecosystem occurs on the escarpment in the Lower CRA Region (e.g. Carrai National Park).

Upper	Mid	Lower
<i>Eucalyptus bicostata</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus pauciflora</i> , <i>Eucalyptus radiata</i> , <i>Eucalyptus cameronii</i>	<i>Allocasuarina littoralis</i> , <i>Banksia integrifolia</i>	<i>Poa sieberiana</i> , <i>Gymnoschoenus sphaerocephalus</i>

Ecosystem 52: Foothill Grey Gum-Ironbark-Spotted Gum

Tall to very tall dry forest which contains a mixed canopy which is usually dominated by Small-fruited Grey Gum (*Eucalyptus propinqua*), Grey Ironbark (*E. siderophloia*), Spotted Gum (*Corymbia variegata*) or a mixture of these in association with a variety of other species like Turpentine (*Syncarpia glomulifera*) or Pink Bloodwood (*C. intermedia*). There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and there may be an understorey comprised of scattered shrubs of Coffee Bush (*Breynia oblongifolia*), Green Wattle (*Acacia irrorata*) and Tree Heath (*Trochocarpa laurina*). The ground layer is dominated by Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*) and Wiry Panic (*Entolasia stricta*) along with various forbs.

This ecosystem occurs on sandstone and siliceous soils in the Clarence lowlands with a western extension through the southern Richmond Range inland to Ewingar State Forest and the Mann River. It is reserved in Nymboida National Park.

Upper	Mid	Lower
<i>Eucalyptus propinqua</i> (52), <i>Eucalyptus siderophloia</i> (52), <i>Syncarpia glomulifera</i> (43), <i>Corymbia intermedia</i> (43), <i>Corymbia variegata</i> (38)	<i>Allocasuarina torulosa</i> (86), <i>Breynia oblongifolia</i> (76), <i>Alphitonia excelsa</i> (52), <i>Trochocarpa laurina</i> (52)	<i>Dianella caerulea</i> (100), <i>Imperata cylindrica</i> (95), <i>Pratia purpurascens</i> (67), <i>Eustrephus latifolius</i> (62), <i>Glycine clandestina</i> (62), <i>Entolasia stricta</i> (62), <i>Lomandra longifolia</i> (62)

Ecosystem 53: Gorge Grey Box

Mid-high to tall dry forest which is usually dominated by Grey Box (*Eucalyptus moluccana*) in association with Pink Bloodwood (*Corymbia intermedia*) and/or Narrow-leaved Ironbark (*E. crebra*). There is a Forest Oak (*Allocasuarina torulosa*) midstorey and there may be scattered shrubs of species such as Dogwood (*Jacksonia scoparia*) and Hickory (*Acacia implexa*) in the understorey. The ground layer is dominated by Barbed-wire Grass (*Cymbopogon refractus*), Kangaroo Grass (*Themeda australis*), Slender Tick-trefoil (*Desmodium varians*) and various other forbs.

This ecosystem is concentrated in the Guy Fawkes River gorge with extensions predicted and/or mapped predominantly in gorges, extending north to the Koreelah Range and south to Copeland Tops. It is reserved in Guy Fawkes National Park.

Upper	Mid	Lower
<i>Eucalyptus moluccana</i> (63), <i>Corymbia intermedia</i> (50)	<i>Allocasuarina torulosa</i> (75), <i>Jacksonia scoparia</i> (50), <i>Acacia implexa</i> (50)	<i>Cymbopogon refractus</i> (100), <i>Desmodium varians</i> (88), <i>Sigesbeckia orientalis</i> (63), <i>Vernonia cinerea</i> (63), <i>Dichondra repens</i> (63), <i>Themeda australis</i> (63), <i>Hardenbergia violacea</i> (63), <i>Cheilanthes sieberi</i> (50), <i>Desmodium brachypodum</i> (50) <i>Dianella caerulea</i> (50)

Ecosystem 54: Grey Box-Red Gum-Grey Ironbark

Tall to very tall forest which is usually dominated by Grey Box (*Eucalyptus moluccana*) in association with Forest Red Gum (*E. tereticornis*) and Grey Ironbark (*E. siderophloia*) and less frequently Small-fruited Grey Gum (*E. propinqua*). There is an open midstorey of Forest Oak (*Allocasuarina torulosa*), and Lantana (*Lantana camara*) is often present in the shrub layer. The ground layer is a mix of grasses and forbs such as Kangaroo Grass (*Themeda australis*), Slender Tick-trefoil (*Desmodium varians*), Blady Grass (*Imperata cylindrica*) and Kidney Weed (*Dichondra repens*).

This ecosystem is concentrated in the upper reaches of the Clarence Valley and associated valley systems with southerly extensions to Copeland Tops. It is reserved in Captains Creek Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus moluccana</i> (89), <i>Eucalyptus tereticornis</i> (67), <i>Eucalyptus siderophloia</i> (61), <i>Eucalyptus propinqua</i> (56)	<i>Lantana camara</i> (67)	<i>Desmodium varians</i> (78), <i>Themeda australis</i> (78), <i>Dichondra repens</i> (72), <i>Oplismenus aemulus</i> (72), <i>Pratia purpurascens</i> (72), <i>Geitonoplesium cymosum</i> (67), <i>Cymbopogon refractus</i> (67), <i>Vernonia cinerea</i> (67), <i>Imperata cylindrica</i> (67), <i>Eustrephus latifolius</i> (61)

Ecosystem 55: Foothills Grey Gum-Spotted Gum

Tall to very tall forest which is usually dominated by Spotted Gum (*Corymbia variegata*) with Small-fruited Grey Gum (*Eucalyptus propinqua*), Grey Ironbark (*E. siderophloia*) and Broad-leaved White Mahogany (*E. carnea*) often present. There is a Forest Oak (*Allocasuarina torulosa*) midstorey and Lantana (*Lantana camara*) is usually present in the understorey. The ground layer is dominated by various grasses, forbs and slender vines such as Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*), Kangaroo Grass (*Themeda australis*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Sarsaparilla (*Smilax australis*).

This ecosystem is concentrated on high and low quartz sediments in the southern portion of the Clarence-Moreton Basin. It is reserved in Yuraygir National Park.

Upper	Mid	Lower
<i>Eucalyptus propinqua</i> (77), <i>Corymbia variegata</i> (71), <i>Eucalyptus siderophloia</i> (65), <i>Eucalyptus carnea</i> (65), <i>Syncarpia glomulifera</i> (47)	<i>Allocasuarina torulosa</i> (88), <i>Breynia oblongifolia</i> (88), <i>Lantana camara</i> (82), <i>Cissus hypoglauca</i> (59), <i>Smilax australis</i> (59), <i>Cissus antarctica</i> (53)	<i>Dianella caerulea</i> (88), <i>Imperata cylindrica</i> (88), <i>Pratia purpurascens</i> (77), <i>Lomandra longifolia</i> (71), <i>Desmodium varians</i> (59), <i>Geitonoplesium cymosum</i> (59), <i>Entolasia stricta</i> (59), <i>Glycine clandestina</i> (59), <i>Cymbopogon refractus</i> (52)

Ecosystem 56: Granite Mallee

Tall to very tall mallee woodland dominated by Bell-fruited Mallee (*Eucalyptus codonocarpa*) with a dense understorey dominated by heath species. The ground layer is a mix of grasses, sedges and forbs with Wiry Panic (*Entolasia stricta*), *Lepidosperma gunnii*, Sword Sedge (*Lepidosperma laterale*) and Red-fruited Saw-sedge (*Gahnia sieberiana*) occurring frequently.

This ecosystem is mostly restricted to Gibraltar Range National Park.

Upper	Mid	Lower
<i>Eucalyptus codonocarpa</i> (67)	<i>Persoonia rufa</i> (83), <i>Boronia anethifolia</i> (83), <i>Leptospermum novae-angliae</i> (83), <i>Allocasuarina rigida</i> (67), <i>Phebalium squamulosum</i> (67), <i>Acacia suaveolens</i> (67), <i>Kunzea bracteolata</i> (67), <i>Mirbelia conferta</i> (67), <i>Xanthorrhoea glauca</i> (67)	<i>Entolasia stricta</i> (83), <i>Lepidosperma gunnii</i> (83), <i>Lepidosperma laterale</i> (83), <i>Gahnia sieberiana</i> (83), <i>Stipa scabrosa</i> (67), <i>Lomandra longifolia</i> (67)

Ecosystem 57: Highland Granite Stringybarks

Low to mid-high forest or woodland usually dominated by Needlebark Stringybark (*Eucalyptus planchoniana*), Bell-fruited Mallee (*E. codonocarpa*) or New England Blackbutt (*E. campanulata*) with a dense heath understorey dominated by species such as Paper-bark Tea-tree (*Leptospermum trinervium*), *Kunzea bracteolata*, *Bossiaea neo-anglica* and *Callistemon comboynensis*. Frequently occurring species in the ground layer include Bracken (*Pteridium esculentum*), Wiry Panic (*Entolasia stricta*) and Sword Sedge (*Lepidosperma laterale*).

This ecosystem is mainly occurs in Gibraltar Range, Washpool and Nymboida National Parks.

Upper	Mid	Lower
<i>Eucalyptus planchoniana</i> (38), <i>Eucalyptus codonocarpa</i> (25), <i>Eucalyptus campanulata</i> (25)	<i>Bossiaea neo-anglica</i> (63), <i>Leptospermum trinervium</i> (63), <i>Acacia obtusifolia</i> (63), <i>Callistemon comboynensis</i> (50), <i>Phebalium squamulosum</i> (50), <i>Allocasuarina rigida</i> (50), <i>Persoonia rufa</i> (50), <i>Kunzea bracteolata</i> (50), <i>Boronia anethifolia</i> (50)	<i>Pteridium esculentum</i> (88), <i>Lepidosperma laterale</i> (88), <i>Entolasia stricta</i> (88), <i>Lomandra longifolia</i> (63), <i>Cassytha filiformis</i> (50), <i>Lepidosperma gunnii</i> (50)

Ecosystem 58: Gorge Grey Gum

Mid-high to tall dry forest dominated by Grey Gum (*Eucalyptus biturbinata*) and in which Broad-leaved Apple (*Angophora subvelutina*) is usually sub-dominant and New England Stringybark (*E. caliginosa*) is also frequent. There is often a midstorey of the Black Oak (*Allocasuarina littoralis*) and *Hibbertia obtusifolia* is common in the understorey. The ground layer is dominated by Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*), Sword Sedge (*Lepidosperma laterale*) and Blady Grass (*Imperata cylindrica*).

This ecosystem is distributed mainly in the Mann River and Guy Fawkes River gorges. It is reserved in Guy Fawkes National Park and Mann River Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus biturbinata</i> (73), <i>Angophora subvelutina</i> (64), <i>Eucalyptus caliginosa</i> (46)	<i>Hibbertia obtusifolia</i> (73), <i>Allocasuarina littoralis</i> (64)	<i>Poa sieberiana</i> (100), <i>Lomandra longifolia</i> (82), <i>Lepidosperma laterale</i> (82), <i>Opercularia hispida</i> (73), <i>Panicum effusum</i> (64), <i>Imperata cylindrica</i> (64), <i>Chrysocephalum apiculatum</i> (64), <i>Themeda australis</i> (55), <i>Dianella revoluta</i> (52), <i>Pomax umbellata</i> (55)

Ecosystem 59: Gorge Ironbark-Grey Gum

Mid-high to tall dry forest dominated by Grey Ironbark (*Eucalyptus siderophloia*) or Small-fruited Grey Gum (*E. propinqua*) with occasional occurrences of a number of other species. There is a midstorey of Forest Oak (*Allocasuarina torulosa*) with an open understorey. There is usually a sparse

ground layer in which Blady Grass (*Imperata cylindrica*), Wombat Berry (*Eustrephus latifolius*) and the forb *Pratia purpurascens* are most frequent species.

This ecosystem is distributed in the rugged gorges associated with Gibraltar Range and extends south through the rugged reaches of the Cooraldooral Creeks and Mann River to the Nymboida River. It is reserved in Gibraltar Range and Nymboida National Parks.

Upper	Mid	Lower
<i>Eucalyptus siderophloia</i> (53), <i>Eucalyptus proprinqua</i> (47), <i>Eucalyptus microcorys</i> (40), <i>Corymbia intermedia</i> (40), <i>Eucalyptus acmenoides</i> (33)	<i>Allocasuarina torulosa</i> (67), <i>Rubus parvifolius</i> (53)	<i>Imperata cylindrica</i> (73), <i>Eustrephus latifolius</i> (60), <i>Pratia purpurascens</i> (60), <i>Dianella caerulea</i> (53), <i>Desmodium varians</i> (53), <i>Desmodium rhytidophyllum</i> (53).

Ecosystem 60: Grassy New England Blackbutt-Tallowwood-Blue Gum forest

Tall to very tall forest dominated by New England Blackbutt (*Eucalyptus campanulata*) with Tallowwood (*E. microcorys*) often sub-dominant and Sydney Blue Gum (*E. saligna*) and Diehard Stringybark (*E. cameronii*) also frequently occurring. There is often a Forest Oak (*Allocasuarina torulosa*) midstorey and scattered shrubs of Lance Beard Heath (*Leucopogon lanceolatus*), Tree Heath (*Trochocarpa laurina*) and Hairy Psychotria (*Psychotria loniceroides*) in the understorey. The ground layer is a mix of grasses, vines, ferns and forbs dominated by Bracken (*Pteridium esculentum*), Snow Grass (*Poa sieberiana*), Climbing Guinea Flower (*Hibbertia scandens*), Blady Grass (*Imperata cylindrica*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem occurs on the rim of the Great Escarpment at the eastern edge of the New England Tablelands, from Mt Seaview north to the Boonoo Boonoo River with the major occurrence in Styx River State Forest. It is reserved in Guy Fawkes River and Cunnawarra National Parks.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (90), <i>Eucalyptus microcorys</i> (60), <i>Eucalyptus saligna</i> (55)	<i>Leucopogon lanceolatus</i> (60), <i>Rubus parvifolius</i> (53)	<i>Hibbertia scandens</i> (85), <i>Pteridium esculentum</i> (80), <i>Lomandra longifolia</i> (80), <i>Dianella caerulea</i> (80), <i>Poa sieberiana</i> (68), <i>Imperata cylindrica</i> (60), <i>Hardenbergia violacea</i> (60), <i>Eustrephus latifolius</i> (60), <i>Viola betonicifolia</i> (58), <i>Desmodium varians</i> (58)

*Ecosystem 61: Grey Box – Ironbark

Tall to very tall woodland and forest in which Grey Box (*Eucalyptus moluccana*) co-dominates the overstorey in association with one or more ironbarks (e.g. *E. siderophloia*, *E. crebra*, or *E. fibrosa*). Associates include Pink Bloodwood (*Corymbia intermedia*), Spotted Gum (e.g. *C. variegata*), Swamp Box (*Lophostemon suaveolens*), and various stringybarks and red gums. There is usually a sparse shrub and small tree layer of species such as Red Ash (*Alphitonia excelsa*), Forest Oak (*Allocasuarina torulosa*) and various wattles (*Acacia* spp.). Common ground layer species include Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*), Barbed-wire Grass (*Cymbopogon refractus*), Three-awned grasses (*Aristida* spp.), Sorghum (*Sorghum leiocladum*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem is concentrated in the Clarence River foothills of the Upper CRA Region.

Upper	Mid	Lower
<i>Eucalyptus moluccana</i> , <i>Eucalyptus siderophloia</i> , <i>Eucalyptus crebra</i> , <i>Eucalyptus fibrosa</i> , <i>Corymbia intermedia</i> , <i>Corymbia variegata</i> , <i>Lophostemon suaveolens</i>	<i>Alphitonia excelsa</i> , <i>Allocasuarina torulosa</i> ,	<i>Imperata cylindrica</i> , <i>Themeda australis</i> , <i>Cymbopogon refractus</i> , <i>Sorghum leiocladum</i> , <i>Lomandra longifolia</i>

*Ecosystem 62: Grey Box – Northern Grey Gum

Very tall to extremely tall moist forest in which Grey Box (*Eucalyptus moluccana*) and Small-fruited Grey Gum (*E. propinqua*) are common overstorey species. Associates include Grey Ironbark (*E. siderophloia*), Tallowwood (*E. microcorys*), Dunn's White Gum (*Eucalyptus dunnii*), Brush Box (*Lophostemon confertus*) and stringybarks. The understorey typically comprises rainforest trees and shrubs, for example Hoop Pine (*Araucaria cunninghamii*), Celery Wood (*Polyscias elegans*), Orangebark (*Maytenus bilocularis*), Large Mock-olive (*Notelaea longifolia*), Red Kamala (*Mallotus philippensis*) and Grey Myrtle (*Backhousia myrtifolia*). Vines such as Large-leaf Staff Vine (*Celastrus subspicata*) and Water Vine (*Cissus antarctica*) are common, and common ground layer species include Sword Sedge (*Lepidosperma laterale*) and Saw-sedge (*Gahnia aspera*).

This ecosystem is concentrated on ranges near the Queensland border, Upper CRA Region.

Upper	Mid	Lower
<i>Eucalyptus moluccana</i> , <i>Eucalyptus siderophloia</i> , <i>Eucalyptus propinqua</i> , <i>Eucalyptus microcorys</i> , <i>Eucalyptus dunnii</i> , <i>Lophostemon confertus</i>	<i>Araucaria cunninghamii</i> , <i>Polyscias elegans</i> , <i>Maytenus bilocularis</i> , <i>Notelaea longifolia</i> , <i>Mallotus philippensis</i> , <i>Backhousia myrtifolia</i> , <i>Celastrus subspicata</i> , <i>Cissus antarctica</i>	<i>Lepidosperma laterale</i> , <i>Gahnia aspera</i>

*Ecosystem 63: Grey Gum – Stringybark

Tall to very tall dry forest in which a grey gum (*Eucalyptus propinqua* or *E. biturbinata*) and one or more stringybarks (*E. caliginosa*, *E. laevopinea* or *E. eugenioides*) characterise the overstorey. Other associates include Tallowwood (*E. microcorys*), Forest Red Gum (*E. tereticornis*), Sydney Blue Gum (*E. saligna*), New England Blackbutt (*E. campanulata*) and Pink Bloodwood (*Corymbia intermedia*). A poorly developed understorey of smaller trees or shrubs such as Forest Oak (*Allocasuarina torulosa*) may be present. Ground layer species include Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*), Blue Flax Lily (*Dianella caerulea*), and various forbs.

This is a widespread ecosystem of ranges and gorges in both CRA Regions (e.g. Cottan-Bimbang and Guy Fawkes River National Parks).

Upper	Mid	Lower
<i>Eucalyptus propinqua</i> , <i>Eucalyptus biturbinata</i> , <i>Eucalyptus caliginosa</i> , <i>Eucalyptus laevopinea</i> , <i>Eucalyptus eugenioides</i> , <i>Eucalyptus tereticornis</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus microcorys</i> , <i>Eucalyptus campanulata</i> , <i>Corymbia intermedia</i>	<i>Allocasuarina torulosa</i>	<i>Themeda australis</i> , <i>Imperata cylindrica</i> , <i>Poa sieberiana</i> , <i>Lomandra longifolia</i> , <i>Dianella caerulea</i>

*Ecosystem 64: Heath

Typically low to tall heathland less than 2 m high. Species richness is generally high, and composition varies with locality (low altitude to high altitude) and habitat (e.g. coastal sand masses or hills, ranges, escarpment, tableland). Representative heath shrub families include Proteaceae (e.g. *Banksia* and *Hakea* spp.), Myrtaceae (e.g. *Leptospermum*, *Melaleuca* and *Kunzea* spp.), Epacridaceae (e.g. *Leucopogon* and *Epacris* spp.), Fabaceae (e.g. *Dillwynia*, *Pultenaea* and *Acacia* spp.), Rutaceae (e.g. *Boronia* and *Eriostemon* spp.), Xanthorrhoeaceae (*Xanthorrhoea* spp.) and Casuarinaceae (*Allocasuarina* spp.). Many grass, sedge and forb species are generally continuous in height with the heath shrubs.

This ecosystem is an aggregation of many different plant communities. It is concentrated along the coast of both CRA Regions (e.g. Broadwater, Yuraygir, Crowdy Bay and Booti Booti National Parks), and scattered at higher altitudes (e.g. Werrikimbe and Gibraltar Range National Parks).

Upper
<i>Banksia</i> spp., <i>Hakea</i> spp., <i>Leptospermum</i> spp., <i>Melaleuca</i> spp., <i>Kunzea</i> spp., <i>Leucopogon</i> spp., <i>Epacris</i> spp., <i>Dillwynia</i> spp., <i>Pultenaea</i> spp., <i>Acacia</i> spp., <i>Boronia</i> spp., <i>Eriostemon</i> spp., <i>Xanthorrhoea</i> spp., <i>Allocasuarina</i> spp.

Ecosystem 65: Heathy Scribbly Gum forest

Tall to very tall dry forest dominated by Scribbly Gum (*Eucalyptus signata*) with either Red or Pink Bloodwood (*Corymbia gummifera* or *C. intermedia*) usually present as sub-dominants. There is a relatively dense heathy understorey dominated by Black Oak (*Allocasuarina littoralis*), banksias (*Banksia oblongifolia* and *B. spinulosa*), egg and bacon peas (*Pultenaea myrtoidea* and *P. retusa*), and Riceflower (*Pimelea linifolia*). The understorey is a mixture of various grasses, sedges, ferns and forbs such as Blady Grass (*Imperata cylindrica*), Wiry Panic (*Entolasia stricta*), Sword Sedge (*Lepidosperma laterale*) and Bracken (*Pteridium esculentum*).

This ecosystem is distributed on metasediments from the Maria River north to the Richmond River. It is reserved in Bungawalbin, Bundjalung, Yuraygir and Maria River National Parks.

Upper	Mid	Lower
<i>Eucalyptus signata</i> (81), <i>Corymbia gummifera</i> (63)	<i>Pimelia linifolia</i> (81), <i>Persoonia stradbokensis</i> (75), <i>Gompholobium pinnatum</i> (63), <i>Banksia oblongifolia</i> (63), <i>Allocasuarina littoralis</i> (56), <i>Banksia spinulosa</i> (56), <i>Pultenaea myrtoidea</i> (56)	<i>Imperata cylindrica</i> (75), <i>Entolasia stricta</i> (75), <i>Lepidosperma laterale</i> (75), <i>Pteridium esculentum</i> (69), <i>Dianella caerulea</i> (63), <i>Glycine clandestina</i> (63), <i>Themeda australis</i> (57)

Ecosystem 67: High Elevation Ferny Blackbutt

Tall to extremely tall forest dominated by Blackbutt (*Eucalyptus pilularis*) with Tallowwood (*E. microcorys*) present as a sub-dominant. There is an often dense Forest Oak (*Allocasuarina torulosa*) midstorey with an open, scattered understorey containing moist shrubs such as Tree Heath (*Trochocarpa laurina*), Blueberry Ash (*Elaeocarpus reticulatus*), Rose Maple (*Cryptocarya rigida*) and Hairy Psychotria (*Psychotria loniceroides*). The ground layer is dominated by ferns and forbs, particularly Blue Flax Lily (*Dianella caerulea*), Common Ground Fern (*Calochlaena dubia*), Gristle Fern (*Blechnum cartilagineum*), and Rasp Fern (*Doodia aspera*), with Bracken (*Pteridium esculentum*) and Blady Grass (*Imperata cylindrica*) also common.

This ecosystem is distributed at medium elevations along the ranges of the Great Escarpment from Chandlers Creek south to Dingo Tops. It is reserved in Nymboi-Binderay, New England, Willi Willi and Tapin Tops National Parks.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (90), <i>Eucalyptus microcorys</i> (88)	<i>Allocasuarina torulosa</i> (86), <i>Trochocarpa laurina</i> (72), <i>Breynia oblongifolia</i> (70), <i>Acacia melanoxylon</i> (52)	<i>Dianella caerulea</i> (88), <i>Hibbertia scandens</i> (81), <i>Pteridium esculentum</i> (74), <i>Lomandra longifolia</i> (70), <i>Calochlaena dubia</i> (70), <i>Imperata cylindrica</i> (60), <i>Blechnum cartilagineum</i> (58)

Ecosystem 68: High Elevation Messmate - Brown Barrel

Very tall to extremely tall forest in which Brown Barrel (*Eucalyptus fastigata*) or Messmate (*E. obliqua*) dominates the canopy and Mountain Ribbon Gum (*E. nobilis*) is sometimes present. There may be scattered shrubs or small trees such as White Banksia (*Banksia integrifolia*), Blackwood (*Acacia melanoxylon*) and Lance Beard Heath (*Leucopogon lanceolatus*). There is a very dense ground layer dominated by Snow Grass (*Poa sieberiana*), Bracken (*Pteridium esculentum*), and Spiny-headed Mat-rush (*Lomandra longifolia*) and various forb species.

This ecosystem is distributed at high elevations on and around the Barrington Plateau. It occurs in Barrington Crown Reserve.

Upper	Mid	Lower
<i>Eucalyptus obliqua</i> (53), <i>Eucalyptus fastigata</i> (46), <i>Eucalyptus nobilis</i> (34)	<i>Smilax australis</i> (84), <i>Leucopogon lanceolatus</i> (69), <i>Coprosma quadrifida</i> (63), <i>Acacia melanoxylon</i> (60), <i>Rubus parvifolius</i> (53)	<i>Pteridium esculentum</i> (100), <i>Poa sieberiana</i> (97), <i>Lomandra longifolia</i> (94), <i>Viola hederacea</i> (84), <i>Geranium potentilloides</i> (82), <i>Poranthera microphylla</i> (72), <i>Dichondra repens</i> (69), <i>Glycine clandestina</i> (69), <i>Hydrocotyle laxiflora</i> (63), <i>Lagenifera stipitata</i> (56), <i>Viola betonicifolia</i> (53), <i>Pratia pedunculata</i> (53), <i>Asperula conferta</i> (53)

Ecosystem 69: High Elevation Moist Open Tallowwood-Blue Gum

Tall to extremely tall moist forest in which Sydney Blue Gum (*Eucalyptus saligna*) and Tallowwood (*E. microcorys*) co-dominate and Brush Box (*Lophostemon confertus*) is a frequent sub-dominant. There is often Forest Oak (*Allocasuarina torulosa*) present as a midstorey and a moderate cover of moist understorey shrubs such as Rose Maple (*Cryptocarya rigida*), Corkwood (*Calcdcluvia paniculosa*), Scentless Rosewood (*Synoum glandulosum*) and Hairy Psychotria (*Psychotria loniceroides*). Vines such as Water Vine (*Cissus antarctica*) and Five-leaf Water Vine (*Cissus hypoglauca*) are common. The ground layer is dominated by the Blue Flax Lily (*Dianella caerulea*), Climbing Guinea Flower (*Hibbertia scandens*), Common Ground Fern (*Calochlaena dubia*) and Gristle Fern (*Blechnum cartilagineum*).

This ecosystem is patchily distributed at high elevations on the ranges of the Great Escarpment from Bulga Tops north to Chandlers Creek. It is reserved in Cottan-Bimbang National Park.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (86), <i>Eucalyptus saligna</i> (86), <i>Lophostemon confertus</i> (68)	<i>Synoum glandulosum</i> (73), <i>Psychotria loniceroides</i> (73), <i>Allocasuarina torulosa</i> (59), <i>Breynia oblongifolia</i> (54), <i>Cryptocarya rigida</i> (54), <i>Smilax australis</i> (54), <i>Cissus antarctica</i> (54), <i>Cissus hypoglauca</i> (54)	<i>Dianella caerulea</i> (82), <i>Hibbertia scandens</i> (64), <i>Lomandra longifolia</i> (64) <i>Blechnum cartilagineum</i> (59), <i>Caloclaena dubia</i> (59), <i>Doodia aspera</i> (54)

Ecosystem 70: High Elevation Open Spotted Gum

Tall to very tall dry forest dominated by Spotted Gum (*Corymbia variegata*) and/or Tallowwood (*Eucalyptus microcorys*). There is usually a midstorey of Forest Oak (*Allocasuarina torulosa*) and a sparse shrub layer with Lance Beard Heath (*Leucopogon lanceolatus*) and Native Raspberry (*Rubus parvifolius*) common. There is a diverse ground layer in which various grasses and forbs dominate.

This ecosystem is distributed at mid elevations in the foothills and ranges of the Great Escarpment in the southern portion of the Clarence-Morton Basin from the Guy Fawkes River east to the Kangaroo River. It is reserved in Guy Fawkes River and Chaelundi National Parks.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (56), <i>Corymbia variegata</i> (56)	<i>Allocasuarina torulosa</i> (75), <i>Leucopogon lanceolatus</i> (63), <i>Rubus parvifolius</i> (56)	<i>Dianella caerulea</i> (94), <i>Desmodium varians</i> (88), <i>Cymbopogon refractus</i> (88), <i>Viola betonicifolia</i> (88), <i>Pratia purpurascens</i> (75), <i>Vernonia cinerea</i> (75), <i>Desmodium rhytidophyllum</i> (75), <i>Hardenbergia violacea</i> (59), <i>Imperata cylindrica</i> (69), <i>Billardiera scandens</i> (63), <i>Themeda australis</i> (63), <i>Lomandra longifolia</i> (63), <i>Dichelachne micrantha</i> (56), <i>Hypericum gramineum</i> (56), <i>Desmodium brachypodum</i> (56), <i>Dichondra repens</i> (56)

Ecosystem 72: Low Relief Coastal Blackbutt

Tall to very tall forest usually dominated by Blackbutt (*Eucalyptus pilularis*) with Pink Bloodwood (*Corymbia intermedia*) and Red Mahogany (*E. resinifera*) present as sub-dominants. There is a moderately dense midstorey which usually includes Snow-in-Summer (*Melaleuca linariifolia*), Cheese Tree (*Glochidion ferdinandi*) and Willow Bottlebrush (*Callistemon salignus*). Common ground layer species include Spiny-headed Matt-rush (*Lomandra longifolia*), Wombat Berry (*Eustrephus latifolius*), Blady Grass (*Imperata cylindrica*) and Bracken (*Pteridium esculentum*).

This ecosystem is distributed in low lying areas on the central coast from Kendall north to Coffs Harbour. It is reserved in Rawdon Creek Nature Reserve and Maria River National Park.

Upper	Mid	Lower
<i>Corymbia intermedia</i> (80), <i>Eucalyptus resinifera</i> (60), <i>Eucalyptus pilularis</i> (60)	<i>Glochidion ferdinandi</i> (80), <i>Rubus hillii</i> (80), <i>Melaleuca linariifolia</i> (60), <i>Callistemon salignus</i> (60), <i>Breynia oblongifolia</i> (60)	<i>Lomandra longifolia</i> (100), <i>Eustrephus latifolius</i> (80), <i>Pseuderantherum variabile</i> (80), <i>Pratia purpurascens</i> (80), <i>Entolasia marginata</i> (80), <i>Imperata cylindrica</i> (80), <i>Viola hederacea</i> (60), <i>Pteridium esculentum</i> (60), <i>Oplismenus imbecillis</i> (60)

Ecosystem 73: Lowlands Red Gum.

Tall to very tall forest dominated by either Forest Red Gum (*Eucalyptus tereticornis*) or Swamp Box (*Lophostemon suaveolens*) with Pink Bloodwood (*Corymbia intermedia*) and Grey Ironbark (*E. siderophloia*) sometimes present. There is a relatively open understorey with Red Ash (*Alphitonia excelsa*) common, and a ground layer dominated by species such as Blady Grass (*Imperata cylindrica*), Spiny-headed Matt-rush (*Lomandra longifolia*) and Kangaroo Grass (*Themeda australis*).

This ecosystem is distributed on high and low quartz sediments in the Clarence lowlands. It is reserved in Bungawalbin National Park.

Upper	Mid	Lower
<i>Lophostemon suaveolens</i> (70), <i>Eucalyptus tereticornis</i> (47), <i>Corymbia intermedia</i> (39), <i>Eucalyptus siderophloia</i> (33)	<i>Alphitonia excelsa</i> (58)	<i>Imperata cylindrica</i> (70), <i>Pratia purpurascens</i> (61), <i>Lomandra longifolia</i> (58), <i>Vernonia cinerea</i> (58), <i>Cymbopogon refractus</i> (58), <i>Themeda australis</i> (52), <i>Entolasia stricta</i> (52)

Ecosystem 74: Lowlands Scribbly Gum

Tall to very tall forest dominated by Scribbly Gum (*Eucalyptus signata*). There is often a scattered understorey of Tea-tree (*Leptospermum polygalifolium*), *Melaleuca sieberi* and *Banksia oblongifolia*. The ground layer is diverse and includes a number of swamp elements such as Feather Plant (*Baloskion tetraphyllum*) and the twig-rushes (*Baumea articulata* and *B. rubiginosa*) as well as Wiry Panic (*Entolasia stricta*) and Spiny-headed Matt-rush (*Lomandra longifolia*).

This ecosystem is distributed predominantly on coastal sands and sandstone from Kempsey to the Tweed River. It is reserved in Limeburners Creek Nature Reserve and Bundjalung and Mount Jerusalem National Parks.

Upper	Mid	Lower
<i>Eucalyptus signata</i> (75)	<i>Leptospermum polygalifolium</i> (50)	<i>Entolasia stricta</i> (58), <i>Dianella caerulea</i> (58), <i>Lomandra longifolia</i> (58), <i>Pteridium esculentum</i> (58)

Ecosystem 75: Lowlands Spotted Gum-Box

Tall to very tall forest in which Broad-leaved Spotted Gum (*Corymbia henryi*) is dominant, and Grey Box (*Eucalyptus moluccana*) and an ironbark (*E. siderophloia* or *E. fibrosa*) are usually sub-dominant. There is an open understorey with scattered shrubs of Red Ash (*Alphitonia excelsa*) and Curracabah (*Acacia concurrens*) and a ground layer dominated by grasses such as Three-awned Grass (*Aristida vagans*), Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*) and Barbed-wire Grass (*Cymbopogon refractus*). Various forb species are also frequently present.

This ecosystem is predominantly confined to low quartz sediments in the Clarence Lowlands. It is reserved in Fortis Creek National Park.

Upper	Mid	Lower
<i>Corymbia henryi</i> (91), <i>Eucalyptus moluccana</i> (67), <i>Eucalyptus siderophloia</i> (62)	<i>Alphitonia excelsa</i> (86), <i>Acacia concurrens</i> (76)	<i>Aristida vagans</i> (100), <i>Pratia purpurascens</i> (91), <i>Imperata cylindrica</i> (91), <i>Cymbopogon refractus</i> (76), <i>Lomandra multiflora</i> (67), <i>Desmodium rhytidophyllum</i> (67), <i>Eragrostis brownii</i> (62), <i>Goodenia hederacea</i> (62), <i>Cheilanthes sieberi</i> (62), <i>Themeda australis</i> (57), <i>Glycine clandestina</i> (52), <i>Eustrephus latifolius</i> (52), <i>Hardenbergia violacea</i> (52)

*Ecosystem 76: Coastal Mallee

Generally tall to extremely tall mallee woodland and forest, or sometimes tall to very tall mallee shrubland. Multi-stemmed eucalypts and eucalypt-allies dominate the overstorey, for example Blackbutt (*Eucalyptus pilularis*), Needlebark Stringybark (*E. planchoniana*), Swamp Mahogany (*E. robusta*), Scribbly Gum (*E. signata*), Red Bloodwood (*Corymbia gummifera*), Smooth-barked Apple (*Angophora costata*) and Brush Box (*Lophostemon confertus*). Understorey species vary with location and habitat, although commonly include banksias (*Banksia* spp.), geebungs (*Persoonia* spp.), tea-trees (*Leptospermum* spp.), paperbarks (*Melaleuca* spp.), peas (e.g. *Bossiaea* and *Dillwynia* spp.), wattles (*Acacia* spp.), Epacrids (e.g. *Leucopogon* spp.) and boronias (*Boronia* spp.). Grass, sedge and forb species are also conspicuous.

This ecosystem is an aggregation of different plant communities. It is widespread but scattered on coastal sand masses in both CRA Regions (e.g. Bundjalung, Hat Head and Myall Lakes National Parks, and Limeburners Creek Nature Reserve).

Upper	Mid
<i>Eucalyptus pilularis</i> , <i>Eucalyptus planchoniana</i> , <i>Eucalyptus robusta</i> , <i>Eucalyptus signata</i> , <i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Lophostemon confertus</i>	<i>Banksia</i> spp., <i>Persoonia</i> spp., <i>Leptospermum</i> spp., <i>Melaleuca</i> spp., <i>Bossiaea</i> spp., <i>Dillwynia</i> spp., <i>Acacia</i> spp., <i>Leucopogon</i> spp., <i>Boronia</i> spp.

*Ecosystem 77: Mangrove

Low to tall woodland and forest, sometimes grading into shrubland. Grey Mangrove (*Avicennia marina* ssp. *australasica*) characteristically dominates the overstorey, although occasional associates are Black Mangrove (*Bruguiera gymnorhiza*), Spider Mangrove (*Rhizophora stylosa*), Milky Mangrove (*Excoecaria agallocha*) and Cottonwood Hibiscus (*Hibiscus tiliaceus*). River Mangrove (*Aegiceras corniculatum*) may be present as an understorey shrub, or otherwise dominate localised stands of shrubland in the absence of Grey Mangrove. The immediate ground surface is either unvegetated apart from pneumatophores, or else supports lower saltmarsh species such as Sand Couch (*Sporobolus virginicus*).

This ecosystem occupies intertidal flats in estuaries, and is widespread along the coast in both CRA Regions.

Upper	Mid	Lower
<i>Avicennia marina</i> ssp. <i>Australasica</i> , <i>Bruguiera gymnorhiza</i> , <i>Rhizophora stylosa</i> , <i>Excoecaria agallocha</i> , <i>Hibiscus tiliaceus</i>	<i>Aegiceras corniculatum</i>	<i>Sporobolus virginicus</i>

Ecosystem 78: Mann River Wet New England Blackbutt

Tall to very tall moist forest dominated by New England Blackbutt (*Eucalyptus campanulata*) with a dense understorey comprised of warm-temperate rainforest species such as Scentless Rosewood (*Synoum glandulosum*), Scrub Turpentine (*Rhodamnia rubescens*), Rose Maple (*Cryptocarya rigida*) and Crabapple (*Schizomeria ovata*). Vines are common and the ground layer is mainly ferns such as Gristle Fern (*Blechnum cartilagineum*) and Trim Shield Fern (*Lastreopsis decomposita*).

This ecosystem is distributed in the upper reaches of Cooraldooral and Cangai Creeks, and Mann River and tributaries. It is reserved in Nymboida and Gibraltar Range National Parks.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (60)	<i>Synoum glandulosum</i> (80), <i>Rhodamnia rubescens</i> (80), <i>Cryptocarya rigida</i> (80), <i>Palmeria scandens</i> (80), <i>Smilax australis</i> (60), <i>Tetrastigma nitens</i> (60), <i>Cissus antarctica</i> (60), <i>Cissus hypoglauca</i> (60), <i>Schizomeria ovata</i> (60), <i>Psychotria loniceriodes</i> (60), <i>Cordyline stricta</i> (60), <i>Acacia irrorata</i> (60)	<i>Geitonoplesium cymosum</i> (80), <i>Blechnum cartilagineum</i> (60), <i>Morinda jasminoides</i> (60), <i>Lastreopsis decomposita</i> (60), <i>Dianella caerulea</i> (60)

*Ecosystem 79: Manna Gum – Stringybark

Typically tall to very tall dry forest in which Manna Gum (*Eucalyptus viminalis*) or Mountain Ribbon Gum (*E. nobilis*) co-dominates the overstorey with one or more stringybarks (e.g. *E. caliginosa*, *E. cameronii*, *E. laevopinea*, *E. macrorhyncha*). The ground layer is often grassy with Snow Grass (*Poa sieberiana*) frequent.

This ecosystem is scattered on the Tablelands in both CRA Regions (e.g. Bald Rock and Werrikimbe National Parks).

Upper	Lower
<i>Eucalyptus viminalis</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus caliginosa</i> , <i>Eucalyptus cameronii</i> , <i>Eucalyptus laevopinea</i> , <i>Eucalyptus macrorhyncha</i>	<i>Poa sieberiana</i>

Ecosystem 80: Manna Gum

Tall to very tall forest in which the canopy is often comprised entirely of Manna Gum (*Eucalyptus viminalis*), or in which Messmate (*E. obliqua*) and New England Blackbutt (*E. campanulata*) sometimes occur. Scattered shrubs such as Broad-leaved Hickory (*Acacia falciformis*), White Banksia (*Banksia integrifolia*), Native Raspberry (*Rubus parvifolius*) and Blackthorn (*Bursaria spinosa*) occur in the understorey, and the ground layer is dominated by Kangaroo Grass (*Themeda australis*), Snow Grass (*Poa sieberiana*) and a variety of forb species.

This ecosystem is distributed very patchily at high elevations on the New England Tablelands from the Barrington Tops north to Mount Spirabo. A small stand is reserved in the western portion of Washpool National Park and several small stands in Stoney Creek National Park.

Upper	Mid	Lower
<i>Eucalyptus viminalis</i> (50), <i>Eucalyptus obliqua</i> (33), <i>Eucalyptus campanulata</i> (33)	<i>Rubus parvifolius</i> (67)	<i>Glycine clandestina</i> (67), <i>Dichondra repens</i> (67), <i>Galium propinquum</i> (67), <i>Pimelea curviflora</i> (67), <i>Geranium potentilloides</i> (67), <i>Themeda australis</i> (67), <i>Acaena novae-zelandiae</i> (67)

*Ecosystem 81: Messmate

Tall to very tall dry or moist forest in which Messmate (*Eucalyptus obliqua*) dominates, or occasionally co-dominates, the overstorey. Others associates include Mountain Ribbon Gum (*E. nobilis*), New England Blackbutt (*E. campanulata*), Diehard Stringybark (*E. cameronii*), Silver-top Stringybark (*E. laevopinea*), and Sydney Blue Gum (*E. saligna*). The understorey includes shrubs such as Lance Beard Heath (*Leucopogon lanceolatus*), Rough Tree Fern (*Cyathea australis*) and Prickly Coprosma (*Coprosma quadrifida*). The ground layer composition varies, but may include Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), flax lily (*Dianella* spp.), Common Ground Fern (*Calochlaena dubia*) and various forbs and vines.

This ecosystem is widespread at higher altitudes in both CRA Regions (e.g. Mummel Gulf, Cathedral Rock and Capoompeta National Parks).

Upper	Mid	Lower
<i>Eucalyptus obliqua</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus campanulata</i> , <i>Eucalyptus cameronii</i> , <i>Eucalyptus laevopinea</i> , <i>Eucalyptus saligna</i>	<i>Cyathea australis</i> , <i>Leucopogon lanceolatus</i> , <i>Coprosma quadrifida</i>	<i>Poa sieberiana</i> , <i>Lomandra longifolia</i> , <i>Pteridium esculentum</i> , <i>Dianella</i> spp., <i>Calochlaena dubia</i>

Ecosystem 82: Messmate - Mountain Gum Forest

Tall to very tall forest dominated by Messmate (*Eucalyptus obliqua*) with Mountain Gum (*E. dalrympleana*) also frequently abundant. The understorey is usually sparse but in some situations is comprised of moderately dense stands of Soft Tree Fern (*Dicksonia antarctica*), White Banksia (*Banksia integrifolia*), Blackthorn (*Bursaria spinosa*) and Pepperbush (*Tasmannia stipitata*). The ground layer is dominated by Snow Grass (*Poa sieberiana*) and a variety of ferns of which the most common are the Mother Shield Fern (*Polystichum proliferum*), Fishbone Water Fern (*Blechnum nudum*) and Bracken (*Pteridium esculentum*).

This ecosystem is distributed on the eastern rim of the New England Tablelands east of Nundle. It is reserved in Ben Halls Gap National Park and Hell Hole Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus obliqua</i> (89), <i>Eucalyptus dalrympleana</i> (67), <i>Eucalyptus pauciflora</i> (22)	<i>Smilax australis</i> (56), <i>Dicksonia antarctica</i> (44), <i>Tasmannia stipitata</i> (33)	<i>Polystichum proliferum</i> (67), <i>Poa sieberiana</i> (89), <i>Pteridium esculentum</i> (78)

Ecosystem 83: Mid Elevation Wet Blackbutt

Tall to extremely tall forest dominated by Blackbutt (*Eucalyptus pilularis*) with a variety of species which frequently occur as sub-dominants including Tallowwood (*E. microcorys*), New England Blackbutt (*E. campanulata*), Brush Box (*Lophostemon confertus*) and Turpentine (*Syncarpia glomulifera*). There is a relatively dense midstorey of Forest Oak (*Allocasuarina torulosa*) and Blackwood (*Acacia melanoxylon*) with a sparse to moderately dense understorey comprised of Rough Tree Fern (*Cyathea australis*), Corkwood (*Caldcluvia paniculosa*) and Scentless Rosewood (*Synoum glandulosum*) and other warm-temperate rainforest elements. The ground layer is dominated by ferns and forbs with grasses occurring very infrequently. Common species include Blue Flax Lily (*Dianella caerulea*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Gristle Fern (*Blechnum cartilagineum*).

This ecosystem is distributed on near coastal ranges of the mid-north coast with major occurrences on the Comara, Snowy and Bushmans Ranges and the Dorrigo Escarpment. It is reserved in New England and Bindarri National Parks.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (82), <i>Eucalyptus microcorys</i> (64), <i>Lophostemon</i> <i>confertus</i> (64), <i>Syncarpia</i> <i>glomulifera</i> (59)	<i>Allocasuarina torulosa</i> (82), <i>Acacia melanoxylon</i> (73), <i>Cyathea australis</i> (68), <i>Synoum glandulosum</i> (64), <i>Elaeocarpus reticulatus</i> (64)	<i>Dianella caerulea</i> (82), <i>Lomandra</i> <i>longifolia</i> (68), <i>Blechnum</i> <i>cartilagineum</i> (68), <i>Pteridium</i> <i>esculentum</i> (68), <i>Calochlaena</i> <i>dubia</i> (64)

Ecosystem 84: Mid North Coast Wet Brush Box-Tallowwood-Blue Gum

Tall to extremely tall moist forest dominated by or co-dominated by Tallowwood (*Eucalyptus microcorys*), Brush Box (*Lophostemon confertus*) and/or Sydney Blue Gum (*E. saligna*). A very well-developed warm temperate rainforest midstorey and understorey is present. Common species include Rose Maple (*Cryptocarya rigida*), Corkwood (*Caldcuvia paniculosa*) and Rough Tree Fern (*Cyathea australis*). Vines such as Sarsaparilla (*Smilax australis*), Five-leaf Water Vine (*Cissus hypoglauca*) and Water Vine (*Cissus antarctica*) are common, and the ground layer is dominated by Gristle Fern (*Blechnum cartilagineum*).

This ecosystem is distributed extensively at mid elevation on the ranges of the Great Escarpment from Clouds Creek south to Dingo Tops. It is reserved in Nymboi-Binderay, Werrikimbe, Cottan-Bimbang, Tapin Tops and Biriwal Bulga National Parks.

Upper	Mid	Lower
<i>Lophostemon</i> <i>confertus</i> (79), <i>Eucalyptus</i> <i>microcorys</i> (75), <i>Eucalyptus</i> <i>saligna</i> (65)	<i>Cryptocarya rigida</i> (83), <i>Trochocarpa laurina</i> (79), <i>Caldacluvia paniculosa</i> (75), <i>Psychotria loniceroides</i> (75), <i>Smilax australis</i> (75), <i>Elaeocarpus reticulatus</i> (73), <i>Cyathea australis</i> (69), <i>Synoum glandulosum</i> (69), <i>Schizomeria ovata</i> (67), <i>Eupomatia laurina</i> (69), <i>Cissus hypoglauca</i> (63), <i>Cephalalaralia</i> <i>cephalobotrys</i> (58), <i>Citriobatus pauciflorus</i> (58), <i>Pandorea pandorana</i> (54), <i>Palmeria scandens</i> (52), <i>Cissus antarctica</i> (52), <i>Pittosporum revolutum</i> (50), <i>Endiandra sieberi</i> (50), <i>Acmena smithii</i> (50)	<i>Blechnum</i> <i>cartilagineum</i> (98), <i>Dianella caerulea</i> (53), <i>Geitonoplesium</i> <i>cymosum</i> (54), <i>Lomandra longifolia</i> (52), <i>Hibbertia</i> <i>scandens</i> (52)

*Ecosystem 85: Mixed Moist Hardwood

Note. A description of **FE: 85** Mixed Moist Hardwood is not included as only small areas are mapped (about 500 hectares). The main areas are RN17 Type 55, which is a local allocation code, and some of this is on Boonoo Boonoo National Park and some is on lowlands in the Bellinger Valley. It is unlikely that these areas represent a recognisable ecosystem. Other areas mapped as **FE: 85** have RN17 codes for plantation and wattle. Some of these areas mapped as wattle represent distinct ecosystems not recognised by this classification.

*Ecosystem 86: Mixed New England Stringybarks

Mid-high to very tall dry forest in which a stringybark species (*E. laevopinea*, *E. cameronii* or *E. ligustrina*) is usually co-dominant with New England Blackbutt (*E. campanulata*). There is often a midstorey of Black Oak (*Allocasuarina littoralis*) and White Banksia (*Banksia integrifolia*) and a shrub layer with Prickly Shaggy Pea (*Podolobium ilicifolium*) and Lance Beard Heath (*Leucopogon lanceolatus*) common. Common ground layer species include Kangaroo Grass (*Themeda australis*), Bracken (*Pteridium esculentum*), Snow Grass (*Poa sieberiana*) and Blady Grass (*Imperata cylindrica*).

This ecosystem is restricted to the far north-east part of the tablelands, for example Boonoo Boonoo National Park and Basket Swamp Nature Reserve.

Upper	Mid	Lower
<i>E. laevopinea</i> , <i>E. cameronii</i> , <i>E. ligustrina</i>	<i>Allocasuarina littoralis</i> , <i>Banksia integrifolia</i> , <i>Podolobium ilicifolium</i> , <i>Leucopogon lanceolatus</i>	<i>Themeda australis</i> , <i>Pteridium esculentum</i> , <i>Poa sieberiana</i> , <i>Imperata cylindrica</i>

Ecosystem 87: Mixed Tableland Stringybark - Gum Open Forest

Tall to very tall forest characterised by a mixed canopy comprised of New England Blackbutt (*Eucalyptus campanulata*), Messmate (*E. obliqua*), Silver-top Stringybark (*E. laevopinea*) and Round-leaved Gum (*E. brunnea*) often associated with a variety of other, less frequent species. The understorey is generally open with some scattered shrubs such as Lance Beard Heath (*Leucopogon lanceolatus*) and the ground layer is dominated by Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), Snow Grass (*Poa sieberiana*) and various forbs species.

This ecosystem is distributed on the New England Tablelands mostly east of the New England Highway from the Barnard River to Mount Mitchell. Small areas are reserved in Ben Halls Gap and Mummel Gulf National Parks and Mt Hyland Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (50), <i>Eucalyptus obliqua</i> (50), <i>Eucalyptus brunnea</i> (38), <i>Eucalyptus laevopinea</i> (38), <i>Eucalyptus dalrympleana</i> (25), <i>Eucalyptus nobilis</i> (25)	<i>Leucopogon lanceolatus</i> (63), <i>Rubus parvifolius</i> (50), <i>Smilax australis</i> (50)	<i>Lomandra longifolia</i> (100), <i>Pteridium esculentum</i> (100), <i>Viola betonicifolia</i> (88), <i>Poa sieberiana</i> (88), <i>Dichondra repens</i> (75), <i>Glycine clandestina</i> (63), <i>Hardenbergia violacea</i> (62)

Ecosystem 88: Moist Escarpment New England Blackbutt

Tall to very tall moist forest in which the canopy is dominated by New England Blackbutt (*Eucalyptus campanulata*), and in which Tallowwood (*E. microcorys*) and, less frequently, Sydney Blue Gum (*E. saligna*) occur as sub-dominants. There is a moderately dense and diverse understorey of moist shrubs such as Tree Heath (*Trochocarpa laurina*), Hairy Psychotria (*Psychotria loniceroides*) and Scentless Rosewood (*Synoum glandulosum*) and a ground layer dominated by Bracken (*Pteridium esculentum*), Spiny-headed Mat-rush (*Lomandra longifolia*), Climbing Guinea Flower (*Hibbertia scandens*) and Common Ground Fern (*Calochlaena dubia*).

This ecosystem is scattered along the eastern fall of the Great Escarpment from the Cataract River south to the Manning River. It is reserved in Washpool, Carrai, Oxley Wild Rivers, Willi Willi, Werrikimbe and Cottan-Bimbang National Parks.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (73), <i>Eucalyptus microcorys</i> (62), <i>Eucalyptus saligna</i> (46)	<i>Trochocarpa laurina</i> (81), <i>Psychotria loniceroides</i> (65), <i>Leucopogon lanceolatus</i> (62), <i>Synoum glandulosum</i> (58), <i>Elaeocarpus reticulatus</i> (58), <i>Cryptocarya rigida</i> (54), <i>Schizomeria ovata</i> (50), <i>Acacia melanoxylon</i> (50)	<i>Lomandra longifolia</i> (89), <i>Pteridium esculentum</i> (73), <i>Dianella caerulea</i> (73), <i>Hibbertia scandens</i> (65), <i>Hibbertia dentata</i> (54), <i>Calochlaena dubia</i> (54), <i>Blechnum cartilagineum</i> (50)

Ecosystem 89: Moist Foothills Spotted Gum

Tall to very tall moist forest dominated by Spotted Gum (*Corymbia variegata* or *C. maculata*) in association with a variety of species with the most frequent including Tallowwood (*Eucalyptus microcorys*), Brush Box (*Lophostemon confertus*) and Narrow-leaved White Mahogany (*E. acmenoides*). There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and a sparse understorey of species such as Tree Heath (*Trochocarpa laurina*), Coffee Bush (*Breynia oblongifolia*), and Hairy Psychotria (*Psychotria loniceroides*). The ground layer is dominated by Blue Flax Lily (*Dianella caerulea*), Blady Grass (*Imperata cylindrica*) and Rasp Fern (*Doodia aspera*) as well as various forbs and vine species.

This ecosystem has major occurrences in Grange State Forest and the Bindery-Mann Wilderness area, with scattered occurrences in gullies from the Chandlers Creek to the coast. It is reserved in Nymboida, Chaelundi and Nymboi-Binderay National Parks.

Upper	Mid	Lower
<i>Corymbia variegata</i> (76), <i>Lophostemon confertus</i> (65), <i>Eucalyptus microcorys</i> (63), <i>Eucalyptus acmenoides</i> (55), <i>Eucalyptus siderophloia</i> (55), <i>Eucalyptus propinqua</i> (50)	<i>Allocasuarina torulosa</i> (82), <i>Trochocarpa laurina</i> (68), <i>Cissus antarctica</i> (68), <i>Breynia oblongifolia</i> (64), <i>Cissus hypoglauca</i> (64), <i>Rubus parvifolius</i> (64), <i>Psychotria loniceroides</i> (59)	<i>Dianella caerulea</i> (96), <i>Imperata cylindrica</i> (82), <i>Doodia aspera</i> (73), <i>Glycine clandestina</i> (68), <i>Lomandra longifolia</i> (68), <i>Pratia purpurascens</i> (64), <i>Eustrephus latifolius</i> (64), <i>Gymnostachys anceps</i> (59), <i>Hardenbergia violacea</i> (59)

Ecosystem 90: Moist Messmate - Gum

Tall to extremely tall forest in which Messmate (*Eucalyptus obliqua*) and New England Blackbutt (*E. campanulata*) co-dominate, frequently in association with Silver-top Stringybark (*E. laevopinea*) and Round-leaved Gum (*E. brunnea*). There is a scattered understorey of moist elements of which the more frequent species are Rough Tree Fern (*Cyathea australis*), Crinkle Bush (*Lomatia silaifolia*), Lance Beard Heath (*Leucopogon lanceolatus*) and Elderberry Panax (*Polyscias sambucifolia*). The ground layer is dominated by a mix of grasses, forbs and ferns such as Bracken (*Pteridium esculentum*), Spiny-headed Mat-rush (*Lomandra longifolia*), Snow Grass (*Poa sieberiana*) and Common Ground Fern (*Calochlaena dubia*).

This ecosystem occurs on deep sedimentary soils on the eastern edge of the New England Tablelands between the Timbarra and the Dorrigo Plateaux. It is reserved in Washpool and Butterleaf National Parks.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (79), <i>Eucalyptus obliqua</i> (64), <i>Eucalyptus brunnea</i> (50), <i>Eucalyptus laevopinea</i> (43)	<i>Leucopogon lanceolatus</i> (86), <i>Polyscias sambucifolia</i> (64), <i>Rubus parvifolius</i> (64), <i>Cyathea australis</i> (57), <i>Lomatia silaifolia</i> (43)	<i>Pteridium esculentum</i> (86), <i>Viola hederacea</i> (79), <i>Lomandra longifolia</i> (79), <i>Viola betonicifolia</i> (71), <i>Pratia purpurascens</i> (71), <i>Glycine clandestina</i> (71), <i>Eustrephus latifolius</i> (71), <i>Dianella caerulea</i> (64), <i>Poa sieberiana</i> (57), <i>Calochlaena dubia</i> (57)

Ecosystem 91: Moist Open Escarpment White Mahogany

Tall to very tall forest containing a mixed canopy of Narrow-leaved White Mahogany (*Eucalyptus acmenoides*), Tallowwood (*E. microcorys*), Sydney Blue Gum (*E. saligna*) and/or New England Blackbutt (*E. campanulata*). There is a midstorey of Forest Oak (*Allocasuarina torulosa*) with occasional scattered shrubs in the understorey and a ground layer dominated by Spiny-headed Mat-

rush (*Lomandra longifolia*), Snow Grass (*Poa sieberiana*), Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*) and various forbs.

This ecosystem is distributed along the great escarpment from Barrington Tops north to Chandlers Creek. Large areas are reserved in Cunnawarra and New England National Parks.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (67), <i>Eucalyptus saligna</i> (63), <i>Eucalyptus acmenoides</i> (50)	<i>Allocasuarina torulosa</i> (77), <i>Rubus parvifolius</i> (57), <i>Persoonia linearis</i> (57), <i>Breynia oblongifolia</i> (53)	<i>Lomandra longifolia</i> (87), <i>Dianella caerulea</i> (80), <i>Desmodium varians</i> (80), <i>Poa sieberiana</i> (70), <i>Imperata cylindrica</i> (70), <i>Hibbertia scandens</i> (67), <i>Glycine clandestina</i> (60), <i>Pteridium esculentum</i> (60), <i>Hardenbergia violacea</i> (57), <i>Doodia aspera</i> (57)

Ecosystem 92: Moist Shrubby Stringybark-Gum

Tall to very tall forest in which New England Blackbutt (*Eucalyptus campanulata*) and Round-leaved Gum (*E. brunnea*) co-dominate, frequently in association with Tallowwood (*E. microcorys*) and/or Messmate (*E. obliqua*). There is an understorey of scattered shrubs with the most frequent including the Rough Tree Fern (*Cyathea australis*), Lance Beard Heath (*Leucopogon lanceolatus*) and Green Wattle (*Acacia irrorata*). The ground layer is dominated by a variety of grasses, ferns, forbs and vines including Climbing Guinea Flower (*Hibbertia scandens*), Bracken (*Pteridium esculentum*) Blady Grass (*Imperata cylindrica*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem is mainly occurs on the eastern edge of the New England Tablelands from the Dorrigo Plateau north to the Timbarra Plateau. It is reserved in Guy Fawkes River National Park.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (74), <i>Eucalyptus brunnea</i> (68), <i>Eucalyptus obliqua</i> (58), <i>Eucalyptus microcorys</i> (52)	<i>Cyathea australis</i> (74), <i>Leucopogon lanceolatus</i> (63), <i>Acacia irrorata</i> (58)	<i>Hibbertia scandens</i> (90), <i>Pteridium esculentum</i> (79), <i>Dianella caerulea</i> (74), <i>Imperata cylindrica</i> (74), <i>Blechnum cartilagineum</i> (74), <i>Poa sieberiana</i> (63), <i>Glycine clandestina</i> (63), <i>Lomandra longifolia</i> (63), <i>Billardiera scandens</i> (58), <i>Viola hederacea</i> (52)

Ecosystem 93: Montane Stringybark-Gum forest

Tall to very tall forest in which Mountain Gum (*Eucalyptus dalrympleana*) and New England Stringybark (*E. caliginosa*) co-dominate with moderately frequent occurrences of one of the peppermints (*E. nova-anglica* and *E. radiata*). There is a dense, diverse dry shrub understorey with the more common species including White Banksia (*Banksia integrifolia*), Fern-leaved Wattle (*Acacia filicifolia*) and Lance Beard Heath (*Leucopogon lanceolatus*). The ground layer is a mix of species including Bracken (*Pteridium esculentum*), Mat-rush (*Lomandra filiformis*), Snow Grass (*Poa sieberiana*) and Blady Grass (*Imperata cylindrica*).

This ecosystem occurs on the New England Tablelands and is predominantly distributed from Guyra north to the Queensland border. It is reserved in Bald Rock and Warra National Parks.

Upper	Mid	Lower
<i>Eucalyptus dalrympleana</i> (72), <i>Eucalyptus caliginosa</i> (64)	<i>Banksia integrifolia</i> (86), <i>Acacia filicifolia</i> (86), <i>Rubus parvifolius</i> (72), <i>Leucopogon lanceolatus</i> (72), <i>Monotoca scoparia</i> (72), <i>Hovea linearis</i> (64), <i>Persoonia cornifolia</i> (57), <i>Bossiaea scortechinii</i> (57)	<i>Pteridium esculentum</i> (86), <i>Glycine clandestina</i> (86), <i>Hypochaeris radicata</i> (86), <i>Lomandra filiformis</i> (86), <i>Poa sieberiana</i> (86), <i>Viola betonicifolia</i> (72), <i>Stylidium graminium</i> (72), <i>Imperata cylindrica</i> (72), <i>Themeda australis</i> (64), <i>Billardiera scandens</i> (64)

Ecosystem 94: Mountain Gum - Brown Barrel

Tall to very tall forest with a mixed canopy of Mountain Gum (*Eucalyptus dalrympleana*), Brown Barrel (*E. fastigata*) and/or Messmate (*E. obliqua*). There is a relatively dense, semi-moist understorey dominated by Blackwood (*Acacia melanoxylon*), White Banksia (*Banksia integrifolia*), Elderberry (*Polyscias sambucifolia*), and Lance Beard Heath (*Leucopogon lanceolatus*). The ground layer is dominated by Snow Grass (*Poa sieberiana*) and Spiny-headed Mat-rush (*Lomandra longifolia*) along with various forb species.

This ecosystem is confined to steep slopes in the Barrington wilderness.

Upper	Mid	Lower
<i>Eucalyptus dalrympleana</i> (60), <i>Eucalyptus fastigata</i> (50), <i>Eucalyptus obliqua</i>	<i>Polyscias sambucifolia</i> (70), <i>Banksia integrifolia</i> (60), <i>Coprosma quadrifida</i> (60), <i>Leucopogon lanceolatus</i> (60), <i>Acacia melanoxylon</i> (60), <i>Smilax australis</i> (60),	<i>Viola hederacea</i> (90), <i>Poa sieberiana</i> (80), <i>Lomandra longifolia</i> (70), <i>Dianella caerulea</i> (60), <i>Pteridium esculentum</i> (60), <i>Pratia purpurascens</i> (60), <i>Geranium potentilloides</i> (60), <i>Wahlenbergia stricta</i> (60)

Ecosystem 95: Northern Moist Blackbutt

Tall to extremely tall forest dominated by Blackbutt (*Eucalyptus pilularis*) with Tallowwood (*E. microcorys*) and Brush Box (*Lophostemon confertus*) present as sub-dominants and Narrow-leaved White Mahogany (*E. acmenoides*) frequently present at lower abundances. There is a dense understorey with Forest Oak (*Allocasuarina torulosa*) and Coffee Bush (*Breynia oblongifolia*) occurring frequently along with many other moist forest species. The ground layer is varied with Blady Grass (*Imperata cylindrica*), Wiry Panic (*Entolasia stricta*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Bracken (*Pteridium esculentum*) occurring frequently, but ferns such as Gristle Fern (*Blechnum cartilagineum*) and Rough Maidenhair (*Adiantum hispidulum*) are sometimes prominent.

This ecosystem is confined to the eastern Mt Warning shield where it is reserved in Mooball, Nightcap and Mt Jerusalem National Parks.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (90), <i>Eucalyptus microcorys</i> (90)	<i>Allocasuarina torulosa</i> (90), <i>Breynia oblongifolia</i> (90)	<i>Imperata cylindrica</i> (90), <i>Entolasia stricta</i> (84), <i>Lomandra longifolia</i> (74), <i>Pteridium esculentum</i> (74), <i>Vernonia cinerea</i> (68), <i>Glycine clandestina</i> (68), <i>Themeda australis</i> (63)

*Ecosystem 96: Natural Grassland

Sod grassland and tussock grassland dominated by one or more grasses, for example Kangaroo Grass (*Themeda australis*), Hairy Spinifex (*Spinifex sericeus*), Weeping Grass (*Microlaena stipoides*), Snow Grass (*Poa sieberiana*), speargrass (*Austrostipa* spp.) and wallaby grass (*Austrodanthonia* spp.). Forbs and heath shrubs may be sub-dominant.

This ecosystem is an aggregation of different plant communities. It has scattered occurrences in both CRA Regions, and extends from sea level (e.g. Yuraygir National Park, Moonee Beach and Limeburners Creek Nature Reserves) to the tablelands.

Upper	Lower
<i>Themeda australis</i> , <i>Spinifex sericeus</i> , <i>Microlaena stipoides</i> , <i>Poa sieberiana</i> , <i>Austrostipa</i> spp., <i>Austrodanthonia</i> spp.	forbs

Ecosystem 97: Needlebark Stringybark-Large Fruited Blackbutt

Tall to very tall dry forest dominated by Large-fruited Blackbutt (*Eucalyptus pyrocarpa*) with Needlebark Stringybark (*E. planchoniana*) and Red Bloodwood (*Corymbia gummifera*) usually sub-dominant and various other canopy species occasionally present. There is a dense understorey of heath species such as Conebush (*Petrophile canescens*), Paper-bark Tea-tree (*Leptospermum trinervium*), *Bossiaea rhombifolia*, *Leptospermum polygalifolium* and *Banksia oblongifolia*. Frequently occurring species in the ground layer include *Patersonia glabrata*, Red-fruited Saw Sedge (*Gahnia sieberiana*) and Wiry Panic (*Entolasia stricta*).

This ecosystem is confined to sandstones from the Orara River north to Bungawalbin Creek. It is reserved in Sherwood Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus planchoniana</i> (83), <i>Eucalyptus pyrocarpa</i> (83), <i>Corymbia gummifera</i> (67), <i>Syncarpia glomulifera</i> (50)	<i>Petrophile canescens</i> (83), <i>Leptospermum trinervium</i> (83), <i>Bossiaea rhombifolia</i> (63), <i>Leptospermum polygalifolium</i> (67), <i>Banksia oblongifolia</i> (67), <i>Monotoca scoparia</i> (67), <i>Hakea dactyloides</i> (67), <i>Lambertia formosa</i> (67)	<i>Patersonia glabrata</i> (100), <i>Gahnia sieberiana</i> (83), <i>Entolasia stricta</i> (67), <i>Persoonia tenuifolia</i> (67), <i>Lomandra filiformis</i> (67)

*Ecosystem 98: New England Peppermint

Mid-high to tall woodland with the overstorey dominated by New England Peppermint (*Eucalyptus nova-anglica*). Associates include Snow Gum (*E. pauciflora*), Black Sally (*E. stellulata*), Mountain Gum (*E. dalrympleana*) and Narrow-leaved Peppermint (*E. radiata*). Understorey shrubs are uncommon, although a dense ground layer supports Kangaroo Grass (*Themeda australis*), Snow Grass (*Poa sieberiana*) and various forbs.

This ecosystem is scattered at high altitudes in both CRA Regions (e.g. Butterleaf and Guy Fawkes River National Parks, Mount Hyland Nature Reserve).

Upper	Lower
<i>Eucalyptus nova-anglica</i> , <i>Eucalyptus pauciflora</i> , <i>Eucalyptus stellulata</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus radiata</i>	<i>Themeda australis</i> , <i>Poa sieberiana</i>

Ecosystem 99: New England Stringybark-Blakelys Red Gum

Mid-high to tall forest in which New England Stringybark (*Eucalyptus caliginosa*), Blakely's Red Gum (*E. blakelyi*) and/or Broad-leaved Apple (*Angophora subvelutina*) co-dominate. There is a sparse shrub layer of Dogwood (*Jacksonia scoparia*) and Hickory (*Acacia implexa*), and a ground layer dominated by grasses such as Barbed-wire Grass (*Cymbopogon refractus*), Three-awned Grass (*Aristida ramosa*), Kangaroo Grass (*Themeda australis*) and mat-rush (*Lomandra* spp.).

This ecosystem is associated with gorges of the Great Escarpment from the Queensland Border south to Barrington Tops. It is reserved in Guy Fawkes River and Oxley Wild Rivers National Parks.

Upper	Mid	Lower
<i>Eucalyptus caliginosa</i> (60), <i>Angophora subvelutina</i> (60), <i>Eucalyptus blakelyi</i> (60)	<i>Jacksonia scoparia</i> (60), <i>Melichrus urceolatus</i> (50), <i>Acacia implexa</i> (50)	<i>Cymbopogon refractus</i> (80), <i>Conyza bonariensis</i> (70), <i>Glycine clandestina</i> (70), <i>Bidens pilosa</i> (70), <i>Lomandra filiformis</i> (70), <i>Themeda australis</i> (60), <i>Aristida ramosa</i> (60), <i>Chrysocephalum apiculatum</i> (50)

Ecosystem 100: Northern Grassy Sydney Blue Gum

Tall to extremely tall forest dominated by Sydney Blue Gum (*Eucalyptus saligna*) in association with Brush Box (*Lophostemon confertus*) and Tallowwood (*E. microcorys*). The understorey may contain Maiden's Wattle (*Acacia maidenii*), Green Wattle (*Acacia irrorata*), Tree Heath (*Trochocarpa laurina*) and other shrubs. The ground layer is dominated by Blady Grass (*Imperata cylindrica*), Sword Sedge (*Lepidosperma laterale*), Sorghum (*Sorghum leiocladum*), Tussock Grass (*Poa labillardieri*), Kangaroo Grass (*Themeda australis*) and Rasp Fern (*Doodia aspera*).

This ecosystem is distributed on the ranges of the Great Escarpment from Clouds Creek north to the Boonoo Boonoo River at mid to high elevation with an easterly extension to the ranges of the Focal Peak Shield and the northern Richmond Range. Examples are reserved in Toonumbar, Border Ranges, Richmond Range, Tooloom, Koreelah and Gibraltar Range National Parks.

Upper	Mid	Lower
<i>Eucalyptus saligna</i> (67), <i>Lophostemon confertus</i> (67), <i>Angophora subvelutina</i> (58), <i>Eucalyptus microcorys</i> (50)	<i>Acacia maidenii</i> (75), <i>Trochocarpa laurina</i> (67)	<i>Lomandra longifolia</i> (75), <i>Lepidosperma laterale</i> (75), <i>Imperata cylindrica</i> (67), <i>Desmodium varians</i> (67), <i>Oplismenus aemulus</i> (67), <i>Dianella caerulea</i> (67), <i>Sorghum leiocladum</i> (58)

Ecosystem 101: Northern Open Grassy Blackbutt

Tall to very tall forest with a mixed canopy usually dominated by Blackbutt (*Eucalyptus pilularis*) and in which one or several of Red Bloodwood (*Corymbia gummifera*), Red Mahogany (*E. resinifera*), Tallowwood (*E. microcorys*) or Turpentine (*Syncarpia glomulifera*) may be sub-dominant or occasional. There is often a Forest Oak (*Allocasuarina torulosa*) midstorey and scattered dry shrubs in the understorey of which Geebung (*Persoonia stradbrokeensis*) and Lance Beard Heath (*Leucopogon lanceolatus*) are the most frequent. There is a predominantly grassy ground layer dominated by Wiry Panic (*Entolasia stricta*), Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Sword Sedge (*Lepidosperma laterale*) and Bracken (*Pteridium esculentum*).

This ecosystem is concentrated on high and low quartz sediments in the near coastal lowlands of the Clarence Valley east of the Coast Range with scattered occurrences on the southern Richmond Range and inland in Ewingar State Forest. It is reserved in Yuraygir National Park.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (42), <i>Syncarpia glomulifera</i> (42)	<i>Persoonia stradbokensis</i> (83), <i>Leucopogon lanceolatus</i> (78), <i>Allocasuarina torulosa</i> (56), <i>Glochidion ferdandi</i> (56)	<i>Entolasia stricta</i> (98), <i>Imperata cylindrica</i> (81), <i>Pteridium esculentum</i> (81), <i>Lepidosperma laterale</i> (81), <i>Lomandra longifolia</i> (78), <i>Glycine clandestina</i> (73), <i>Pratia purpurascens</i> (73), <i>Dianella caerulea</i> (71), <i>Panicum simile</i> (68), <i>Themeda australis</i> (66)

Ecosystem 102: Northern Ranges Dry Tallowwood

Tall to very tall forest with a very mixed canopy which usually contains Tallowwood (*Eucalyptus microcorys*) in association with one or several other species which may include Narrow-leaved White Mahogany (*E. acmenoides*), Pink Bloodwood (*Corymbia intermedia*), Small-fruited Grey Gum (*E. propinqua*) or Brush Box (*Lophostemon confertus*). There is often a midstorey of Forest Oak (*Allocasuarina torulosa*) with an open understorey. The ground layer is a mix of grasses, forbs and vines such as Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*), Kangaroo Grass (*Themeda australis*) and False Sarsaparilla (*Hardenbergia violacea*).

This ecosystem is distributed on the exposed slopes of the Koreelah, Macpherson and Main Camp ranges with extensions east to the Border and Tweed Ranges. It is reserved in Captains Creek Nature Reserve, Border Ranges, Richmond Range and Mebbin National Parks.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (64), <i>Lophostemon confertus</i> (56), <i>Corymbia intermedia</i> (48), <i>Eucalyptus siderophloia</i>	<i>Smilax australis</i> (72), <i>Breynia oblongifolia</i> (64), <i>Cissus antarctica</i> (52), <i>Allocasuarina torulosa</i> (48)	<i>Imperata cylindrica</i> (84), <i>Dianella caerulea</i> (72), <i>Geitonoplesium cymosum</i> (68), <i>Themeda australis</i> (64), <i>Hardenbergia violacea</i> (56), <i>Pratia purpurascens</i> (52), <i>Lantana camara</i> (52), <i>Lomandra longifolia</i> (52)

Ecosystem 103: Northern Wet Brush Box

Tall to extremely tall moist forest dominated by Brush Box (*Lophostemon confertus*) which often occurs as pure stands. There is a dense, wet understorey dominated by rainforest species such as Murrogun (*Cryptocarya microneura*), Scentless Rosewood (*Synoum glandulosum*), Bolwarra (*Eupomatia laurina*) and Celery Wood (*Polyscias elegans*). Vines such as Water Vine (*Cissus antarctica*) and Native Yam (*Dioscorea transversa*) are common, and the ground layer is dominated by ground ferns such as Giant Maidenhair (*Adiantum formosum*) and Gristle Fern (*Blechnum cartilagineum*).

This ecosystem occurs predominantly on the Koreelah, Tooloom and Richmond Ranges with scattered occurrences south to Chandlers Creek. It is reserved in Toonumbar and Richmond Range National Parks.

Upper	Mid	Lower
<i>Lophostemon confertus</i> (96)	<i>Cissus antarctica</i> (93), <i>Dioscorea transversa</i> (86), <i>Alpinia caerulea</i> (79), <i>Cryptocarya microneura</i> (79), <i>Synoum glandulosum</i> (79), <i>Eupomatia laurina</i> (79), <i>Cordyline petiolaris</i> (71), <i>Smilax australis</i> (71), <i>Rhodamnia rubescens</i> (68), <i>Citriobatus pauciflorus</i> (64), <i>Polyscias elegans</i> (64), <i>Neolitsea dealbata</i> (64), <i>Croton verrauxii</i> (64), <i>Parsonsia straminea</i> (57)	<i>Adiantum formosum</i> (71), <i>Blechnum cartilagineum</i> (68), <i>Geitonoplesium cymosum</i> (64), <i>Dianella caerulea</i> (64), <i>Pseuderanthemum variabile</i> (61)

Ecosystem 104: Northern Wet Tallowwood-Blue Gum

Tall to extremely tall forest in which Sydney Blue Gum (*Eucalyptus saligna*) and Tallowwood (*E. microcorys*) dominate the canopy, with Brush Box (*Lophostemon confertus*) or Narrow-leaved White Mahogany (*E. acmenoides*) frequently sub-dominant. There is a dense understorey of rainforest shrubs and small trees such as Guioa (*Guioa semiglauc*), White Bolly Gum (*Neolitsea dealbata*) and Scrub Turpentine (*Rhodamnia rubescens*). Vines such as Water Vine (*Cissus Antarctica*) and Five-leaf Water Vine (*Cissus hypoglauc*) are common, and the ground layer is dominated by ferns and forbs like Giant Maidenhair (*Adiantum formosum*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem is distributed along the Koreelah, Richmond and Tooloom Ranges to the north and along the eastern fall of the Gibraltar Range to the south. It is reserved in Washpool, Toonumbar and Richmond Range National Parks.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (79), <i>Eucalyptus saligna</i> (69), <i>Lophostemon confertus</i> (55)	<i>Cissus antarctica</i> (86), <i>Alpinia caerulea</i> (81), <i>Smilax australis</i> (76), <i>Guioa semiglauc</i> (74), <i>Cissus hypoglauc</i> (64), <i>Neolitsea dealbata</i> (64), <i>Rhodamnia rubescens</i> (64), <i>Psychotria loniceroides</i> (64), <i>Cryptocarya microneura</i> (64), <i>Trochocarpa laurina</i> (60), <i>Polyscias elegans</i> (55), <i>Eupomatia laurina</i> (52), <i>Synoum glandulosum</i> (50)	<i>Dianella caerulea</i> (69), <i>Geitonoplesium cymosum</i> (64), <i>Adiantum formosum</i> (57), <i>Rubus rosifolius</i> (52)

Ecosystem 105: Nymboida Tallowwood-Turpentine

Tall to very tall forest dominated by Tallowwood (*Eucalyptus microcorys*) with one or more of Narrow-leaved White Mahogany (*E. acmenoides*), Turpentine (*Syncarpia glomulifera*) and Sydney Blue Gum (*E. saligna*) occurring as sub-dominants. There is a relatively dense moist to semi-moist understorey in which Forest Oak (*Allocasuarina torulosa*), Tree Heath (*Trochocarpa laurina*), Hairy Psychotria (*Psychotria loniceroides*), and Scrub Turpentine (*Rhodamnia rubescens*) are most common. Vines are common and there is a diverse ground layer in which grasses, ferns, and forbs such as Blue Flax Lily (*Dianella caerulea*), Climbing Guinea Flower (*Hibbertia scandens*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Snow Grass (*Poa sieberiana*) are common.

This ecosystem is relatively restricted to ranges and foothills from Clouds Creek east to the Little Nymboida River. It is reserved in Nymboi-Binderay National Park.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (100), <i>Syncarpia glomulifera</i> (70), <i>Eucalyptus acmenoides</i> (50)	<i>Cissus antarctica</i> (90), <i>Cissus hypoglauca</i> (80), <i>Allocasuarina torulosa</i> (80), <i>Trochocarpa laurina</i> (80), <i>Psychotria loniceroides</i> (80), <i>Breynia oblongifolia</i> (70), <i>Pandorea pandorana</i> (70), <i>Smilax australis</i> (70), <i>Solanum densevestitum</i> (70), <i>Rhodamnia rubescens</i> (70), <i>Acacia melanoxylon</i> (70), <i>Persoonia media</i> (60), <i>Polyscias elegans</i> (60)	<i>Dianella caerulea</i> (100), <i>Hibbertia scandens</i> (80), <i>Lomandra longifolia</i> (70), <i>Venonia cinerea</i> (60), <i>Rubus hillii</i> (60), <i>Oplismenus hirtellus</i> (60), <i>Kennedia rubicunda</i> (60), <i>Poa sieberiana</i> (60), <i>Geitonoplesium cymosum</i> (60)

Ecosystem 106: Open Coastal Brush Box

Tall to very tall forest dominated by Brush Box (*Lophostemon confertus*) with Turpentine (*Syncarpia glomulifera*) present as a sub-dominant. There is often a midstorey of Forest Oak (*Allocasuarina torulosa*), and an open to moderately dense understorey of semi-moist shrubs such as Tree Heath (*Trochocarpa laurina*), Narrow-leaved Palm Lily (*Cordyline stricta*) and Scentless Rosewood (*Synoum glandulosum*). The ground layer is dominated by ferns such as Gristle Fern (*Blechnum cartilagineum*) and Giant Maidenhair (*Adiantum formosum*) and forbs such as Spiny-headed Mat-rush (*Lomandra longifolia*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem is distributed on coastal lowlands and foothills from the Manning Valley north to the Corindi River. It is reserved in New England and Kumbatine National Parks and Ngambaa Nature Reserve.

Upper	Mid	Lower
<i>Lophostemon confertus</i> (78), <i>Syncarpia glomulifera</i> (64),	<i>Dioscorea transversa</i> (70), <i>Smilax australis</i> (70), <i>Trochocarpa laurina</i> (64), <i>Allocasuarina torulosa</i> (64), <i>Cordyline stricta</i> (61), <i>Wilkea huegeliana</i> (61), <i>Synoum glandulosum</i> (56), <i>Cryptocarya microneura</i> (56), <i>Lantana camara</i> (53)	<i>Dianella caerulea</i> (70), <i>Lomandra longifolia</i> (70), <i>Blechnum cartilagineum</i> (61), <i>Pseuderanthemum variabile</i> (58), <i>Morinda jasminoides</i> (58), <i>Doodia aspera</i> (53), <i>Gymnostachys anceps</i> (53)

Ecosystem 107: Open Messmate-New England Blackbutt

Tall to very tall forest dominated by New England Blackbutt (*Eucalyptus campanulata*) often in association with Messmate (*E. obliqua*). The understorey is varied with Lance Beard Heath (*Leucopogon lanceolatus*) occurring frequently, while other species such as White Banksia (*Banksia integrifolia*), Antarctic Beech (*Nothofagus moorei*) and Hill Kanuka (*Tristaniaopsis collina*) may be present. The ground layer is dominated by Spiny-headed Mat-rush (*Lomandra longifolia*), Snow Grass (*Poa sieberiana*) and Bracken (*Pteridium esculentum*).

This ecosystem is confined to the western and eastern falls of Barrington Tops. It is reserved in Barrington National Park.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (86), <i>Eucalyptus obliqua</i> (43)	<i>Leucopogon lanceolatus</i> (71), <i>Smilax australis</i> (71), <i>Pyrossia rupestris</i> (50)	<i>Lomandra longifolia</i> (79), <i>Dianella caerulea</i> (64), <i>Pteridium esculentum</i> (57), <i>Lepidosperma laterale</i> (57)

Ecosystem 108: Open Ribbon Gum

Tall to extremely tall forest dominated by Mountain Ribbon Gum (*Eucalyptus nobilis*), often in association with New England Blackbutt (*E. campanulata*) and Messmate (*E. obliqua*). The understorey may contain scattered shrubs of Lance Beard Heath (*Leucopogon lanceolatus*), Prickly Shaggy Pea (*Podolobium ilicifolium*), and Blackwood (*Acacia melanoxylon*), and the ground layer is dominated by Spiny-headed Mat-rush (*Lomandra longifolia*), Snow Grass (*Poa sieberiana*) and Bracken (*Pteridium esculentum*) and various forbs.

This ecosystem is restricted to high altitude, colder regions of the New England Tablelands near Mummel Gulf and the Werrikimbe escarpment. It is reserved in Mummel Gulf and Cottan-Bimbang National Parks.

Upper	Mid	Lower
<i>Eucalyptus nobilis</i> (64), <i>Eucalyptus obliqua</i> (55), <i>Eucalyptus campanulata</i> (55)	<i>Leucopogon lanceolatus</i> (73), <i>Rubus parvifolius</i> (55), <i>Acacia melanoxylon</i> (55)	<i>Pteridium esculentum</i> (100), <i>Poa sieberiana</i> (100), <i>Lomandra longifolia</i> (100), <i>Glycine clandestina</i> (73), <i>Viola betonicifolia</i> (64), <i>Hibbertia scandens</i> (64), <i>Desmodium varians</i> (64), <i>Viola hederacea</i> (64), <i>Wahlenbergia stricta</i> (53), <i>Gonocarpus teucroides</i> (55)

Ecosystem 109: Open Shrubby Brush Box-Tallowwood

Tall to very tall forest often comprised of pure Brush Box (*Lophostemon confertus*) stands or with Tallowwood (*Eucalyptus microcorys*) present as a sub-dominant. There is usually an understorey of scattered shrubs with common species including Hairy Psychotria (*Psychotria loniceroides*), Scentless Rosewood (*Synoum glandulosum*), and Tree Heath (*Trochocarpa laurina*). The understorey is a mix of ferns, forbs and grasses such as Rasp Fern (*Doodia aspera*), Giant Maidenhair (*Adiantum formosum*), Blue Flax Lily (*Dianella caerulea*) and Blady Grass (*Imperata cylindrica*).

This ecosystem is primarily distributed on the eastern fall of the Great Escarpment north of the Nymboida River, and on the ranges north of the Clarence River. It is reserved in Washpool and Border Ranges National Park.

Upper	Mid	Lower
<i>Lophostemon confertus</i> (89), <i>Eucalyptus microcorys</i> (67)	<i>Psychotria loniceroides</i> (78), <i>Synoum glandulosum</i> (67), <i>Trochocarpa laurina</i> (67), <i>Polyscias elegans</i> (67), <i>Allocasuarina torulosa</i> (56)	<i>Dianella caerulea</i> (100), <i>Desmodium varians</i> (67), <i>Imperata cylindrica</i> (67), <i>Doodia aspera</i> (56)

Ecosystem 110: Open Silver-top Stringybark - Blue Gum

Tall to very tall forest with a canopy dominated by Silver-top Stringybark (*Eucalyptus laevopinea*) with Sydney Blue Gum (*E. saligna*) often present as a sub-dominant. The understorey is sparse with Native Raspberry (*Rubus parvifolius*) and Lance Beard Heath (*Leucopogon lanceolatus*) common. The ground layer is dominated by Tussock Grass (*Poa labillardieri*), Snow Grass (*Poa sieberiana*), Bracken (*Pteridium esculentum*), Spiny-headed Mat-rush (*Lomandra longifolia*) and various forbs.

This ecosystem is distributed along the rugged eastern fall of the New England Tablelands from Barrington Tops north to the Queensland Border. It is reserved in Barakee, Mummel Gulf, Barrington and Washpool National Parks.

Upper	Mid	Lower
<i>Eucalyptus laevopinea</i> (74), <i>Eucalyptus saligna</i> (57)	<i>Rubus parvifolius</i> (64)	<i>Lomandra longifolia</i> (92), <i>Pteridium esculentum</i> (87), <i>Glycine clandestina</i> (82), <i>Desmodium varians</i> (77), <i>Dianella caerulea</i> (74), <i>Poa labillardieri</i> (69), <i>Acaena novae-zelandiae</i> (67), <i>Dichondra repens</i> (67), <i>Hibbertia scandens</i> (64), <i>Pratia purpurascens</i> (64)

Ecosystem 111: Open Silver-top Stringybark-Tallowwood

Tall to very tall forest with a canopy dominated by Silver-top Stringybark (*Eucalyptus laevopinea*) associated with Tallowwood (*E. microcorys*), Sydney Blue Gum (*E. saligna*) or Messmate (*E. obliqua*). There are often scattered shrubs such as Native Raspberry (*Rubus parvifolius*) and Rough Tree Fern (*Cyathea australis*) in the understorey. The ground layer is dominated by a variety of grasses, ferns, vines and forbs such as Blady Grass (*Imperata cylindrica*), Bracken (*Pteridium esculentum*), Snow Grass (*Poa sieberiana*) and Climbing Guinea Flower (*Hibbertia scandens*).

This ecosystem is concentrated on the New England Tablelands north from the Dorrigo Plateau to the Gibraltar Range. It is reserved in Guy Fawkes National Park.

Upper	Mid	Lower
<i>Eucalyptus laevopinea</i> (56), <i>Eucalyptus microcorys</i> (44)	<i>Rubus parvifolius</i> (67), <i>Cyathea australis</i> (56), <i>Breynia oblongifolia</i> (56), <i>Polyscias sambucifolia</i> (56), <i>Smilax australis</i> (56)	<i>Desmodium varians</i> (78), <i>Eustrephus latifolius</i> (78), <i>Viola hederacea</i> (67), <i>Hibbertia scandens</i> (67), <i>Dianella caerulea</i> (67), <i>Poa sieberiana</i> (67), <i>Pratia purpurascens</i> (67), <i>Sigesbeckia orientalis</i> (56), <i>Hibbertia dentata</i> (56), <i>Glycine clandestina</i> (56), <i>Pteridium esculentum</i> (56), <i>Imperata cylindrica</i> (56), <i>Blechnum cartilagineum</i> (56), <i>Lomandra longifolia</i> (56)

*Ecosystem 112: Paperbark

Low to very tall woodland and forest in which Broad-leaved Paperbark (*Melaleuca quinquenervia*) commonly dominates the overstorey, or occasionally another paperbark (e.g. *M. alternifolia*, *M. sieberi*, *M. linariifolia*, *M. styphelioides*). Associates include Swamp Mahogany (*Eucalyptus robusta*), Swamp Oak (*Casuarina glauca*) and Swamp Box (*Lophostemon suaveolens*). Understorey and ground layer composition varies with substrate, depth and extent of waterlogging, and water quality. Saw-sedges (*Gahnia* spp.), twig-rushes (*Baumea* spp.), *Carex* spp., Bungwahl Fern (*Blechnum indicum*), Feather Plant (*Baloskion tetraphyllum*), tea-tree (e.g. *Leptospermum juniperinum*), bottlebrush (e.g. *Callistemon pachyphyllus*) and certain grasses (e.g. *Hemarthria uncinata*, *Ischaemum australe*) may dominate, or alternatively rainforest trees, shrubs and vines such as Cabbage Tree Palm (*Livistona australis*), Cheese Tree (*Glochidion ferdinandi*) and Common Silkpod (*Parsonsia straminea*) can be common.

This ecosystem is widespread on the coastal lowlands in both CRA Regions (e.g. Bundjalung, Crowdy Bay and Myall Lakes National Parks).

Upper	Mid	Lower
<i>Melaleuca quinquenervia</i> , <i>Melaleuca alternifolia</i> , <i>Melaleuca sieberi</i> , <i>Eucalyptus robusta</i> , <i>Casuarina glauca</i> , <i>Lophostemon suaveolens</i>	<i>Livistona australis</i> , <i>Glochidion ferdinandi</i> , <i>Parsonsia straminea</i> , <i>Leptospermum juniperinum</i> , <i>Callistemon pachyphyllus</i>	<i>Gahnia</i> spp., <i>Baumea</i> spp., <i>Carex</i> spp., <i>Blechnum indicum</i> , <i>Baloskion tetraphyllum</i> , <i>Hemarthria uncinata</i> , <i>Ischaemum australe</i>

*Ecosystem 113: Peppermint

Generally mid-high to tall woodland and forest with the overstorey dominated by Narrow-leaved Peppermint (*Eucalyptus radiata*), Wattle-leaved Peppermint (*E. acaciiformis*) and/or New England Blackbutt (*E. campanulata*). Associates include stringybarks (e.g. *E. williamsiana*), Snow Gum (*E. pauciflora*) and Mountain Gum (*E. dalrympleana*). The understorey may support a range of shrubs including *Monotoca scoparia*, Lance Beard Heath (*Leucopogon lanceolatus*), *Banksia spinulosa*, *Bossiaea scortechinii* and Conestick (*Petrophile canescens*). Bracken (*Pteridium esculentum*), Kangaroo Grass (*Themeda australis*), Snow Grass (*Poa sieberiana*), mat-rushes (*Lomandra* spp.) are common in the ground layer.

This ecosystem is widespread at high altitudes in both CRA Regions (e.g. Gibraltar Range and Cathedral Rocks National Parks, Nowendoc district).

Upper	Mid	Lower
<i>Eucalyptus radiata</i> , <i>Eucalyptus acaciiformis</i> , <i>Eucalyptus williamsiana</i> , <i>Eucalyptus pauciflora</i> , <i>Eucalyptus campanulata</i> , <i>Eucalyptus dalrympleana</i>	<i>Leucopogon lanceolatus</i> , <i>Monotoca scoparia</i> , <i>Banksia spinulosa</i> , <i>Bossiaea scortechinii</i> , <i>Daviesia ulicifolia</i>	<i>Pteridium esculentum</i> , <i>Themeda australis</i> , <i>Poa sieberiana</i> , <i>Lomandra longifolia</i> , <i>Lomandra filiformis</i>

*Ecosystem 114: Peppermint – Mountain/Manna Gum

Mid-high to very tall dry or moist forest in which Narrow-leaved Peppermint (*Eucalyptus radiata*) co-dominates the overstorey with Mountain Ribbon Gum (*E. nobilis*). Associated species include Broad-leaved Stringybark (*E. caliginosa*), Mountain Gum (*E. dalrympleana*), Round-leaved Gum (*E. brunnea*) and New England Blackbutt (*E. campanulata*). Understorey composition varies although trees and shrubs include Lance Beard Heath (*Leucopogon lanceolatus*), Fern-leaved Wattle (*Acacia filicifolia*), Black Oak (*Allocasuarina littoralis*), Crinkle Bush (*Lomatia silaifolia*) and *Monotoca scoparia*. The ground layer is dominated by species such as Snow Grass (*Poa sieberiana*), Kangaroo Grass (*Themeda australis*), Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), Common Ground Fern (*Calochlaena dubia*), Rasp Fern (*Doodia caudata*), and various forbs.

This ecosystem is widespread at high altitudes in both CRA Regions (e.g. Nowendoc and Cathedral Rocks National Parks).

Upper	Mid	Lower
<i>Eucalyptus radiata</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus caliginosa</i> , <i>Eucalyptus brunnea</i> , <i>Eucalyptus campanulata</i>	<i>Leucopogon lanceolatus</i> , <i>Acacia filicifolia</i> , <i>Allocasuarina littoralis</i> , <i>Lomatia silaifolia</i> , <i>Monotoca scoparia</i> , <i>Dillwynia phyllicoides</i>	<i>Poa sieberiana</i> , <i>Themeda australis</i> , <i>Lomandra longifolia</i> , <i>Pteridium esculentum</i> , <i>Lomandra filiformis</i> , <i>Calochlaena dubia</i> , <i>Doodia caudata</i> ,

*Ecosystem 115: Red Bloodwood

Mid-high to tall woodland and forest with the overstorey dominated by Red Bloodwood (*Corymbia gummifera*). Understorey trees and shrubs include Black Oak (*Allocasuarina littoralis*), tea-trees (*Leptospermum* spp.), wattles (e.g. *Acacia ulicifolia*), Epacrids (e.g. *Leucopogon lanceolatus*, *L. leptospermoides*) and banksias (e.g. *Banksia aemula*). Ground layer species include Feather Plant (*Balioskion tetraphyllum*), Bracken (*Pteridium esculentum*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem has a scattered distribution on the coastal lowlands of both CRA Regions (e.g. Bundjalung National Park, Lake Innes Nature Reserve), and also in Myrtle and Doubleduke State Forests.

Upper	Mid	Lower
<i>Corymbia gummifera</i>	<i>Allocasuarina littoralis</i> , <i>Leptospermum</i> spp., <i>Acacia ulicifolia</i> , <i>Leucopogon lanceolatus</i> , <i>Leucopogon leptospermoides</i> , <i>Banksia aemula</i>	<i>Baloskion tetraphyllum</i> , <i>Pteridium esculentum</i> , <i>Lomandra longifolia</i>

*Ecosystem 117: Red Mahogany

Tall to extremely tall dry or moist forest in which Red Mahogany (*Eucalyptus resinifera*) clearly dominates the overstorey, and associates include Needlebark Stringybark (*E. planchoniana*), Pink Bloodwood (*Corymbia intermedia*), Swamp Box (*Lophostemon suaveolens*), Turpentine (*Syncarpia glomulifera*) and Smudgy Apple (*Angophora woodsiana*). Rainforest trees, shrubs and vines are common in the understorey at some sites, for example Blueberry Ash (*Elaeocarpus reticulatus*), Hard Corkwood (*Endiandra sieberi*), Brush Box (*Lophostemon confertus*), Blue Lilly Pilly (*Syzygium oleosum*), Tree Heath (*Trochocarpa laurina*) and Five-leaf Water Vine (*Cissus hypoglauca*). In more open examples of forest or woodland common species include wattles (*Acacia* spp.), oaks (*Allocasuarina* spp.), Swamp Banksia (*Banksia oblongifolia*), Tea-tree (e.g. *Leptospermum polygalifolium*), geebungs (e.g. *Persoonia stradbrokeensis*), paperbarks (e.g. *Melaleuca sieberi*), bush-peas (*Pultenaea* spp.) and Spear Grass-tree (*Xanthorrhoea fulva*). The ground layer in these woodlands and drier forests supports many grasses and sedges such as Kangaroo Grass (*Themeda australis*), Wiry Panic (*Entolasia stricta*), Horned Sedge (*Ptilothrix deusta*), *Ischaemum australe*, Spiny-headed Mat-rush (*Lomandra longifolia*) and Chaffy Scale-rush (*Lepyrodia scariosa*).

This ecosystem has a scattered distribution at lower altitudes in both CRA Regions (e.g. Bundjalung, Broadwater and Yuraygir National Parks, Lake Innes Nature Reserve).

Upper	Mid	Lower
<i>Eucalyptus resinifera</i> , <i>Eucalyptus planchoniana</i> , <i>Corymbia intermedia</i> , <i>Lophostemon suaveolens</i> , <i>Syncarpia glomulifera</i> , <i>Angophora woodsiana</i>	<i>Elaeocarpus reticulatus</i> , <i>Endiandra sieberi</i> , <i>Lophostemon confertus</i> , <i>Syzygium oleosum</i> , <i>Trochocarpa laurina</i> , <i>Cissus hypoglauca</i> , <i>Acacia</i> spp., <i>Allocasuarina</i> spp., <i>Banksia oblongifolia</i> , <i>Leptospermum polygalifolium</i> , <i>Persoonia stradbrokeensis</i> , <i>Melaleuca sieberi</i> , <i>Pultenaea</i> spp., <i>Xanthorrhoea fulva</i>	<i>Themeda australis</i> , <i>Entolasia stricta</i> , <i>Ptilothrix deusta</i> , <i>Ischaemum australe</i> , <i>Lomandra longifolia</i> , <i>Lepyrodia scariosa</i>

Ecosystem 118: Richmond Range Spotted Gum

Tall to extremely tall forest in which Spotted Gum (*Corymbia variegata*) is dominant, and Small-fruited Grey Gum (*Eucalyptus propinqua*), Grey Ironbark (*E. siderophloia*) and/or Grey Box (*E. moluccana*) are usually present as sub-dominants. There is usually an understorey of scattered moist and semi-moist shrubs with the most common including Prickly Alyxia (*Alyxia ruscifolia*), Lantana (*Lantana camara*), Coffee Bush (*Breynia oblongifolia*), and Wild Quince (*Alectryon subcinereus*). Vines such as Water Vine (*Cissus antarctica*) and Wombat Berry (*Eustrephus latifolius*) are often common and the ground layer is usually sparse with Blady Grass (*Imperata cylindrica*), Saw Sedge (*Gahnia aspera*) and a variety of forbs often present.

This ecosystem is confined to the northern Richmond Range and adjacent valleys and is reserved in Richmond Range National Park.

Upper	Mid	Lower
<i>Corymbia variegata</i> (100), <i>Eucalyptus siderophloia</i> (83), <i>Eucalyptus propinqua</i> (83), <i>Eucalyptus moluccana</i> (67)	<i>Alxyia ruscifolia</i> (83), <i>Breynia oblongifolia</i> (83), <i>Cissus antarctica</i> (67), <i>Alectryon subcinereus</i> (67), <i>Maytenus bilocularis</i> (67), <i>Pandorea pandorana</i> (67)	<i>Eustrephus latifolius</i> (83), <i>Pratia purpurascens</i> (67)

Ecosystem 119: Richmond Range Spotted Gum-Box

Tall to very tall forest in which Spotted Gum (*Corymbia variegata*) is dominant, and Grey Box (*Eucalyptus moluccana*) and, less frequently, Small-fruited Grey Gum (*E. propinqua*) are present. This ecosystem is less likely to contain Grey Ironbark (*E. siderophloia*) than Ecosystem 118, but Broad-leaved Ironbark (*E. fibrosa*) is sometimes present. The understorey consists of scattered dry shrubs such as Coffee Bush (*Breynia oblongifolia*), Lantana (*Lantana camara*) and Red Ash (*Alphitonia excelsa*). The ground layer is dominated by grasses and forbs with Kangaroo Grass (*Themeda australis*) and Blady Grass (*Imperata cylindrica*) common.

This ecosystem is distributed along the Richmond Range from Mount Marsh north to Mallanganee with extensions north-west into the upper reaches of the Clarence Valley. It is reserved in Banyabba Nature Reserve and Mt Pikapene National Park.

Upper	Mid	Lower
<i>Corymbia variegata</i> (72), <i>Eucalyptus moluccana</i> (63), <i>Eucalyptus propinqua</i> (50)	<i>Breynia oblongifolia</i> (88), <i>Lantana camara</i> (88), <i>Alphitonia excelsa</i> (63)	<i>Themeda australis</i> (88), <i>Lepidosperma laterale</i> (63), <i>Oplismenus aemulus</i> (63), <i>Pratia purpurascens</i> (63), <i>Eustrephus latifolius</i> (63), <i>Dianella caerulea</i> (62), <i>Imperata cylindrica</i> (62)

*Ecosystem 120: River Oak

Tall to very tall woodland and forest along permanent freshwater streams in which River Oak (*Casuarina cunninghamiana*) dominates the overstorey. The understorey of this riparian ecosystem varies with locality, although it may support a variety of rainforest trees and shrubs such as Silky Oak (*Grevillea robusta*) and Weeping Lilly Pilly (*Waterhousea floribunda*), or alternatively more sclerophyllous species such as Rough-barked Apple (*Angophora floribunda*), Broad-leaved Apple (*A. subvelutina*) and Drooping Bottlebrush (*Callistemon viminalis*). The ground stratum is prone to disturbance by floodwaters, and often supports a mixture of natives and exotics.

This ecosystem has a widespread but restricted distribution in both CRA Regions (e.g. Mann River Nature Reserve, Oxley Wild Rivers National Park)

Upper	Mid
<i>Casuarina cunninghamiana</i>	<i>Grevillea robusta</i> , <i>Waterhousea floribunda</i> , <i>Angophora floribunda</i> , <i>Angophora subvelutina</i> , <i>Callistemon viminalis</i>

*Ecosystem 121: Rock

Rocky sites are widespread in habitats ranging from littoral (e.g. seacliffs) to sub-coastal and upland (e.g. granite, sandstone and serpentinite outcrops on ranges and the Tablelands). Rock surfaces may be largely devoid of vascular plants, although they often support small patches of vegetation in crevasses, cracks and depressions where soil and moisture accumulates. Any overstorey may be structurally depauperate (e.g. open woodland or mallee) but nonetheless floristically similar to adjoining forests on deeper soils. In other situations the vegetation may feature species with restricted or highly disjunct distributions, for example Bell-fruited Mallee (*E. codonocarpa*) or *E. serpentinicola*. Understorey and

ground stratum species vary with locality and geology, and floristic composition in general may be very different from one rocky site to the next.

This ecosystem is widespread in both CRA Regions (e.g. Tapin Tops, Nymboida and Border Ranges National Parks, and Mernot Nature Reserve).

*Ecosystem 122: Rough-barked Apples

Mid-high to very tall woodland and forest in which the overstorey is dominated by a species of rough-barked Angophora (e.g. *Angophora bakeri*, *A. floribunda*, *A. paludosa*, *A. subvelutina*, *A. woodsiana*). Various species are associates, and these include Red Mahogany (*Eucalyptus resinifera*), Grey Box (*E. moluccana*), Scribbly Gum (*E. signata*), Red Bloodwood (*Corymbia gummifera*), Pink Bloodwood (*C. intermedia*) and Swamp Box (*Lophostemon suaveolens*). Sclerophyllous shrub and small tree species may be well represented in the understorey, for example banksias (e.g. *Banksia oblongifolia*, *B. spinulosa*), wattles (*Acacia* spp.), tea-trees (e.g. *Leptospermum polygalifolium*), Black Oak (*Allocasuarina littoralis*) and bush-peas (e.g. *Pultenaea myrtoides*). Ground layer species include Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Three-awned grasses (*Aristida* spp.), Wiry Panic (*Entolasia stricta*) and Horned Sedge (*Ptilothrix deusta*).

This ecosystem occurs in both CRA Regions, generally at lower altitudes (e.g. Fortis Creek and Myall Lakes National Parks).

Upper	Mid	Lower
<i>Angophora bakeri</i> , <i>Angophora floribunda</i> , <i>Angophora paludosa</i> , <i>Angophora subvelutina</i> , <i>Angophora woodsiana</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus moluccana</i> , <i>Eucalyptus signata</i> , <i>Corymbia gummifera</i> , <i>Corymbia intermedia</i> , <i>Lophostemon suaveolens</i>	<i>Banksia oblongifolia</i> , <i>Banksia spinulosa</i> , <i>Acacia</i> spp., <i>Leptospermum polygalifolium</i> , <i>Allocasuarina littoralis</i> , <i>Pultenaea myrtoides</i>	<i>Themeda australis</i> , <i>Imperata cylindrica</i> , <i>Aristida</i> spp, <i>Entolasia stricta</i> , <i>Ptilothrix deusta</i>

*Ecosystem 123: Round-leaved Gum

Tall to very tall moist or dry forest in which Round-leaved Gum (*Eucalyptus brunnea*) dominates the overstorey. Associates include Manna Gum (*E. viminalis*), Mountain Ribbon Gum (*E. nobilis*), Sydney Blue Gum (*E. saligna*), stringybarks (e.g. *E. cameronii*), New England Blackbutt (*E. campanulata*), Messmate (*E. obliqua*), Dorrigo White Gum (*E. dorrigoensis*), peppermints (e.g. *E. radiata*) and Yellow Box (*E. melliodora*). The understorey consists of a range of sclerophyllous or rainforest trees and shrubs, and vines. The composition of the ground layer varies, but may include Snow Grass (*Poa sieberiana*), Blady Grass (*Imperata cylindrica*), Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), Common Ground Fern (*Calochlaena dubia*), Rasp Fern (*Doodia aspera*) and various forbs.

This ecosystem is concentrated at higher altitudes in the Upper CRA Region (e.g. Guy Fawkes River National Park).

Upper	Lower
<i>Eucalyptus brunnea</i> , <i>Eucalyptus viminalis</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus cameronii</i> , <i>Eucalyptus campanulata</i> , <i>Eucalyptus obliqua</i> , <i>Eucalyptus dorrigoensis</i> , <i>Eucalyptus radiata</i> , <i>Eucalyptus melliodora</i>	<i>Poa sieberiana</i> , <i>Imperata cylindrica</i> , <i>Lomandra longifolia</i> , <i>Pteridium esculentum</i> , <i>Calochlaena dubia</i> , <i>Doodia aspera</i>

*Ecosystem 124: Round-leaved Gum – Turpentine

Very tall to extremely tall moist forest in which Round-leaved Gum (*Eucalyptus brunnea*) normally dominates the tallest stratum. Associates include Turpentine (*Syncarpia glomulifera*), Sydney Blue Gum (*E. saligna*) and Narrow-leaved White Mahogany (*E. acmenoides*). The understorey and ground layer generally supports a strong component of rainforest trees, shrubs and vines, along with various ferns.

This ecosystem occupies very small areas in Marengo State Forest.

Upper	Mid	Lower
<i>Eucalyptus brunnea</i> , <i>Syncarpia glomulifera</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus acmenoides</i>	rainforest trees, shrubs, vines	ferns

*Ecosystem 125: Saltmarsh

Dwarf to low chenopod shrubland in which Samphire (*Sarcocornia quinqueflora*) dominates, or occasionally Austral Seablite (*Suaeda australis*). Sand couch (*Sporobolus virginicus*) and Streaked Arrowgrass (*Triglochin striatum*) are frequent associates, and may become co-dominant.

This ecosystem occurs on tidal flats periodically inundated with seawater, and it extends along the coast of both CRA Regions (e.g. Bundjalung, Yuraygir and Booti Booti National Parks).

Upper
<i>Sarcocornia quinqueflora</i> , <i>Suaeda australis</i> , <i>Sporobolus virginicus</i> , <i>Triglochin striatum</i>

Ecosystem 126: Sandstone Spotted Gum-Blackbutt

Tall to very tall forest which is dominated Blackbutt (*Eucalyptus pilularis*) with Large-leaved Spotted Gum (*Corymbia henryi*), Grey Ironbark (*E. siderophloia*) and/or Pink Bloodwood (*C. intermedia*) as co-dominants. There is often a midstorey of Forest Oak (*Allocasuarina torulosa*) and a sparse to moderately dense understorey of dry shrubs with more common species including Geebung (*Persoonia stradbokensis*), Curracabah (*Acacia concurrens*) and Dogwood (*Jacksonia scoparia*). The ground layer is dominated by grasses and forbs such as Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*) and False Sarsaparilla (*Hardenbergia violacea*).

This ecosystem has scattered occurrences on sandstones in the Clarence Moreton basin. Small areas are reserved in Fortis Creek and Ramornie National Parks.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (100), <i>Corymbia henryi</i> (50), <i>Eucalyptus siderophloia</i> (40), <i>Corymbia intermedia</i> (40)	<i>Persoonia stradbokensis</i> (80), <i>Allocasuarina torulosa</i> (70), <i>Acacia concurrens</i> (70), <i>Jacksonia scoparia</i> (70), <i>Pimelea linifolia</i> (60), <i>Alphitonia excelsa</i> (60)	<i>Dianella caerulea</i> (90), <i>Themeda australis</i> (90), <i>Hardenbergia violacea</i> (70), <i>Imperata cylindrica</i> (70), <i>Cymbopogon refractus</i> (70), <i>Desmodium rhytidophyllum</i> (60), <i>Lepidosperma laterale</i> (60), <i>Pratia purpurascens</i> (60), <i>Entolasia stricta</i> (80), <i>Laxmania gracilis</i> (70)

Ecosystem 127: Sherwood Needlebark Stringybark

Mid-high to tall forest in which Needlebark Stringybark (*Eucalyptus planchoniana*) is usually dominant with Red Bloodwood (*Corymbia gummifera*) frequently occurring as a co-dominant. This

ecosystem is characterised by a dense heath understorey of species such as *Hakea dactyloides*, *Banksia oblongifolia* and Geebung (*Persoonia stradbokensis*). The ground layer is usually dominated by a mix of grasses and low shrubs like Wiry Panic (*Entolasia stricta*), Kangaroo Grass (*Themeda australis*), *Melichrus procumbens* and *Hibbertia vestita*.

This ecosystem is concentrated on the Glenreagh sandstones in the lower Clarence Valley and is reserved in Sherwood Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus planchoniana</i> (80), <i>Corymbia gummifera</i> (60)	<i>Hakea dactyloides</i> (80), <i>Banksia oblongifolia</i> (80), <i>Persoonia stradbokensis</i> (80), <i>Leptospermum trinervium</i> (80), <i>Petrophile canescens</i> (60), <i>Lambertia formosa</i> (60), <i>Xanthorrhoea latifolia</i> (60), <i>Boronia rosmarinifolia</i> (60)	<i>Melichrus procumbens</i> (80), <i>Hibbertia vestita</i> (80), <i>Entolasia stricta</i> (80), <i>Persoonia tenuifolia</i> (60), <i>Themeda australis</i> (60)

*Ecosystem 128: Silver-leaved Ironbark

Mid-high to tall woodland in which Silver-leaved Ironbark (*Eucalyptus melanophloia*) dominates the overstorey. Associates include Narrow-leaved Ironbark (*E. crebra*), Rough-barked Apple (*Angophora floribunda*), Forest Red Gum (*E. tereticornis*) and Thin-leaved Stringybark (*E. eugenioides*). The understorey is generally open with scattered shrubs such as Dogwood (*Jacksonia scoparia*) and Forest Oak (*Allocasuarina torulosa*), and the ground layer is a mix of grasses and forbs with Kangaroo Grass (*Themeda australis*) and Barbed Wire Grass (*Cymbopogon refractus*) common.

This ecosystem is scattered on Clarence River foothills in the Upper CRA Region.

Upper	Mid	Lower
<i>Eucalyptus melanophloia</i> , <i>Eucalyptus crebra</i> , <i>Angophora floribunda</i> , <i>Eucalyptus tereticornis</i> , <i>Eucalyptus eugenioides</i>	<i>Allocasuarina torulosa</i> , <i>Jacksonia scoparia</i>	<i>Themeda australis</i> , <i>Cymbopogon refractus</i>

*Ecosystem 129: Smooth-barked Apple

Mid-high to very tall woodland and forest with the overstorey clearly dominated by Smooth-barked Apple (*Angophora costata*). Associates include Red Mahogany (*Eucalyptus resinifera*), Swamp Mahogany (*E. robusta*), Blackbutt (*E. pilularis*), White Stringybark (*E. globoidea*) and Broad-leaved White Mahogany (*E. carnea*). Understorey trees and shrubs include tea-trees (*Leptospermum spp.*), banksias (*Banksia spp.*), paperbarks (*Melaleuca spp.*), wattles (*Acacia spp.*), grasstrees (e.g. *Xanthorrhoea fulva*), and various peas (e.g. *Pultenaea villosa*) and Epacrids (e.g. *Epacris pulchella*). Ground layer species include Feather Plant (*Baloskion tetraphyllum*), Horned Sedge (*Ptilothrix deusta*), Kangaroo Grass (*Themeda australis*), Spiny-headed Mat-rush (*Lomandra longifolia*), Wiry Panic (*Entolasia stricta*) and Spreading Rope-rush (*Empodisma minus*).

This ecosystem is characteristic of coastal sand masses, and occurs in both CRA Regions (e.g. Yuraygir, Crowdy Bay, Booti Booti and Myall Lakes National Parks).

Upper	Mid	Lower
<i>Angophora costata</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus robusta</i> , <i>Eucalyptus pilularis</i> , <i>Eucalyptus globoidea</i> , <i>Eucalyptus carnea</i>	<i>Leptospermum spp.</i> , <i>Banksia spp.</i> , <i>Melaleuca spp.</i> , <i>Acacia spp.</i> , <i>Xanthorrhoea fulva</i> , <i>Pultenaea villosa</i> , <i>Epacris pulchella</i>	<i>Baloskion tetraphyllum</i> , <i>Ptilothrix deusta</i> , <i>Themeda australis</i> , <i>Lomandra longifolia</i> , <i>Entolasia stricta</i> , <i>Empodisma minus</i>

*Ecosystem 130: Smooth-barked Apple – Sydney Peppermint – Stringybark

Mid-high to very tall woodland and forest in which Smooth-barked Apple (*Angophora costata*) co-dominates the overstorey with one or both of Sydney Peppermint (*Eucalyptus piperita*) and White Stringybark (*E. globoidea*). Associates include Red Mahogany (*Eucalyptus resinifera*), Small-fruited Grey Gum (*E. propinqua*), Broad-leaved White Mahogany (*E. carnea*), Brown Stringybark (*E. capitellata*), Tallowwood (*E. microcorys*) and Red Bloodwood (*Corymbia gummifera*). Understorey trees and shrubs and vines include Black Sheoak (*Allocasuarina littoralis*), wattles (*Acacia* spp.), geebung (*Persoonia* spp.), banksias (*Banksia oblongifolia*, *B. spinulosa*), False Sarsaparilla (*Hardenbergia violacea*) and various peas (e.g. *Pultenaea* spp.). Species such as Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Wiry Panic (*Entolasia stricta*), Horned Sedge (*Ptilothrix deusta*), Bracken (*Pteridium esculentum*) and Spiny-headed Mat-rush (*Lomandra longifolia*) are common in the ground layer.

This ecosystem occurs at low altitudes in the Lower CRA Region (e.g. Karuah Nature Reserve).

Upper	Mid	Lower
<i>Angophora costata</i> , <i>Eucalyptus piperita</i> , <i>Eucalyptus globoidea</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus propinqua</i> , <i>Eucalyptus carnea</i> , <i>Eucalyptus capitellata</i> , <i>Eucalyptus microcorys</i> , <i>Corymbia gummifera</i>	<i>Allocasuarina littoralis</i> , <i>Acacia</i> spp., <i>Persoonia</i> spp., <i>Banksia oblongifolia</i> , <i>Banksia spinulosa</i> , <i>Pultenaea</i> spp.	<i>Themeda australis</i> , <i>Imperata cylindrica</i> , <i>Entolasia stricta</i> , <i>Ptilothrix deusta</i> , <i>Hardenbergia violacea</i> , <i>Pteridium esculentum</i> , <i>Lomandra longifolia</i>

*Ecosystem 131: Snow Gum

Mid-high to very tall woodland and forest in which Snow Gum (*Eucalyptus pauciflora*) dominates or co-dominates the overstorey. Associates include New England Peppermint (*E. acaciiformis*), Narrow-leaved Peppermint (*E. radiata*), Black Sally (*E. stellulata*), Mountain Gum (*E. dalrympleana*) and Apple Box (*E. bridgesiana*). Understorey composition varies, but may include shrubs and trees such as White Banksia (*Banksia integrifolia*), Epacrids (e.g. *Epacris breviflora*, *Leucopogon lanceolatus*), tea-trees (e.g. *Leptospermum polygalifolium*), wattles (e.g. *Acacia melanoxylon*), Broad-leaved Pepperbush (*Tasmannia purpurascens*), Bitter Pea (*Daviesia latifolia*), and the exotic Scotch Broom (*Cytisus scoparius*). Ground layer species include Snow Grass (*Poa sieberiana*), Weeping Grass (*Microlaena stipoides*), Kangaroo Grass (*Themeda australis*), Bracken (*Pteridium esculentum*), and various forbs.

This ecosystem is scattered at high altitudes, particularly in the Lower CRA Region (e.g. Bald Rock and Barrington Tops National Parks).

Upper	Mid	Lower
<i>Eucalyptus pauciflora</i> , <i>Eucalyptus acaciiformis</i> , <i>Eucalyptus radiata</i> , <i>Eucalyptus stellulata</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus bridgesiana</i>	<i>Banksia integrifolia</i> , <i>Epacris breviflora</i> , <i>Leucopogon lanceolatus</i> , <i>Leptospermum polygalifolium</i> , <i>Acacia melanoxylon</i> , <i>Tasmannia purpurascens</i> , <i>Daviesia latifolia</i> , <i>Cytisus scoparius</i>	<i>Poa sieberiana</i> , <i>Microlaena stipoides</i> , <i>Themeda australis</i> , <i>Pteridium esculentum</i>

*Ecosystem 132: Snow Gum – Mountain/Manna Gum

Mid-high to very tall forest in which Snow Gum (*Eucalyptus pauciflora*) and one or more of Mountain Gum (*E. dalrympleana*), Forest Ribbon Gum (*E. nobilis*) and Manna Gum (*E. viminalis*) dominate the overstorey. Associates may include Narrow-leaved Peppermint (*E. radiata*), Brown Barrel (*E.*

fastigata), Messmate (*E. obliqua*) and Black Sally (*E. stellulata*). Common understorey species include Broad-leaved Pepperbush (*Tasmannia purpurascens*), *Leucopogon hookeri*, Silver Wattle (*Acacia dealbata*), Blackwood (*A. melanoxylon*) and Soft Treefern (*Dicksonia antarctica*). Ground layer species include Snow Grass (*Poa sieberiana*), Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), Fishbone Water Fern (*Blechnum nudum*), Sarsaparilla (*Smilax australis*) and various forbs.

This ecosystem is comparatively widespread at high altitudes in both CRA Regions (e.g. Barrington Tops and Ben Halls Gap National Parks).

Upper	Mid	Lower
<i>Eucalyptus pauciflora</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus viminalis</i> , <i>Eucalyptus radiata</i> , <i>Eucalyptus fastigata</i> , <i>Eucalyptus obliqua</i> , <i>Eucalyptus stellulata</i>	<i>Tasmannia purpurascens</i> , <i>Leucopogon hookeri</i> , <i>Acacia dealbata</i> , <i>Acacia melanoxylon</i> , <i>Dicksonia antarctica</i>	<i>Poa sieberiana</i> , <i>Lomandra longifolia</i> , <i>Pteridium esculentum</i> , <i>Blechnum nudum</i> , <i>Smilax australis</i>

***Ecosystem 133: Snow Gum – Black Sally**

Mid-high to tall woodland in which Snow Gum (*Eucalyptus pauciflora*) and Black Sally (*Eucalyptus stellulata*) are often sole co-dominants of the overstorey. Where present, associates include New England Peppermint (*E. nova-anglica*), Mountain Gum (*E. dalrympleana*) and Manna Gum (*E. viminalis*). There are scattered shrubs such as *Leucopogon hookeri* and tea-tree (*Leptospermum spp*). The ground layer is characteristically grassy and often dominated by Snow Grass (*Poa sieberiana*), Tussock Grass (*Poa labillardieri*) and the introduced Sweet Vernal Grass (*Anthoxanthum odoratum*).

This ecosystem has very small, scattered occurrences at high altitudes in both CRA Regions.

Upper	Mid	Lower
<i>Eucalyptus pauciflora</i> , <i>Eucalyptus stellulata</i> , <i>Eucalyptus nova-anglica</i> , <i>Eucalyptus dalrympleana</i> , <i>Eucalyptus viminalis</i>	<i>Leucopogon hookeri</i> , <i>Leptospermum spp</i>	<i>Poa sieberiana</i> , <i>Poa labillardieri</i> , <i>Anthoxanthum odoratum</i>

Ecosystem 134: South Coast Shrubby Grey Gum

Tall to very tall forest with a very mixed canopy which is usually co-dominated by Small-fruited Grey Gum (*Eucalyptus propinqua*), Tallowwood (*E. microcorys*), Turpentine (*Syncarpia glomulifera*) Broad-leaved White Mahogany (*E. carnea*) and/or Narrow-leaved White Mahogany (*E. acmenoides*). There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and a sparse to moderately dense understorey of shrubs such as Coffee Bush (*Breynia oblongifolia*) and Narrow-leaved Orange Bark (*Maytenus silvestris*). There is a dense ground layer of forbs and grasses such as Spiny-headed Mat-rush (*Lomandra longifolia*), Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*) and Tussock Grass (*Poa labillardieri*).

This ecosystem is distributed extensively on coastal lowlands and foothills from Port Stephens north to the Manning Valley. Large areas are reserved in Myall Lakes National Park and Talawahl Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus propinqua</i> (67), <i>Eucalyptus microcorys</i> (61), <i>Syncarpia glomulifera</i> (44), <i>Eucalyptus acmenoides</i> (44)	<i>Allocasuarina torulosa</i> (83), <i>Breynia oblongifolia</i> (83), <i>Maytenus silvestris</i> (78), <i>Persoonia linearis</i> (61), <i>Polyscias sambucifolia</i> (56), <i>Acacia maidenii</i> (56)	<i>Dianella caerulea</i> (94), <i>Lomandra longifolia</i> (78), <i>Imperata cylindrica</i> (78), <i>Pratia purpurascens</i> (78), <i>Desmodium varians</i> (78), <i>Pseuderanthemum variabilie</i> (72), <i>Geitonoplesium cymosum</i> (72), <i>Poa labillardieri</i> (67), <i>Vernonia cinerea</i> (61), <i>Billardiera scandens</i> (61), <i>Gymnostachys anceps</i> (61), <i>Entolasia marginata</i> (61), <i>Hibbertia scandens</i> (56), <i>Oplismenus imbecillis</i> (56), <i>Lepidosperma laterale</i> (56)

Ecosystem 135: South Coast Tallowood-Blue Gum

Tall to very tall mixed forest with a canopy usually co-dominated by Tallowwood (*Eucalyptus microcorys*), Brush Box (*Lophostemon confertus*) and Sydney Blue Gum (*E. saligna*), and in which Narrow-leaved White Mahogany (*E. acmenoides*) and Turpentine (*Syncarpia glomulifera*) are sometimes co-dominant. There is a dense moist understorey in which Murrogun (*Cryptocarya microneura*), Scentless Rosewood (*Synoum glandulosum*) and Forest Oak (*Allocasuarina torulosa*) are common. Vines such as Sarsaparilla (*Smilax australis*) and Water Vine (*Cissus antarctica*) are common and the ground layer is dominated by ferns and forbs such as Gristle Fern (*Blechnum cartilagineum*), Common Ground Fern (*Calochlaena dubia*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Rasp Fern (*Doodia aspera*).

This ecosystem is distributed predominantly in the Buladelah region with northern extensions as scattered occurrences along the foothills and ranges to the Corindi River. It is reserved in Nymboi-Binderay National Park, New England National Park, Ghin-doo-ee National Park and Myall Lakes National Park.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (74), <i>Lophostemon confertus</i> (74), <i>Eucalyptus saligna</i> (67), <i>Syncarpia glomulifera</i> (52), <i>Eucalyptus acmenoides</i> (48)	<i>Smilax australis</i> (93), <i>Dioscorea transversa</i> (89), <i>Cissus antarctica</i> (83), <i>Synoum glandulosum</i> (78), <i>Breynia oblongifolia</i> (74), <i>Allocasuarina torulosa</i> (70), <i>Cryptocarya microneura</i> (63), <i>Cordyline stricta</i> (63), <i>Psychotria loniceroides</i> (63), <i>Rubus hillii</i> (59), <i>Trochocarpa laurina</i> (56), <i>Citriobatus pauciflorus</i> (56), <i>Cryptocarya rigida</i> (56), <i>Rhodamnia rubescens</i> (52)	<i>Blechnum cartilagineum</i> (78), <i>Lomandra longifolia</i> (78), <i>Dianella caerulea</i> (70), <i>Pseuderanthemum variabile</i> (70), <i>Doodia aspera</i> (70), <i>Gymnostachys anceps</i> (67), <i>Oplismenus imbecillis</i> (63), <i>Geitonoplesium cymosum</i> (63), <i>Lastreopsis decomposita</i> (56)

Ecosystem 137: Southern Wet Sydney Blue Gum

Tall to very tall moist forest with the canopy comprised of pure or near pure stands of Sydney Blue Gum (*Eucalyptus saligna*) with Narrow-leaved White Mahogany (*E. acmenoides*) and Tallowwood (*E. microcorys*) sometimes present. There is a dense midlayer and understorey of moist shrubs such as Guioa (*Guioa semiglauc*), Orange Thorn (*Citriobatus pauciflorus*), laurels (*Cryptocarya spp.*), Lilly Pilly (*Acmena smithii*) and Black Plum (*Diospyros australis*). Vines including Water Vine (*Cissus antarctica*) and Five-leaf Water Vine (*Cissus hypoglauc*) are common. The ground layer usually includes forbs and ferns such as Jungle Mat-rush (*Lomandra spicata*), Gristle Fern (*Blechnum cartilagineum*) and Giant Maidenhair (*Adiantum formosum*).

This ecosystem is distributed from the southern and eastern foothills of the Barrington Tops east to the ocean. It is reserved in Barrington Tops and Wallingat National Parks and in The Glen Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus saligna</i> (74)	<i>Cissus antarctica</i> (70), <i>Cissus hypoglauca</i> (61), <i>Dioscorea transversa</i> (61), <i>Guioa semiglauca</i> (61), <i>Citriobatus pauciflorus</i> (74), <i>Acmena smithii</i> (61), <i>Diospyros australis</i> (61), <i>Smilax australis</i> (61), <i>Synoum glandulosum</i> (57), <i>Psychotria loniceroides</i> (52), <i>Eupomatia laurina</i> (52), <i>Cryptocarya glaucescens</i> (52), <i>Cryptocarya microneura</i> (52), <i>Parsonsia straminea</i> (51)	<i>Lomandra spicata</i> (52)

*Ecosystem 138: Steel Box/Craven Grey Box

Generally very tall to extremely tall moist forest in which Steel Box (*Eucalyptus rummeryi*) or Craven Grey Box (*E. largeana*) dominates the overstorey. Associates include Small-fruited Grey Gum (*E. propinqua*), Grey Ironbark (*E. siderophloia*), Sydney Blue Gum (*E. saligna*), Silver-top Stringybark (*E. laevopinea*), Spotted Gum (*Corymbia maculata* or *C. variegata*), Brush Box (*Lophostemon confertus*) and Turpentine (*Syncarpia glomulifera*). The understorey of the northern occurrences often supports dry rainforest understorey of trees, shrubs and vines, for example Red Kamala (*Mallotus philippensis*), Small-leaved Tuckeroo (*Cupaniopsis parvifolia*), Casearia (*Casearia multinervosa*), Native Holly (*Alchornea ilicifolia*), Orange Thorn (*Citriobatus pauciflorus*), Hoop Pine (*Araucaria cunninghamii*), Teak (*Flindersia australis*), Water Vine (*Cissus antarctica*) and Blood Vine (*Austrosteenisia blackii*). Saw-sedge (*Gahnia aspera*) and ferns (e.g. *Doodia caudata*, *Pellaea falcata*) may be present as a ground stratum. The southern occurrences dominated by Craven Grey Box often have a more open understorey.

This unit represents two quite different ecosystems, a northern one in which Steel Box dominates, and a southern one in which Craven Grey Box dominates. The understorey and ground layers are different as well.

This ecosystem has two disjunctions on foothills and ranges in the Upper CRA Region (e.g. Urbenville district for Steel Box) and Lower CRA Region (e.g. Copeland Tops State Forest for Craven Grey Box).

Upper	Mid	Lower
<i>Eucalyptus rummeryi</i> , <i>Eucalyptus largeana</i> , <i>Eucalyptus propinqua</i> , <i>Eucalyptus siderophloia</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus laevopinea</i> , <i>Corymbia maculata</i> , <i>Corymbia variegata</i> , <i>Lophostemon confertus</i> , <i>Syncarpia glomulifera</i>	<i>Mallotus philippensis</i> , <i>Cupaniopsis parvifolia</i> , <i>Casearia multinervosa</i> , <i>Alchornea ilicifolia</i> , <i>Citriobatus pauciflorus</i> , <i>Araucaria cunninghamii</i> , <i>Flindersia australis</i> , <i>Cissus antarctica</i> , <i>Austrosteenisia blackii</i>	<i>Gahnia aspera</i> , <i>Doodia caudata</i> , <i>Pellaea falcata</i>

Ecosystem 139: Stringybark-Apple

Mid-high to very tall forest usually dominated by Broad-leaved Apple (*Angophora subvelutina*) and/or Thin-leaved Stringybark (*Eucalyptus eugenioides*) with a number of other species sometimes present as associates. The understorey is generally sparse with Coffee Bush (*Breynia oblongifolia*), Native Raspberry (*Rubus parvifolius*) and Lantana (*Lantana camara*) common. The ground layer is dominated by grasses and forbs such as Weeping Grass (*Microlaena stipoides*), Blady Grass (*Imperata cylindrica*) and Kidney Weed (*Dichondra repens*).

This ecosystem is distributed on rugged escarpment gorges from the Macpherson Ranges south to the Hunter River. It is reserved in Guy Fawkes River and Oxley Wild Rivers National Parks.

Upper	Mid	Lower
<i>Angophora subvelutina</i> (57), <i>Eucalyptus eugenioides</i> (50)	<i>Breynia oblongifolia</i> (64), <i>Rubus parvifolius</i> (50)	<i>Pratia purpurascens</i> (71), <i>Dichondra repens</i> (64), <i>Microlaena stipoides</i> (57), <i>Desmodium varians</i> (57), <i>Imperata cylindrica</i> (50), <i>Cymbopogon refractus</i> (50), <i>Bidens pilosa</i> (50), <i>Adiantum aethiopicum</i> (50)

Ecosystem 140: Stringybark-Mallee

Low to mid-high forest in which New England Blackbutt (*Eucalyptus campanulata*), Bell-fruited Mallee (*E. codonocarpa*) and/or Diehard Stringybark (*E. cameronii*) are dominant or co-dominant. There is a dense shrub layer of species such as Geebung (*Persoonia cornifolia*), Kunzea bracteolata, tea-tree (*Leptospermum novae-angliae*), Fringe Myrtle (*Calytrix tetragona*), Brown Wattle (*Acacia brunioides*) and *Allocasuarina rigida*. The ground layer is a mix of grasses and sedges with Wiry Panic (*Entolasia stricta*), Sword Sedge (*Lepidosperma laterale*) and *Schoenus melanostachys* common.

This ecosystem is confined to very high rainfall areas in the Gibraltar Range and Mt Boss regions. It is reserved in Gibraltar Range National Park and Werrikimbe National Park.

Upper	Mid	Lower
<i>Eucalyptus codonocarpa</i> (50), <i>Eucalyptus cameronii</i> (33), <i>Eucalyptus campanulata</i> (33)	<i>Persoonia cornifolia</i> (67), <i>Mirbelia rubiifolia</i> (67), <i>Kunzea bracteolata</i> (67), <i>Leucopogon neo-anglica</i> (67), <i>Leucopogon microphylla</i> (67), <i>Leptospermum novae-angliae</i> (67), <i>Acacia brunioides</i> (67), <i>Boronia anethifolia</i> (67), <i>Calytrix tetragona</i> (67), <i>Callistemon comboynensis</i> (67)	<i>Entolasia stricta</i> (100), <i>Lepidosperma laterale</i> (100), <i>Schoenus melanostachys</i> (67), <i>Lepidosperma gunnii</i> (67), <i>Aristida ramosa</i> (67), <i>Trachymene incisa</i> (67), <i>Laxmannia compacta</i> (67), <i>Cassytha filiformis</i> (67)

*Ecosystem 141: Swamp

This ecosystem comprises sedgeland, rushland, forbland, fernland and mossland in inundated or perpetually moist sites. It extends from sea level to the Tablelands, and floristic composition varies with locality and habitat. Although herbaceous species dominate, trees and shrubs may be present in low cover-abundance, for example Broad-leaved Paperbark (*Melaleuca quinquenervia*) near the coast and Alpine Bottlebrush (*Callistemon pityoides*) at high altitudes.

This ecosystem is an aggregation of many different plant communities. It is widespread in both CRA Regions (e.g. Gibraltar Range, Barrington Tops, Bundjalung and Crowdy Bay National Parks and Moffats Swamp Nature Reserve).

*Ecosystem 142: Swamp Mahogany

Mid-high (rarely low) to very tall woodland and forest in which Swamp Mahogany (*Eucalyptus robusta*) dominates or co-dominates the overstorey. Associates include Broad-leaved Paperbark (*Melaleuca quinquenervia*), Swamp Oak (*Casuarina glauca*), Red Mahogany (*Eucalyptus resinifera*), Forest Red Gum (*E. tereticornis*), Pink Bloodwood (*Corymbia intermedia*) and Swamp Box (*Lophostemon suaveolens*). Understorey composition varies with substrate, depth and extent of waterlogging, and water quality; although examples of tree, shrub and vine species include paperbarks (*Melaleuca* spp.), Cabbage Tree Palm (*Livistona australis*), Cheese Tree (*Glochidion ferdinandi*), Narrow-leaved Palm Lily (*Cordyline stricta*), Pink-flowered Doughwood (*Melicope elleryana*), Maiden's Wattle (*Acacia maidenii*), Wallum Bottlebrush (*Callistemon pachyphyllus*), tea-trees (e.g. *Leptospermum juniperinum*), Clustered Baeckea (*Baeckea frutescens*) and Common Silkpod

(*Parsonsia straminea*). Ground layer species include Feather Plant (*Baloskion tetraphyllum*), saw-sedges (*Gahnia* spp.), Spear Grasstree (*Xanthorrhoea fulva*), Knotted Scale-rush (*Sporadanthus interruptus*), various ferns (e.g. *Blechnum camfieldii*, *B. indicum*, *Hypolepis muelleri*) and grasses (e.g. *Ischaemum australe*).

This ecosystem occupies drainage lines and open depressions near the coast in both CRA Regions (Broadwater, Yuraygir, Hat Head, Crowdy Bay, Khappinghat and Myall Lakes National Parks, and Lake Innes Nature Reserve).

Upper	Mid	Lower
<i>Eucalyptus robusta</i> , <i>Melaleuca quinquenervia</i> , <i>Casuarina glauca</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus tereticornis</i> , <i>Corymbia intermedia</i> , <i>Lophostemon suaveolens</i>	<i>Melaleuca</i> spp., <i>Livistona australis</i> , <i>Glochidion ferdinandi</i> , <i>Cordyline</i> <i>stricta</i> , <i>Melicope elleryana</i> , <i>Acacia</i> <i>maidenii</i> , <i>Callistemon</i> <i>pachyphyllus</i> , <i>Leptospermum</i> <i>juniperinum</i> , <i>Baeckea frutescens</i> , <i>Parsonsia straminea</i>	<i>Baloskion tetraphyllum</i> , <i>Gahnia</i> spp., <i>Xanthorrhoea</i> <i>fulva</i> , <i>Sporadanthus</i> <i>interruptus</i> , <i>Blechnum</i> <i>camfieldii</i> , <i>Blechnum</i> <i>indicum</i> , <i>Hypolepis</i> <i>muelleri</i> , <i>Ischaemum</i> <i>australe</i>

*Ecosystem 143: Swamp Oak

Low to very tall woodland and forest with the overstorey clearly dominated by Swamp Oak (*Casuarina glauca*). Associates include Broad-leaved Paperbark (*Melaleuca quinquenervia*) and Forest Red Gum (*Eucalyptus tereticornis*). Composition of the understorey varies with habitat (e.g. estuarine or floodplain), and it may be poorly developed where the overstorey is dense. Examples of smaller trees, shrubs and vines include various paperbarks (e.g. *Melaleuca ericifolia*, *M. styphelioides*), Groundsel Bush (*Baccharis halimifolia*), Lantana (*Lantana camara*), Swamp Hibiscus (*Hibiscus diversifolius*), *Goodenia ovata*, Common Silkpod (*Parsonsia straminea*) and Five-leaf Morning Glory (*Ipomoea cairica*). Ground layer species include Bare Twig-rush (*Baumea juncea*), Maritime Rush (*Juncus kraussii*), *Enydra fluctuans*, Brown Fringe-rush (*Fimbristylis ferruginea*), Tall Saw-sedge (*Gahnia clarkei*), and various grasses (e.g. *Entolasia* spp., *Oplismenus* spp., *Phragmites australis*, *Sporobolus virginicus*, *Isachne globosa*) and forbs (e.g. *Pratia purpurascens*, *Viola hederacea*, *Centella asiatica*, *Hydrocotyle acutiloba*).

This ecosystem is widespread on poorly drained sites in coastal areas of both CRA Regions (e.g. Ballina, Richmond River, Limeburners Creek and Yahoo Nature Reserves, and Khappinghat, Bundjalung, Yuraygir and Myall Lakes National Parks).

Upper	Mid	Lower
<i>Casuarina glauca</i> , <i>Melaleuca</i> <i>quinquenervia</i> , <i>Eucalyptus tereticornis</i>	<i>Melaleuca ericifolia</i> , <i>M.</i> <i>styphelioides</i> , <i>Baccharis</i> <i>halimifolia</i> , <i>Lantana</i> <i>camara</i> , <i>Hibiscus</i> <i>diversifolius</i> , <i>Goodenia</i> <i>ovata</i> , <i>Parsonsia straminea</i> <i>Ipomoea cairica</i>	<i>Baumea juncea</i> , <i>Juncus kraussii</i> , <i>Enydra fluctuans</i> , <i>Fimbristylis</i> <i>ferruginea</i> , <i>Gahnia clarkei</i> , <i>Entolasia</i> spp., <i>Oplismenus</i> spp., <i>Phragmites</i> <i>australis</i> , <i>Sporobolus virginicus</i> , <i>Isachne globosa</i> , <i>Pratia purpurascens</i> , <i>Viola hederacea</i> , <i>Centella asiatica</i> , <i>Hydrocotyle acutiloba</i>

*Ecosystem 145: Sydney Peppermint – Stringybark

Tall to very tall forest in which Sydney Peppermint (*Eucalyptus piperita*) and a stringybark (usually White Stringybark (*Eucalyptus globoidea*)) are characteristic co-dominants of the overstorey. Other associates may include Red Mahogany (*E. resinifera*), Small-fruited Grey Gum (*E. propinqua*), Swamp Mahogany (*E. robusta*) and Red Bloodwood (*Corymbia gummifera*) or Pink Bloodwood (*C. intermedia*). Understorey shrubs and small trees include paperbarks (*Melaleuca* spp.), wattles (e.g.

Acacia terminalis), banksias (e.g. *Banksia spinulosa*) and various peas (e.g. *Daviesia ulicifolia*, *Pultenaea myrtoidea*). Ground layer species include Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica*), Wiry Panic (*Entolasia stricta*), Two-colour Panic (*Panicum simile*), Bracken (*Pteridium esculentum*), Common Bog Rush (*Schoenus apogon*) and various forbs.

This ecosystem is restricted to the Lower CRA Region (e.g. Myall Lakes and Wollemi National Parks).

Upper	Mid	Lower
<i>Eucalyptus piperita</i> , <i>Eucalyptus globoidea</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus propinqua</i> , <i>Eucalyptus robusta</i> , <i>Corymbia gummifera</i> , <i>Corymbia intermedia</i>	<i>Melaleuca</i> spp., <i>Acacia terminalis</i> , <i>Banksia spinulosa</i> , <i>Daviesia ulicifolia</i> , <i>Pultenaea myrtoidea</i>	<i>Themeda australis</i> , <i>Imperata cylindrica</i> , <i>Entolasia stricta</i> , <i>Panicum simile</i> , <i>Pteridium esculentum</i> , <i>Schoenus apogon</i>

*Ecosystem 146: Tallowwood

Tall to very tall forest which is dominated by Tallowwood (*Eucalyptus microcorys*) in association with a variety of other tree species including Brush Box (*Lophostemon confertus*), Broad-leaved White Mahogany (*E. carnea*) and Grey Ironbark (*E. siderophylloa*). A midstorey of Forest Oak (*Allocasuarina torulosa*) is usually present and the understorey is mainly open with Lantana (*Lantana camara*), Prickly Alyxia (*Alyxia ruscifolia*) and Coffee Bush (*Breynia oblongifolia*) common. Occasionally an understorey of dry rainforest species occurs. The ground layer is a mix of grasses, forbs and ferns such as Blady Grass (*Imperata cylindrica*), Kangaroo Grass (*Themeda australis*), Spiny-headed Mat-rush (*Lomandra longifolia*), Maidenhair (*Adiantum aethiopicum*) and Rasp Fern (*Doodia aspera*).

This ecosystem mainly occurs in the northern parts of the Guy Fawkes River National Park and nearby areas.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> , <i>Lophostemon confertus</i> , <i>Eucalyptus carnea</i> , <i>Eucalyptus siderophylloa</i>	<i>Allocasuarina torulosa</i> , <i>Lantana camara</i> , <i>Alyxia ruscifolia</i> , <i>Breynia oblongifolia</i>	<i>Imperata cylindrica</i> , <i>Themeda australis</i> , <i>Lomandra longifolia</i> , <i>Adiantum aethiopicum</i> , <i>Doodia aspera</i>

*Ecosystem 147: Turpentine

Generally very tall to extremely tall moist forest in which Turpentine (*Syncarpia glomulifera*) dominates or co-dominates the overstorey. Associates include Sydney Blue Gum (*Eucalyptus saligna*), Flooded Gum (*E. grandis*), Tallowwood (*E. microcorys*), Red Mahogany (*E. resinifera*), Narrow-leaved White Mahogany (*E. acmenoides*), Small-fruited Grey Gum (*E. propinqua*), Pink Bloodwood (*Corymbia intermedia*) and Brush Box (*Lophostemon confertus*). Understorey trees, shrubs and vines include Forest Oak (*Allocasuarina torulosa*), laurels (*Cryptocarya* spp.), Crabapple (*Schizomeria ovata*), Tree Heath (*Trochocarpa laurina*), Sarsaparilla (*Smilax australis*) and Five-leaf Water Vine (*Cissus hypoglauca*). Ground layer species include Gristle Fern (*Blechnum cartilagineum*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem is concentrated in the Upper CRA Region (e.g. Guy Fawkes River National Park and Moonee Beach Nature Reserve), with scattered occurrences in the Lower CRA Region (e.g. Khappinghat Nature Reserve).

Upper	Mid	Lower
<i>Syncarpia glomulifera</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus grandis</i> , <i>Eucalyptus microcorys</i> , <i>Eucalyptus resinifera</i> , <i>Eucalyptus acmenoides</i> , <i>Eucalyptus propinqua</i> , <i>Corymbia intermedia</i> , <i>Lophostemon confertus</i>	<i>Allocasuarina torulosa</i> , <i>Cryptocarya</i> spp., <i>Schizomeria ovata</i> , <i>Trochocarpa laurina</i> , <i>Smilax australis</i> , <i>Cissus hypoglauca</i>	<i>Blechnum cartilagineum</i> , <i>Lomandra longifolia</i> , <i>Dianella caerulea</i>

Ecosystem 148: Very Wet New England Blackbutt - Tallowwood

Very tall to extremely tall moist forest in which the canopy often consists of pure stands of New England Blackbutt (*Eucalyptus campanulata*), but which is sometimes associated with Tallowwood (*E. microcorys*) and Brush Box (*Lophostemon confertus*). There is a well-developed warm temperate rainforest understorey with species such as Scentless Rosewood (*Synoum glandulosum*), Hard Corkwood (*Endiandra sieberi*), Prickly Ash (*Orites excelsa*), Forest Oak (*Allocasuarina torulosa*), Corkwood (*Caldcluvia paniculosa*) and Rough Tree Fern (*Cyathea australis*) common. The ground layer is a mix of forbs and ferns such as Gristle Fern (*Blechnum cartilagineum*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Common Ground Fern (*Calochlaena dubia*).

This ecosystem occurs in areas with very high rainfalls on the Nightcap Range, Gibraltar Range and at Mount Banda Banda and Mt Killerkerankie. It is reserved in Nightcap, Gibraltar Range, Willi Willi and New England National Parks.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (65), <i>Eucalyptus microcorys</i> (42)	<i>Synoum glandulosum</i> (77), <i>Elaeocarpus reticulatus</i> (71), <i>Cyathea australis</i> (65), <i>Endiandra sieberi</i> (65), <i>Orites excelsa</i> (53), <i>Allocasuarina torulosa</i> (53), <i>Trochocarpa laurina</i> (53), <i>Caldcluvia paniculosa</i> (53), <i>Palmeria scandens</i> (53), <i>Tasmannia insipida</i> (47), <i>Schizomeria ovata</i> (47)	<i>Dianella caerulea</i> (65), <i>Blechnum cartilagineum</i> (65), <i>Lomandra longifolia</i> (65), <i>Gymnostachys anceps</i> (53), <i>Smilax glyciphylla</i> (53), <i>Calochlaena dubia</i> (47)

Ecosystem 149: Mallee-Peppermint mosaic

Tall to very tall mallee woodland dominated by Bell-fruited Mallee (*Eucalyptus codonocarpa*), with Wattle-leaved Peppermint (*E. acaciaformis*) sometimes present. There is a dense understorey of heath shrubs such as tea-tree (*Leptospermum novae-angliae*), *Kunzea obovata*, *Allocasuarina rigida* and *Acacia ulicifolia*. The ground layer includes species such as Wiry Panic (*Entolasia stricta*), *Gonocarpus teucroides* and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem is concentrated in Warra National Park with very scattered occurrences north and south.

Upper	Mid	Lower
<i>Eucalyptus codonocarpa</i> (58), <i>Eucalyptus acaciaformis</i> (50)	<i>Acacia ulicifolia</i> (75), <i>Leptospermum novae-angliae</i> (75), <i>Leucopogon neo-anglica</i> (67), <i>Acacia falcata</i> (67), <i>Dillwynia phyllicoides</i> (67), <i>Hovea pedunculata</i> (67), <i>Kunzea obovata</i> (67)	<i>Entolasia stricta</i> , <i>Gonocarpus teucroides</i> , <i>Lomandra longifolia</i>

Ecosystem 150: Washpool Brush Box-Tallowwood

Tall to extremely tall moist forest in which the canopy is co-dominated by Brush Box (*Lophostemon confertus*), Tallowwood (*Eucalyptus microcorys*) and New England Blackbutt (*E. campanulata*). There is a well-developed warm-temperate rainforest understorey of species such as Corkwood (*Caldcluvia paniculosa*), Crabapple (*Schizomeria ovata*), Rough Tree Fern (*Cyathea australis*), Tree Heath (*Trochocarpa laurina*) and Rose Maple (*Cryptocarya rigida*). Vines including Water Vine (*Cissus antarctica*) and Five-leaf Water Vine (*Cissus hypoglauca*) and Sarsaparilla (*Smilax australis*) are common. The ground layer is a mix of ferns, vines and forbs such as Gristle Fern (*Blechnum cartilagineum*), Climbing Guinea Flower (*Hibbertia scandens*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem occurs at higher elevations near the headwaters of Washpool Creek in Washpool National Park.

Upper	Mid	Lower
<i>Lophostemon confertus</i> (80), <i>Eucalyptus microcorys</i> (70)	<i>Trochocarpa laurina</i> (90), <i>Cissus antartica</i> (80), <i>Psychotria loniceroides</i> (80), <i>Synoum glandulosum</i> (80), <i>Cryptocarya rigida</i> (80), <i>Archontophoenix cunninghamii</i> (70), <i>Caldcluvia paniculosa</i> (70), <i>Cissus hypoglauca</i> (70), <i>Smilax australis</i> (70), <i>Archirhodomyrtus beckleri</i> (60), <i>Schizomeria ovata</i> (60), <i>Cephalalaria cephalobotrys</i> (60), <i>Cyathea australis</i> (60), <i>Elaeocarpus reticulatus</i> (60)	<i>Dianella caerulea</i> (90), <i>Blechnum cartilagineum</i> (90), <i>Geitonoplesium cymosum</i> (80), <i>Hibbertia scandens</i> (80), <i>Gymnostachys anceps</i> (80)

*Ecosystem 151: Wattle

Generally low to mid-high forest, although occasionally taller or a woodland. The overstorey is clearly dominated by a species of wattle (e.g. *Acacia disparrima*, *A. melanoxylon*, *A. irrorata*). Understorey composition varies with habitat and location (e.g. coastal or tableland).

This ecosystem is scattered in both CRA Regions (e.g. Iluka Nature Reserve). In some instances it is likely to have developed following disturbance (e.g. fire).

Upper
<i>Acacia disparrima</i> , <i>Acacia melanoxylon</i> , <i>Acacia irrorata</i>

Ecosystem 152: Wet Bloodwood-Tallowwood

Tall to extremely tall forest dominated by Pink Bloodwood (*Corymbia intermedia*) frequently in association with Tallowwood (*Eucalyptus microcorys*) and also often including Brush Box (*Lophostemon confertus*), Narrow-leaved White Mahogany (*E. acmenoides*), Grey Ironbark (*E. siderophloia*) and Small-fruited Grey Gum (*E. propinqua*). There is usually a dense understorey dominated by species such as Celery Wood (*Polyscias elegans*), Lantana (*Lantana camara*), Guioa (*Guioa semiglaucula*), Native Ginger (*Alpinia caerulea*) and Ribbon Wood (*Eurosichinus falcatus*). Vines are common, and the ground layer is most frequently dominated by Rasp Fern (*Doodia aspera*), Blady Grass (*Imperata cylindrica*), Blue Flax Lily (*Dianella caerulea*) and Spiny-headed Mat-rush (*Lomandra longifolia*).

This ecosystem is confined predominantly to metasediments of the MacPherson and Richmond Ranges with extensions on similar geologies to the Focal Peak and Mt Warning Shields. Small areas are reserved in Yabbara, Richmond Range and Mebbin National Parks.

Upper	Mid	Lower
<i>Corymbia intermedia</i> (77), <i>Eucalyptus microcorys</i> (69), <i>Lophostemon confertus</i> (54), <i>Eucalyptus siderophloia</i> (50), <i>Eucalyptus acmenoides</i> (50), <i>Eucalyptus propinqua</i> (39)	<i>Smilax australis</i> (96), <i>Cissus antarctica</i> (89), <i>Lantana camara</i> (85), <i>Alpinia caerulea</i> (81), <i>Euroschinus falcata</i> (77), <i>Cissus hypoglauca</i> (73), <i>Polyscias elegans</i> (73), <i>Guioa semiglaucula</i> (69), <i>Celastrus subspicatus</i> (65), <i>Trochocarpa laurina</i> (65), <i>Rhodamnia rubescens</i> (65), <i>Psychotria daphnoides</i> (65), <i>Breynia oblongifolia</i> (62), <i>Allocasuarina torulosa</i> (62), <i>Cryptocarya microneura</i> (58), <i>Citriobatus pauciflorus</i> (58)	<i>Dianella caerulea</i> (81), <i>Geitonoplesium cymosum</i> (69), <i>Eustrephus latifolius</i> (69), <i>Imperata cylindrica</i> (65), <i>Lomandra longifolia</i> (65), <i>Doodia aspera</i> (58)

Ecosystem 153: Wet Coastal Tallowwood-Brush Box

Tall to extremely tall forest which is usually co-dominated by Blackbutt (*Eucalyptus pilularis*), Tallowwood (*E. microcorys*) and/or Brush Box (*Lophostemon confertus*). There is a sparse to moderately dense understorey dominated by species such as Forest Oak (*Allocasuarina torulosa*), Tree Heath (*Trochocarpa laurina*), Scentless Rosewood (*Synoum glandulosum*) and Rose Myrtle (*Archirhodomyrtus beckleri*). The ground layer is a mix of ferns, forbs and grasses with common species being Gristle Fern (*Blechnum cartilagineum*), Common Ground Fern (*Calochlaena dubia*), Spiny-headed Mat-rush (*Lomandra longifolia*), Blue Flax Lily (*Dianella caerulea*), Blady Grass (*Imperata cylindrica*) and Kangaroo Grass (*Themeda australis*).

This ecosystem is distributed in near coastal valleys and foothills from the Nambucca Valley north to the Corindi River. A small area is reserved in Jaaningga National Park.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (85), <i>Lophostemon confertus</i> (77), <i>Eucalyptus pilularis</i> (69), <i>Syncarpia glomulifera</i> (62)	<i>Allocasuarina torulosa</i> (69), <i>Synoum glandulosum</i> (54), <i>Trochocarpa laurina</i> (54), <i>Cordyline stricta</i> (54), <i>Notelaea longifolia</i> (54), <i>Archirhodomyrtus beckleri</i> (54), <i>Elaeocarpus reticulatus</i> (54)	<i>Lomandra longifolia</i> (69), <i>Blechnum cartilagineum</i> (62), <i>Calochlaena dubia</i> (62), <i>Pteridium esculentum</i> (62), <i>Imperata cylindrica</i> (62), <i>Themeda australis</i> (54)

Ecosystem 154: Wet Flooded Gum-Tallowwood

Tall to extremely tall forest dominated by Flooded Gum (*Eucalyptus grandis*) with Tallowwood (*E. microcorys*), Brush Box (*Lophostemon confertus*) and Turpentine (*Syncarpia glomulifera*) frequently present. There is usually a dense understorey of trees and shrubs such as Bangalow Palm (*Archontophoenix cunninghamii*), Rose Maple (*Cryptocarya rigida*) Narrow-leaved Palm Lily (*Cordyline stricta*) and Lilly Pilly (*Acmena smithii*). Many sites are disturbed and have a dense understorey of Lantana (*Lantana camara*). Vines are common and the ground layer is often sparse with Gristle Fern (*Blechnum cartilagineum*), Blue Flax Lily (*Dianella caerulea*) and Rough Maidenhair (*Adiantum hispidulum*) common.

This ecosystem is predominantly distributed on near coastal valleys and foothills of the Nambucca, Bellinger, Orara and Tweed Valleys. Small areas are reserved in Bindarri National Park and Bollandolla Nature Reserve.

Upper	Mid	Lower
<i>Eucalyptus grandis</i> (88), <i>Eucalyptus microcorys</i> (75), <i>Lophostemon confertus</i> (69), <i>Syncarpia glomulifera</i> (63)	<i>Dioscorea transversa</i> (94), <i>Wilkiea huegeliana</i> (82), <i>Lantana camara</i> (82), <i>Cordyline stricta</i> (82), <i>Cryptocarya rigida</i> (82), <i>Archontophoenix cunninghamiana</i> (75), <i>Cissus hypoglaucha</i> (75), <i>Guioa semiglaucha</i> (75), <i>Acmena smithii</i> (75), <i>Smilax australis</i> (69), <i>Cryptocarya microneura</i> (69), <i>Synoum glandulosum</i> (69), <i>Trochocarpa laurina</i> (69)	<i>Morinda jasminoides</i> (82), <i>Blechnum cartilagineum</i> (82), <i>Dianella caerulea</i> (75), <i>Smilax glycyphylla</i> (65), <i>Hibbertia scandens</i> (63)

Ecosystem 155: Wet Foothills Blackbutt-Turpentine

Tall to extremely tall forest dominated by Blackbutt (*Eucalyptus pilularis*) with Tallowwood (*E. microcorys*), Brush Box (*Lophostemon confertus*) and/or Turpentine (*Syncarpia glomulifera*) often present as co-dominants. There is a midstorey of Forest Oak (*Allocasuarina torulosa*) and a dense understorey dominated by shrubs such as Blueberry Ash (*Elaeocarpus reticulatus*), Rose Myrtle (*Archirhodomyrtus beckleri*) and Scentless Rosewood (*Synoum glandulosum*). Vine species such as Five-leaf Water Vine (*Cissus hypoglaucha*) and Sarsaparilla (*Smilax australis*) are often present. The ground layer is dominated by ferns and forbs such as Common Ground Fern (*Calochlaena dubia*), Gristle Fern (*Blechnum cartilagineum*), Bracken (*Pteridium esculentum*), Spiny-headed Mat-rush (*Lomandra longifolia*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem is distributed on foothills and ranges from the Manning Valley north to the Corindi River. It is reserved in New England, Big Nellie, Yoorigan and Dooragan National Parks.

Upper	Mid	Lower
<i>Eucalyptus pilularis</i> (91), <i>Syncarpia glomulifera</i> (86), <i>Eucalyptus microcorys</i> (81), <i>Lophostemon confertus</i> (74)	<i>Allocasuarina torulosa</i> (95), <i>Cissus hypoglaucha</i> (74), <i>Smilax australis</i> (72), <i>Elaeocarpus reticulatus</i> (70), <i>Breynia oblongifolia</i> (67), <i>Archirhodomyrtus beckleri</i> (65), <i>Dioscorea transversa</i> (65), <i>Synoum glandulosum</i> (63), <i>Cordyline stricta</i> (61), <i>Trochocarpa laurina</i> (61), <i>Alpinia caerulea</i> (58), <i>Polyscias sambucifolia</i> (54), <i>Psychotria loniceroides</i> (54), <i>Cyathea australis</i> (51), <i>Persoonia media</i> (51)	<i>Hibbertia scandens</i> (81), <i>Dianella caerulea</i> (79), <i>Calochlaena dubia</i> (72), <i>Blechnum cartilagineum</i> (70), <i>Pteridium esculentum</i> (67), <i>Lomandra longifolia</i> (58)

Ecosystem 156: Wet New England Blackbutt-Silver-top Stringybark

Tall to extremely tall forest dominated by New England Blackbutt (*Eucalyptus campanulata*) frequently in association with either Silver-top Stringybark (*E. laevopinea*) or Sydney Blue Gum (*E. saligna*). The dense understorey is composed of moist shrubs such as Scentless Rosewood (*Synoum glandulosum*), Tree Heath (*Trochocarpa laurina*), Rose Maple (*Cryptocarya rigida*), Jackwood (*Cryptocarya glaucescens*) and Blueberry Ash (*Elaeocarpus reticulatus*). Vine species such as Five-leaf Water Vine (*Cissus hypoglaucha*) and Water Vine (*Cissus antarctica*) are common. The ground layer is dominated by ferns and forbs with the more common and abundant species including Spiny-headed Mat-rush (*Lomandra longifolia*), *Senecio amygdalifolius*, Common Ground Fern (*Calochlaena dubia*), Gristle Fern (*Blechnum cartilagineum*) and Rasp Fern (*Doodia aspera*).

This ecosystem is distributed on the western, eastern and southern foothills of the Barrington Tops and is reserved in Barrington Tops National Park.

Upper	Mid	Lower
<i>Eucalyptus campanulata</i> (67), <i>Eucalyptus laevopinea</i> (56), <i>Eucalyptus saligna</i> (44)	<i>Synoum glandulosum</i> (78), <i>Trochocarpa laurina</i> (67), <i>Cissus hypoglauca</i> (67), <i>Cryptocarya rigida</i> (67), <i>Cryptocarya glaucescens</i> (56), <i>Acmena smithii</i> (56), <i>Parsonsia straminea</i> (56), <i>Psychotria loniceroides</i> (56), <i>Elaeocarpus reticulatus</i> (56)	<i>Lomandra longifolia</i> (100), <i>Geitonoplesium cymosum</i> (78), <i>Gymnostachys anceps</i> (67), <i>Hibbertia dentata</i> (67), <i>Dianella caerulea</i> (56), <i>Senecio amygdalifolius</i> (56), <i>Pteridium esculentum</i> (56), <i>Blechnum cartilagineum</i> (56), <i>Calochlaena dubia</i> (56)

Ecosystem 157: Wet Shrubby Brush Box-Tallowwood

Tall to extremely tall forest dominated by Brush Box (*Lophostemon confertus*) with Tallowwood (*Eucalyptus microcorys*) and/or Sydney Blue Gum (*E. saligna*) sometimes present. There is a dense warm temperate rainforest or shrubby understorey of species such as Corkwood (*Caldcluvia paniculosa*), Crabapple (*Schizomeria ovata*), Rose Maple (*Cryptocarya rigida*), Scentless Rosewood (*Synoum glandulosum*) and Bolwarra (*Eupomatia laurina*). Vines like Sarsaparilla (*Smilax australis*), Water Vine (*Cissus antarctica*) and Five-leaf Water Vine (*Cissus hypoglauca*) and Anchor Vine (*Palmeria scandens*) are common. The ground layer is mainly ferns and forbs such as Gristle Fern (*Blechnum cartilagineum*), Trim Shield Fern (*Lastreopsis decomposita*) and Blue Flax Lily (*Dianella caerulea*).

This ecosystem is distributed on the ranges of the great escarpment from Dingo Tops north to Chandlers Creek. It is reserved in New England, Biriwal Bulga, Tapin Tops and Cottan-Bimbang National Parks.

Upper	Mid	Lower
<i>Lophostemon confertus</i> (84), <i>Eucalyptus microcorys</i> (50), <i>Eucalyptus saligna</i> (41)	<i>Eupomatia laurina</i> (72), <i>Synoum glandulosum</i> (72), <i>Cryptocarya rigida</i> (69), <i>Smilax australis</i> (69), <i>Cissus antarctica</i> (63), <i>Palmeria scandens</i> (60), <i>Psychotria loniceroides</i> (60), <i>Caldcluvia paniculosa</i> (60), <i>Cissus hypoglauca</i> (56), <i>Trochocarpa laurina</i> (56), <i>Schizomeria ovata</i> (56), <i>Asplenium australasicum</i> (53), <i>Cryptocarya microneura</i> (53)	<i>Blechnum cartilagineum</i> (69), <i>Dianella caerulea</i> (69), <i>Morinda jasminoides</i> (63), <i>Doodia aspera</i> (60)

Ecosystem 158: Wet Spotted Gum-Tallowwood

Tall to very tall forest frequently co-dominated by Spotted Gum (*Corymbia variegata*), Tallowwood (*Eucalyptus microcorys*) and Narrow-leaved White Mahogany (*E. acmenoides*) and in which Brush Box (*Lophostemon confertus*) is occasionally present as a sub-dominant. There is usually a dense understorey dominated by *Solanum densivestitum*, Tree Heath (*Trochocarpa laurina*), Hairy Psychotria (*Psychotria loniceroides*) and Cabbage Palm (*Livistona australis*). Vines such as Climbing Guinea Flower (*Hibbertia scandens*), Water Vine (*Cissus antarctica*) and Wombat Berry (*Eustrephus latifolius*) are common. The ground layer is dominated by forbs, grasses and ferns such as Blue Flax Lily (*Dianella caerulea*), Slender Tick-trefoil (*Desmodium varians*), Blady Grass (*Imperata cylindrica*) and Giant Maidenhair (*Adiantum formosum*).

This ecosystem is confined to Washpool National Park and Washpool State Forest.

Upper	Mid	Lower
<i>Eucalyptus microcorys</i> (60), <i>Eucalyptus acmenoides</i> (55), <i>Corymbia variegata</i> (50), <i>Lophostemon confertus</i> (40)	<i>Solanum densivestitum</i> (95), <i>Trochocarpa laurina</i> (95), <i>Psychotria loniceroides</i> (85), <i>Livistona australis</i> (85), <i>Cayratia clematidea</i> (80), <i>Alpinia caerulea</i> (75), <i>Celastrus subspicatus</i> (65), <i>Cissus antarctica</i> (75), <i>Rhodamnia rubescens</i> (70), <i>Guioa semiglaucula</i> (65), <i>Breynia oblongifolia</i> (60), <i>Rapanea variabilis</i> (60), <i>Acacia irrorata</i> (60), <i>Synoum glandulosum</i> (55)	<i>Dianella caerulea</i> (100), <i>Hibbertia scandens</i> (95), <i>Pratia purpurascens</i> (85), <i>Desmodium varians</i> (85), <i>Sigesbeckia orientalis</i> (85), <i>Glycine clandestina</i> (85), <i>Eustrephus latifolius</i> (80), <i>Imperata cylindrica</i> (80), <i>Pseuderanthemum variabile</i> (75), <i>Oplismenus aemulus</i> (65), <i>Hydrocotyle peduncularis</i> (65), <i>Desmodium rhytidophyllum</i> (65), <i>Adiantum formosum</i> (60),

*Ecosystem 162: White-topped Box

Very tall to extremely tall moist forest with the overstorey dominated by White-topped Box (*Eucalyptus quadrangulata*). Associates include Sydney Blue Gum (*E. saligna*), Tallowwood (*E. microcorys*), New England Blackbutt (*E. campanulata*), Silver-top Stringybark (*E. laevopinea*), Thin-leaved Stringybark (*E. eugenioides*), Messmate (*E. obliqua*), Small-fruited Grey Gum (*E. propinqua*) and Grey Gum (*E. biturbinata*). Understorey trees, shrubs and vines include Forest Oak (*Allocasuarina torulosa*), wattles (e.g. *Acacia irrorata*, *A. melanoxylon*), Blackthorn (*Bursaria spinosa*), Forest Maple (*Cryptocarya rigida*), Rough Tree Fern (*Cyathea australis*), Lance Beard Heath (*Leucopogon lanceolatus*), Water Vine (*Cissus antarctica*) and Five-leaf Water Vine (*Cissus hypoglaucula*). Ground layer species include Gristle Fern (*Blechnum cartilagineum*), mat-rushes (*Lomandra* spp.), Kangaroo Grass (*Themeda australis*), Climbing Guinea Flower (*Hibbertia scandens*), and Blue Flax Lily (*Dianella caerulea*).

This ecosystem primarily occurs on ranges and the escarpment in the Lower CRA Region (e.g. Barakee National Park).

Upper	Mid	Lower
<i>Eucalyptus quadrangulata</i> , <i>Eucalyptus saligna</i> , <i>Eucalyptus microcorys</i> , <i>Eucalyptus campanulata</i> , <i>Eucalyptus laevopinea</i> , <i>Eucalyptus eugenioides</i> , <i>Eucalyptus obliqua</i> , <i>Eucalyptus biturbinata</i> , <i>Eucalyptus propinqua</i>	<i>Allocasuarina torulosa</i> , <i>Acacia irrorata</i> , <i>Acacia melanoxylon</i> , <i>Bursaria spinosa</i> , <i>Cryptocarya rigida</i> , <i>Cyathea australis</i> , <i>Leucopogon lanceolatus</i> , <i>Cissus antarctica</i> , <i>Cissus hypoglaucula</i>	<i>Blechnum cartilagineum</i> , <i>Lomandra</i> spp., <i>Themeda australis</i> , <i>Hibbertia scandens</i> , <i>Dianella caerulea</i>

*Ecosystem 163: Yellow Box – Blakely’s Red Gum

Tall woodland or forest in which Yellow Box (*Eucalyptus melliodora*) and Blakely’s Red Gum (*E. blakelyi*) co-dominate in the overstorey. Associates include Apple Box (*E. bridgesiana*), Manna Gum (*E. viminalis*), Narrow-leaved Peppermint (*E. radiata*), New England Peppermint (*E. nova-anglica*) and stringybarks (e.g. *E. caliginosa*, *E. laevopinea*, *E. youmanii*). Understorey shrubs are generally sparse. The ground layer supports grasses (e.g. *Poa sieberiana*, *Themeda australis*) and various forbs.

This ecosystem occurs at high altitudes on the tablelands in both CRA Regions.

Upper	Lower
<i>Eucalyptus melliodora</i> , <i>Eucalyptus blakelyi</i> , <i>Eucalyptus bridgesiana</i> , <i>Eucalyptus viminalis</i> , <i>Eucalyptus radiata</i> , <i>Eucalyptus nova-anglica</i> , <i>Eucalyptus caliginosa</i> , <i>Eucalyptus laevopinea</i> , <i>Eucalyptus youmanii</i>	<i>Poa sieberiana</i> , <i>Themeda australis</i>

***FE 164: Agricultural plantations, orchards**

Perennial agricultural crops.

***Ecosystem 165: Forestry Plantations**

Forest plantings for wood production are characteristic, generally after removal of the original native vegetation. Plantation species include Flooded Gum (*Eucalyptus grandis*), Blackbutt (*E. pilularis*), Hoop Pine (*Araucaria cunninghamii*), and exotics such as Slash Pine (*Pinus elliottii*) or Radiata Pine (*P. radiata*). The understorey may comprise a variety of native species, or infestations of weeds such as Lantana (*Lantana camara*), Blackberry (*Rubus spp.*) or Groundsel Bush (*Baccharis halimifolia*).

Forestry Plantations occur in both CRA Regions on the coastal lowlands (e.g. Barcoongere State Forest, Tea Gardens district) and at higher altitudes (Wild Cattle Creek and Hanging Rock State Forests).

Upper	Mid
<i>Eucalyptus grandis</i> , <i>Eucalyptus pilularis</i> , <i>Araucaria cunninghamii</i> , <i>Pinus elliottii</i> , <i>Pinus radiata</i>	<i>Lantana camara</i> , <i>Rubus spp.</i> , <i>Baccharis halimifolia</i>

***FE 166: Improved pasture, croplands**

Annual agricultural crops and improved pasture.

***Ecosystem 167: Introduced Scrub (Shrubland)**

Introduced woody weeds such as Lantana (*Lantana camara*), Blackberry (*Rubus spp.*) or Privet (*Ligustrum spp.*) dominate, typically as dense shrubland or low forest. Some stands may in time revert to forest dominated by native species. In other cases active bush regeneration is required to facilitate this recruitment.

Upper
<i>Lantana camara</i> , <i>Rubus spp.</i> , <i>Ligustrum spp</i>

FE 168: Rainforest

Typically Closed Forest (>70% crown cover) dominated by Rainforest species. Characteristic features may include vines, epiphytes, drip tips, mosses, compound leaves and tree buttresses. May include emergent Eucalypt species and/or Brushbox with up to 50% crown cover. Includes all Rainforest classes (Sub-tropical, Warm Temperate, Cool Temperate, Littoral, Dry and Viney Scrub); Rainforest sub-alliances of Floyd A G (1989) and 'Forest Types' 1 - 26 described in Research Note 17, Forestry Commission of NSW (1989). Where emergent Eucalypt or other non-rainforest species occur, the Rainforest canopy stratum is more or less continuous with crowns typically touching or overlapping.

***Ecosystem 169: Scrub (Shrubland)**

Tall to extremely tall shrubland that is generally more than 2 m high. Floristic composition varies with locality (low to high altitude) and habitat (e.g. estuarine, sand mass, floodplain, tableland). Various paperbarks (*Melaleuca spp.*), tea-trees (*Leptospermum spp.*), wattles (*Acacia spp.*), banksias (*Banksia spp.*) or Kunzea spp. may dominate the overstorey, or alternatively one or more Rainforest species.

This ecosystem is an aggregation of many different plant communities. It is widespread in both CRA Regions, although mainly coastal (e.g. Bundjalung, Hat Head and Crowdy Bay National Parks).

Upper
<i>Melaleuca spp.</i> , <i>Leptospermum spp.</i> , <i>Acacia spp.</i> , <i>Banksia spp.</i> , <i>Kunzea spp.</i> ,

***FE 171: Water surfaces**

Areas covered by permanent water.

***FE 172: Sand ridge**

Generally in littoral areas. Usually unvegetated but may support scattered herbs.

***FE 173: Cleared, partially cleared**

Lands originally forested, subsequently cleared and generally used for grazing, but pastures are not improved. Often contains remnant vegetation.

Ecosystem 195: Apple-Manna Gum Woodland

Mid-high to tall woodland dominated by Manna Gum (*Eucalyptus viminalis*), Yellow Box (*E. melliodora*) and/or Rough-barked Apple (*Angophora floribunda*). The understorey is usually very sparse or absent, while the ground layer is dominated by grasses such as Snow Grass (*Poa sieberiana*), Red-leg Grass (*Bothriochloa macra*), *Austrodanthonia racemosa* and various forb species.

This ecosystem has scattered occurrences on the tablelands.

Upper	Lower
<i>Eucalyptus viminalis</i> , <i>E. melliodora</i> , <i>Angophora floribunda</i>	<i>Poa sieberiana</i> , <i>Bothriochloa macra</i> , <i>Austrodanthonia racemosa</i>

Ecosystem 200: Broad-leaved Stringybark-Ribbon Gum

Tall to very tall forest or woodland with the canopy dominated by Broad-leaved Stringybark (*Eucalyptus caliginosa*), Mountain Ribbon Gum (*E. nobilis*) and/or Narrow-leaved Peppermint (*E. radiata*). An understorey of species such as White Banksia (*Banksia integrifolia*), Lance Beard Heath (*Leucopogon lanceolatus*) and Fern-leaved Wattle (*Acacia filicifolia*) is usually present. The ground layer is dominated by Snow Grass (*Poa sieberiana*), Bracken (*Pteridium esculentum*), Blady Grass (*Imperata cylindrica*) and various forbs.

There are scattered occurrences of this ecosystem on the tablelands.

Upper	Mid	Lower
<i>Eucalyptus caliginosa</i> , <i>Eucalyptus nobilis</i> , <i>Eucalyptus radiata</i>	<i>Banksia integrifolia</i> , <i>Leucopogon lanceolatus</i> , <i>Acacia filicifolia</i>	<i>Poa sieberiana</i> , <i>Pteridium esculentum</i> , <i>Imperata cylindrica</i>

FE 201: Camphor Laurel
Only mapped in the UNE study area.

5 References

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6 Appendices

APPENDIX 1: Common and Scientific Species Names

Common Name	Scientific Name
Apple, Broad-leaved	<i>Angophora subvelutina</i>
Apple, Narrow-leaved	<i>Angophora bakeri</i>
Apple, Rough-barked	<i>Angophora floribunda</i>
Apple, Sandstone	<i>Angophora robur</i>
Apple, Smooth-barked	<i>Angophora costata</i>
Apple, Smudgy	<i>Angophora woodsiana</i>
Ash, Blue Mountain	<i>Eucalyptus oreades</i>
Ash, Red	<i>Alphitonia excelsa</i>
Bangalow Palm	<i>Archontophoenix cunninghamiana</i>
Banksia, White	<i>Banksia integrifolia</i>
Blackbutt	<i>Eucalyptus pilularis</i>
Blackbutt, Large-fruited	<i>Eucalyptus pyrocarpa</i>
Blackbutt, New England	<i>Eucalyptus campanulata</i>
Blackbutt, Western New England	<i>Eucalyptus andrewsii</i>
Blady Grass	<i>Imperata cylindrica</i>
Bloodwood, Pink	<i>Corymbia intermedia</i>
Bloodwood, Red	<i>Corymbia gummifera</i>
Box, Apple	<i>Eucalyptus bridgesiana</i>
Box, Craven Grey	<i>Eucalyptus largeana</i>
Box, Grey	<i>Eucalyptus moluccana</i>
Box, Steel	<i>Eucalyptus rummeryi</i>
Box, Swamp	<i>Lophostemon suaveolens</i>
Box, White-topped	<i>Eucalyptus quadrangulata</i>
Box, Yellow	<i>Eucalyptus melliodora</i>
Bracken	<i>Pteridium esculentum</i>
Brown Barrel	<i>Eucalyptus fastigata</i>
Brush Box	<i>Lophostemon confertus</i>
Camphor Laurel	<i>Cinnamomum camphora</i>
Candlebark	<i>Eucalyptus rubida</i> ssp <i>barbigerorum</i>
Corkwood	<i>Caldcluvia paniculosa</i>
Crabapple	<i>Schizomeria ovata</i>
Cypress, Black	<i>Callitris endlicheri</i>
Cypress, Coast	<i>Callitris columellaris</i>
Cypress, White	<i>Callitris glaucophylla</i>
Grey Gum	<i>Eucalyptus biturbinata</i>
Grey Gum, Large-fruited	<i>Eucalyptus canaliculata</i>
Grey Gum, Small-fruited	<i>Eucalyptus propinqua</i>
Guioa	<i>Guioa semiglauc</i>
Gum, Cabbage	<i>Eucalyptus amplifolia</i> ssp <i>sessiliflora</i> or ssp <i>amplifolia</i>
Gum, Dorriggo White	<i>Eucalyptus dorriggoensis</i>
Gum, Dunn's White	<i>Eucalyptus dunnii</i>
Gum, Flooded	<i>Eucalyptus grandis</i>
Gum, Manna	<i>Eucalyptus viminalis</i>
Gum, Mountain	<i>Eucalyptus dalrympleana</i> ssp <i>heptantha</i>
Gum, Mountain Ribbon	<i>Eucalyptus nobilis</i>
Gum, Orange (coastal)	<i>Eucalyptus bancroftii</i>

Common Name	Scientific Name
Gum, Orange (west of New England Hwy)	<i>Eucalyptus prava</i>
Gum, Ribbon	<i>Eucalyptus viminalis</i>
Gum, Round-leaved	<i>Eucalyptus brunnea</i>
Gum, Scribbly	<i>Eucalyptus signata</i>
Gum, Snow	<i>Eucalyptus pauciflora</i>
Gum, Southern Blue	<i>Eucalyptus bicostata</i>
Gum, Sydney Blue	<i>Eucalyptus saligna</i>
Gum, Tumbledown	<i>Eucalyptus dealbata</i>
Hoop Pine	<i>Araucaria cunninghamii</i>
Ironbark, a grey	<i>Eucalyptus paniculata</i>
Ironbark, a grey	<i>Eucalyptus fergusonii</i> ssp <i>fergusonii</i>
Ironbark, Broad-leaved	<i>Eucalyptus fibrosa</i>
Ironbark, Caley's	<i>Eucalyptus caleyi</i>
Ironbark, Grey	<i>Eucalyptus siderophloia</i>
Ironbark, Nambucca	<i>Eucalyptus fusiformis</i>
Ironbark, Narrow-leaved	<i>Eucalyptus crebra</i>
Ironbark, Serpentine	<i>Eucalyptus ophitica</i>
Ironbark, Silver-leaved	<i>Eucalyptus melanophloia</i>
Ironbark, Square-fruited	<i>Eucalyptus tetrapleura</i>
Lilly Pilly	<i>Acmena smithii</i>
Mahogany, Red	<i>Eucalyptus resinifera</i> ssp <i>hemilampra</i> or ssp <i>resinifera</i>
Mahogany, Swamp	<i>Eucalyptus robusta</i>
Mallee, Barren Mountain	<i>Eucalyptus approximans</i>
Mallee, Bell-fruited	<i>Eucalyptus codonocarpa</i>
Maple, Forest	<i>Cryptocarya rigida</i>
Messmate	<i>Eucalyptus obliqua</i>
No common name	<i>Eucalyptus olida</i>
No common name	<i>Eucalyptus serpentinicola</i>
Oak, Bull	<i>Allocasuarina luehmanii</i>
Oak, River	<i>Casuarina cunninghamiana</i>
Oak, Swamp	<i>Casuarina glauca</i>
Paperbark, Broad-leaved	<i>Melaleuca quinquenervia</i>
Peppermint, Narrow-leaved	<i>Eucalyptus radiata</i> ssp <i>sejuncta</i>
Peppermint, New England	<i>Eucalyptus nova-anglica</i>
Peppermint, Sydney	<i>Eucalyptus piperita</i>
Peppermint, Wattle-leaved	<i>Eucalyptus acaciiformis</i>
Red Gum, Blakely's	<i>Eucalyptus blakelyi</i>
Red Gum, Forest	<i>Eucalyptus tereticornis</i>
Red Gum, Narrow-leaved	<i>Eucalyptus seeana</i>
Red Gum, Slaty	<i>Eucalyptus glaucina</i>
Sally, Black	<i>Eucalyptus stellulata</i>
Snow Grass	<i>Poa sieberiana</i>
Snow-in-Summer	<i>Melaleuca linariifolia</i>
Spotted Gum (north of Coffs Harbour)	<i>Corymbia variegata</i>
Spotted Gum (south of Coffs Harbour)	<i>Corymbia maculata</i>
Spotted Gum, Large-leaved	<i>Corymbia henryi</i>
Stringybark, Bailey's	<i>Eucalyptus baileyana</i>
Stringybark, Blue-leaved	<i>Eucalyptus agglomerata</i>
Stringybark, Broad-leaved	<i>Eucalyptus caliginosa</i>
Stringybark, Diehard	<i>Eucalyptus cameronii</i>
Stringybark, Needlebark	<i>Eucalyptus planchoniana</i>

Common Name	Scientific Name
Stringybark, Privet-leaved	<i>Eucalyptus ligustrina</i>
Stringybark, Silver-top	<i>Eucalyptus laevopinea</i>
Stringybark, Thin-leaved	<i>Eucalyptus eugenioides</i>
Stringybark, White	<i>Eucalyptus globoidea</i>
Stringybark, Williams's	<i>Eucalyptus williamsiana</i>
Stringybark, Youman's	<i>Eucalyptus youmanii</i>
Tallowwood	<i>Eucalyptus microcorys</i>
Tea-Tree	<i>Melaleuca alternifolia</i>
Tree Fern, Rough	<i>Cyathea australis</i>
Turpentine	<i>Syncarpia glomulifera</i>
White Mahogany, Broad-leaved	<i>Eucalyptus carnea</i>
White Mahogany, Narrow-leaved	<i>Eucalyptus acmenoides</i>

Appendix 2: Forest Ecosystems of North East NSW

FE No.	FE Name	Geographic zone	Common trees
2	Alpine Gum	tablelands	<i>E. pauciflora</i> (<i>E. nobilis</i> , <i>E. dalrympleana</i> , <i>E. cameronii</i>)
3	Bailey's Stringybark	northern lowlands	<i>E. baileyana</i> (<i>E. planchoniana</i> , <i>Angophora woodsiana</i> , <i>Corymbia gummifera</i>)
5	Banksia	mainly coastal but scattered in escarpment areas	<i>Banksia integrifolia</i> (<i>Corymbia intermedia</i> , <i>C. gummifera</i> , <i>E. robusta</i> , <i>E. laevopinea</i> , <i>E. nobilis</i>)
6	Barrington Dry Shrubby New England Blackbutt-Blue Gum	Barrington	<i>E. campanulata</i> (<i>E. saligna</i>)
7	Barrington moist Blue Gum-White Mahogany	southern lowlands	<i>E. saligna</i> (<i>E. acmenoides</i> , <i>E. tereticornis</i>)
8	Barrington Wet New England Blackbutt-Blue Gum	Barrington	<i>E. saligna</i> , <i>E. campanulata</i>
10	Black Sally	tablelands	<i>E. stellulata</i>
11	Blackbutt-Sydney Peppermint-Smooth-barked Apple	far southern coast	<i>E. pilularis</i> (<i>E. piperita</i> , <i>Angophora costata</i>)
12	Blue Mountain Ash	scattered small areas on escarpment	<i>E. oreades</i>
13	Blue-leaved Stringybark	small areas mid-north Coast	<i>E. agglomerata</i>
14	Brown Barrel	central and southern escarpment	<i>E. fastigata</i>
15	Brown Barrel-Gum	central and southern escarpment	<i>E. fastigata</i> , <i>E. nobilis</i> , <i>E. dalrympleana</i>
16	Bull Oak	Scattered	<i>Allocasuarina luehmannii</i>
17	Candlebark	northern New England Tableland	<i>E. rubida</i> ssp <i>barbigororum</i>
18	Casuarina Woodland	Scattered	<i>Allocasuarina species</i>
19	Coastal Mid Elevation Sydney Blue Gum	central and southern escarpments	<i>E. saligna</i>
20	Clarence Lowlands Needlebark Stringybark	Clarence coastal lowlands	<i>Syncarpia glomulifera</i> (<i>E. planchoniana</i>)
21	Lowlands Grey Box	Clarence Valley	<i>E. moluccana</i> , <i>E. siderophloia</i> (<i>Lophostemon suaveolens</i>)
22	Coast Cypress Pine	central and northern coast	<i>Callitris columellaris</i>
23	Coast Range Bloodwood-Mahogany	Clarence coastal lowlands	<i>C. intermedia</i> (<i>A. woodsiana</i>)
24	Clarence Lowlands Spotted Gum	Clarence Valley	<i>E. siderophloia</i> (<i>C. henryi</i> , <i>E. propinqua</i> , <i>C. variegata</i> , <i>C. intermedia</i>)
25	Coast Range Spotted Gum-Blackbutt	Clarence Valley	<i>C. variegata</i> (<i>E. microcorys</i> , <i>Syncarpia glomulifera</i> , <i>E. pilularis</i>)
26	Coastal Flooded Gum	widespread coastal ranges	<i>E. grandis</i> (<i>Lophostemon confertus</i>)
27	Coastal Sands Blackbutt	coastal sands south of Clarence	<i>E. pilularis</i> (<i>E. planchoniana</i> , <i>A. costata</i>)

FE No.	FE Name	Geographic zone	Common trees
28	Cool Moist Messmate	southern tableland edge	<i>E. obliqua</i>
29	Corkwood-Crabapple and Mixed Stringybarks	eastern tableland edge	<i>E. microcorys</i> , <i>E. saligna</i> (<i>E. laevopinea</i> , <i>E. campanulata</i>)
30	Diehard Stringybark-New England Blackbutt	central eastern tableland edge	<i>E. campanulata</i> (<i>E. cameronii</i>)
31	Dorrigo White Gum	northern central eastern New England Tableland and escarpment	<i>E. dorrigoensis</i>
32	Dry Foothills Blackbutt-Turpentine	central coastal foothills and ranges	<i>Syncarpia glomulifera</i> (<i>E. pilularis</i> , <i>E. microcorys</i>)
33	Dry Foothills Spotted Gum	northern central foothills and ranges	<i>C. variegata</i> (<i>E. siderophloia</i> , <i>E. carnea</i> , <i>E. microcorys</i>)
34	Dry Grassy Blackbutt-Tallowwood	central lowlands and foothills	<i>E. pilularis</i> , <i>E. microcorys</i>
35	Dry Grassy Stringybark	gorges	<i>E. campanulata</i> (<i>E. caliginosa</i> , <i>E. microcorys</i> , <i>E. cameronii</i> , <i>E. biturbinata</i>)
36	Dry Grassy Tallowwood/Grey Gum	central coastal lowlands and foothills	<i>E. microcorys</i> (<i>E. propinqua</i> , <i>E. siderophloia</i> , <i>Syncarpia glomulifera</i> , <i>E. carnea</i> , <i>C. intermedia</i>)
37	Dry Heathy Blackbutt-Bloodwood	Clarence lowlands	<i>Syncarpia glomulifera</i> (<i>C. intermedia</i>)
38	Dry Heathy New England Blackbutt	northern eastern tablelands	<i>E. campanulata</i> (<i>E. radiata</i> , <i>E. cameronii</i> , <i>E. dalrympleana</i>)
39	Dry Heathy New England Stringybarks	Gibraltar Range	<i>E. cameronii</i> (<i>E. campanulata</i> , <i>E. ligustrina</i> , <i>E. williamsiana</i> , <i>E. cameronii</i>)
40	Dry Heathy Sandstone Blackbutt	Clarence valley	<i>E. pilularis</i> , <i>Syncarpia glomulifera</i>
41	Dry Open New England Blackbutt	tablelands	<i>E. campanulata</i>
42	Dry Red Gum-Bloodwood-Apple	central ranges	<i>C. intermedia</i> , <i>A. floribunda</i> , <i>E. tereticornis</i>
43	Dry Silver-top Stringybark-Apple	gorges	<i>A. subvelutina</i> (<i>E. laevopinea</i> , <i>E. tereticornis</i>)
44	Dry Open Red Gum-Broad-leaved Apple	central gorges	<i>E. tereticornis</i> (<i>A. subvelutina</i> , <i>E. moluccana</i>)
45	Dunn's White Gum	far northern ranges and northern central ranges	<i>E. dunnii</i>
46	Eastern Red Gums	mainly northern coastal lowlands	<i>E. seeana</i> , <i>E. bancroftii</i> , <i>E. amplifolia</i>
47	Escarpment Red Gum	northern ranges	<i>E. tereticornis</i> (<i>A. subvelutina</i> , <i>C. intermedia</i> , <i>E. siderophloia</i>)
48	Escarpment Scibbly Gum-Apple	central gorges	<i>A. subvelutina</i> (<i>E. eugenoides</i> , <i>E. signata</i>)
49	Escarpment Tallowwood/Bloodwood	central ranges	<i>E. microcorys</i> (<i>C. intermedia</i> , <i>S. glomulifera</i>)
50	Wet Bangalow-Brush Box	central and northern ranges	<i>L. confertus</i>

FE No.	FE Name	Geographic zone	Common trees
51	Eurabie	central escarpment (Carrai)	<i>E. bicostata</i>
52	Foothills Grey Gum/Ironbark/Spotted Gum	Clarence lowlands	<i>E. propinqua</i> , <i>E. siderophloia</i> (<i>S. glomulifera</i> , <i>C. intermedia</i> , <i>C. variegata</i>)
53	Gorge Grey Box	central gorges	<i>E. moluccana</i> (<i>E. intermedia</i>)
54	Grey Box-Red Gum-Grey Ironbark	widespread inland valleys	<i>E. moluccana</i> (<i>E. tereticornis</i> , <i>E. siderophloia</i> , <i>E. propinqua</i>)
55	Foothills Grey Gum-Spotted Gum	Clarence lowlands	<i>E. propinqua</i> (<i>C. variegata</i> , <i>E. siderophloia</i> , <i>E. carnea</i> , <i>S. glomulifera</i>)
56	Granite Mallee	northern escarpment	<i>E. codonocarpa</i>
57	Highland Granite Stringybarks	northern escarpment	<i>E. planchoniana</i> (<i>E. codonocarpa</i> , <i>E. campanulata</i>)
58	Gorge Grey Gum	central gorges	<i>E. biturbinata</i> (<i>A. subvelutina</i> , <i>E. caliginosa</i>)
59	Gorge Ironbark/Grey Gum	central gorges	<i>E. siderophloia</i> (<i>E. propinqua</i> , <i>E. microcorys</i> , <i>C. intermedia</i> , <i>E. acmenoides</i>)
60	Grassy New England Blackbutt-Tallowwood-Blue Gum	central and northern escarpment	<i>E. campanulata</i> (<i>E. microcorys</i> , <i>E. saligna</i>)
61	Grey Box-Ironbark	Clarence foothills	<i>E. moluccana</i>
62	Grey Box-Northern Grey Gum	far northern ranges	<i>E. moluccana</i> , <i>E. propinqua</i>
63	Grey Gum-Stringybark	widespread gorges and ranges	<i>E. biturbinata</i> , <i>E. eugenoides</i>
64	Heath	widespread on coast and scattered elsewhere	
65	Heathy Scribbly Gum	central and northern coast	<i>E. signata</i> (<i>C. gummifera</i>)
67	High Elevation Ferny Blackbutt	central and northern ranges	<i>E. pilularis</i> (<i>E. microcorys</i>)
68	High Elevation Messmate-Brown Barrel	Barrington and eastern New England Tableland	<i>E. obliqua</i> (<i>E. fastigata</i> , <i>E. nobilis</i>)
69	High Elevation Moist Open Tallowwood-Blue Gum	central ranges	<i>E. microcorys</i> , <i>E. saligna</i> (<i>L. confertus</i>)
70	High Elevation Open Spotted Gum	Clarence foothills	<i>C. variegata</i> , <i>E. microcorys</i>
71	Ironbark	Richmond lowlands and upper Clarence; Hunter lowlands	<i>E. siderophloia</i> , <i>E. crebra</i> , <i>E. fibrosa</i>
72	Low Relief Coastal Blackbutt	central coast	<i>C. intermedia</i> (<i>E. resinifera</i> , <i>E. pilularis</i>)
73	Lowland Red Gum	Clarence lowlands	<i>L. suaveolens</i> (<i>E. tereticornis</i> , <i>C. intermedia</i> , <i>E. siderophloia</i>)
74	Lowlands Scribbly Gum	central and northern coast	<i>E. signata</i>
75	Lowlands Spotted Gum-Box	Clarence lowlands	<i>C. henryi</i> (<i>E. moluccana</i> , <i>E. siderophloia</i>)
76	Coastal Mallee	widespread but scattered on coast	
77	Mangrove	coastal	

FE No.	FE Name	Geographic zone	Common trees
78	Mann River Wet New England Blackbutt	northern gorges	<i>E. campanulata</i>
79	Manna Gum-Stringybark	southern eastern New England Tableland	<i>E. nobilis</i> (<i>E. obliqua</i> , <i>E. campanulata</i>)
80	Manna Gum	Barrington and eastern New England Tableland	<i>E. viminalis</i> (or <i>nobilis</i>) (<i>E. obliqua</i> , <i>E. campanulata</i>)
81	Messmate	widespread eastern New England Tableland	<i>E. obliqua</i>
82	Messmate-Mountain Gum Forest	southern eastern New England Tableland	<i>E. obliqua</i> (<i>E. dalrympleana</i> , <i>E. pauciflora</i>)
83	Mid Elevation Wet Blackbutt	central ranges	<i>E. pilularis</i> (<i>E. microcorys</i> , <i>L. confertus</i> , <i>S. glomulifera</i>))
84	Mid North Coast Wet Brush Box-Tallowwood-Blue Gum	central and southern ranges	<i>L. confertus</i> , <i>E. microcorys</i> (<i>E. saligna</i>)
85	Mixed Moist Hardwood	scattered in foothills	
86	Mixed New England Stringybarks	widespread eastern part of New England Tableland	<i>E. caliginosa</i>
87	Mixed Tableland Stringybark-Gum Open Forest	eastern New England Tableland	<i>E. campanulata</i> , <i>E. obliqua</i> (<i>E. brunnea</i> , <i>E. laevopinea</i> , <i>E. dalrympleana</i>)
88	Moist Escarpment New England Blackbutt	widespread ranges	<i>E. campanulata</i> (<i>E. microcorys</i> , <i>E. saligna</i>)
89	Moist Foothills Spotted Gum	Clarence foothills	<i>C. variegata</i> (<i>L. confertus</i> , <i>E. microcorys</i> , <i>E. acmenoides</i> , <i>E. siderophloia</i> , <i>E. propinqua</i>)
90	Moist Messmate-Gum	northern eastern New England Tableland	<i>E. campanulata</i> (<i>E. obliqua</i> , <i>E. brunnea</i> , <i>E. laevopinea</i>)
91	Moist Open Escarpment White Mahogany	widespread Barrington and escarpment	<i>E. microcorys</i> (<i>E. saligna</i> , <i>E. acmenoides</i>)
92	Moist Shrubby Stringybark-Gum	northern eastern New England Tableland	<i>E. campanulata</i> (<i>E. brunnea</i> , <i>E. obliqua</i> , <i>E. microcorys</i>)
93	Montane Stringybark-Gum	northern New England Tableland	<i>E. dalrympleana</i> (<i>E. caliginosa</i>)
94	Mountain Gum-Brown Barrel	Barrington	<i>E. dalrympleana</i> (<i>E. fastigata</i> , <i>E. obliqua</i>)
95	Northern Moist Blackbutt	far northern ranges	<i>E. pilularis</i> , <i>E. microcorys</i>
96	Natural Grassland	scattered small areas	
97	Needlebark Stringybark-Large-fruited Blackbutt	lower Clarence	<i>E. planchoniana</i> , <i>E. pyrocarpa</i> (<i>C. gummifera</i> , <i>S. glomulifera</i>)
98	New England Peppermint	eastern New England Tableland	<i>E. nova-anglica</i>
99	New England Stringybark-Blakely's Red Gum	gorges	<i>E. caliginosa</i> , <i>A. subvelutina</i> , <i>E. blakelyi</i>
100	Northern Grassy Sydney Blue Gum	northern ranges	<i>E. saligna</i> (<i>E. microcorys</i>)
101	Northern Open Grassy Blackbutt	Clarence lowlands	<i>E. pilularis</i> , <i>S. glomulifera</i>
102	Northern Ranges Dry Tallowwood	far northern ranges	<i>E. microcorys</i> (<i>L. confertus</i> , <i>C. intermedia</i> , <i>E. siderophloia</i>)
103	Northern Wet Brush Box	northern ranges	<i>L. confertus</i>

FE No.	FE Name	Geographic zone	Common trees
104	Northern Wet Tallowwood-Blue Gum	northern ranges	<i>E. microcorys</i> (<i>E. saligna</i> , <i>L. confertus</i>)
105	Nymboida Tallowwood/Turpentine	north central ranges	<i>E. microcorys</i> (<i>S. glomulifera</i> , <i>E. acmenoides</i>)
106	Open Coastal Brush Box	central lowlands and foothills	<i>L. confertus</i> (<i>S. glomulifera</i>)
107	Open Messmate-New England Blackbutt	Barrington	<i>E. campanulata</i> (<i>E. obliqua</i>)
108	Open Ribbon Gum	southern eastern New England Tableland	<i>E. nobilis</i> (<i>E. obliqua</i> , <i>E. campanulata</i>)
109	Open Shrubby Brush Box-Tallowwood	northern escarpment and ranges	<i>L. confertus</i> (<i>E. microcorys</i>)
110	Open Silver-top Stringybark/Blue Gum	eastern escarpment	<i>E. laevopinea</i> (<i>E. saligna</i>)
111	Open Silver-top Stringybark-Tallowwood	northern eastern New England Tableland	<i>E. laevopinea</i> (<i>E. saligna</i>)
112	Paperbark	widespread coastal lowlands	<i>M. quinquenervia</i>
113	Peppermint	widespread eastern New England Tableland	<i>E. radiata</i>
114	Peppermint-Mountain/Manna Gum	widespread eastern New England Tableland	<i>E. radiata</i> , <i>E. dalrympleana</i> , <i>E. viminalis</i> (or <i>nobilis</i>)
115	Red Bloodwood	scattered in coastal lowlands	<i>C. gummifera</i>
116	Red Gum-Stringybark	western tableland and slopes	<i>E. blakelyi</i> , <i>E. caliginosa</i>
117	Red Mahogany	scattered, mainly northern coastal foothills	<i>E. resinifera</i>
118	Richmond Range Spotted Gum	northern ranges	<i>C. variegata</i> (<i>E. siderophloia</i> , <i>E. propinqua</i> , <i>E. moluccana</i>)
119	Richmond Range Spotted Gum-box	northern ranges	<i>C. variegata</i> (<i>E. moluccana</i> , <i>E. propinqua</i>)
120	River Oak	widespread	<i>Casuarina cunninghamiana</i>
121	Rock	widespread	
122	Rough-barked Apples	Clarence/Richmond lowlands and far southern coast	Angophora species
123	Round-leaved Gum	northern eastern New England Tableland	<i>E. brunnea</i>
124	Round-leaved Gum-Turpentine	very small areas	<i>E. brunnea</i> , <i>S. glomulifera</i>
125	Saltmarsh	central coastal	
126	Sandstone Spotted Gum-Blackbutt	Clarence lowlands	<i>E. pilularis</i> (<i>C. henryi</i> , <i>E. siderophloia</i> , <i>C. intermedia</i>)
127	Sherwood Needlebark Stringybark	Clarence lowlands	<i>E. planchoniana</i> (<i>C. gummifera</i>)
128	Silver-leaved Ironbark	Clarence foothills	<i>E. melanophloia</i>
129	Smooth-barked Apple	southern coastal areas, scattered further north	<i>A. costata</i>
130	Smooth-barked Apple-Sydney Peppermint-Stringybark	far southern coast	<i>A. costata</i> , <i>E. piperita</i> , <i>E. globoidea</i>

FE No.	FE Name	Geographic zone	Common trees
131	Snow Gum	scattered eastern New England Tableland and particularly Barrington	<i>E. pauciflora</i>
132	Snow Gum-Mountain/Manna Gum	widespread New England Tableland and Barrington	<i>E. pauciflora</i> , <i>E. dalrympleana</i>
133	Snow Gum-Black Sally	small areas on New England Tableland	<i>E. pauciflora</i> , <i>E. stellulata</i>
134	South Coast Shrubby Grey Gum	southern coastal lowlands	<i>E. propinqua</i> (<i>E. microcorys</i> , <i>S. glomulifera</i> , <i>E. acmenoides</i>)
135	South Coast Tallowwood-Blue Gum	southern and central foothills	<i>E. microcorys</i> , <i>L. confertus</i> (<i>E. saligna</i> , <i>S. glomulifera</i> , <i>E. acmenoides</i>)
137	Southern Wet Sydney Blue Gum	Barrington and southern lowlands	<i>E. saligna</i>
138	Steel Box-Craven Grey Box	two disjunct areas; far northern foothills and southern foothills	<i>E. largeana</i> or <i>E. rummeryi</i>
139	Stringybark-Apple	widespread in gorges	<i>A. subvelutina</i> (<i>E. eugenioides</i>)
140	Stringybark-Mallee	central and northern escarpment	<i>E. codonocarpa</i> (<i>E. cameronii</i> , <i>E. campanulata</i>)
141	Swamp	widespread	
142	Swamp Mahogany	scattered in coastal lowlands	<i>E. robusta</i>
143	Swamp Oak	widespread in coastal areas	<i>Casuarina glauca</i>
145	Sydney Peppermint-Stringybark	far southern coastal foothills	<i>E. piperita</i>
146	Tallowwood	scattered in gorges and ranges	<i>E. microcorys</i>
147	Turpentine	mainly far northern coastal ranges and foothills, scattered further south	<i>Syncarpia glomulifera</i>
148	Very Wet New England Blackbutt-Tallowwood	central and northern ranges	<i>E. campanulata</i> (<i>E. microcorys</i>)
149	Mallee-Peppermint Mosaic	northern New England Tableland	<i>E. codonocarpa</i> (<i>E. acaciiformis</i>)
150	Washpool Tallowwood-Blue Gum	northern escarpment	<i>L. confertus</i> (<i>E. microcorys</i>)
151	Wattle	scattered, mainly coastal districts	
152	Wet Bloodwood/Tallowwood	far northern ranges	<i>C. intermedia</i> (<i>E. microcorys</i> , <i>L. confertus</i> , <i>E. siderophloia</i> , <i>E. acmenoides</i> , <i>E. propinqua</i>)
153	Wet coastal Tallowwood-Brush Box	central foothills	<i>E. microcorys</i> (<i>L. confertus</i> , <i>E. pilularis</i> , <i>S. glomulifera</i>)
154	Wet Flooded Gum-Tallowwood	central and northern foothills	<i>E. grandis</i> (<i>E. microcorys</i> , <i>L. confertus</i> , <i>S. glomulifera</i>)
155	Wet Foothills Blackbutt-Turpentine	central foothills	<i>E. pilularis</i> (<i>S. glomulifera</i> , <i>E. microcorys</i> , <i>L. confertus</i>)
156	Wet New England Blackbutt-Silver-top Stringybark	Barrington	<i>E. campanulata</i> (<i>E. laevopinea</i> , <i>E. saligna</i>)

FE No.	FE Name	Geographic zone	Common trees
157	Wet Shrubby Brush Box-Tallowwood	central ranges	<i>L. confertus</i> (<i>E. microcorys</i> , <i>E. saligna</i>)
158	Wet Spotted Gum-Tallowwood	northern escarpment	<i>E. microcorys</i> (<i>E. acmenoides</i> , <i>C. variegata</i> , <i>L. confertus</i>)
162	White-topped Box	southern ranges and escarpment	<i>E. quadrangulata</i>
163	Yellow Box-Blakely's Red Gum	New England Tableland	<i>E. melliodora</i> , <i>E. blakelyi</i>
164	Agricultural Plantations Orchards		
165	Forestry Plantations		
166	Improved Pasture, Croplands		
167	Introduced Scrub		
168	Rainforest		
169	Scrub	widespread, mainly coastal	this is a mix of various floristic communities
170	Settlements Roads Gravel		
171	Water Surfaces		
172	Sand Ridge		
173	Cleared Partially Cleared		
195	Apple-Manna Gum Woodland	New England Tableland and slopes	<i>E. viminalis</i> (<i>A. floribunda</i> , <i>E. melliodora</i>)
199	Riparian Shrubland	scattered, mainly New England Tableland	
200	Broad-leaved Stringybark-Ribbon Gum	scattered, New England Tableland	<i>E. nobilis</i> (<i>E. caliginosa</i> , <i>E. radiata</i> , <i>B. integrifolia</i>)
201	Camphor Laurel	widespread in far northern coastal areas	<i>Cinnamomum camphora</i>

Appendix 3: Area, status, target, and area reserved for each Forest Ecosystem (FE)

Definitions:

- **Status**
 - **End** - an **endangered ecosystem** is one where its distribution has contracted to less than 10% of its former range or the total area has contracted to less than 10% of its former area, or where 90% of its area is in small patches which are subject to threatening processes and unlikely to persist.
 - **Rare** - a **rare ecosystem** is one where its geographic distribution involves a total range of generally less than 10,000ha, a total area of generally less than 1,000ha or patch sizes of generally less than 100ha, where such patches do not aggregate to significant areas.
 - **Vul** - a **vulnerable ecosystem** is one which is approaching a reduction in areal extent of 70% within a bioregional context and which remains subject to threatening processes or [which is] not depleted but subject to continuing and significant threatening processes which may reduce its extent.
- **Severely Depleted** - refers to the extent to which a forest ecosystem has been cleared. Forest ecosystems that have been more than 70% cleared (i.e. that have less than 30% of their original extent remaining as defined by the pre-1750 modelled distribution) are regarded as severely depleted.
- **Highly Inadequately Reserved** - forest ecosystems that required 60% or more of their current area to be reserved in order to meet the 15% target, but which achieved less than 40% of the reservation target during the RFA, were identified as 'Highly Inadequately Reserved'. The 'Highly Inadequately Reserved' rating system has been used to identify high conservation value ecosystems that are poorly represented in conservation reserves.
- **Private Land Priority** - ecosystems that have only limited extent on public land and whose reservation target could not be met through reservation of public land were identified as 'Private Land Priority'. Ecosystems identified as being a 'Private Land Priority' are under represented within the public reserve system.
- **% Target Met** – relates to the percentage of target met updated for NPWS Estate as at June 2004.

No	Ecosystem	LNE						UNE					
		% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
2	Alpine Gum	26.44	Vul	*		*	67.81	31.91	Vul	*		*	33.88
3	Baileys Stringybark	94.68	Rare			*	80.7	74.77					100
5	Banksia	47.76	Vul			*	58.7	27.06	Rare	*	*	*	32.84
6	Barrington Dry Shrubby New England Blackbutt-Blue Gum	88					100						
7	Barrington Moist Blue Gum-White Mahogany	70.09				*	100						
8	Barrington Wet New England Blackbutt-Blue Gum	67.02				*	72.36						
10	Black Sallee	100	Rare				100	100	Rare				100
11	Blackbutt-Sydney Peppermint-Smoothbarked Apple	38.82		*		*	80.34						
12	Blue Mountain Ash	100	Rare				100	100	Rare				86.78
13	Blue-leaved Stringybark	100	Rare				96						
14	Brown Barrell	52.28	Rare				49.02	41.71	Rare	*	*		16.27
15	Brown Barrell-Gum	56.97					100	38.81	Rare	*	*	*	15.34
16	Bull Oak	100	Rare			*	100	100	Rare				100
17	Candlebark	8.23	End	*	*	*	10	19.23	Rare	*	*	*	12.19
18	Casuarina Woodland	0	Rare			*	85.08	0	Rare		*	*	13.95
19	Central Mid Elevation Sydney Blue Gum	44.43		*		*	41.52	53.92				*	50.66
20	Clarence Lowland Needlebark Stringybark	100	Rare				100	86.56					100
21	Lowlands Grey Box	20.6	Vul	*		*	94.39	38.7	Vul	*	*	*	1.94
22	Coast Cypress Pine	100	Rare				91.18	51.9	Rare			*	79.27
23	Coast Range Bloodwood-Mahogany	88.68	Rare				92.91	32.78		*			79.69
24	Clarence Lowlands Spotted Gum							50.81			*	*	22.44
25	Coast Range Spotted Gum-	100	Rare				100	83.95	Rare		*	*	10.23

No	Ecosystem	LNE	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	UNE	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
		% remaining						% remaining					
	Blackbutt												
26	Coastal Flooded Gum	57.71				*	61.19	63.22					100
27	Coastal Sands Blackbutt	64.06					100	68.64					100
28	Cool Moist Messmate	45.15				*	67.99						
29	Corkwood-Crabapple and Mixed Stringybarks	79.32					100	85.23					100
30	Diehard Stringybark-New England Blackbutt	84.13					100	38.35	Rare	*	*	*	10.55
31	Dorrigo White Gum	17.41	Vul	*	*	*	8.31	87.9	Rare		*	*	45.52
32	Dry Foothills Blackbutt-Turpentine	69.32				*	60.22	78.59					79.52
33	Dry Foothills Spotted Gum	53.8				*	61.37	92.95					100
34	Dry Grassy Blackbutt-Tallowwood	44.04		*	*	*	37.38	61.26					73.89
35	Dry Grassy Stringybark	72.9					100	79.69					100
36	Dry Grassy Tallowwood-Grey Gum	67.55					89.07	57.21			*	*	30.16
37	Dry Heathy Blackbutt-Bloodwood	58.49					100	61.7					91.75
38	Dry Heathy New England Blackbutt	96	Rare				69.7	93.36					100
39	Dry Heathy New England Stringybarks	100	Rare				100	100					100
40	Dry Heathy Sandstone Blackbutt							90.91					100
41	Dry Open New England Blackbutt	28.45	Vul	*	*	*	31.12	55.34					100
42	Dry Redgum-Bloodwood-Apple	64.82					100	99.18	Rare				93.42
43	Dry Silvertop Stringybark-Apple	77.44					100	86.6					100
44	Dry open Redgum-Broad Leaved Apple	95.3					100	92.53					100
45	Dunns White Gum							67.1	Rare			*	52.31
46	Eastern Red Gums	100	Rare				94.74	101.18	Vul				65.02
47	Escarpment Redgum	27.35	Vul	*	*	*	16.08	50.46				*	62.06
48	Escarpment Scribbly Gum-Apple	27.57	Vul	*		*	45.31	93.48					100
49	Escarpment Tallowwood-	86.27					100						

No	Ecosystem	LNE	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	UNE	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
		% remaining						% remaining					
	Bloodwood												
50	Wet Bangalow-Brushbox	63.66					100	62.51	Vul			*	53.84
51	Eurabbie	99.64	Rare				87.68						
52	Foothill Grey Gum-Ironbark-Spotted Gum							78.72					88.06
53	Gorge Grey Box	86.26					100	90.93					100
54	Grey Box-Red Gum-Grey Ironbark	21.74	Vul	*		*	65.62	53.2					39.29
55	Foothills Grey Gum-Spotted Gum	79.54					100	81.67					52.66
56	Granite Mallee	56.11				*	88.85	96.72					100
57	Highland Granite Stringybarks	37.24	Rare	*	*	*	23.59	91.69					100
58	Gorge Grey Gum	100	Rare			*	62.75	88.97					100
59	Gorge Ironbark-Grey Gum							84.53					100
60	Grassy New England Blackbutt-Tallowwood-Blue Gum	82.78					100	85.72					100
61	Grey Box-Ironbark							89.73	Rare		*	*	16.79
62	Grey Box-Northern Grey Gum							31.32	Rare	*	*	*	1.38
63	Grey Gum-Stringybark	69.51					100	91.28					100
64	Heath	0	Rare			*	76.28	0	Vul				100
65	Heathy Scribbly Gum	74.84					100	73.58					100
67	High Elevation Ferny Blackbutt	88.45					100	85.51					79.41
68	High Elevation Messmate-Brown Barrell	81.33					100	17.03	Rare	*	*	*	28.88
69	High Elevation Moist Open Tallowwood-Blue Gum	90.38					100	88.26					100
70	High Elevation Open Spotted Gum	57.14	Rare		*	*	100	81.18					97.12
71	Ironbark	42.96		*			97.23	31.27		*	*	*	41.51
72	Low Relief Coastal Blackbutt	46.63			*	*	46.59	54.57	Rare		*	*	46.33
73	Lowland Red Gum	63.76	Rare			*	35.25	40.43		*		*	34.57
74	Lowlands Scribbly Gum	84.36					100	51.54	Vul			*	89.7
75	Lowlands Spotted Gum-Box							53.19					54.11

No	Ecosystem	LNE						UNE					
		% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
76	Coastal Mallee	83.18	Rare				90.89	56.64	Vul				100
77	Mangrove	0	Rare			*	56.74	0	Rare			*	52.18
78	Mann River Wet New England Blackbutt							99.86					100
79	Manna Gum-Stringybark	53.56	Rare		*	*	13.61	94.74	Rare			*	65.56
80	Manna Gum	29.35	Vul	*		*	35.87	23.5	Rare	*	*	*	16.71
81	Messmate	33.27		*	*	*	35.34	37.11	Vul	*	*	*	31.52
82	Messmate-Mountain Gum Forest	44.26		*		*	87.83						
83	Mid Elevation Wet Blackbutt	88.56					100	88.52					100
84	Mid North Coast Wet Brushbox-Tallowood-Blue Gum	73.71					100	81.44					100
85	Mixed Moist Hardwood	100	Rare		*		7.76	42.3	Rare	*		*	35.26
86	Mixed New England Stringybarks							90.42					100
87	Mixed Tableland Stringybark-Gum Open Forest	38.91		*		*	58.31	34.85		*	*	*	27.91
88	Moist Escarpment New England Blackbutt	97.04					100	99.24					100
89	Moist Foothills Spotted Gum	63.6				*	100	94.97					100
90	Moist Messmate-Gum	69.03	Rare		*	*	2.56	83.27					100
91	Moist Open Escarpment White Mahogany	90.22					100	92.27					100
92	Moist Shrubby Stringybark-Gum	52.55	Rare		*	*	37.83	70.54					100
93	Montane Stringybark-Gum	22.94	Vul	*	*	*	33.25	46.77			*	*	37.05
94	Mountain Gum-Brown Barrell	99.56					100						
95	Northern Moist Blackbutt							83.52					100
96	Natural Grassland	0	Rare				80.43	0	Rare			*	69.46
97	Needlebark Stringybark-Large Fruited Blackbutt	90.29	Rare			*	52.19	94.06					100
98	New England Peppermint	80.59	Rare				91.16	82.11					100
99	New England Stringybark-Blakelys Red Gum	24.32	Vul	*		*	41.43	74.41					100
100	Northern Grassy Sydney Blue							82.17	Vul			*	66.94

No	Ecosystem	LNE						UNE					
		% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
	Gum												
101	Northern Open Grassy Blackbutt							70.81					100
102	Northern Ranges Dry Tallowwood							56.77					48.57
103	Northern Wet Brushbox							64.4					100
104	Northern Wet Tallowwood-Blue Gum							87.02					100
105	Nymboida Tallowwood-Turpentine	80	Rare			*	48.39	88.02					100
106	Open Coastal Brushbox	62.85					91.96	68.42					82.21
107	Open Messmate-New England Blackbutt	81.39					100						
108	Open Ribbon Gum	71.19					100						
109	Open Shrubby Brushbox-Tallowwood	57.36					100	74.12					100
110	Open Silvertop Stringybark-Blue Gum	79.22					100	85.03					100
111	Open Silvertop Stringybark-Tallowwood	89.27					100	92.8					100
112	Paperbark	0	Vul				99.97	0	Vul			*	53.78
113	Peppermint	25.39	Vul	*		*	52.03	57.84					100
114	Peppermint-Mountain/Manna Gum	19.29	Vul	*		*	45.12	29.98	Vul	*	*	*	21.84
115	Red Bloodwood	100	Rare				100	90.79	Rare				15.67
116	Red Gum-Stringybark	32.06	Vul	*	*	*	0.14	46.72			*	*	6.14
117	Red Mahogany	100	Rare		*	*	6.15	93.4					100
118	Richmond Range Spotted Gum							46.23			*		33.23
119	Richmond Range Spotted Gum-Box							59.31				*	33.72
120	River Oak	58.88	Rare			*	48.59	67.51	Vul		*	*	17.18
121	Rock	0					100	0					100
122	Rough-barked Apples	18.84	Vul	*		*	61.88	44.71	Vul	*			94.26
123	Roundleaved Gum	11.14	Rare	*	*	*	8.72	44.15		*		*	89.15

No	Ecosystem	LNE	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	UNE	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
		% remaining						% remaining					
124	Roundleaved Gum-Turpentine	100	Rare			*	94.92	100	Rare				0
125	Saltbush	106.95	Rare		*	*		94.12	Rare				62.5
126	Sandstone Spotted Gum-Blackbutt							54.19				*	54.85
127	Sherwood Needlebark Stringybark							79.13					74.38
128	Silverleaved Ironbark							85.4			*		0.86
129	Smoothbarked Apple	73.72					77.38	98.9	Rare				94.44
130	Smoothbarked Apple-Sydney Peppermint-Stringybark	57.61					100						
131	Snow Gum	67.93					100	94.74	Rare				87.85
132	Snow Gum -Mountain/Manna Gum	27.56	Vul	*		*	54.27	21.75	Vul	*	*	*	8.92
133	Snow Gum-Black Sallee	100	Rare				100	100	Rare				100
134	South Coast Shrubby Grey Gum	42.19		*	*	*	36.33						
135	South Coast Tallowwood-Blue Gum	67.1				*	80.84	79.03					100
137	Southern Wet Sydney Blue Gum	72.85					100						
138	Steel Box/Craven Grey Box	93.98	Rare				86.4	67.35	Rare		*	*	35.6
139	Stringybark-Apple	38.91		*		*	68.26	60.54					69.28
140	Stringybark-Mallee	99.11	Rare				95.04	99.91					100
141	Swamp	0	Rare				85.86	0	End			*	48.2
142	Swamp Mahogany	46.87				*	78.91	83.17	Rare			*	49.65
143	Swamp Oak	22.67	Vul	*		*	46.53	25.82	Rare	*	*	*	31.67
145	Sydney Peppermint-Stringybark	99.37					100	95.51	Rare		*	*	11.37
146	Tallowwood	85.26	Rare			*	50.54	91.72					100
147	Turpentine	98.33	Rare		*			43.38		*			100
148	Very Wet New England Blackbutt-Tallowwood	89.09					100	99.93					100
149	Mallee-Peppermint mosaic	58.33				*	84.85	59.46				*	85.29
150	Washpool Brushbox-Tallowwood							100					100
151	Wattle	0					10.05	0			*		30.81
152	Wet Bloodwood-Tallowwood							62.02					77.3

No	Ecosystem	LNE						UNE					
		% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% target met	% remaining	Status	Severely depleted	Highly inadequately reserved	Private land priority	% of target met
153	Wet Coastal Tallowwood-Brushbox	64.43			*	*	31.57	52.92			*		23..32
154	Wet Flooded Gum-Tallowwood	65.59				*	62.95	38.49		*	*	*	34.55
155	Wet Foothills Blackbutt-Turpentine	92.59					100	90.49					100
156	Wet New England Blackbutt-Silvertop Stringybark	86.66					100						
157	Wet Shrubby Brushbox-Tallowwood	85.92					100	78.07					100
158	Wet Spotted Gum-Tallowwood							99.96					100
162	Whitetopped Box	55.48	Rare			*	38.99	100	Rare				100
163	Yellow Box-Blakely's Red Gum	9.6	End	*	*	*	1.45	18.33	Vul	*	*	*	8.17
168	Rainforest	0	Rare			*	67.02	0	End			*	64.36
169	Scrub	0	Vul				100	0	Vul			*	92.2
195	Apple-Manna Gum woodland	18.14	Vul	*	*	*	3.79	45.45			*	*	19.85
199	Riparian Shrubland	16.8	Vul	*	*	*		22.73	Vul	*	*	*	0.27
200	Broad-leaved Stringybark-Ribbon Gum	28	Rare	*	*	*		32.15	Rare	*	*	*	1.08
201	Camphor Laurel							0					

Appendix 4: Field Proforma

AMGs _____

Survey No	
Date	
Recorder	
Location details	
Map name (25k)	
Map name (100k)	

1. Environmental Factors

Geology	
Aspect	
Soils	
Land Unit	
Elevation	
Slope	

2. Upper Canopy Species

	Upper Canopy Species	Cover Abundance
1.		
2.		
3.		
4.		
5.		
6.		

3. Notes

Forest Ecosystem Mapped	
Notes on Structure	
Forest Ecosystem Identified	

4. Species Present (if required)

	Species	CA	Strata
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	Species	CA	Strata
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