



BOOK.
01

Healthy landscapes
and waterways



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Appendix 1: Planting Guide from *Subtropical Rainforest Restoration Manual*

Appendix 2: Common and serious environmental weeds



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Special thanks to the Big Scrub Rainforest Landcare Group for permission to reproduce the species planting guide (Appendix 1) from the *Subtropical Rainforest Restoration Manual*, which can be purchased at bigscrubrainforest.org.au.

Historical photographs have come from the Ray Hunt family collection and the Richmond River Historical Society, Lismore.

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PART A: FARM HEALTH ASSESSMENT TOOL

Introduction to Book 1: Healthy landscapes and waterways

Book 1: Healthy landscapes and waterways is the first of a four-book series for the Rural Landholder Initiative. This initiative aims to help rural landholders achieve a number of social, environmental and economic benefits by **conserving and improving biodiversity** on farms and rural lifestyle properties.

Book 1: Healthy landscapes and waterways contains information relevant to **all** rural landholders across the Lismore Local Government Area (LGA), while Books 2, 3 and 4 are specific to the main agricultural industries in our region:

Book 2: Beef grazing and dairying

Book 3: Macadamias and other orchards

Book 4: Floodplain cropping



The book is in three parts:

Part A - Farm Health Assessment Tool

Part B - Summary of biodiversity in the Lismore region (including threats to biodiversity)

Part C - Management practices you can implement on your property to conserve and improve biodiversity.

Farm Health Assessment Tool

In each book there is a 'Farm Health Assessment Tool' that was developed by Southern Cross University in partnership with Council. The Tool is based on the 'ABCD management framework' first used by the Queensland sugarcane industry. Each book describes 5–10 land management practices that can benefit biodiversity. Each land management practice is scored as either:

A = Aspirational **B** = Best Practice **C** = Common **D** = Dated

The Farm Health Assessment Tool, which can be found on page 8, highlights how you as a landholder can progressively adapt your land management practices to conserve and improve biodiversity and 'ecosystem services'. The importance of biodiversity and the current threats to biodiversity in our region are explained in more detail from page 18.

Table 1 below introduces the Farm Health Assessment Tool A, B, C and D classes. It includes a general description of practices; and a description of the property and regional scale effects that these practices have on native vegetation, wildlife and ecosystem services.

Table 1: Management classes and definitions for the Farm Health Assessment Tool

Class ¹	Description of practices	On-property effect of practices on biodiversity and ecosystem services	Regional effect on biodiversity and ecosystem services where practices are widely adopted
Aspirational	<ul style="list-style-type: none"> New and innovative practices that go beyond best practice Balance biodiversity and agricultural outcomes Integrated farm management plans in place 	<ul style="list-style-type: none"> Self-sustaining, resilient and diverse native vegetation communities requiring minimal maintenance Ecosystem services are strengthened and become more resilient to change 	<ul style="list-style-type: none"> Medium- to long-term benefits Ecosystem services are improved at a landscape scale
Best practice	<ul style="list-style-type: none"> Current 'best practice' Manage for biodiversity with agricultural production benefits Farm management plans incorporate biodiversity outcomes 	<ul style="list-style-type: none"> Diverse native vegetation communities requiring minimal intervention Ecosystem services are enhanced 	<ul style="list-style-type: none"> Short- to medium-term benefits
Common	<ul style="list-style-type: none"> Common practices meet only basic environmental expectations in the community Farm management plans are focused more on agricultural outcomes 	<ul style="list-style-type: none"> Existing native vegetation communities are maintained Unlikely to substantially improve biodiversity and ecosystem services 	<ul style="list-style-type: none"> Unlikely to achieve short-term benefits
Dated	<ul style="list-style-type: none"> Superseded or unacceptable practices that do not meet current environmental expectations and community standards No farm management plan in place 	<ul style="list-style-type: none"> Existing native vegetation communities are maintained or degraded The condition of biodiversity and ecosystem services continues to degrade 	<ul style="list-style-type: none"> Likely to degrade the condition of biodiversity and ecosystem services

¹ Note: Over time, changes in knowledge, technology, costs and market conditions may result in an 'A' class practice becoming more widespread and accepted as a 'B' class practice.

We need to conserve and improve biodiversity in our agricultural region

The term 'biodiversity' (or 'biological diversity') is the variety of all life forms on earth. Biodiversity is all the different plants, animals and micro-organisms; their genes; and the terrestrial, marine and freshwater ecosystems they are part of. It includes the genetic diversity of a species, the diversity between different species and the diversity of ecosystems.

Biodiversity is simply the variety of life on earth.

The natural environment produces goods and services that we use, such as clean air and water, timber, food and fibre, and pollination of native plants and agricultural crops. Known collectively as 'ecosystem services', these goods and services support the long-term sustainability of human society and are critical in maintaining successful agricultural industries.

Biodiversity, including plants and animals, is a major contributor to the provision of ecosystem services. This means that biodiversity is essential to agricultural production and our physical, social, cultural and economic wellbeing. Resilient and healthy native ecosystems provide our land, our community and our industries with many valuable and important services.

Ecosystem services can be categorised as provisioning services, regulating services, supporting services and cultural services as shown on the following page.

The four main types of ecosystem services

1. PROVISIONING SERVICES

are benefits that people extract from the natural environment

- food, fibre, fuel, bush tucker and many medicines
- genetic resources
- biochemicals
- fresh water

2. SUPPORTING SERVICES

are the most fundamental services that sustain basic life forms, ecosystems and people

- supporting and maintaining viable primary production (e.g. agriculture, forestry and fisheries)
- providing habitat for species
- pollinating crops and native plants
- dispersing seeds of crops and native plants
- photosynthesis
- cycling of nutrients
- forming and retaining soil
- decomposing wastes
- producing oxygen and maintaining air quality
- cycling of water

3. REGULATING SERVICES

are the benefits provided by ecosystem processes that moderate natural phenomena

- pest and disease invasion resistance
- herbivory (grazing of grasses, trees, plankton)
- regulating the climate
- regulating pests and disease
- protection from natural hazards (e.g. shade and shelter)
- moderating extreme weather and its impacts
- regulating and protecting from erosion and flood damage
- mitigating the impacts of drought and flood
- purifying water

4. CULTURAL SERVICES

are the non-material benefits that contribute to the development and cultural advancement of people

- tourism and recreation resources and opportunities
- enhancing landscape and aesthetic amenity
- spiritual and religious values
- knowledge systems
- education and inspiration
- sense of place
- improving the overall health of the community

What are benefits for landholders?

Each management practice in the Farm Health Assessment Tool states what the benefits of implementing A and B practices are to landholders and agriculture. By looking after biodiversity and ecosystem services, you can reduce your property management costs. For example, providing habitat for insect-eating birds will reduce costs for pesticides.

What are the benefits for biodiversity?





The Farm Health Assessment Tool aims to improve biodiversity in the Lismore LGA, however, it is relevant across the entire Northern Rivers Region. Each management practice has a corresponding green leaf symbol  which indicates the level of benefit that a particular management practice provides to biodiversity (see Table 2). The more symbols the larger the benefit for biodiversity.

Table 2: Biodiversity benefits scoring

Biodiversity benefit score	Benefit to biodiversity
	These management actions are the most beneficial to biodiversity as they improve habitat and native vegetation connectivity across the landscape, and increase resilience to change.
	These management actions have moderate benefit to biodiversity.
	These management actions have a small beneficial impact on biodiversity.

Land management practices for healthy landscapes and waterways

There are 10 land management practices that relate to improving and conserving biodiversity across our landscapes and waterways. These practices can help address the types of threats described in Part B of the book and can increase agricultural productivity at the same time. They are:

Practice 1: Maintaining and improving native vegetation

Practice 2: Improving vegetation connectivity

Practice 3: Controlling environmental weeds in native vegetation and riparian areas (i.e. areas on the banks of creeks, rivers and wetlands)

Practice 4: Controlling or excluding pest animals

Practice 5: Stabilising riparian areas and stream banks

Practice 6: Creating in-stream habitat and unrestricted fish movements in natural waterways

Practice 7: Creating nesting habitat and perches for wildlife

Practice 8: Identifying and managing threatened species

Practice 9: Monitoring native vegetation and waterways

Practice 10: Preparing integrated property plans for biodiversity and agricultural outcomes.

You may already be doing some or all of these practices on your property to varying degrees. The Farm Health Assessment Tool will give you an indication of which class your current management practices across the whole property fall into: Aspirational, Best practice, Common or Dated.

Later in the book we provide you with an outline of the types of techniques you can build into your farm management activities over time to help you transition from one class to a higher class. There are also many more detailed resources and guides available to help you that are included in the Resources section, or you can talk to Council or other agencies (see Contacts list).



How to use the Farm Health Assessment Tool

When using the Tool consider three things:

- your vision and knowledge of your property
- your whole property – although not every management practice in the Tool will apply to all land uses and physical characteristics
- any project sites or individual actions you wish to highlight.

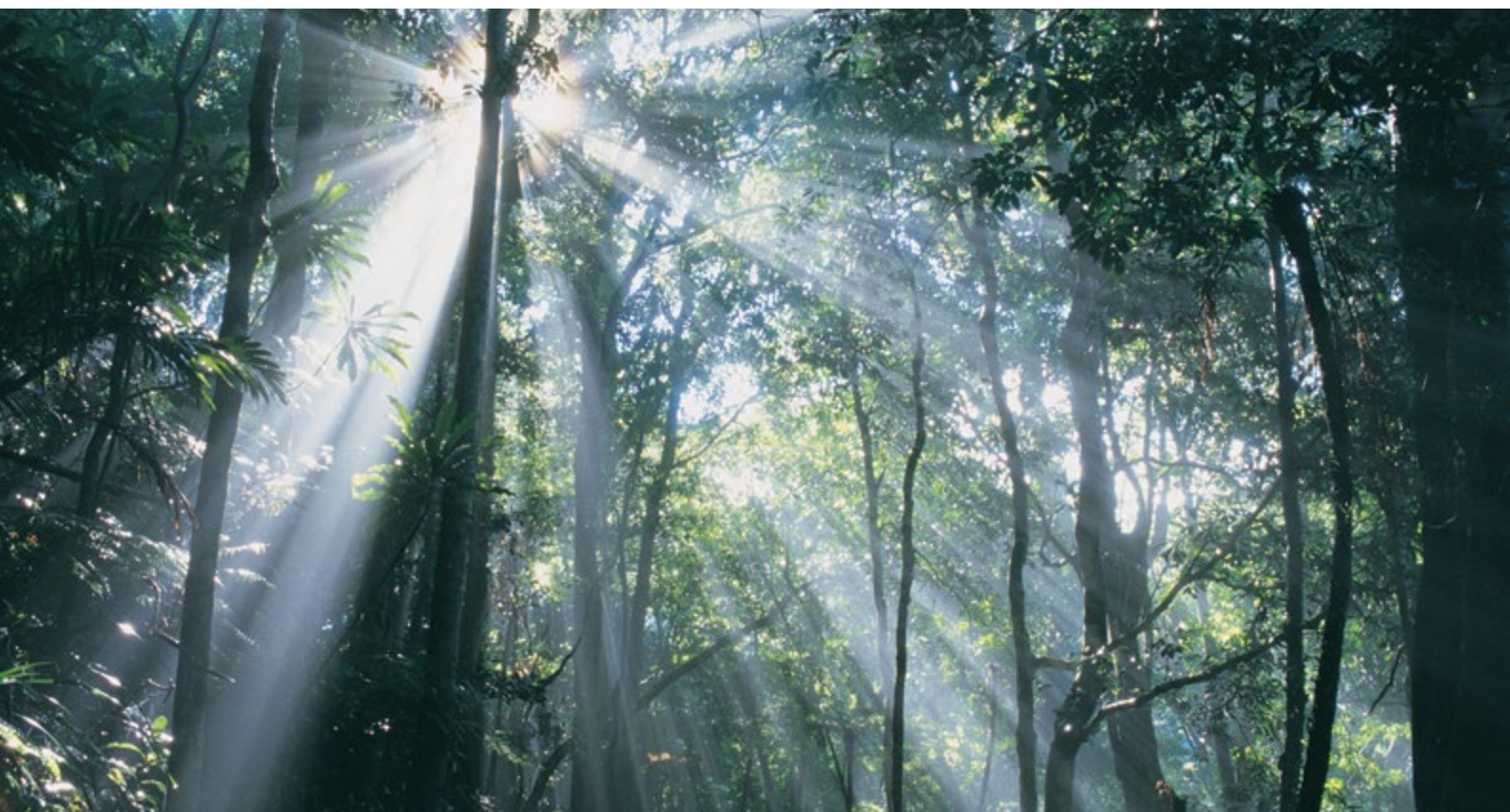
To use the Tool we suggest you do the following:

1. Read the numbered Management Practice in the left hand column and the way the practice can benefit agricultural production. Think about how the practice can improve productivity by improving and conserving biodiversity on your property.
2. Think about how and if these benefits are currently being achieved on your property. Are they relevant to you?
3. Look across the coloured columns and decide which of the property descriptions or types of practices apply to your property. There may be a few in each column that are relevant to your property. Place a tick in all the boxes that are relevant to your property.
4. Some sections may not apply to your property. You can make a note of this in the 'Your self-assessment notes' section of the table.
5. Make notes if there is a particular site to which a practice applies, or any conditions that influence your decision.


If you don't know enough to make a decision, make a note in the 'Your self-assessment notes' section of the table.


Certain terms in the Tool have certain meanings as follows:


Term	Meaning
Species diversity:	Diversity between different species and the diversity of ecosystems
Low species diversity	Patches of vegetation with 1–5 native species
Moderate species diversity	Patches of vegetation with 6–20 native species
High species diversity	Patches of vegetation with 21–50 native species
Very high species diversity	Patches of vegetation with more than 50 native species
Vegetation structure:	The mix of plant forms e.g. grasses, herbs, vines, scramblers, shrubs, small, medium and large trees.
Low vegetation structure	Vegetation that contains 1–2 plant forms
Moderate vegetation structure	Vegetation that contains 3–4 plant forms
Complex vegetation structure	Vegetation that contains more than 5 plant forms
Patch size	The larger the patch size, the greater the benefits to biodiversity
Patch shape	Wide and round/square is better than long and thin
Other terms:	
Revegetation	Active planting of trees
Regeneration	Passive/natural regeneration of native vegetation (assumes no direct landholder input other than exclusion fencing)
Restoration	The assisted repair of native ecosystems and remnant vegetation
Control	In relation to weeds/pests, 'control' or 'controlled' means you are undertaking some activity to curb the spread of the weed/pest
Remove/Eradicate	In relation to weeds/pests, 'remove' or 'eradicate' means you are completely eradicating the weed/pest from your property




Farm Health Assessment Tool: ABCD for healthy landscapes and waterways

Land management practice	Dated	Common	Best	Aspirational
1/ Maintaining and improving native vegetation  <p>Production benefits of A&B practices:</p> <ul style="list-style-type: none"> provides habitat for beneficial species e.g. insects and birds that are predators and pollinators provides shade and shelter for livestock, crops and orchards provides drought and flood refuge areas for stock improves scenic values reduces soil loss and runoff stabilises soil on slopes and creek banks improves water quality in wetlands, rivers and creeks provides a barrier to dust and spray drift increases soils moisture retention reduces weed invasion by reducing area of open space 	<p><input type="checkbox"/> No native vegetation or existing native vegetation that is very weedy, has low species diversity, low vegetation structure and is uniform in age</p> <p><input type="checkbox"/> Condition of existing native vegetation is not being maintained (i.e. vegetation is degraded and/or weedy)</p> <p><input type="checkbox"/> Patch size and shape of native vegetation is not being actively improved</p> <p><input type="checkbox"/> Paddock trees are dying and are not protected from agricultural activities or livestock</p>	<p><input type="checkbox"/> Only small/minimal areas of native vegetation with moderate species diversity and moderate vegetation structure, however, there is pressure on these areas from weeds</p> <p><input type="checkbox"/> Condition of existing native vegetation is maintained but is not being revegetated or regenerated</p> <p><input type="checkbox"/> Patch size and shape is maintained, but with little or no active revegetation</p> <p><input type="checkbox"/> Mix of healthy and unhealthy paddock trees, trees are not protected from livestock, and no new trees are being planted</p>	<p><input type="checkbox"/> Existing native vegetation has high species diversity, moderate vegetation structure and a range of ages</p> <p><input type="checkbox"/> Condition of existing native vegetation is being actively maintained or improved</p> <p><input type="checkbox"/> Patch size and shape is being improved using weed control and revegetation</p> <p><input type="checkbox"/> Important habitat and native vegetation is voluntarily registered as land conserved for wildlife (e.g. Land for Wildlife, which is not legally binding).</p> <p><input type="checkbox"/> Native paddock trees are healthy, new paddock trees are being planted and are protected from livestock</p>	<p><input type="checkbox"/> Existing native vegetation has very high species diversity, complex vegetation structure with diverse ages and is free from weeds</p> <p><input type="checkbox"/> Condition of existing native vegetation is being strategically improved in line with property/site plan</p> <p><input type="checkbox"/> Patch size and shape is being strategically improved in line with property/site plan using revegetation and regeneration</p> <p><input type="checkbox"/> Paddock trees are fenced/protected and either native regrowth around them is encouraged or trees are regularly planted</p> <p><input type="checkbox"/> Important habitat and native vegetation is formally protected by legally binding agreements (e.g. Property Vegetation Plan under the <i>Native Vegetation Act 2007</i>, or Conservation Agreement under the <i>Nature Conservation Trust Act 2001</i>)</p>
Your self-assessment notes				


Land management practice	Dated	Common	Best	Aspirational
<p>2/ Improving vegetation connectivity</p>  <p>Production benefits of A&B practices:</p> <ul style="list-style-type: none"> corridors function as shelterbelts and provide shade and windbreaks for livestock, crops and orchards corridors provide a barrier to dust and chemical spray drift corridors provide habitat for beneficial species (e.g. insects and birds that are pollinators and predators) 	<p><input type="checkbox"/> Existing patches of native vegetation and isolated native trees are not linked by corridors</p> <p><input type="checkbox"/> No attempts are being made to link existing native vegetation and isolated trees</p>	<p><input type="checkbox"/> Some existing patches of native vegetation and isolated native trees are linked by narrow corridors (i.e. lines of trees) or 'stepping stone' patches</p> <p><input type="checkbox"/> No strategic plan exists for improving connectivity on the property</p>	<p><input type="checkbox"/> The majority of existing native vegetation patches and isolated native trees are linked by narrow corridors (i.e. at least 8 m wide) that were established by revegetation and assisted regeneration</p> <p><input type="checkbox"/> Corridors are composed of diverse native species and have moderate vegetation structure</p> <p><input type="checkbox"/> Established corridors link with neighbouring properties</p> <p><input type="checkbox"/> Property plan includes establishing native corridors on the property</p>	<p><input type="checkbox"/> All native vegetation patches and isolated trees are linked by wide corridors (i.e. at least 20 m wide) that were established by revegetation and regeneration</p> <p><input type="checkbox"/> Corridor links are composed of diverse native species with a complex structure</p> <p><input type="checkbox"/> Corridors connect riparian areas to ridgelines</p> <p><input type="checkbox"/> Property plan includes establishing corridors on-property and in consultation with neighbouring properties</p>
Your self-assessment notes				

Land management practice	Dated	Common	Best	Aspirational
<p>3/ Controlling environmental weeds in native vegetation and riparian area</p>  <p>Production benefits of A&B practices:</p> <ul style="list-style-type: none"> prevents further spread and invasion of weeds and reduces future treatment costs reduces soil erosion/loss and runoff protects water quality reduces risk of poisoning livestock improves habitat for beneficial pest control and pollinating species 	<p><input type="checkbox"/> Minimal skills in identifying environmental and noxious weeds</p> <p><input type="checkbox"/> Established weed infestations are not controlled and are spreading</p> <p><input type="checkbox"/> Little or ad hoc control of newly established weeds with minimal follow-up treatments and unknown impact on non-target native species</p> <p><input type="checkbox"/> Herbicide use is not recorded or does not follow legislative or label requirements</p>	<p><input type="checkbox"/> Basic skills in identifying environmental and noxious weeds</p> <p><input type="checkbox"/> Established weed infestations are mostly controlled with minimal spreading</p> <p><input type="checkbox"/> Occasional control of newly established weeds with irregular follow-up treatments and some impact on non-target species</p> <p><input type="checkbox"/> Herbicide use is recorded in accordance with standard label requirements</p>	<p><input type="checkbox"/> Moderate skills in identifying environmental and noxious weeds, and the most effective means of controlling each species</p> <p><input type="checkbox"/> Established weed infestations are being removed (eradicated) from site</p> <p><input type="checkbox"/> Regular control and follow-up treatment of newly established weeds with no impact on non-target species</p> <p><input type="checkbox"/> Herbicide use, control methods and level of success are recorded</p> <p><input type="checkbox"/> Occasional coordination of timing for weed control with property neighbours or Landcare group</p> <p><input type="checkbox"/> Revegetation is used to shade weeds (e.g. riparian plantings to shade out aquatic weeds)</p>	<p><input type="checkbox"/> Excellent skills in identifying environmental and noxious weeds, and the most effective means of controlling each species</p> <p><input type="checkbox"/> Established weed infestations are minimal and no longer spreading, and are being progressively removed (eradicated) from site</p> <p><input type="checkbox"/> Regular control and follow-up treatment of newly established weeds with no impact on non-target species</p> <p><input type="checkbox"/> Herbicide use, control methods and level of success are recorded and improved to increase the success of treatments</p> <p><input type="checkbox"/> Coordinated weed control is undertaken with neighbouring properties, including those upstream and downstream</p> <p><input type="checkbox"/> Revegetation is used to shade out weeds (e.g. riparian plantings to shade out aquatic weeds)</p>
Your self-assessment notes				


Farm Health Assessment Tool: ABCD for healthy landscapes and waterways


Land management practice	Dated	Common	Best	Aspirational
4/ Controlling or excluding pest animals  <p>Production benefits of A&B practices:</p> <ul style="list-style-type: none"> reduces the impacts of pests (e.g. wild dogs, rabbits, rats, Indian mynas and carp) improves productivity of livestock and orchards 	<p><input type="checkbox"/> Monitoring of pest animals or pest damage is not undertaken</p> <p><input type="checkbox"/> Pest animals are not prevented from establishing and spreading</p> <p><input type="checkbox"/> Pest control is on an ad hoc basis with no follow-up interventions, and control techniques used are ad hoc and not specifically recommended</p>	<p><input type="checkbox"/> Monitoring of pest animals or pest damage occurs through visual sightings, but pests are not recorded or reported</p> <p><input type="checkbox"/> Control programs are used so pest animals are mostly prevented from establishing and spreading</p> <p><input type="checkbox"/> Control is done using methods recommended by the appropriate authority, but follow-up is rare</p> <p><input type="checkbox"/> Pest control programs are rarely coordinated in conjunction with neighbouring landholders and government agencies</p>	<p><input type="checkbox"/> Monitoring of pest animals and pest damage occurs through visual sightings, and pests are recorded and reported</p> <p><input type="checkbox"/> Control programs with follow-up interventions are used so pest animals are prevented from establishing and spreading</p> <p><input type="checkbox"/> Control methods used follow relevant recommendations for that target species</p> <p><input type="checkbox"/> Pest control programs are occasionally coordinated in conjunction with neighbouring landholders and government agencies</p>	<p><input type="checkbox"/> Monitoring of pest animals and pest damage is undertaken using a variety of techniques, and pests are recorded in relevant databases (e.g. FeralScan) and reported</p> <p><input type="checkbox"/> Early intervention and regular follow-up treatments are used so pest animals are prevented from establishing and spreading</p> <p><input type="checkbox"/> Control methods used follow recommended control methods and contact is maintained with relevant experts to monitor the program's success and ongoing improvement</p> <p><input type="checkbox"/> Pest control programs are regularly coordinated in conjunction with neighbouring landholders and government agencies</p>
Your self-assessment notes				<p>Continue over to Practice 5 and 6 if you have wetlands, rivers or creeks on your property, or go to practice 7.</p>


Farm Health Assessment Tool: ABCD for healthy landscapes and waterways

Land management practice	Dated	Common	Best	Aspirational
5/ Stabilising riparian areas and stream banks  <p>Production benefits of A&B practices:</p> <ul style="list-style-type: none"> protects water quality provides a buffer between production land uses and water resources prevents loss of productive soil 	<p><input type="checkbox"/> Very little or no native vegetation exists along waterways</p> <p><input type="checkbox"/> Native vegetation has low species diversity and weed species dominate</p> <p><input type="checkbox"/> Extensive sections of bank are unstable, and erosion hotspots are not being repaired</p>	<p><input type="checkbox"/> Native vegetation extends along some sections of waterways, however, these are narrow strips and weeds dominate</p> <p><input type="checkbox"/> Native vegetation has moderate species diversity and structure</p> <p><input type="checkbox"/> Sections of unstable banks, and erosion hotspots are largely remediated in an ad hoc manner</p>	<p><input type="checkbox"/> Most sections of waterways have a moderate corridor of native vegetation along the top of the stream bank</p> <p><input type="checkbox"/> Native vegetation has good species diversity and structure</p> <p><input type="checkbox"/> Remediation works are preventative, however, any erosion remediation is done using quality and long-term solutions</p> <p><input type="checkbox"/> Livestock and vehicle crossings are constructed in accordance with NSW Department of Primary Industries guidelines</p>	<p><input type="checkbox"/> Entire length of waterways have a wide corridor of native vegetation along the top of the stream bank</p> <p><input type="checkbox"/> Riverbank corridors are connected to other native vegetation corridors</p> <p><input type="checkbox"/> Native vegetation has high species diversity and complex structure</p> <p><input type="checkbox"/> Bank instability and erosion hotspots are mostly absent and are actively prevented (e.g. by bank contouring) Crossings are constructed in accordance with NSW Office of Water guidelines</p>
Your self-assessment notes				


Farm Health Assessment Tool: ABCD for healthy landscapes and waterways


Land management practice	Dated	Common	Best	Aspirational
6/ Creating in-stream habitat and unrestricted fish movements in natural waterways  <p><u>Production benefits of A&B practices:</u></p> <ul style="list-style-type: none"> • improves water quality • improves fish habitat and fish recruitment for commercial and recreational fishing 	<input type="checkbox"/> Woody debris is absent from natural waterways and is actively removed <input type="checkbox"/> Existing stream crossings (e.g. roads) restrict fish from moving upstream or downstream	<input type="checkbox"/> Some woody debris is present within natural waterways and it is occasionally removed <input type="checkbox"/> Existing stream crossings (e.g. roads) restrict fish from moving upstream or downstream	<input type="checkbox"/> Woody debris is present within natural waterways and is left where fallen <input type="checkbox"/> Some existing stream crossings for roads that block fish passage are retro-fitted or replaced with fish-friendly crossings	<input type="checkbox"/> Large woody debris is present in natural waterways, is left where fallen, and is created/added where appropriate (e.g. re-snagging) <input type="checkbox"/> All stream crossings for roads allow fish to move upstream and downstream <input type="checkbox"/> Native in-stream and fringing aquatic plants are added to the channel or wetlands (e.g. Lomandra, sedges and rushes)
Your self-assessment notes				

Land management practice	Dated	Common	Best	Aspirational
<p>7/ Creating nesting habitat and perches for beneficial wildlife</p>  <p>Production benefits of A&B practices:</p> <ul style="list-style-type: none"> provides habitat for insects (e.g. native bees) that pollinate crops and orchards provides habitat for insects, birds and micro-bats that prey on pest animals; this reduces chemical usage and costs increases number and success of beneficial wildlife 	<p><input type="checkbox"/> No old hollow bearing trees and no wildlife nesting boxes are installed</p> <p><input type="checkbox"/> Fallen logs and woody debris are removed, burned or collected for firewood</p> <p><input type="checkbox"/> No native vegetation is retained or planted as habitat for beneficial wildlife</p>	<p><input type="checkbox"/> Some old hollow bearing trees present, however, no wildlife nesting boxes are installed</p> <p><input type="checkbox"/> Presence of some fallen logs and woody debris, however, it is removed, burned or collected for firewood</p> <p><input type="checkbox"/> Some native vegetation is retained, however, not to provide habitat for beneficial wildlife</p>	<p><input type="checkbox"/> There are old hollow bearing trees present and wildlife boxes are installed in several non-hollow bearing trees to target specific beneficial species (e.g. owls for rodent control)</p> <p><input type="checkbox"/> Most fallen logs and woody debris are left intact as habitat</p> <p><input type="checkbox"/> Native vegetation is conserved to provide habitat for beneficial wildlife, and some planting is used to extend these habitats</p>	<p><input type="checkbox"/> There are abundant existing and potential hollow bearing trees present, and wildlife nest boxes are installed in strategic non-hollow bearing trees targeting beneficial species (e.g. native bees, micro-bats, parrots)</p> <p><input type="checkbox"/> All logs and woody debris are left intact as habitat</p> <p><input type="checkbox"/> Native vegetation is conserved and added to with extensive planting to provide habitat for and attract beneficial wildlife</p> <p><input type="checkbox"/> Trees are planted or artificial perches are created (e.g. for owls to hunt rats)</p>
Your self-assessment notes				

Land management practice	Dated	Common	Best	Aspirational
8/ Identifying and managing threatened species  <p><u>Production benefits of A&B practices:</u></p> <ul style="list-style-type: none"> • improves eligibility for grant funding • improves habitat of beneficial species e.g. pollinators and pest control species 	<div> <input type="checkbox"/> Does not seek information on how to identify local threatened species </div> <div> <input type="checkbox"/> No effort to identify and protect known habitat for threatened species </div>	<div> <input type="checkbox"/> Aware of local threatened species, however, no further information sought </div> <div> <input type="checkbox"/> Little effort to identify and protect known habitat for threatened species </div>	<div> <input type="checkbox"/> Seeks to identify local threatened species and determines if species are present on the property </div> <div> <input type="checkbox"/> Identifies and protects known and potential habitat for threatened species and expands habitat through revegetation and regeneration activities </div>	<div> <input type="checkbox"/> Seeks to identify local threatened species and determines if species are present on the property and adjoining properties through engaging a relevant expert </div> <div> <input type="checkbox"/> Identifies, protects and expands known and potential habitat areas for threatened species and connects habitats with corridors across and between properties </div>
Your self-assessment notes				

Farm Health Assessment Tool: ABCD for healthy landscapes and waterways

Land management practice	Dated	Common	Best	Aspirational
9/ Monitoring native vegetation and waterways  <p><u>Production benefits of A&B practices:</u></p> <ul style="list-style-type: none"> provides evidence of change over time assists in evaluating progress and successes of property plan implementation improves chances of grant funding 	<input type="checkbox"/> Does not visually watch key areas (i.e. native vegetation and waterways), does not monitor water quality <input type="checkbox"/> Does not document changes in native vegetation, other than mental notes and random photos	<input type="checkbox"/> Mental notes are taken of the key areas during routine property activities <input type="checkbox"/> Occasional landscape photos are taken to record progressive changes in native vegetation or specific sites <input type="checkbox"/> The presence of wildlife is recorded in a once-off wildlife survey <input type="checkbox"/> Visually inspects water quality in main streams and makes mental or paddock notes	<input type="checkbox"/> Visually inspects key areas during specific site visits and takes paddock notes <input type="checkbox"/> Documents changes in native vegetation, and takes annual landscape and site photos at designated points <input type="checkbox"/> Undertakes a basic plant survey <input type="checkbox"/> Documents changes in wildlife by undertaking occasional basic wildlife survey <input type="checkbox"/> Inspects water quality on a regular basis and undertakes a basic annual water quality assessment	<input type="checkbox"/> Undertakes targeted surveys of all key areas during specific visits and takes detailed paddock notes <input type="checkbox"/> Comprehensive annual plant and animal survey is undertaken and opportunistic wildlife sightings are recorded (seeks expert advice where needed) <input type="checkbox"/> Seasonal photographs are taken of the landscape and at specific photo points throughout the entire property <input type="checkbox"/> Water quality in all streams is inspected on a regular basis, observations are documented and samples for laboratory analysis are collected <input type="checkbox"/> Water quality inspections includes annual monitoring of in-stream water bugs and other large invertebrates
Your self-assessment notes				

Land management practice	Dated	Common	Best	Aspirational
<p>10/ Preparing integrated property plans for biodiversity and agricultural outcomes</p>  <p><u>Production benefits of A&B practices:</u></p> <ul style="list-style-type: none"> • provides direction for management efforts • provides goals and motivation • improves chances of grant funding 	<p><input type="checkbox"/> There is no existing property plan for either agricultural or biodiversity outcomes</p>	<p><input type="checkbox"/> Existing property plan is informal (e.g. mental notes) or only covers agricultural outcomes</p>	<p><input type="checkbox"/> Property has an integrated plan with maps covering aspects of property and environmental management for the long-term improvement of biodiversity and production</p>	<p><input type="checkbox"/> Property has highly detailed, integrated and staged plans with comprehensive maps covering multiple aspects of property and environmental management</p> <p><input type="checkbox"/> Integrated plans have been developed collaboratively with neighbouring landholders (e.g. coordinated weed management across boundaries)</p>
Your self-assessment notes				

PART B: BIODIVERSITY IN THE LISMORE REGION

Changes to biodiversity in the Lismore region

Widjabul People relied on biodiversity in their Country

Prior to the 1840s, the Widjabul People of the Bundjalung Nation were the custodians of the land for millennia. The boundaries of the Country of the Widjabul People roughly coincide with the boundaries of the Lismore Local Government Area (LGA) shown in Figure 1. Widjabul People of today relay the stories shared by elders of the different family groups that lived on the floodplains in North, South and East Lismore. Cultural exchange with groups visiting from other regions occurred in several locations including the large bora ring at Banyam/Baigham which is now the site of the Lismore Showground at North Lismore.

The Widjabul People relied on the bounty provided by the variety of local ecosystems: rivers, wetlands, open forests, grasslands and rainforest. These ecosystems supplied all the food and materials required for permanent camps and large gatherings, for example, fowl (ducks, Magpie Geese, Brush Turkey), fish (Cod, Eel, Perch, Mullet, Bass and Crayfish), game (Wallaby, Pademelon, Echidna etc.), honey and plant foods (fruits, yams, leaves, nuts and seeds). Resources were used carefully, never wastefully, and hill tops were treated as plant and animal refuges (also called 'increase sites').



Figure 1: Richmond River Catchment

Settlement converted diverse forests and wetlands to farmland

To the east of Lismore, the famous Big Scrub Rainforest covered 75,000 hectares and was Australia's largest tract of lowland subtropical rainforest. It was viewed by the early European settlers as an immense scrubland standing in the way of farming, and was valued only for its timber. Over the course of settlement it was almost entirely cleared for agriculture, so that today less than 1% remains intact. The Big Scrub and areas around Nimbin were cleared for dairying, bananas and pig farming. On the floodplains south from Lismore, the wetlands were either filled or drained for dairying, sugarcane and maize cultivation.

After the dairying downturn that started in the 1950s, many farms changed to beef grazing and by the 1960s new crops such as macadamias and tropical fruits were being introduced. By the 1970s the Nimbin Aquarius Festival also brought a wave of new ideas and new settlers from Australia's cities and abroad. There was a shift towards more sustainable farming practices and conservation began, marked by the first successful anti-logging campaign at Terania Creek.

The timeline on pages 22 and 23 gives a brief history of settlement and highlights some of the impacts on the landscape and waterways with photographs from around 1880 to 1920. Quotes are from journalists reporting in the *Town and Country Journal* established in 1870.

Over the last four decades landholders, wildlife conservation volunteers and Landcare groups have helped conserve and enhance biodiversity through restoration, revegetation, and wildlife care and rescue. National parks, vegetation remnants and restored areas provide invaluable insight to the values, benefits and services healthy landscapes and waterways provide, and a glimpse of what was once a rich and varied landscape.

Current threats to biodiversity, landscapes and waterways

Lismore LGA is part of the Northern Rivers Region which extends from the Tweed in the north to the Clarence in the south. Landholders across our region are working hard to maintain and regenerate our native vegetation and wildlife. However, there are still a number of threats that impact our biodiversity and the health of our landscapes and waterways. These threats need to be addressed to protect the unique natural values in the Northern Rivers Region.

While the Northern Rivers Region is just 6.3% of New South Wales, it supports over 40% of the State's threatened animal and plant species, and 20% of the State's threatened ecological communities. The region also has a large number of endemic species (i.e. species that are native to the region).

The richness of the Northern Rivers Region is a direct result of its position within the Macleay–McPherson Overlap, an area where these temperate and tropical bioregions overlap.

Figure 2, *Landscapes of Lismore*, shows the three dominant landscapes in the LGA: coastal plains, midland hills and the escarpment ranges. A brief description of the threats impacting biodiversity in each landscape is provided over the page.

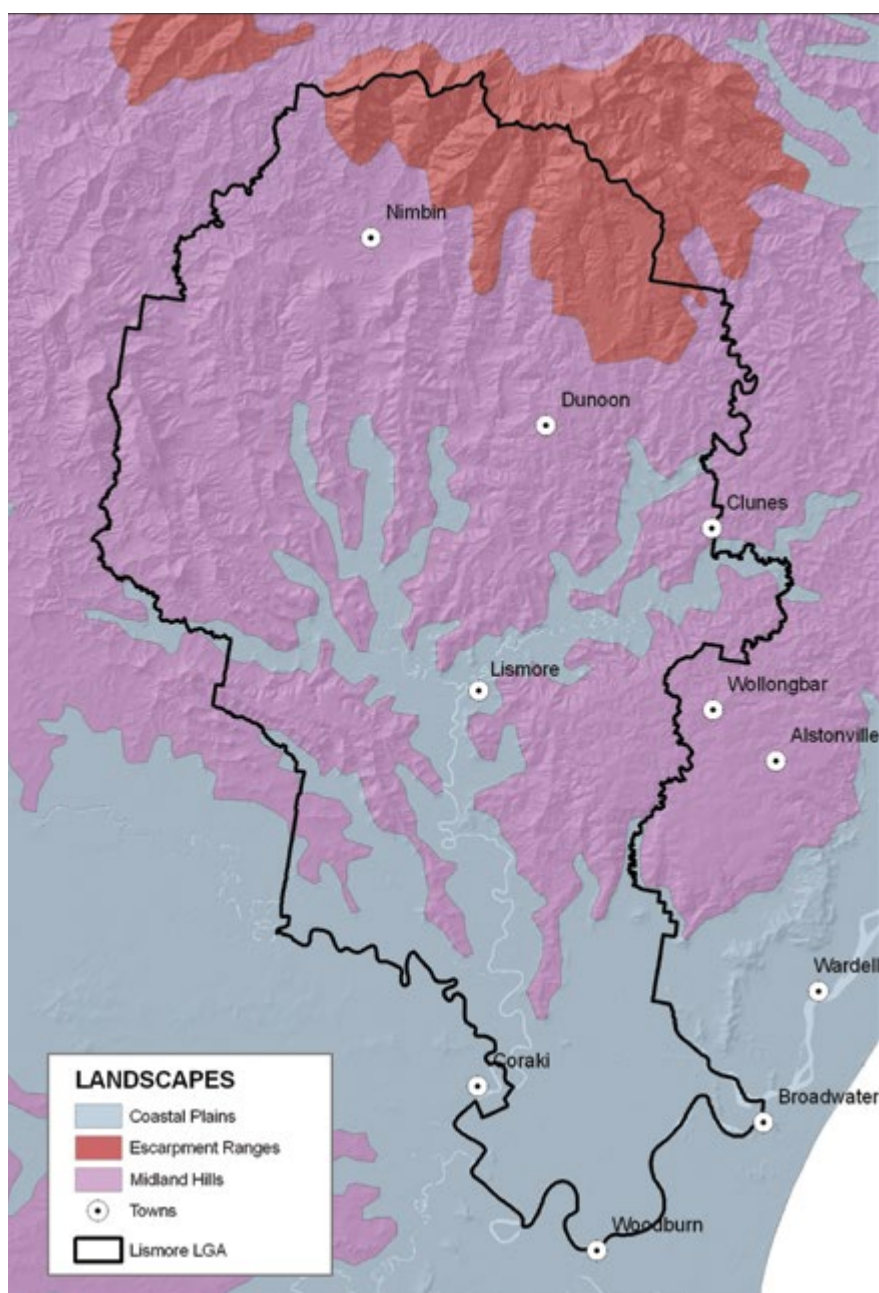


Figure 2: Landscapes of Lismore



Coastal plains – Rivers and floodplains

Lismore LGA lies in the centre of the Richmond Catchment and covers 1267 km², or one-fifth of the catchment's total area (see Figure 1). Compared to other coastal catchments, a large portion of the catchment is floodplain. Impacts from flooding are therefore magnified in the Richmond compared to other coastal catchments. Vegetation change from farming and settlement on the floodplain has replaced flood-tolerant native trees, shrubs and wetland plants with flood-susceptible exotic plants and grasses. The floodplain is intensively cropped for sugarcane, tea-tree and soya beans.

In 2014, the ecosystem health of the Richmond River was ranked based on water quality, riparian condition, bank stability and large aquatic invertebrates. Overall, the Richmond scored a D+, however, the Wilsons River and Wilsons Creek catchments in the Lismore LGA scored an F, the lowest possible score. Leycester Creek scored a D; and Goolmangar, Terania, Rocky and Coopers creeks scored a C-.

The poor water quality results are due to:

- very high levels of nutrients being washed into waterways from adjacent lands
- nutrients from stock defecating and urinating in waterways
- low dissolved oxygen.

The poor condition of riparian vegetation is due to:

- native vegetation being smothered by exotic vines
- Coral trees, Camphor, Lantana and Privet inhibiting native regeneration
- the dominance of weeds and spread of garden weeds
- grassed or bare banks
- grazing pressure on natural regeneration
- bank erosion.

Down river from Lismore, the impacts from acid sulphate soils in the lower parts of the LGA are evident. These soils are 'activated' when soils are exposed to air, for example when they are excavated or when drains are constructed. Exposed acid sulphate soils create acid water releases during storm and flood events. Acid water combined with black water (i.e. deoxygenated water created by inundated floodplain pasture) impact aquatic animals. Floods during the warm summer months generate fish kill events and plant communities have also changed in some areas in response to acidic conditions and constructed barriers.

Midland hills

The midland hills are intensively farmed and have fragmented native vegetation prone to weed invasion and competition. The cultivation and grazing of slopes can create soil erosion which transports soil with nutrients (naturally occurring nutrients, stock wastes, or nutrients from fertilisers) into waterways.

The major threats in this landscape are:

- soil erosion from cultivated and grazed land
- very high levels of nutrients being washed into waterways from adjacent lands
- nutrients from stock defecating and urinating in waterways
- native vegetation being smothered by exotic vines
- Camphor, Lantana and other weeds inhibiting native regeneration
- the dominance of weeds and spread of garden weeds
- grazing pressure on natural regeneration
- pest species (e.g. rabbits, pigs, cane toads, foxes, feral dogs and cats).

Escarpment ranges

The Nightcap Range, including the World Heritage-listed Nightcap National Park, and broader escarpment contains the most intact biodiversity in the LGA with only a small portion under commercial agriculture. Threats include:

- weed invasion, for example Lantana, Giant Devils Fig
- Bell Miner associated dieback
- predation of native wildlife by feral animals (e.g. cats, wild dogs)
- cane toads impacting native wildlife (e.g. reptiles, birds, quolls) that prey on the toads
- inappropriate visitor use of off-limit areas (e.g. water pollution from swimmers can impact Fleays Barred Frog)
- fire/arson
- Phytophthora fungal disease.



A history of settlement and early farming

Allan Cunningham viewed the headwaters of the Richmond and reported land favourable for grazing. Captain Rous R.N. (Royal Navy) anchored the *Rainbow*, crossed the bar in the ship's row boat and explored the river as far as Broadwater.

Henry Brown established a sawpit near the river in Lismore and placed a chain across the river below Fawcetts Bridge to catch cedar logs.

The *Robertson Land Act* saw the rapid clearing of the Big Scrub. Maize, sugarcane, dairying and pig farming became the major industries.



Most of the riverbank land had been selected by settlers. The timber was felled, left to dry, then burnt. Crops were planted and then the land was burnt again after two years.

William Wilson took up the lease of a 9324-hectare cattle station (Lismore).



1828 1842 1843 1844 1845 1852 1853 1856 1861 1862 1866 1870 1877 1879

Ward Stephens sent 10,000 sheep from the tablelands to Runnymede station on the Richmond, then onto land which became Lismore station. Tunstall station was established (7700 hectares) and Steve King and his party set up the first cedar camp at Codrington.

Two thirds of the colony's timber exports were coming from the Big Scrub.

The first sawmill built on the Richmond River was at Shaws Bay, Ballina.

The town of Lismore was proclaimed in the *Government Gazette* on May 1.

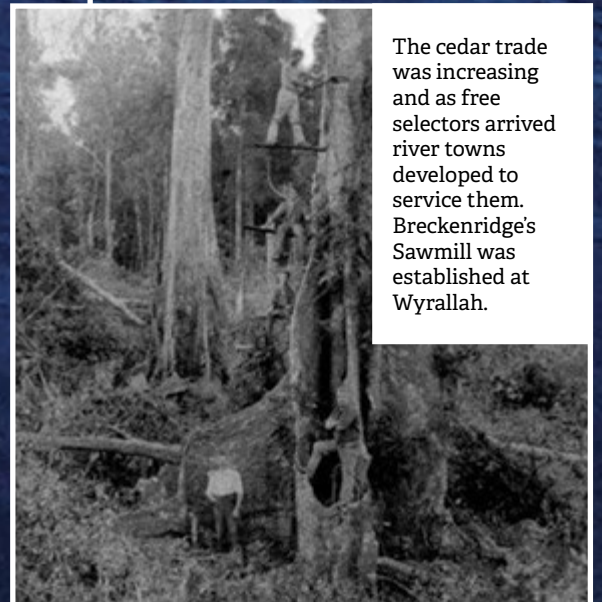
"Not many years ago the inhabitants of this vast district consisted only of squatters and timber getters, with some ship carpenters and sawyers. The banks of the river were only a continuation of dense scrubs on both sides, beautiful to look upon, but otherwise useless for man or beast."

First keg of butter sent to Sydney from Goolmangar.

The timber trade continued to provide the biggest income to the area with 45 steamships and 224 schooners or smaller steamers carrying an estimated 30,500 tonne within the year.

Drought forced the cutters upstream for freshwater. Gundurimba, a well-grassed plain, became the site of a camp.

The Wadjabul People were custodians of the land and water for millennia.



The cedar trade was increasing and as free selectors arrived river towns developed to service them. Breckenridge's Sawmill was established at Wyrallah.



The dairy industry is in decline and farmers are moving over to crops such as bananas and beef cattle farming. The first large macadamia plantations are established.



Two new sawmills established in North Lismore and Coraki.

"As Lismore is approached the country becomes more hilly in nature, and the banks are fringed with trees, among which are many willows, the graceful drooping branches of which hang down in pendant masses to the water's edge."

Sedimentation of the river meant dredges were used to assist ship passage.

Agricultural chemicals, hailed as the answer to pest problems, were introduced, e.g. arsenic for paralysis ticks. Cattle dips were built less than one kilometre apart. DDT was a standard insecticide for various crops, and 2-4-D and 2-4-5-T herbicides (for weed control) were used on maize crops.

The Richmond River County Council, established 10 years prior, commenced building the Bagotville Barrage. This was designed to stop saltwater flowing upstream.

1881 1882 1885 1886 1900 1916 Post WWII 1954 1960s 1969

The State Director of Agriculture examined the area between the Tweed and Richmond rivers, reporting it as suitable for dairying. The Lismore Agricultural & Industrial Society held its first show.

Water hyacinth infestation on the Richmond due to excessive nutrients from erosion of topsoil, animal wastes and sewerage. It lasted until the 1918 flood flushed it out.



"Nearly all the creek water in the scrub land, which is beautifully clear, contains fish, comprising eels, cod, bream, lobster, perch... The bush abounds in game, including the scrub turkey, green and bronze wing pigeons, parrots, ducks, plover, quail, and others of different varieties, sufficient to tempt the appetite of even a dying man, so there need not be any occasion for the selector to disarrange his digestive organs by eating damper and corned beef only, if he can muster a fishing line and fowling-piece."

The river was badly damaged by a cyclone, destroying many of the remaining riverbank trees (willows). The eastern freshwater cod became all but extinct. Farms were abandoned and weeds took a strong hold. Soil fertility of the once famously rich soils declined and runoff became excessive. The Soil Conservation Service undertook a study of the region. This study found that: clearing and subsequent conversion of forest to grassland resulted in greater runoff; that burning of scrub and litter prevented cleared areas reverting to forest; stock grazing on inadequate pasture led to erosion and landslips; and cultivation of banana and vegetable crops on steep slopes further accelerated this problem.

PART C: MANAGEMENT PRACTICES FOR HEALTHY LANDSCAPES AND WATERWAYS

If the majority of your land management practices fall within the Dated or Common class there are ways you can improve your management practices over time to transition into the Best practice or Aspirational classes. The types of techniques that can help you improve are outlined in this section of the book. More detailed resources are listed in the Resources section and are available from Council or other agencies. Many of them are available online as a downloadable document.

The following 10 land management practices from the Farm Health Assessment Tool are relevant across most rural properties. Practices 5 and 6 are relevant to properties with wetlands, rivers or creeks.

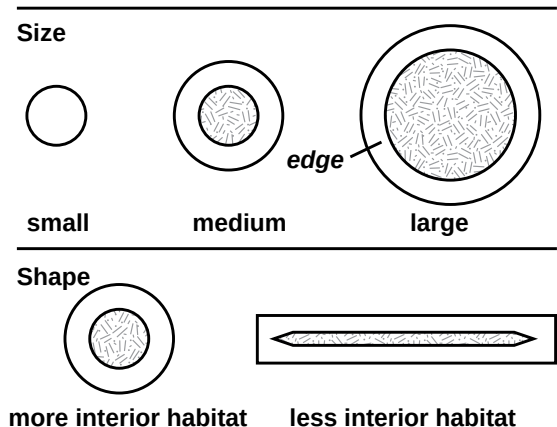
1. Maintaining and improving native vegetation

Improving native vegetation starts with protecting existing vegetation so that there is no further loss or damage to biodiversity. This might mean fencing off patches of vegetation to reduce grazing and other impacts from adjacent land use. By introducing local native species the quality and resilience of remnant vegetation can be improved.

When undertaking revegetation work there are several principles to follow:

- retain and protect existing native vegetation
- work in areas with the best native vegetation and least weeds first, tackle the worst areas last
- undertake targeted weed control to allow areas to regenerate naturally from existing seed banks in the soil
- plant in areas where natural regeneration is not taking place
- minimise soil disturbance to reduce new weed invasion and soil erosion
- when planting, use compost or organic fertiliser with water crystals if soil is poor or compacted
- mulch if required to minimise competition
- aim for large, non-linear plantings (see diagram right).

The size and shape of your planting can have a big influence on biodiversity values and the level of ongoing maintenance. Larger, non-linear plantings are best.



There are many other things to consider and different sites will require different practices. There are many local experienced bush regenerators that can carry out work and provide advice on techniques and species selection. There are also a number of Landcare groups undertaking work on private and public land. Richmond Landcare Inc. has contact information for all groups and can assist with setting up a new group.

An extensive species list from 'Subtropical Rainforest Restoration: A practical manual and data source for Landcare groups, land managers and rainforest regenerators' is included in Appendix 1, courtesy of the Big Scrub Rainforest Landcare Group and partners. This publication is an invaluable resource when undertaking restoration and revegetation in areas that were once part of the Big Scrub.

2. Improving vegetation connectivity

Small isolated patches of native vegetation can be expanded and linked to create corridors. Corridors maximise wildlife habitat connectivity, and allow species to easily and safely move across the broader landscape. Many animal species avoid crossing cleared areas such as paddocks because it exposes them to predators.

Linear corridors are usually continuous and may follow waterways, property boundaries or ridgelines. They vary in length and width, from thin lines of trees, to bands of vegetation more than 20 m wide.

Stepping stones are isolated patches that provide connectivity and function as corridors for mobile species (e.g. birds). Over time, stepping stones may become a more connected corridor if they are linked by revegetation or regeneration.

Improving connectivity will allow species to recolonise an area and connect different gene pools. This improves the long-term survival of species.

There are a number of ways to improve connectivity on your property, including techniques that can be done in conjunction with other activities:

- fence around paddock trees to allow for natural regeneration
- plant and fence new trees in paddocks and open areas
- revegetate waterways to improve both terrestrial and aquatic habitat corridors (see Practice 5)

- revegetate prominent sites to enhance the local scenery and improve the value of individual properties
- create or widen corridors along existing fence lines
- consider if shelterbelts, windbreaks or woodlots can be positioned to function as corridors
- create wider corridors that are more resilient and effective
- mimic the composition and structure of healthy local vegetation
- maximise vegetation structural complexity by planting or encouraging a mix of different plant forms, e.g. groundcovers, vines, shrubs, small and large trees
- protect fallen timber and woody debris because it is an important habitat feature that takes decades to develop.

3. Controlling environmental weeds in native vegetation and riparian areas

Local soils and a favourable climate mean a vast number of weed species are widespread in the Lismore area. The list in Appendix 2 provides the most common and serious weeds at present in each landscape type. Some species can be controlled without herbicide, including annuals and other groundcovers, or where plants are still saplings. Some vines can be crowned with a sharp knife (e.g. Asparagus vine) or pulled and hand removed (e.g. Cats Claw Creeper and Ipomoea species) — but this will involve several years of follow-up work.

The more widespread weed trees (Privet and Coral tree) are incredibly tough and will require use of herbicide. When using chemicals it's important to always follow label instructions and wear appropriate protective clothing and equipment.

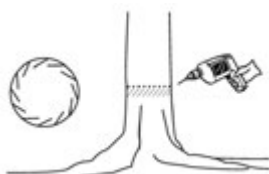
Below is a summary of the main control techniques. More detailed information can be found in the many weed education resources (see Resources section).

Cut & paint – for trees and woody weeds



- Cut stem as close to the ground as possible using a chainsaw, axe, machete etc.
- Apply herbicide within 15 seconds with a brush, drench gun or hand spray/squirt bottle
- Use a bright coloured dye to reduce impacts on non-target species

Stem inject: drill & fill method – for trees and shrubs that can be left on site



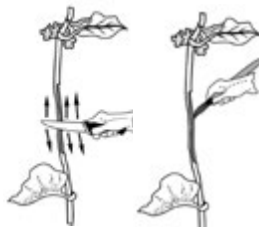
- Make a ring of downward-angled holes 3 cm deep with a drill
- Fill holes with herbicide within 15 seconds with a drench gun or hand squirt bottle.
- Use a bright coloured dye

Stem inject: axe cut method



- Make 3 cm deep cuts with an axe or tomahawk at waist height or lower
- Open up cut by angling the axe outwards
- Fill cut with herbicide within 15 seconds
- Continue to make a ring around the trunk
- Repeat around a second level offsetting the first ring of cuts

Stem scrape – for vines



- Use a sharp knife to scrape a thin layer of bark from 30 cm of the stem
- Apply herbicide within 15 seconds using a paintbrush
- For large vines, target stem close to the roots and repeat at root nodes

Foliar spraying – for dense groundcovers, shrubs and vines



- Use a spray pack with diluted herbicide and surfactant
- Spray foliage until wet but not dripping
- Use a bright coloured dye

4. Controlling or excluding pest animals

Pest animals can impact stock, wildlife and native vegetation so it is important to monitor and prevent their establishment if possible. If pest animals are a serious threat it's important to work with neighbours to undertake effective control measures.

Wild Dog sightings have become common in the Northern Rivers and there have been reports of attacks on stock and pets, and farmers being stalked. North Coast Local Land Services is the lead agency for wild dog, fox and rabbit control and undertake baiting and training programs (see Contacts list). A series of information sheets on research and what to do about wild dogs are available at Council's Goonellabah Administration Centre.

Cats (feral and domestic) are known to prey on many species of reptiles, birds and small mammals. Pet cats should be kept indoors, particularly at night, and collared with a noise or visual device if they are let outdoors. A 2014 study found that cats are the greatest threat to Australia's mammals, double the threat of foxes and triple that of habitat loss and fragmentation.

Indian Mynas are a pest around urban and rural areas where they have access to a regular food supply. They displace a number of native species, including other birds and tree dwelling mammals, and can be a major pest around stock feed. Traps are available at the Goonellabah Administration Centre.

Carp and other pest fish biomass has been estimated to be as high as 80% in the Richmond River. Pest fish compete with native species for food and habitat, prey on native species and can introduce disease. Carp also damage riparian vegetation by eating plant roots, and this causes undercutting and collapse of river and stream banks. The Casino RSM Fishing Club coordinates a Carp Muster in September each year, offering prizes for the largest catch. Carp exclusion traps are being used by some landholders and a Carp virus has been tested and may be released in NSW rivers in the future.

Cane Toads are poisonous to native reptiles, quolls and birds that prey on the toads. Toad numbers can be reduced by trapping and they can be excluded from farm dams and wetlands by establishing several rows of aquatic plants around your dam or wetland (see list of species in Practice 6). While these plants are establishing, a low (70 cm) shade cloth fence can be placed around the water body.

5. Stabilising riparian areas and stream banks

Riparian areas are the interface between land and water and play an important role in stabilising and protecting the habitat values of wetlands, creeks and rivers. These areas are often highly degraded by weed invasion, erosion and sedimentation.

Major functions and benefits of healthy riparian vegetation include:

- holding the soil and banks together which in turn minimises erosion
- improving in-stream conditions by providing shade, lowering water temperatures
- providing food sources for aquatic organisms when leaf litter, twigs, branches and insects fall into the water
- providing refuges for small fish from fallen trees and logs
- providing a buffer or filter to intercept and reduce the velocity of runoff, and to trap and breakdown soil and pollutants (e.g. spray drift, fertiliser, rubbish).

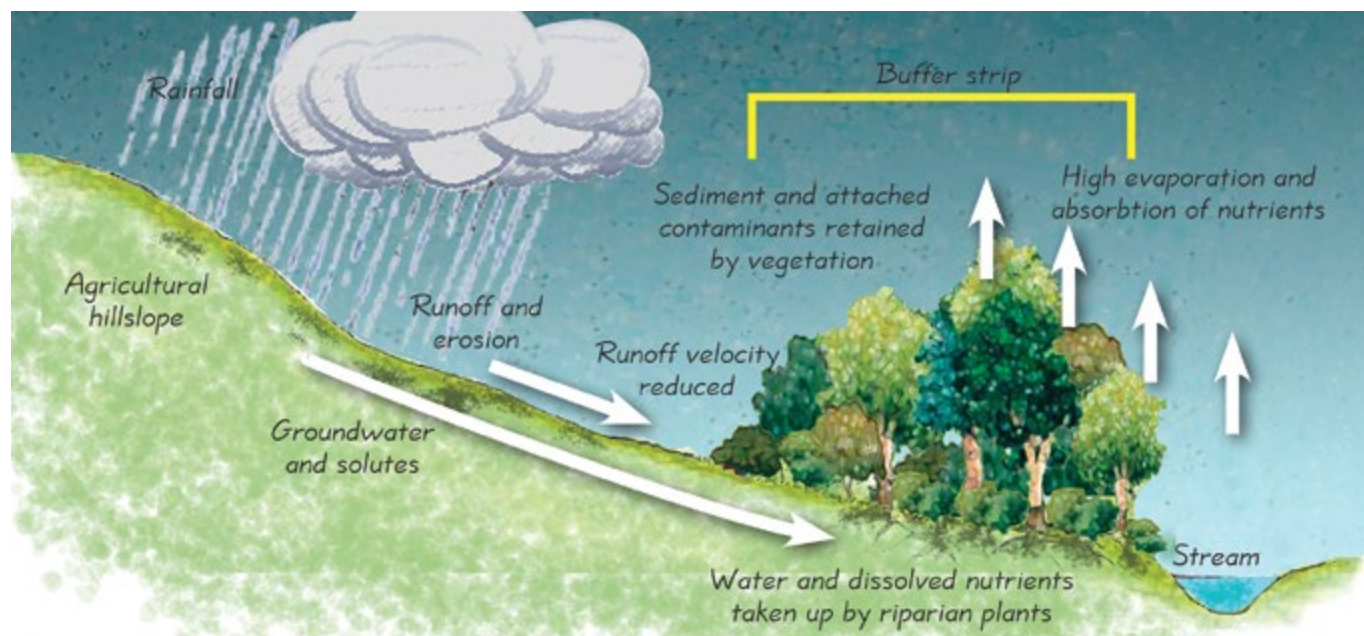
To achieve the best possible riparian buffer and corridor, a wide and highly diverse planting is the aim. 'Revegetating Streams in the Richmond Catchment' by Raine and Gardner (1997) provides a species lists for the toe or lower bank, mid bank and upper bank.

The following lower bank species are flood and frost tolerant and suitable for all reaches on the Wilsons River and Leycester Creek.

Common name	Botanical name
Lilly Pilly	<i>Acmena smithii</i>
Hard Quandong	<i>Eleocarpus grandis</i>
Matrush or Lomandra	<i>Lomandra hystrix</i>
River She Oak	<i>Casuarina cunninghamiana</i>
Sandpaper Fig	<i>Ficus coronata</i>
Water Gum	<i>Tristanopsis laurina</i>
Weeping Bottlebrush	<i>Callistemon viminalis</i>

Revegetation with native species will help prevent future erosion, but where active erosion and steep banks are present other techniques will be required. If river banks with vertical erosion zones are present, earthworks to reshape and create a more stable and accessible bank may be appropriate. Natural rock or other hard 'armouring' along bank scours or slips can be used to protect areas where flood flows will continue to cut into banks. On creek banks in the slopes or midland landscape, use of logs and re-snagging may be an option.

There are various technical guidelines for river and creek bank works, for example *River Landscapes* by Dr Andrew P Brooks which is a good nationally relevant resource. However, advice from the Office of Water, NSW Department of Primary Industries, should be sought and a permit may be required.



The diagram above shows the main hydrological functions of riparian vegetation.

Riparian profile illustration from Orara River Project (Source: The Interpretive Design Co)

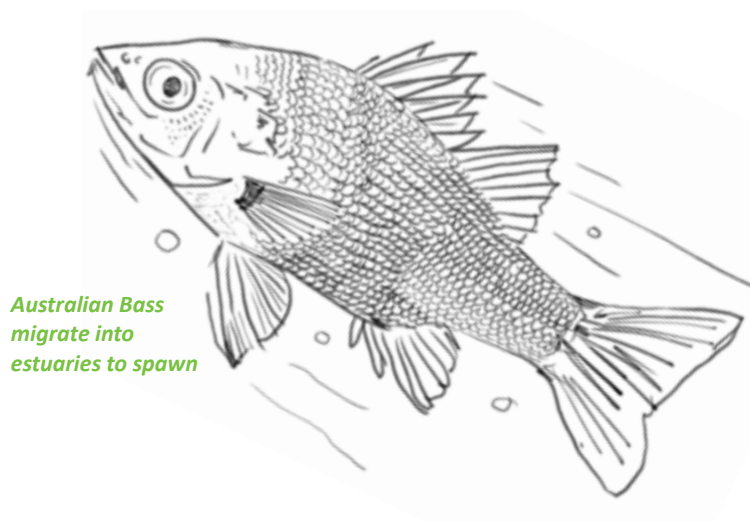
6. Creating in-stream habitat and unrestricted fish movements in natural waterways

Forested creeks and rivers in a natural condition have a large amount of large woody debris, and the removal and loss of this debris is a key threatening process. Large woody debris provides habitat for large invertebrates (i.e. crayfish, shrimps), shelter for small fish to hide from predators, and refuge in times of high flow. Most in-stream habitat features will develop with time as riparian revegetation matures, trees age, drop branches and eventually fall into the stream.

Wetland restoration also creates important aquatic habitat by providing a refuge for fish during flooding and permanent habitat for waterbirds. Wetlands, like riparian vegetation, filter water and improve water quality through uptake of nutrients and other processes.

The following aquatic plants can be used on farm dams and natural wetlands.

Common name	Botanical name
Blue Flax lily	<i>Dianella caerulea</i>
Common Fringe-sedge	<i>Fimbristylis dichotoma</i>
Common Rush	<i>Juncus usitatus</i>
Frogmouth	<i>Philydrum lanuginosum</i>
Jointed Twig-rush	<i>Baumea articulata</i>
Marsh Clubrush	<i>Bolboschoenus fluviatilis</i>
Matrush	<i>Lomandra hystrix</i>
River Clubrush	<i>Schoenoplectus validus</i>
Soft Twig-rush	<i>Baumea rubiginosa</i>
Spiny-headed Matrush	<i>Lomandra longifolia</i>
Swamp Lily	<i>Crinum pendunculatum</i>
Tall Sedge	<i>Carex appressa</i>
Triangular Clubrush	<i>Schoenoplectus mucronatus</i>
Water Chestnut	<i>Eleocharis dulcis</i>



Some fish need to move up and down streams as part of their life cycle. For example, Australian Bass travel upstream to mature for up to six years. There may be old or poorly designed structures (e.g. causeways and culverts) which stop fish from moving along the stream. There are, however, ways of making road crossings and culverts fish-friendly to allow passage both up and downstream (see Resources).

7. Creating nesting habitat and perches for wildlife

Different insects, birds and mammals provide beneficial services to the landscape and agriculture. For example, owls eat rats and mice, bees pollinate many commercial plants, and various birds and micro-bats prey on pest insects. These animals need appropriate nest sites to ensure they can inhabit and breed successfully in your area.

Native vegetation, including trees with hollows and fallen timber, is important to insects, birds, mammals and reptiles. If an area is lacking established native vegetation, artificial nests and perches can be used. Plans for making your own bird, micro-bat and mammal nest boxes are available on some websites, or ready-made nest boxes can be purchased. You could also create specific nest sites in a standing, dead tree – a new technique known as a ‘habitat stag’ where a chainsaw is used to create hollows in the dead tree.

You can also encourage native bees, which are great pollinators, onto your property by building shelters (see Resources). Richmond Landcare Inc. have a downloadable fact sheet about native bees on their website (see Contacts)

8. Identifying and managing threatened species

The Northern Rivers Region supports 70% of NSW’s threatened frogs, 75% of threatened birds, 60% of the mammals and 40% of the State’s threatened plants. Having such a high number and large range of threatened species means our region needs to take on some of the responsibility for protecting the State’s threatened species. Threatened and vulnerable species can play an important role in ecosystems, for example, keystone species such as flying-foxes pollinate night flowering, commercial hardwood tree species. Other threatened species, like large forest owls and micro-bats, can improve agricultural productivity by reducing pest species.

If you do a habitat assessment with a professional ecologist and are able to show that there are threatened species on your property, you can increase your chances of getting funding for conserving and improving biodiversity on your property. Techniques to locate threaten species include playing recorded calls and listening for responses (e.g. gliders, frogs), scat surveys, active searches (e.g. for reptiles, frogs and birds), spotlighting and trapping.

You can also access BioNet for free via the web to find out what species, including threatened species, have been found in your area (see Resources).



9. Monitoring native vegetation and waterways

Having baseline data and knowing what’s on your property and in your creeks is important when you plan to carry out work to conserve and improve biodiversity and ecosystem services. Creating a species list for both plants and animals as you notice them is a good starting point. You can add to this list and build up a picture of your property’s biodiversity over the seasons and years.

Taking photos and updating species lists will provide evidence of changes on your property over time. They can also help in evaluating the progress and success of any property plans you are implementing, and will improve your chances of securing grant funding.

10. Preparing integrated property plans for biodiversity and agricultural outcomes

Having a property plan will help guide actions over time and integrate biodiversity management into agricultural production plans. A typical plan may include a vision statement about what you and your family hope to achieve so everyone understands each other’s perspectives on the health of the landscape. A physical plan will lay out the assets, resources and challenges of your property and help identify the capability of your property. Financial planning helps manage decisions about enterprise investment and organise farm records.

The purpose of planning is to guide achievable and relevant targets to maintain and improve the environmental and productive health of your property. Planning will help you make the most of the benefits that biodiversity can provide your agricultural activities, for example, natural pest control and less reliance on chemicals.

The process of planning may require you to seek more information about your resources and understand dynamic natural systems such as climate, soils and ecological restoration. It can be a daunting undertaking but help can be found through Landcare groups or Local Land Services.

A well-presented property plan can also be useful to help you gain external advice, finance and funding to enact your objectives.

RESOURCES

Rainforest restoration and rehabilitation:

- Big Scrub Rainforest Landcare Group (2005) *Subtropical Rainforest Restoration: A Practical Manual and data source for landcare groups*, land managers and rainforest regenerators, 2nd edition.
- Raine, A and Gardner, J (1997) *Revegetating Streams in the Richmond Catchment, a guide to species and planting methods*, Maitland, June 1997.

Weed control:

- Bushland Friendly Nursery Scheme (2009) *Environmental Weeds and Native Alternatives*, Initiative of NSW North Coast Weeds Advisory Council, 2nd edition.
- Ensbey, R (2009) *Noxious and Environmental Weed Control Handbook – a guide to weed control in non-crop, aquatic and bushland situations*, 5th edition, NSW Department of Primary Industries.
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CONTACTS

- Department of Environment and Heritage, at: www.environment.nsw.gov.au/
- Office of Water, Department of Primary Industries: Phone 02 6676 7380; Fax 02 6676 7388; Street address 135 Main Street Murwillumbah www.water.nsw.gov.au/about-us/contact-us
- North Coast Local Land Services, at: <http://northcoast.lis.nsw.gov.au/> Phone 02 6623 3900; Street address 79 Conway Street Lismore
- Richmond Landcare Inc., at: www.richmondlandcare.org Phone 02 6619 0115

APPENDIX 1: PLANTING GUIDE

Subtropical Rainforest Restoration Manual courtesy of Big Scrub Rainforest Landcare.

Available for purchase at bigscrubrainforest.org.au

Key

Edge	Hardy species with a bushy habit that retain lower branches, or species that sucker freely. Recommended to seal edge of planting from drying effects of sun and wind. Note that fast growing edge species are useful for sealing edges more quickly, but some slower edge species should be included to provide a more permanent edge in the longer term.
Growth Rate	F: Fast M: Moderate S: Slow Relative growth rate (note that growth rate for all species will vary depending on site conditions, especially soil moisture).
Habit and Size	S: Shrub or clumping plant (<5m) ST: Small tree (5m - 10m) T: Tree (10m - 25m) LT: Large tree (>25m). Note that this is an indicative guide only for trees planted in open situations. Many rainforest species can reach heights of up to 30m if forced to grow straight and erect with a single trunk in a forest gap situation, but will adopt a lower bushier multi-trunked form (to say only 15m) if planted in an open paddock situation.
Sun Exposure	S: Shade/Understorey (need shade or minimal exposure to sun in cooler parts of the day) P: Partial Sun/Protected (prefer shade in the hottest part of the day) F: Full Sun (tolerate full exposure to sun throughout day) This is the amount of sunlight tolerated at planting. P species should be able to tolerate more sun exposure as they mature. S species will always require some sun protection.
Frost Resistance	L: Low (not recommended for frosty sites until canopy protection provided by frost resistant species) M: Moderate (0c to -2c) H: High -2c to -5c) VH: Very High (<-5c) Relative resistance to frost. Note that small seedlings of resistant species will still be vulnerable to heavy frost. Therefore in high frost areas, spring plantings of fast growing species only are recommended. This will maximise the size of the trees before the next winter.
Wind Tolerance	L: Low M: Moderate H: High VH: Very High (recommended for frontline planting in sites exposed to frequent high wind, inc. coastal sites) Relative tolerance to wind. Note that species with low resistance to wind will be subject to damage, poor growth form and slow growth rates if planted in high wind areas.
Dry Tolerance	D: Tolerate extended dry conditions from planting (provided they are well watered at planting). E: Tolerate extended dry conditions after establishment (1 to 2 years age), but may require supplemental watering in dry periods until establishment. Sites subject to seasonal soil dryness (eg coastal, west-facing or inland sites) should contain a mixture of both these species.
Riparian or Waterlogged	R: Riparian (Immediate creek banks with exposure to high energy flood flow.) W: Waterlogged (Tolerant of standing water and low soil oxygen for extended periods.)
Successional Stage	P: Pioneer S: Secondary M: Mature Phase US: Understorey RA: Rainforest Associate
Zone	C: Coastal Areas (east of former Big Scrub) B: Former Big Scrub Area/Red Soil I: Inland and Mountains (west and north of former Big Scrub) T: Tweed/Brunswick Valleys
Legal Status	S1: NSW Threatened Species Act, Schedule 1 (Endangered) S2: NSW Threatened Species Act, Schedule 2 (Vulnerable) R: ROTAP (CSIRO Rare or Threatened Australian Plant) Advice should be sought before growing these species.

Scientific Name	Common Name	Family	Edge	Growth Rate	Habit and Size	Sun Exposure	Frost Resistance	Wind Tolerance	Dry Tolerance	Riparian or Waterlogged	Successional Stage	Zone	Legal Status
<i>Abrophyllum ornans</i>	Native Hydrangea	Escalloniaceae		M	S	P	L	L			S	CIT	
<i>Acacia aulococarpa</i>	Ironbark Wattle	Mimosaceae	Y	F	T	F	VH	H	D		RA	CT	
<i>Acacia bakeri</i>	Marblewood	Mimosaceae		S	T	F	L	M	E		S	CT	S2
<i>Acacia melanoxylon</i>	Blackwood	Mimosaceae	Y	F	T	F	VH	H	D		P	CBIT	
<i>Acmena hemilampra</i>	Broad-leaved Lilly Pilly	Myrtaceae	Y	M	T	F	L	H			M	CBIT	
<i>Acmena ingens</i>	Red Apple	Myrtaceae		M	T	F	L	M			M	CBIT	
<i>Acmena smithii</i>	Common Lilly Pilly	Myrtaceae	Y	M	ST	F	M	H	E	R	S	CBIT	
<i>Acmena smithii</i> var. <i>minor</i>	Small-leaved Lilly Pilly	Myrtaceae	Y	M	ST	F	M	H		RW	S	CBIT	
<i>Acronychia imperforata</i>	Beach Acronychia	Rutaceae	Y	M	ST	F	L	H	E		S	C	
<i>Acronychia laevis</i>	Glossy Acronychia	Rutaceae	Y	M	ST	F	L	H	E		S	BI	
<i>Acronychia oblongifolia</i>	Common Acronychia	Rutaceae	Y	M	ST	F	M	H	D		S	CBIT	
<i>Acronychia pubescens</i>	Hairy Acronychia	Rutaceae	Y	M	ST	F	L	M	E		S	BIT	
<i>Acronychia suberosa</i>	Corky Acronychia	Rutaceae	Y	M	ST	F	L	M			S	IT	
<i>Acronychia wilcoxiana</i>	Silver Aspen	Rutaceae	Y	M	ST	F	L	M	E		S	CT	
<i>Actephila lindleyi</i>	Actephila	Euphorbiaceae		S	S	S	L	L			US	CBIT	
<i>Ailanthus triphysa</i>	White Bean	Simaroubaceae		M	T	F	L	M	E		S	CBIT	
<i>Akania lucens</i>	Turnipwood	Akaniaceae		S	ST	S	L	L			M	BIT	
<i>Alangium villosum</i>	Muskwood	Alangiaceae		S	T	P	L	L			M	CBIT	
<i>Alchornea ilicifolia</i>	Native Holly	Euphorbiaceae		S	S	P	L	M	E		S	CBIT	
<i>Alectryon coriaceus</i>	Beach Alectryon	Sapindaceae		M	T	F	L	M	E		S	C	
<i>Alectryon subcinereus</i>	Wild Quince	Sapindaceae	Y	M	T	F	L	M	E		S	IT	
<i>Alectryon tomentosus</i>	Hairy Alectryon	Sapindaceae		M	T	F	L	M	E		S	CBIT	
<i>Alocasia brisbanensis</i>	Conjevoi Lily	Araceae		F	S	F	M	L	E	W	US	CBIT	
<i>Alocasuarina torolosa</i>	Forest Oak	Casuarinaceae	Y	F	T	F	H	VH	D		RA	I	
<i>Alphitonia excelsa</i>	Red Ash	Rhamnaceae		F	T	F	H	H	D		S	CBIT	
<i>Alphitonia petriei</i>	Pink Ash	Rhamnaceae		F	ST	F	M	H	D		P	IT	
<i>Alpinia caerulea</i>	Native Ginger	Zingiberaceae		M	S	P	L	L			US	CBIT	
<i>Alyxia ruscifolia</i>	Prickley Alyxia	Apocynaceae		S	S	P	L	L	E		US	CBT	
<i>Amorpha sp.</i>	Rusty Plum	Sapotaceae		S	T	P	L	L			M	CIT	S2
<i>Anthocarpa nitidula</i>	Incense Cedar	Meliaceae		S	ST	P	L	L			M	CBIT	
<i>Aphananthe philippinensis</i>	Rough-leaved Elm	Ulmaceae		M	T	F	M	M	E	R	S	CBIT	
<i>Araucaria cunninghamii</i>	Hoop Pine	Araucariaceae	Y	M	LT	F	M	VH	D	RW	S	CBIT	
<i>Archidendron grandiflorum</i>	Pink Laceflower	Mimosaceae		M	ST	F	L	L	E		M	CBIT	
<i>Archidendron hendersonii</i>	White Laceflower	Mimosaceae		M	T	F	L	M			M	CBT	S2
<i>Archidendron muellerianum</i>	Viney Laceflower	Mimosaceae		S	ST	F	L	M	E		S	CBIT	R
<i>Archirhodomyrtus beckeri</i>	Rose Myrtle	Myrtaceae		M	ST	F	L	M	E		S	CIT	
<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	Arecaceae		M	T	F	L	L		RW	M	CBIT	
<i>Argophyllum nullumense</i>	Silver Leaf	Escalloniaceae		M	ST	P	L	L			S	IT	R
<i>Arytera distylis</i>	Twin-leaved Coogera	Sapindaceae		S	ST	F	L	M			M	CBIT	
<i>Arytera divaricata</i>	Coogera	Sapindaceae	Y	S	T	P	L	L			M	CBI	
<i>Atalaya multiflora</i>	Broad-leaved Whitewood	Sapindaceae		S	T	P	L	L			M	BIT	R
<i>Attractocarpus benthamiana</i>	Large-leaved Gardenia	Rubiaceae		M	ST	P	L	L			US	CBIT	
<i>Attractocarpus chartacea</i>	Narrow-leaved Gardenia	Rubiaceae		S	S	S	L	L			US	CBIT	

Scientific Name	Common Name	Family	Edge	Growth Rate	Habit and Size	Sun Exposure	Frost Resistance	Wind Tolerance	Dry Tolerance	Riparian or Waterlogged	Successional Stage	Zone	Legal Status
<i>Austrobuxus swainii</i>	Pinkwood	Euphorbiaceae		M	ST	P	L	L			M	IT	R
<i>Austromyrtus dulcis</i>	Midgenberry	Myrtaceae		M	S	F	L	H	D		RA	CBT	
<i>Backhousia myrtifolia</i>	Cinnamon Myrtle	Myrtaceae	Y	S	ST	F	L	H	E	R		S	I
<i>Baloghia inophylla (lucida)</i>	Brush Bloodwood	Euphorbiaceae		S	ST	P	L	L			M	CBIT	
<i>Baloghia marmorata</i>	Jointed Baloghia	Euphorbiaceae		S	ST	P	L	L			M	B	S2
<i>Banksia integrifolia</i>	Coastal Banksia	Proteaceae	Y	F	T	F	M	VH	D		RA	CI	
<i>Beilschmiedia elliptica</i>	Grey Walnut	Lauraceae		S	T	P	L	L			M	CBIT	
<i>Beilschmiedia obtusifolia</i>	Blush Walnut	Lauraceae		S	T	P	L	L			M	CIT	
<i>Bosistoa pentacocca</i>	Ferny-leaf Bosistoa	Rutaceae		S	S	P	L	L			M	BIT	
<i>Bouchardatia neurococcata</i>	Union Nut	Rutaceae		M	ST	F	L	L			M	BIT	
<i>Brachychiton acerifolius</i>	Flame Tree	Sterculiaceae		F	T	F	M	M	D		S	BIT	
<i>Brachychiton discolor</i>	Lacebark Tree	Sterculiaceae		F	T	F	L	M	E		S	CBIT	
<i>Breynia oblongifolia</i>	Breynia	Euphorbiaceae		M	S	F	M	H	E		P	CBIT	
<i>Bridelia exaltata</i>	Brush Ironbark	Euphorbiaceae	Y	M	T	F	M	H	E		S	CBIT	
<i>Caldcluvia paniculosa</i>	Soft Corkwood	Cunoniaceae		M	T	F	L	L			S	BIT	
<i>Callicoma serratifolia</i>	Black Wattle	Cunoniaceae	Y	F	ST	F	L	L		RW	S	BIT	
<i>Callistemon salignus</i>	Pink Bottlebrush	Myrtaceae	Y	F	T	F	H	VH	D	RW	RA	CIT	
<i>Callistemon viminalis</i>	Weeping Bottlebrush	Myrtaceae	Y	M	ST	F	M	H		RW	RA	IT	
<i>Callitris columellaris</i>	Beach Cypress	Cupressaceae	Y	M	T	F	L	H	D		RA	C	
<i>Callitris macleayana</i>	Stringybark Pine	Cupressaceae		M	T	F	L	H	E		RA	CI	
<i>Canarium australasicum</i>	Mango Bark	Burseraceae		M	T	F	L	L			M	IT	
<i>Canthium coprosmoides</i>	Coast Canthium	Rubiaceae		S	S	P	L	L			M	CBIT	
<i>Capparis arborea</i>	Brush Caper Berry	Capparaceae		S	ST	P	L	L	E		S	CBIT	
<i>Cassia marksiana</i>	Brush Cassia	Caesalpiniaceae		M	T	F	L	L			S	T	R
<i>Cassine australis</i>	Red Olive Plum	Celastraceae	Y	S	ST	P	L	M	E		M	CBIT	
<i>Castanoperum australe</i>	Black Bean	Fabaceae	Y	S	T	F	L	L		R	M	CBIT	
<i>Castanospora alphanthii</i>	Brown Tamarind	Sapindaceae	Y	M	T	F	L	M		RW	M	CBIT	
<i>Casuarina cunninghamiana</i>	River Oak	Casuarinaceae	Y	F	T	F	H	VH	E	R	RA	IT	
<i>Casuarina glauca</i>	Swamp Oak	Casuarinaceae	Y	M	T	F	H	H		RW	RA	CIT	
<i>Celtis paniculata</i>	Native Celtis	Ulmaceae		M	T	F	L	M			S	CBIT	
<i>Ceratopetalum apetalum</i>	Coachwood	Cunoniaceae		S	T	P	L	M			M	I	
<i>Cinnamomum oliveri</i>	Oliver's Sassafras	Lauraceae		S	T	P	L	L			M	CBIT	
<i>Cinnamomum virens</i>	Red-barked Sassafras	Lauraceae		S	T	P	L	L			M	CBIT	
<i>Citronella moorei</i>	Churnwood	Icacinaceae		S	T	P	L	L			M	BIT	
<i>Citrus australasica</i>	Finger Lime	Rutaceae		S	S	P	L	L	E		US	CBIT	R
<i>Claoxylon australe</i>	Brittlewood	Euphorbiaceae		M	T	F	L	L			S	BI	
<i>Cleistanthus cunninghamii</i>	Cleistanthus	Euphorbiaceae		S	ST	P	L	L	E		S	CBIT	
<i>Clerodendron floribundum</i>	Smooth Clerodendron	Verbenaceae		F	ST	F	L	M	E		S	BIT	
<i>Clerodendron tomentosum</i>	Hairy Clerodendron	Verbenaceae		F	ST	F	L	M	E		S	BIT	
<i>Commersonia bartamia</i>	Brown Kurrajong	Sterculiaceae		F	T	F	M	H	D		P	CBIT	
<i>Commersonia fraseri</i>	Brush Kurrajong	Sterculiaceae		M	ST	F	L	M	E		P	C	
<i>Cordyline congesta</i>	Coast Palm Lily	Agavaceae		M	S	P	L	M	E	RW	US	C	R
<i>Cordyline petiolaris</i>	Broad-leaved Palm Lily	Agavaceae		M	S	P	L	M	E		US	CBIT	
<i>Cordyline rubra</i>	Red-fruited Palm Lily	Agavaceae		M	S	P	L	L	E		US	CBIT	
<i>Cordyline stricta</i>	Narrow-leaved Palm Lily	Agavaceae		M	S	P	L	L	E		US	CI	
<i>Crinum pedunculatum</i>	Beach/River Lily	Amaryllidaceae		F	S	F	L	M	E	RW	RA	C	
<i>Croton verreauxii</i>	Native Cascarilla	Euphorbiaceae		S	S	P	L	L	E		S	CBIT	
<i>Cryptocarya erythroxylon</i>	Pidgeonberry Ash	Lauraceae		S	T	P	L	L			M	IT	
<i>Cryptocarya foetida</i>	Stinking Cryptocarya	Lauraceae		S	ST	P	L	L			M	C	S2
<i>Cryptocarya glaucescens</i>	Jackwood	Lauraceae	Y	M	T	F	L	L	E		S	CBIT	
<i>Cryptocarya laevigata</i>	Glossy Laurel	Lauraceae		S	S	S	L	L	E		US	CBIT	
<i>Cryptocarya microneura</i>	Murrogun	Lauraceae		M	ST	F	L	L	E		M	BIT	
<i>Cryptocarya obovata</i>	Pepperberry	Lauraceae		S	T	F	L	M		W	M	CBIT	
<i>Cryptocarya rigida</i>	Forest Maple	Lauraceae		S	ST	P	L	L			S	I	
<i>Cryptocarya triplinervis triplinervis</i>	Coastal Three-veined Laurel	Lauraceae	Y	S	T	F	L	H	E		M	C	
<i>Cryptocarya triplinervis pubens</i>	Three-veined laurel	Lauraceae	Y	S	T	F	L	M	E		M	BIT	
<i>Cupaniopsis anacardioides</i>	Tuckeroo	Sapindaceae	Y	M	T	F	L	VH	E		S	C	
<i>Cupaniopsis flagelliformis</i>	Brown Tuckeroo	Sapindaceae		M	T	F	L	L			S	BIT	
<i>Cupaniopsis foveolata</i>	Toothed Tuckeroo	Sapindaceae		M	T	F	L	L			S	IT	
<i>Cupaniopsis newmanii</i>	Long-leaved Tuckeroo	Sapindaceae		M	ST	P	L	M			US	CIT	R
<i>Cupaniopsis parvifolia</i>	Small-leaved Tuckeroo	Sapindaceae	Y	M	ST	F	L	M	E		S	CBIT	
<i>Cuttsia viburnea</i>	Cuttsia	Escalloniaceae		M	S	P	L	L			S	IT	
<i>Cyathea australis</i>	Rough Tree Fern	Cyatheaceae		M	S	P	L	L			S	CBIT	
<i>Cyathea cooperi</i>	Scaly Tree Fern	Cyatheaceae		M	S	P	L	L			S	CBIT	
<i>Cyathea leichhardtiana</i>	Prickly Tree Fern	Cyatheaceae		S	S	S	L	L			US	BIT	
<i>Daphnandra micrantha</i>	Socketwood	Monimiaceae		M	S	P	L	L	E		M	BIT	
<i>Davidsonia jerseyana</i>	Davidson's Plum	Davidsoniaceae		M	ST	P	L	L			M	CT	S1
<i>Decaspermum humile</i>	Silky Myrtle	Myrtaceae	Y	M	ST	F	L	H			M	BIT	
<i>Dendrocnide excelsa</i>	Giant Stinging Tree	Urticaceae		F	LT	P	L	L			S	BIT	
<i>Dendrocnide photinophylla</i>	Shiny-leaved Stinging Tree	Urticaceae		M	T	P	L	L	E		S	CBIT	
<i>Denhamia celestroides</i>	Orange Boxwood	Celastraceae	Y	S	ST	F	L	M	E		S	CBIT	
<i>Desmodium acanthocladum</i>	Thorny Pea	Fabaceae	Y	M	S	F	M	M	E	R	P	BIT	S2
<i>Dianella caerulea</i>	Blue Flax Lily	Liliaceae		F	S	P	M	M		R	US	CBIT	
<i>Diospyros australis</i>	Black Plum	Ebenaceae		S	T	P	L	L			M	BIT	
<i>Diospyros fasciculosa</i>	Grey Ebony	Ebenaceae		S	T	P	L	L			M	C	
<i>Diospyros pentamera</i>	Myrtle Ebony	Ebenaceae		S	T	P	L	L	E		M	CBIT	
<i>Diploglottis australis</i>	Native Tamarind	Sapindaceae		M	T	F	L	M			S	BIT	
<i>Diploglottis campbellii</i>	Small-leaved Tamarind	Sapindaceae		S	ST	F	L	L			S	BT	S1
<i>Doryphora sassafras</i>	Sassafras	Myricaceae	Y	M	T	P	L	L			M	BIT	
<i>Drypetes australasica</i>	Yellow Tulip	Euphorbiaceae		S	T	F	L	M	E		S	CBIT	
<i>Duboisia myoporoides</i>	Corkwood	Solanaceae	Y	F	ST	F	VH	H	D		P	CBIT	
<i>Dysoxylum fraserianum</i>	Rosewood	Meliaceae		S	T	F	L	L			M	CBIT	
<i>Dysoxylum mollissimum</i>	Red Bean	Meliaceae		M	T	F	L	M			M	CBIT	
<i>Dysoxylum rufum</i>	Hairy Rosewood	Meliaceae		S	T	F	L	L			M	CBIT	
<i>Ehretia acuminata</i>	Koda	Boraginaceae		F	T	F	M	H	E		M	CBIT	
<i>Elaeocarpus angustifolia</i>	Blue Quandong	Elaeocarpaceae		F	LT	F	L	M		R	S	CBIT	

Scientific Name	Common Name	Family	Edge	Growth Rate	Habit and Size	Sun Exposure	Frost Resistance	Wind Tolerance	Dry Tolerance	Riparian or Waterlogged	Successional Stage	Zone	Legal Status
<i>Elaeocarpus eumundi</i>	Eumundi Quandong	Elaeocarpaceae		M	T	F	L	M			M	I	
<i>Elaeocarpus kirtonii</i>	Silver Quandong	Elaeocarpaceae		M	T	F	L	M			M	BIT	
<i>Elaeocarpus obovatus</i>	Hard Quandong	Elaeocarpaceae	Y	M	T	F	H	H	E		M	CBIT	
<i>Elaeocarpus reticulatus</i>	Blueberry Ash	Elaeocarpaceae	Y	M	ST	F	L	M	E	RW	S	CIT	
<i>Elattostachys nervosa</i>	Green Tamarind	Sapindaceae		M	T	F	L	M			M	CBIT	
<i>Elattostachys xylocarpa</i>	White Tamarind	Sapindaceae		M	T	F	L	M	Y		M	I	
<i>Emmenospermum alphononoides</i>	Yellow Ash	Rhamnaceae		M	T	F	L	M			M	BIT	
<i>Endiandra compressa</i>	White Bark	Lauraceae		S	T	P	L	L			M	I	R
<i>Endiandra discolor</i>	Rose Walnut	Lauraceae		S	T	P	L	L			M	IT	
<i>Endiandra floydii</i>	Crystal Creek Walnut	Lauraceae		S	ST	P	L	L			M	CT	S1
<i>Endiandra globosa</i>	Black Walnut	Lauraceae		S	ST	P	L	L			M	T	R
<i>Endiandra hayesii</i>	Velvet Laurel	Lauraceae		S	ST	P	L	L			M	IT	S2
<i>Endiandra muelleri</i>	Green-leaved Rose Walnut	Lauraceae		S	ST	P	L	L			M	BIT	S1
<i>Endiandra pubens</i>	Hairy Walnut	Lauraceae		S	ST	P	L	L			M	CBIT	
<i>Endiandra sieberi</i>	Hard Corkwood	Lauraceae		S	T	F	L	M	E		S	CIT	
<i>Endiandra virens</i>	White Apple	Lauraceae		S	T	P	L	M			M	I	
<i>Erythrina vespertilio</i>	Bats-wing Coral Tree	Fabaceae		F	T	F	L	H	E		S	IT	
<i>Eucalyptus acmenoides</i>	White Mahogany	Myrtaceae		F	T	F	H	VH	D		RA	IT	
<i>Eucalyptus grandis</i>	Flooded (Rose) Gum	Myrtaceae		F	LT	F	H	H	E	R	RA	IT	
<i>Eucalyptus microcorys</i>	Tallowwood	Myrtaceae		F	LT	F	H	VH	D		RA	IT	
<i>Eucalyptus pilularis</i>	Blackbutt	Myrtaceae		F	LT	F	H	VH	D		RA	IT	
<i>Eucalyptus saligna</i>	Sydney Blue Gum	Myrtaceae		F	LT	F	H	H	D		RA	IT	
<i>Eucalyptus siderophloia</i>	Ironbark	Myrtaceae		F	LT	F	H	VH	D		RA	IT	
<i>Eucalyptus tereticornis</i>	Forest Red Gum	Myrtaceae		F	LT	F	H	VH	D		RA	IT	
<i>Eupomatia laurina</i>	Bolwarra	Eupomatiaceae		S	S	P	L	L			US	CBIT	
<i>Euroschinus falcata</i>	Ribbonwood	Anacardiaceae		F	T	F	L	H	E		S	CBIT	
<i>Ficus coronata</i>	Creek Sandpaper Fig	Moraceae	Y	M	ST	F	L	M		RW	S	CBIT	
<i>Ficus fraseri</i>	Sandpaper Fig	Moraceae		F	T	F	M	H	E	R	S	CBIT	
<i>Ficus macrophylla</i>	Moreton Bay Fig	Moraceae	Y	S	LT	F	L	VH	D	RW	M	CBIT	
<i>Ficus obliqua</i>	Small-leaved Fig	Moraceae	Y	S	LT	F	L	VH	D	RW	M	CBIT	
<i>Ficus rubiginosa</i>	Rusty Fig	Moraceae	Y	S	T	F	L	VH	D		M	IT	
<i>Ficus superba</i> var. <i>henneana</i>	Deciduous Fig	Moraceae	Y	S	LT	F	L	M	E	R	M	CBIT	
<i>Ficus virens</i>	White Fig	Moraceae	Y	S	LT	F	L	VH	D	RW	M	CT	
<i>Ficus watkinsiana</i>	Strangler Fig	Moraceae	Y	S	LT	F	L	VH	D	RW	M	CBIT	
<i>Flindersia australis</i>	Teak	Rutaceae		S	T	F	M	H	E		M	CBIT	
<i>Flindersia bennettiana</i>	Bennett's Ash	Rutaceae	Y	M	T	F	L	H	E		S	CBIT	
<i>Flindersia schottiana</i>	Cudgerie	Rutaceae		M	T	F	L	H	E		S	CBIT	
<i>Flindersia xanthoxyla</i>	Yellowwood	Rutaceae		M	T	F	L	H	E		S	BIT	
<i>Floydia praealta</i>	Ball Nut	Proteaceae		S	ST	P	L	L			M	CBIT	S2
<i>Gahnia aspera</i>	Cut-grass Sedge	Cyperaceae		M	S	F	M	H	E	RW	RA	CBIT	
<i>Geissois benthamii</i>	Red Carabeen	Cunoniaceae		M	T	F	L	L			M	CBIT	
<i>Glochidion ferdinandi</i>	Cheese Tree	Euphorbiaceae	Y	M	T	F	M	H	D		S	CBIT	
<i>Glochidion sumatranum</i>	Umbrella Cheese Tree	Euphorbiaceae		F	T	F	L	H	E	RW	S	CIT	
<i>Gmelina leichhardtii</i>	White Beech	Verbenaceae		M	T	F	L	H	E		M	CBIT	
<i>Gossia bidwillii</i>	Python Tree	Myrtaceae		S	ST	P	L	L	E		M	BIT	
<i>Gossia fragrantissima</i>	Fragrant Myrtle	Myrtaceae		S	ST	P	L	L	E		M	BIT	S1
<i>Gossia hillii</i>	Scaly Myrtle	Myrtaceae	Y	S	ST	F	L	H	E		M	BIT	
<i>Gossia lasioclada</i> aff.	Velvet Myrtle	Myrtaceae	Y	M	ST	F	L	L		RW	S	IT	
<i>Grevillea hilliana</i>	White Yiel Yiel	Proteaceae		M	T	F	L	H			S	T	S1
<i>Grevillea robusta</i>	Silky Oak	Proteaceae		F	T	F	VH	H	D		S	BIT	
<i>Guilfoylia monostylis</i>	Guilfoylia	Simaroubaceae		S	ST	P	L	L			M	BIT	
<i>Guioa semiglaucous</i>	Guioa	Sapindaceae	Y	M	T	F	M	H	E		S	CBIT	
<i>Halfordia kendack</i>	Saffron Heart	Rutaceae	Y	S	T	F	L	H			M	CIT	
<i>Harpullia alata</i>	Wing Leaved Tulip	Sapindaceae		S	S	S	L	L			US	BIT	
<i>Harpullia hillii</i>	Blunt-leaved Tulip	Sapindaceae		M	T	F	L	M	E		S	BIT	
<i>Harpullia pendula</i>	Tulipwood	Sapindaceae	Y	S	T	F	L	M	E		S	BIT	
<i>Hedraianthera porphyropetala</i>	Hedraianthera	Celastraceae		S	S	S	L	L			US	CBIT	
<i>Helicia ferruginea</i>	Rusty Helicia	Proteaceae		M	ST	F	L	L			S	IT	
<i>Helicia glabriflora</i>	Smooth Helicia	Proteaceae	Y	M	ST	F	L	L			S	CBIT	
<i>Helmholtzia glaberrima</i>	Stream Lily	Phyllidraceae		S	S	S	L	L		R	US	BIT	
<i>Heritiera actinophyllum</i>	Black Booyong	Sterculiaceae		M	T	F	L	M			M	CIT	
<i>Heritiera trifoliolatum</i>	White Booyong	Sterculiaceae		S	T	F	L	L			M	CBIT	
<i>Hibiscus heterophylla</i>	Native Hibiscus	Malvaceae		F	ST	F	L	L	D		P	IT	
<i>Hibiscus splendens</i>	Pink Hibiscus	Malvaceae		M	S	F	L	M	D		RA	I	
<i>Hibiscus tiliaceus</i>	Cottonwood Hibiscus	Malvaceae	Y	F	ST	F	L	H	E	W	S	C	
<i>Hicksbeachia pinnatifolia</i>	Red Bopple Nut	Proteaceae		S	ST	P	L	L	E		S	BIT	S2
<i>Hodgkinsonia ovatiflora</i>	Hodgkinsonia	Rubiaceae		S	S	S	L	L			S	CBIT	
<i>Hovea acutifolia</i>	Purple Pea	Fabaceae		M	S	F	L	M	E		S	CIT	
<i>Hymenosporum flavum</i>	Native Frangipani	Pittosporaceae		F	ST	F	H	H	D		S	CBIT	
<i>Ixora beckleri</i>	Native Ixora	Rubiaceae		S	S	S	L	L	E		M	CBIT	
<i>Jagera pseudorhus</i>	Foambark Tree	Sapindaceae	Y	M	T	F	M	H	E		S	CBIT	
<i>Lepiderema pulchella</i>	Fine-leaved Tuckeroo	Sapindaceae		M	ST	P	L	L			M	T	S2
<i>Lepidozamia peroffskyana</i>	Shining Burrawang	Zamiaceae		S	S	P	L	L	E		US	CT	
<i>Linospadix monostachyus</i>	Walking Stick Palm	Arecaceae		S	S	S	L	L			US	CBIT	
<i>Litsea australis</i>	Brown Bolly Gum	Lauraceae		S	T	P	L	L			M	CBIT	
<i>Litsea reticulata</i>	Bolly Gum	Lauraceae		S	T	P	L	L			M	CBIT	
<i>Livistona australis</i>	Cabbage Tree Palm	Arecaceae		S	T	F	L	L		W	M	CI	
<i>Lomandra hystrix</i>	Forest Mat-rush	Xanthorrhoeaceae		F	S	F	M	M		RW	US	CBT	
<i>Lomandra longifolia</i>	Spiny headed Mat-rush	Xanthorrhoeaceae	Y	F	S	F	H	VH	E	R	RA	CBIT	
<i>Lomatia arborescens</i>	Tree Lomatia	Proteaceae		M	T	F	L	H	E		S	I	
<i>Lophostemon confertus</i>	Brush Box	Myrtaceae		F	LT	F	M	VH	D		RA	CIT	
<i>Lophostemon suaveolens</i>	Swamp Box	Myrtaceae		F	T	F	M	H	E	W	RA	CIT	
<i>Macadamia tetraphylla</i>	Macadamia Nut	Proteaceae	Y	M	ST	F	L	H	E		S	BT	S2
<i>Macaranga tanarius</i>	Macaranga	Euphorbiaceae		F	ST	F	L	H	E		P	CBIT	
<i>Mallotus cloxyloides</i>	Green Kamala	Euphorbiaceae		S	ST	P	L	L	E		S	IT	
<i>Mallotus discolor</i>	White/Yellow Kamala	Euphorbiaceae		M	T	F	L	H	E		S	CBIT	

Scientific Name	Common Name	Family	Edge	Growth Rate	Habit and Size	Sun Exposure	Frost Resistance	Wind Tolerance	Dry Tolerance	Riparian or Waterlogged	Successional Stage	Zone	Legal Status
<i>Mallotus philippensis</i>	Red Kamala	Euphorbiaceae	Y	M	T	F	M	H	E		S	CBIT	
<i>Melaleuca quinquenervia</i>	Broad-leaf Paperbark	Myrtaceae		M	T	F	L	H		W	RA	C	
<i>Melastoma affine</i>	Blue Tongue	Melastomataceae		M	S	F	L	L		W	US	CB	
<i>Melia azedarach</i> var. <i>australasica</i>	White Cedar	Meliaceae		F	T	F	M	H	D		S	CBIT	
<i>Melicope elleryana</i>	Pink Euodia	Rutaceae		F	ST	F	L	M		W	S	CT	
<i>Melicope erythrococca</i>	Tingletonie	Rutaceae		M	ST	F	L	M			S	I	R
<i>Melicope hayesii</i>	Small-leaved Doughwood	Rutaceae		M	T	F	L	L			S	I	
<i>Melicope micrococca</i>	White Euodia	Rutaceae	Y	M	T	F	L	H			S	BIT	
<i>Melicope octandra</i>	Doughwood	Rutaceae		M	T	F	L	M			M	CBIT	
<i>Melicope vitiflora</i>	Leatherwood	Rutaceae		M	T	P	L	L			S	CB	
<i>Mischocarpus australis</i>	Red Pear Fruit	Sapindaceae	Y	S	T	P	L	L	E		M	BIT	
<i>Mischocarpus pyramidalis</i>	Yellow Pear-fruit	Sapindaceae		S	T	P	L	L	E		M	CBT	
<i>Neisosperma poweri</i>	Milkbush	Apocynaceae		S	S	S	L	L			US	B	R
<i>Neolitsea australiensis</i>	Green Bolly Gum	Lauraceae		S	ST	P	L	L			S	CBIT	
<i>Neolitsea dealbata</i>	White Bolly Gum	Lauraceae		S	ST	P	L	L			M	CBIT	
<i>Notelaea johnsonii</i>	Veinless Mock-Olive	Oleaceae		S	S	P	L	L			S	CBIT	
<i>Notelaea longifolia</i>	Mock Olive	Oleaceae		S	S	P	L	M	E		S	CIT	
<i>Notelaea venosa</i>	Veiny Mock-olive	Oleaceae		S	S	P	L	L	E		S	I	
<i>Olea paniculata</i>	Native Olive	Oleaceae		M	ST	F	L	M	E		S	BIT	
<i>Omalanthus nutans</i>	Bleeding Heart	Euphorbiaceae		F	ST	F	L	M			P	BIT	
<i>Orites excelsa</i>	Prickly Ash/Mountain Silky Oak	Proteaceae		M	T	F	L	H	E		S	I	
<i>Owenia cepioides</i>	Onion Cedar	Meliaceae		S	ST	F	L	M			M	BI	S2
<i>Parachidendron pruinosum</i>	Snowwood	Mimosaceae		M	ST	F	L	H	E		S	CBIT	
<i>Pennantia cunninghamii</i>	Brown Beech	Icacinaeae		M	T	F	L	L			M	BIT	
<i>Pentaceras australis</i>	Crow's Ash/Black Teak	Rutaceae		M	T	F	M	H	E		S	CBIT	
<i>Piliostigma glabrum</i>	Plum Myrtle	Myrtaceae	Y	M	S	F	L	M	E		S	CBIT	
<i>Pipterus argenteus</i>	White Nettle	Urticaceae		F	ST	F	L	H			P	CIT	
<i>Pittosporum multiflorum</i>	Orange Thorn	Pittosporaceae		S	S	S	L	L	E		US	BI	
<i>Pittosporum revolutum</i>	Hairy Pittosporum	Pittosporaceae	Y	M	S	F	M	H	E		P	CI	
<i>Pittosporum rhombifolium</i>	Hollywood	Pittosporaceae	Y	M	ST	F	M	H	E		S	CBIT	
<i>Pittosporum undulatum</i>	Sweet Pittosporum	Pittosporaceae	Y	M	ST	F	H	VH	D		P	CBIT	
<i>Podocarpus elatus</i>	Brown Pine	Podocarpaceae	Y	S	T	F	M	H	E	RW	M	CBIT	
<i>Polysoma cunninghamii</i>	Featherwood	Escalloniaceae		S	T	P	L	L			M	CBIT	
<i>Polyscias elegans</i>	Celerywood	Araliaceae		F	T	F	M	M	D		S	CBIT	
<i>Polyscias murrayi</i>	Pencil Cedar	Araliaceae		F	T	F	L	M			S	CBIT	
<i>Pouteria australis</i>	Black Apple	Sapotaceae		S	T	F	L	L			M	CBIT	
<i>Pouteria chartacea</i>	Thin-leaf Coondoo	Sapotaceae		S	T	F	L	L			M	CT	
<i>Pouteria myrsinoides</i>	Blunt-leaf Coondoo	Sapotaceae		S	T	F	L	L			S	CBIT	
<i>Premna lignum-vitae</i>	Lignum-vitae	Verbenaceae		S	ST	F	L	L			M	CI	
<i>Pseudowienmannia lachnocarpa</i>	Rose Marara	Cunoniaceae		M	T	P	L	L			M	CBIT	
<i>Psychotria loniceroides</i>	Hairy Psychotria	Rubiaceae		S	S	S	L	L			US	CBIT	
<i>Quassia</i> sp. Mt. Nardi	Southern Quassia	Simaroubaceae		M	S	P	L	M	E		S	CBIT	S1
<i>Quintinia verdonii</i>	Grey Possumwood	Escalloniaceae		M	T	P	L	L			S	IT	
<i>Rapanea howittiana</i>	Brush Muttonwood	Myrsinaceae		S	ST	F	L	M			S	CIT	
<i>Rapanea variabilis</i>	Muttonwood	Myrsinaceae	Y	M	ST	F	L	M	E		S	CIT	
<i>Rhodamnia argentea</i>	Malletwood	Myrtaceae	Y	M	T	F	L	H			S	CBIT	
<i>Rhodamnia maideniana</i>	Smooth Scrub Turpentine	Myrtaceae		M	S	P	L	L			US	B	R
<i>Rhodamnia rubescens</i>	Scrub Turpentine	Myrtaceae	Y	M	ST	F	L	H	E		S	CBIT	
<i>Rhodomyrtus psidioides</i>	Native Guava	Myrtaceae	Y	M	ST	F	L	M	E		S	CBIT	
<i>Rhodospaera rhodanthema</i>	Deep Yellowwood	Anacardiaceae	Y	F	ST	F	M	M	D		S	I	
<i>Rhysotoechia bifoliolata</i>	Twin-leaved Tuckeroo	Sapindaceae		M	ST	F	L	M			S	CBIT	
<i>Sambucus australasica</i>	Native Elderberry	Araliaceae		F	S	P	L	L			S	CBIT	
<i>Sarcomelicope simplicifolia</i>	Bauerella	Rutaceae	Y	M	ST	F	M	H	E		M	BI	
<i>Sarcopharyx stipitata</i>	Steelwood	Sapindaceae	Y	S	ST	F	M	H	E		S	CBIT	
<i>Scolopia braunii</i>	Flintwood	Flacourtiaceae		S	ST	P	L	L	E		M	CBIT	
<i>Senna acclinis</i>	Senna	Caesalpinjiaceae		F	S	F	L	M	E		P	BIT	S1
<i>Sloanea australis</i>	Maiden's Blush	Elaeocarpaceae		S	T	P	L	L			M	CBIT	
<i>Sloanea woollsi</i>	Yellow Carabeen	Elaeocarpaceae		M	T	P	L	L			M	BIT	
<i>Solanum aviculare</i>	Kangaroo Apple	Solanaceae		F	S	F	L	L	D		P	CBIT	
<i>Stenocarpus salignus</i>	Scrub Beefwood	Proteaceae		M	T	F	L	M			S	IT	
<i>Stenocarpus sinuatus</i>	Firewheel Tree	Proteaceae		M	T	F	M	H	E		M	CBIT	
<i>Sterculia quadrifida</i>	Peanut Tree	Sterculiaceae		M	T	F	L	M	E		S	CBT	R
<i>Streblus brunonianus</i>	Whalebone Tree	Moraceae	Y	M	T	F	L	H	E	R	S	CBIT	
<i>Symplocos stawellii</i>	White Hazelwood	Symplocaceae		M	T	P	L	M			M	BT	
<i>Symplocos thwaitesii</i>	Buff Hazelwood	Symplocaceae		M	T	P	L	M	E		M	CBIT	
<i>Syncarpia glomulifera</i>	Turpentine	Myrtaceae		M	T	F	H	VH	D		RA	IT	
<i>Synoum glandulosum</i>	Scentless Rosewood	Meliaceae	Y	M	ST	F	L	L	E		S	CBIT	
<i>Syzygium australe</i>	Brush Cherry	Myrtaceae	Y	M	ST	F	L	H		RW	S	CBIT	
<i>Syzygium corynanthum</i>	Sour Cherry	Myrtaceae	Y	S	T	F	L	M			M	CBIT	
<i>Syzygium crebrinerve</i>	Purple Cherry/Rose Satinash	Myrtaceae	Y	M	T	F	L	L			M	BIT	
<i>Syzygium francisii</i>	Giant Water Gum	Myrtaceae	Y	S	T	F	M	M	E	RW	M	BIT	
<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	Myrtaceae		S	ST	P	L	L			M	BIT	S2
<i>Syzygium luehmianii</i>	Riberry	Myrtaceae	Y	S	ST	F	L	M	E	R	M	CBIT	
<i>Syzygium moorei</i>	Durobby/Coolamon	Myrtaceae	Y	S	T	F	L	H		R	M	BT	S2
<i>Syzygium oleosum</i>	Blue Lilly Pilly	Myrtaceae	Y	M	ST	F	L	VH	E		M	CIT	
<i>Tabernaemontana pandacqui</i>	Banana Bush	Apocynaceae		S	S	P	L	L	E		S	CBIT	
<i>Tasmannia insipida</i>	Mountain Pepperbush	Winteraceae		S	S	S	L	L			US	I	
<i>Toechima dasyrrache</i>	Blunt-leaved Steelwood	Sapindaceae	Y	S	ST	F	M	H	E		S	CBIT	
<i>Toechima tenax</i>	Pitted-leaf Steelwood	Sapindaceae	Y	S	ST	F	L	M	E		S	IT	
<i>Toona ciliata</i>	Red Cedar	Meliaceae		F	T	F	M	H	D		M	BIT	
<i>Trema aspera</i>	Native Peach	Ulmaceae		F	S	F	L	M	D		P	CBIT	
<i>Tristanopsis collina</i>	Hill Kanuka	Myrtaceae		M	T	F	M	M			M	IT	
<i>Tristanopsis laurina</i>	Water Gum	Myrtaceae	Y	M	ST	F	VH	H		RW	S	BI	
<i>Trochocarpa laurina</i>	Tree Heath	Epacridaceae	Y	S	ST	P	L	L			S	CIT	
<i>Truinia youngiana</i>	Honeysuckle Bush	Proteaceae		S	S	S	L	L			US	CBIT	R
<i>Waterhousea floribunda</i>	Weeping Lilly Pilly	Myrtaceae	Y	M	T	F	M	H		RW	M	BIT	
<i>Wikstroemia indica</i>	Wikstroemia	Thymelaeaceae		M	S	F	L	M	D		P	CBIT	
<i>Wilkiea austroqueenslandica</i>	Smooth Wilkiea	Monimiaceae		S	S	S	L	L			US	BIT	
<i>Wilkiea huegeliana</i>	Veiny Wilkiea	Monimiaceae		S	S	S	L	L			US	CBIT	
<i>Wilkiea macrophylla</i>	Large-leaved Wilkiea	Monimiaceae		S	S	S	L	L			US	CBIT	
<i>Xylosma terrae-reginae</i>	Xylosma	Flacourtiaceae		M	ST	P	L	L			S	C	S1

APPENDIX 2: WEEDS LIST

Common and Serious Environmental Weeds

Trees	Common Name	Scientific Name	Coastal Plains	Midland slopes	Escarp.
	African Tulip	Spathodea campanulata-subsp. rotundata			x
	Cadagi	Eucalyptus torelliana	x	x	x
	Camphor laurel	Cinnamomum camphora	x		
	Cecropia	Cecropia peltata	x		
	Chinese Celtis	Celtis sindensis		x	
	Cocks Comb/Indian Coral	Erythrina crist-galli	x		
	Cocos Palm	Syragrus romanzoffianum	x	x	
	Common Coral Tree	Erythrina x sykesii	x	x	
	Common Olive	Olea europaea subsp. cuspidata		x	
	Golden Rain Tree	Keolreuteria paniculata	x		
	Honey Locust	Robinia psuedo-acacia	x		
	Large-leaved Privet	Ligustrum lucidum	x		
	Lombardy Poplar	Populus nigra 'Italica'	x		
	Loquat	Eriobotrya japonica	x	x	
	Paulownia	Paulownia fortune/tomentose		x	
	Pepper Tree	Schinus areia	x		
	Small-leaved Privet	Ligustrum sinense	x	x	
	Tecoma/Yellow Bells	Tecoma stans		x	
	Umbrella Tree	Schefflera actinophylla		x	
	Willows	Salix sps	x		
Shrubs	Castor Oil Plant	Ricinus communis	x		
	Coffee	Coffee Arabica		x	
	Groundsel	Baccharis halimifolia	x	x	
	Guava	Psidium guajava			x
	Japanese Sunflower	Tithonia diversifolia	x		
	Mulberry	Broussonetia papyrifera	x		
	Mysore Thorn	Caesalpinia decapetala		x	
	Ochna	Ochna serrulata	x	x	
	Lantana	Lantana camera	x	x	x
	Senna Sps	pendula var. glabrata/septemtrionalis	x		
Groundcovers	Tobacco Bush	Solanum mauritianum	x	x	x
	Canna Lily	Canna indica	x	x	x
	Crofton Weed	Ageratina adenophora	x	x	x
	Cuphea	Cuphea carthagenensis	x		
	Giant Devils Fig	Solanum hispidum	x	x	
	Ground Asparagus	Protasparagus aethiopicus	x		
	Mistweed	Ageratina riparia	x	x	x
	Nasturtiums	Nasturtium tropaeolum	x		
	Noogoora Burr	Xanthium spinosum	x		
	Singapore Daisy	Widelia trilobata	x	x	
	Trad/Wandering Jew	Tradescantia fluminensis	x	x	
	Tropical Soda Apple	Solanum viarum	x	x	
Vines	Wild Banana	Musa spp.			x
	Asparagus Fern	Asparagus africanus	x	x	
	Balloon Vine	Cardiospermum grandiflorum	x	x	
	Cat's Claw Creeper	Macfadyena unguis-cati	x	x	
	Climbing Asparagus Fern	Asparagus plumosus		x	
	Corky Passionfruit	Passiflora suberosa	x	x	
	Japanese Honeysuckle	Lonicera japonica		x	
	Kudzu	Pueraria lobate		x	
	Madeira Vine	Anredera cordifolia	x	x	x
	Morning Glory (various)	Ipomoea indica	x	x	
	Moonflower	Ipomoea alba	x		
	Moth Vine	Araujia sericiflora	x	x	x
	Siratro	Macroptilium atropurpureum		x	x
	Thorny Poinciana	Caesalpinia decapetala		x	
	White Passionflower	Passiflora subpeltata	x	x	
Aquatic	Alligator Weed	Alternanthera philoxeroides	x		
	Cabomba	Cabomba caroliniana	x		
	Glush Weed	Hygrophila costa	x		
	Parrots Feather	Myriophyllum aquaticum	x		
	Sagittaria	Sagittaria platyphylla	x		
	Salvinia	Salvinia molesta	x		
	Senegal Tea	Gymnocoronis spilanthoides	x		
	Water Hyacinth	Eichornia crassipes	x		
	Water Lettuce	Pista stratiotes	x		
	Waterlily (Cape and Yellow)	Nymphaea caerulea (capensis)	x		
Grasses	Aleman Grass	Echinochloa polystachya	x		
	Bahia Grass	Paspalum notatum	x		
	Bana Grass	Pennisetum purpureum x Pennisetum typhoides	x		
	Broad leaved Paspalum	Paspalum wettsteinii	x	x	x
	Coolatai Grass	Hyparrhenia hirta		x	
	Guinea Grass	Megathyrus maximus	x	x	
	Hymenachne	Hymenachne amplexicaulis	x		
	Johnson Grass	Sorghum halepense	x	x	
	Para Grass	Brachiaria mutica	x		
	Pidgeon Grass	Setaria incrassata	x	x	
	Vasey Grass	Paspalum urvillei	x	x	

NOTES

