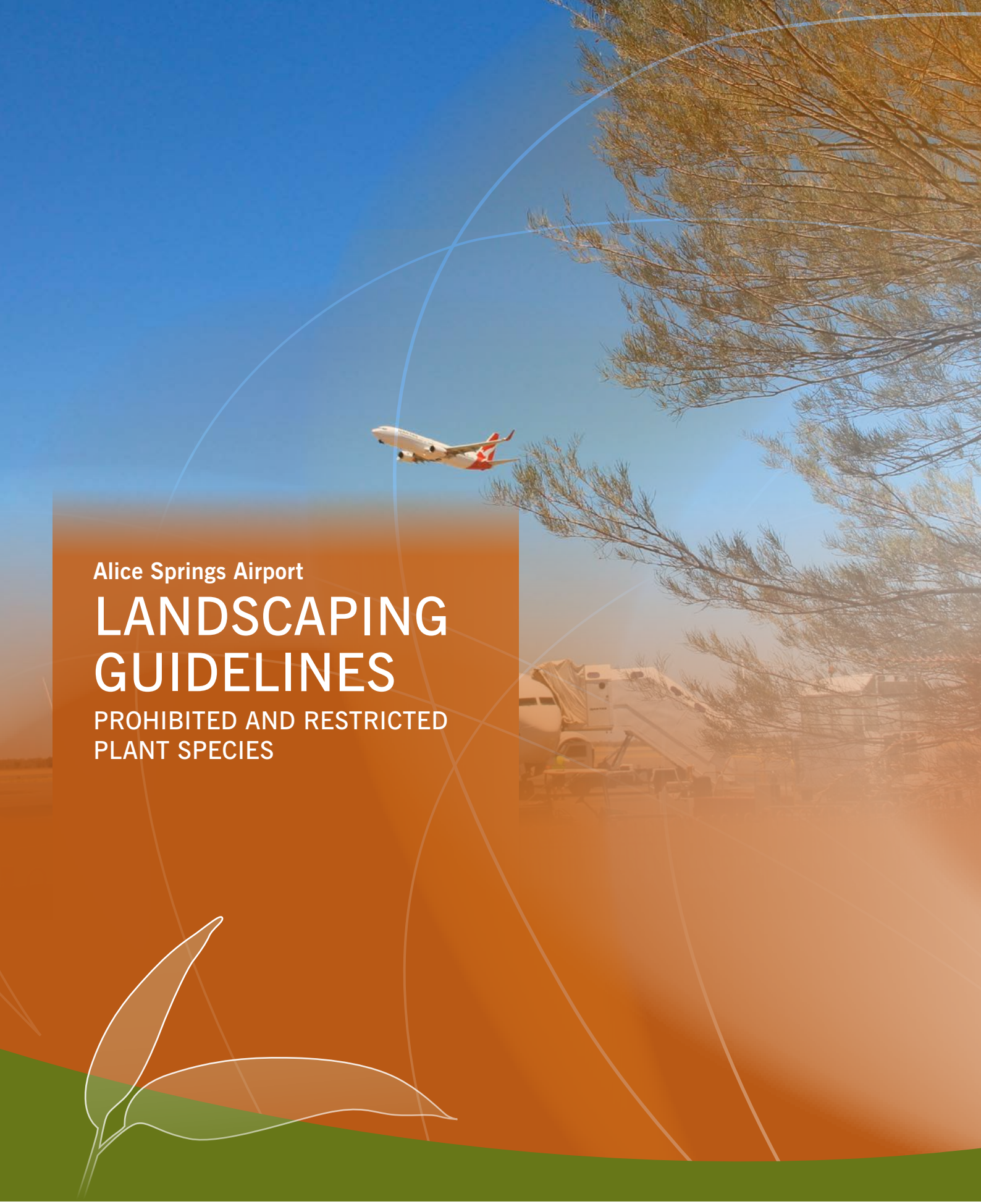


Alice Springs Airport

LANDSCAPING GUIDELINES

PROHIBITED AND RESTRICTED PLANT SPECIES

EcOz

Alice Springs Airport

PROHIBITED AND RESTRICTED PLANT SPECIES

1. INTRODUCTION

This document is a brief guide to plant species that should be restricted from planting around Alice Springs Airport (ASA). The objective to be achieved is ensuring landscaping and groundskeeping is undertaken in align with environmental management goals; specifically:

- Fire risk management
- Weed Management
- Bird and Animal Hazard Management
- Biodiversity
- Mosquito control

This document identifies plant species that should not be planted at the airport because they have higher potential to:

- Spread invasively and cause costly removal
- Attract birds which may increase risk of bird strikes
- Spread fire
- Promote mosquito breeding

Appropriate planting provides a passive means to reduce the risks of fire and birdstrike, but will not alone reduce bird presence in the airport area.

1.1 Background

ASA has adopted a policy of planting only local native species within the airport grounds, as such species have low watering and general maintenance requirements and are surest to survive the extreme conditions and support local wildlife. The current gardens in the airport terminal area (Anetyeke Gardens) are a native landscape that the airport values as a community engaging project that advocates use of natives in gardens, supporting conservation and helping protect the environment.

Considerations on species to be planted in the terminal areas requires further assessment of known local species which have properties that may increase risks at the airport, namely fire and birdstrikes. It is unlikely that the small airport terminal gardens themselves would be a major cause of wildlife breeding that directly increases the risk of bird strikes to aircraft, however choice of planted species can assist to ensure that such a risk is minimised.

Species of strike risk concern, for which landscaping designs must ensure their habitat is not increased/ created in the airport area, are listed in *Table 1*. The list is extrapolated from bird/animal management audits conducted at ASA where species were identified as having high to moderate strike risk categories to aircraft. Similar species have been added to the list which are known to occur at ASA but may not have been recorded with strike data or yet been implicated with bird strike events.

The key bird behavioural attributes which make birds higher risk at ASA:

- Larger size – higher potential damage with impact (e.g Ibis, raptors)
- Flocking nature – higher likelihood of strike through abundance
- Grassland dwelling – risk of colonising/breeding in airside areas eg. Ibis and other waterfowl
- Gliding/circling – spending most of time in air i.e. raptors

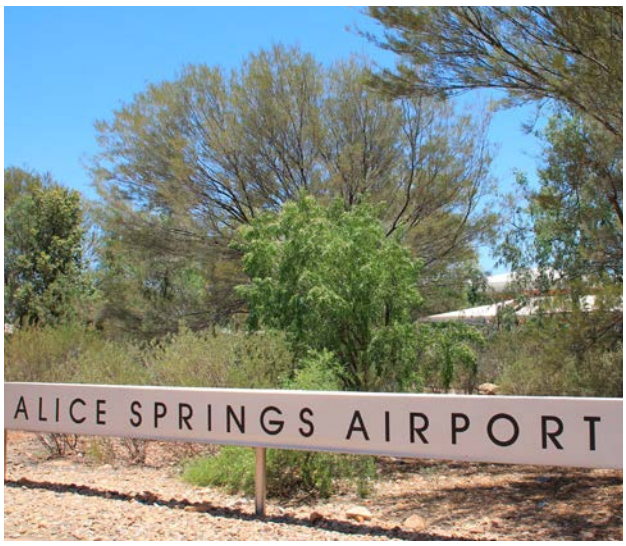
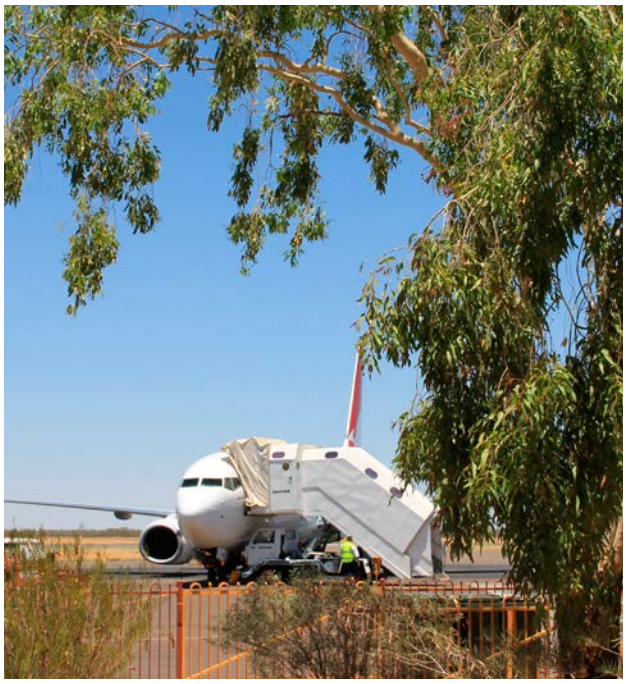


Table 1: Bird Species with elevated strike risk concern

COMMON NAME	SCIENTIFIC NAME
Straw-necked Ibis	*Threskiornis spinicollis*
Whistling Kite	*Haliastur sphenurus*
Black Kite	*Milvus migrans*
Nankeen Kestrel	*Falco cenchroides*
Brown Falcon	*Falco berigora*
Australian Hobby	*Falco longipennis*
Masked Lapwing	*Vanellus miles*
Oriental Pratincole	*Glareola maldivarum*
Australian Pratincole	*Stiltia isabella*
Red-tailed Black-cockatoo	*Calyptorhynchus banksii samueli*
Galah	*Cacatua roseicapilla*
Little Corella	*Cacatua sanguinea*
Black-faced Woodswallow	*Artamus cinereus*
Australian Magpie	*Gymnorhina tibicen*



1.2 Considerations for Landscaping

Since all planted vegetation carries with it some risk of contributing to fire or increasing habitat for animals, landscaping should generally employ the minimum planting necessary to achieving the desired aesthetic amenity. Planted areas would more ideally be shaped in long thin section with a large perimeter/area ratio, which would minimise potential for creating breeding areas for birds/animals. Use of artificial over natural structures for shade/shelter/protection is encouraged e.g. shade sails over shade trees. Larger plants i.e. trees, have a higher capacity to provide shelter, perch/roost or habitat for birds/wildlife, therefore, shrubs should generally be planted over trees. As natives plants are the focus of landscaping at Alice Springs Airport, local species that have particularly high attractiveness for birds of high strike risk i.e. particular flower/nectar/nest preference, should not be planted.

The suitability of particular species should be re-assessed and monitored as landscapes develop and mature.

Species of plants observed to be hosting activity of birds which are considered as having higher strike risk (i.e. larger birds, raptors) should be considered for removal.

1.3 Considerations for airside zone grounds maintenance

Buffel Grass (*Cenchrus ciliaris*) has been planted in the airside zone to assist in the prevention of dust generation and other introduced grasses invariably occur here too from time to time. The amount of grassland in the airside zone varies seasonally and this in turn affects abundance of seed and insects that attracts birds to the area. Management of bird activity in the airside zone is related to methods of grounds maintenance, e.g. mowing frequencies and heights, and active management of birds as they occur in this area. There is little scope for restricting plant types in this zone as this is not practical, except in the case where weed removal is necessary.

1.4 Considerations for reducing Mosquito breeding habitat

Mosquitoes generally require ponded water for ¾ of their breeding cycle, and plants that produce dense canopies may assist with extending periods of ponded water – thereby increase the chance of mosquito breeding. Typically, local native species do not form dense canopies, and are therefore not regarded as an issue for supporting mosquito breeding habitat. Exotic/introduced plant species (such as Athel Pine) do have the ability to produce dense canopies and have been found to support increased numbers of mosquitoes under their canopy from time to time – which has been observed at the airport. Therefore, as discussed above, planting native species will greatly reduce risk of mosquito breeding. Mature Athel Pines currently present at the seven mile aerodrome should be regularly pruned or totally removed to reduce mosquito breeding or harbouring. Also, grasses within open stormwater drains in the airside zone should be regularly maintained, to ensure that water ponding does not occur.

Table 2: Weeds to Alice Springs Airport

COMMON NAME	SCIENTIFIC NAME	STATUS	
		NT	CTH
African Boxthorn	*Lycium ferocissimum*	A,C	-
African Fountain Grass	*Pennisetum setaceum*	-	-
African Wood Sorrell or Soursob	*Oxalis pes-caprae*	-	-
Athel Pine or Tamarisk	*Tamarix aphylla*	B,C WONS	
Awnless Barnyard Grass	*Echinochloa colona*	-	-
Bathurst Burr	*Xanthium spinosum*	B,C	-
Bellyache Bush	*Jatropha gossypiifolia*	B,C	-
Bindii or Caltrop	*Tribulus terrestris*	B,C	-
Birdwood Grass	*Cenchrus setiger*	-	-
Buffel Grass	*Cenchrus ciliaris*	-	-
Castor Oil Plant	*Ricinus communis*	B,C	-
Coffee Senna	*Senna occidentalis*	B,C	-
Columbus Grass	*Sorghum almum*		
Common Prickly Pear	*Opuntia elatior*	B,C (S of 18 deg S)	-
Common Prickly Pear	*Opuntia stricta var. stricta*	B,C (S of 18 deg S)	-
Devil`s Rope Pear	*Opuntia imbricata*	B,C (S of 18 deg S)	-
Downy Thornapple	*Datura inoxia*	C	-
Feathertop Rhodes Grass	*Chloris virgata*	-	-
Fierce Thorn-apple	*Datura ferox*	A,C	-
Giant Rat`s Tail Grass	*Sporobolus pyramidalis*	-	-
Goat`s Head Burr or Starburr	*Acanthospermum hispidum*	B,C	-
Gomphrena Weed or Soft Khaki Weed	*Gomphrena celosioides*	-	-
Hairy Thornapple	*Datura wrightii*	C	-
Himalayan Raintree	*Dalbergia sissoo*	A,C (N of 18 deg S)	-
Lead Tree	*Leucaena leucocephala subsp. glabrata*	-	-
Lesser Swinecress	*Coronopus didymus*	-	-
Mediterranean Turnip	*Brassica tournefortii*	-	-
Mesquite or Algaroba	*Prosopis pallida*	A,C WONS	
Mission Grass (annual)	*Pennisetum pedicellatum subsp. unispiculum*	-	-
Mossman River Grass	*Cenchrus echinatus*	B,C	-
Mother of Millions	*Bryophyllum daigremontianum*	-	-
Native Sorrel or Native	*Oxalis Oxalis perennans*	-	-
Native Thornapple	*Datura leichhardtii*	C	-
Nut Grass	*Cyperus rotundus*	-	-
Parkinsonia or Jerusalem Thorn	*Parkinsonia aculeata*	B,C WONS	
Parramatta grass	*Sporobolus africanus*	-	-
Paterson`s Curse	*Echium plantagineum*	A,C	-

Table 2 continued

COMMON NAME	SCIENTIFIC NAME	STATUS	
		NT	CTH
Pie Melon or Bitter Melon	*Citrullus lanatus*	-	-
Pink Wood Sorrel	*Oxalis debilis var. corymbosa*	-	-
Purpletop Chloris	*Chloris barbata*	-	-
Red Natal Grass	*Melinis repens*	-	-
Rubber Bush or Calotrope	*Calotropis procera*	B,C (S of 16.5 degS)	-
Sabi Grass	*Urochloa mosambicensis*	-	-
Saffron Thistle	*Carthamus lanatus*	B,C	-
Spiked Malvastrum	*Malvastrum americanum*	-	-
Spiny Emex or Three-corner Jack	*Emex australis*	B,C -	
Spinyhead Sida	*Sida acuta*	B,C -	
Stinkgrass or Stinking Lovegrass	*Eragrostis cilianensis*	-	-
Velvet Mesquite	*Prosopis velutina*	A,C WONS	
Wiry Lovegrass or Elastic Grass	*Eragrostis tenuifolia*	-	-
Yellow Burrweed	*Amsinckia calycina*	-	-

2. SPECIES LISTS

2.2 Bird Attracting Native Plants

Analysis of strike data has identified the major groups of species (listed in *Table 1)* which are of the highest strike impact concern; namely, raptors, large parrots and ground-nesting birds. To reduce potential of the airport environs providing habitat for these species, trees and plant species that may attract them should not be planted. These plant species are listed below in *Table 3*. Plant species that attract other birds have not been included as such species generally only attract species that aren't of strike concern (e.g. Honeyeaters) and would be of ornamental/aesthetic value to the airport gardens (e.g. Eremophila spp.).

2.3 Fire Spreading Species

Most Australian plants are adapted to Australia's harsh climatic conditions and possess important adaptations, most notably sclerophyll, which includes the presence of waxy-oily coatings on leaves that reduce loss of water. As a consequence, many species are very flammable and have high potential to spread fire quickly, through either live canopy foliage or dried leaf litter on ground. This is most true of many species with the Family *Myrtaceae*, which includes the most common larger Australian species that would be considered fire-prone: *Eucalyptus* and *Corymbia* (gum trees), *Callistemon* (bottlebrushes) and *Melaleuca* (paperbarks). All local species of these groups are woody and contain oils and are therefore fire-prone and not desirable for planting in the immediate vicinity of the airport, however some smaller species would not pose as great a risk and may still be appropriate. The other major fire-prone group of native plants that occur locally is grasses (family *Poacea*), most notably Spinifex (*Triodia spp.* and others). These species burn well when dry and spread fire rapidly. Other species to avoid are anything that creates a high litter load, e.g. Deciduous trees.

Buffel Grass *Cenchrus ciliaris* is also a major species responsible for increased fire threat throughout central Australia. This introduced grass species should not be established in areas where fire risk is a major concern. Currently, Buffel Grass establishment throughout the airport bushland zone is promoted to some degree in some areas, as the species is useful in terms of soil conservation. Areas managed for biodiversity (i.e. Coolabah patches) should not contain Buffel Grass as this greatly increases fire threat to this vegetation community(s).

Table 3: Species that may attract birds of strike concern

SPECIES	COMMON NAME
Acacia aneura	Mulga
Acacia coriacea	Dogwood, Wirewood
Acacia estrophiolata	Ironwood
Acacia kempeana	Witchetty
Acacia ligulata	Dune Wattle, Umbrella Bush
Capparis mitchellii	Wild Orange
Corymbia aparrerinja	Ghost Gum
Corymbia eremaea	Mallee Bloodwood, Hill Bloodwood
Corymbia opaca	Bloodwood
Eremophila bignoniiflora	Gooramurra, River Angee, Creek Wilga,
Eucalyptus camaldulensis	River Red Gum
Eucalyptus coolabah	Coolabah
Eucalyptus coolabah subsp. arida	Coolabah
Eucalyptus intertexta	Bastard Coolibah
Eucalyptus microtheca	Coolabah
Ficus platypoda	Rock Fig, Wild Fig
Hakea divericata	Corkwood
Melaleuca bracteata	Black teatree
Melaleuca faucicola	Desert Bottlebrush
Melaleuca glomerata	Inland Teatree
Melaleuca trichostachya	Paperbark
Santalum acuminatum	Quandong, Native Peach
Triodia spp.	Spinifex

Table 4: Species with higher fire risk (should not be planted)

SPECIES	COMMON NAME
Callitris glaucophylla	Cypress Pine
Corymbia aparrerinja	Ghost Gum
Corymbia eremaea	Mallee Bloodwood, Hill Bloodwood
Corymbia opaca	Bloodwood
Eucalyptus camaldulensis	River Red Gum
Eucalyptus coolabah	Coolabah
Eucalyptus coolabah subsp. arida	Coolabah
Eucalyptus intertexta Bastard	Coolibah
Eucalyptus microtheca	Coolabah
Eucalytpus thozetiana	Thozets Box
Melaleuca bracteata	Black teatree
Melaleuca faucicola	Desert Bottlebrush
Melaleuca glomerata	Inland Teatree
Melaleuca trichostachya	Paperbark
Triodia spp.	Spinifex

3. FIELD GUIDES/REFERENCES

Field Guides:

- Allan C. and Wilson C. (2006) *Central Australian Grass Guide: the essential glovebox guide for pastoral lands* Centralian Land Management Association, Alice Springs.
- Latz P.K. (1995). Bushfires & Bushtucker: *Aboriginal plant use in Central Australia*. IAD Press: Alice Springs.
- Moore P (2005) *A guide to Plants of inland Australia*. New Holland.
- Dhanji S. (2009) *Weeds of Central Australia: A field guide*. Greening Australia (NT) Ltd, Alice Springs.
- Purdie J., Materne C. and Bubb, A. (2008) *A field guide to plants of the Barkly RegionNorthern Territory.* Barkly Landcare and Conservation Association
- Urban A. (2004). *Wildflowers and Plants of Inland Australia*, Paul Fitzsimons, Northern Territory.
- Vinter, A., Forth., F. (2007) *Native plants for central Australian gardens*. Greening Australia, NT.

On-line resources for plant identification:

- www.florabase.calm.wa.gov.au/search/advanced
- www.anbg.gov.au/

Alice Springs Airport Resources

- ASA Industrial Landscaping Strategies for reducing the Risk Of Fire (Low Ecological Services 2002)
- ASA Bird and Grass Identification Booklet (ongoing document)
- ASA Flora Species Inventory (maintained by NT Airports)
- ASA Flora and Fauna Reports (2003, 2008, 2009)