Maranoa Balonne region Grazing Land Management land type information

Plant Index

Common name	Scientific name	Page
budgeroo	*Lysicarpus angustifolius*	MB02, MB10
buffel grass*	*Pennisetum ciliare* formerly *Cenchrus ciliaris*	MB03, MB04, MB05, MB06, MB06, MB07, MB11, MB12, MB13, MB14, MB15, MB16, MB17, MB18
bull Mitchell grass	*Astrebla squarrosa*	MB05
bulloak	*Hakea chordophylla*	MB06, MB07, MB10, MB11, MB13
burgundy bean	*Macroptilium bracteatum* cvv. Cadarga, Juanita	MB03, MB04, MB05, MB09, MB18
burr medic*	*Medicago polymorpha*	MB03, MB04, MB09, MB18
butter bush	*Senna artemisioides* subsp. *coriacea*	MB15
button grass	*Dactyloctenium radulans*	MB15
Caatinga stylo*	*Stylosanthes seabrana*	MB03, MB04, MB05, MB09, MB11, MB12, MB13, MB15, MB16, MB18
cane panic	*Walwhalleya subxerophila*	MB14
Chinchilla wattle	*Acacia chinchillensis*	MB10
climbing caustic	*Euphorbia sarcostemmoides*	MB08
comet grass	*Perotis rara*	MB02
coolibah	*Eucalyptus coolabah*	MB05, MB09
cotton panic	*Digitaria brownii*	MB12, MB14, MB16, MB17
creeping bluegrass*	*Bothriochloa insculpta* cvv. Bisset, Hatch	MB03, MB11, MB12, MB13, MB15, MB16, MB18
curled wiregrass	*Aristida platychaeta*	MB04, MB10, MB13, MB15 MB16
curly Mitchell grass	*Astrebla lappacea*	MB09, MB11
curly windmill grass	*Enteropogon acicularis*	MB01, MB06, MB07, MB08, MB11, MB12, MB15, MB16, MB17
currant bush	*Carissa ovata*	MB01, MB04, MB11, MB12, MB14, MB15, MB16
cypress pine	*Callitris endlicheri* (black), *C. glaucophylla* (white)	MB01, MB06, MB07, MB10, MB17
dark wiregrass	*Aristida calycina*	MB02, MB12, MB17, MB18
darling pea	*Swainsona* sp.	MB03, MB09
desert bluegrass	*Bothriochloa ewartiana*	MB10, MB11, MB12, MB14

Common name	Scientific name	Page
digit grass	*Digitaria eriantha* cv. Premier	MB06, MB07, MB12, MB13, MB15, MB16, MB17, MB18
desmanthus	*Desmanthus virgatus*	MB03, MB04, MB05, MB09, MB09, MB18
early spring grass	*Eriochloa pseudoacrotricha*	MB02, MB03, MB05, MB09, MB12, MB15, MB16
Ellangowan poison bush	*Eremophila deserti*	MB11, MB12, MB14, MB15
emu foot	*Cullen tenax*	MB09, MB12
fairy grass	*Sporobolus caroli*	MB04, MB05, MB15
false sandalwood	*Eremophila mitchellii*	MB04, MB07, MB11, MB14, MB15, MB16, MB17, MB18
feathertop wiregrass	*Aristida latifolia*	MB09
finger panic	*Digitaria coencola*	
fine stem stylo*	*Stylosanthes hippocampoides* formerly *Stylosanthes guianensis* var. *intermedia*	MB06, MB07
five-minute grass	*Tripogon loliiformis*	MB11, MB12, MB14, MB17
forest bluegrass	*Bothriochloa bladhii*	MB04 MB05 MB10, MB11, MB13
galvanised burr	*Sclerolaena bicornis*	MB03, MB06, MB09, MB14, MB15, MB16, MB18
Gatton panic*	*Panicum maximum*	MB03, MB11, MB16
gidgee	*Acacia cambagei*	MB05
gilgai darling pea	*Swainsona campylantha*	MB03, MB04, MB05
glycine pea	*Glycine tabacina*	MB02, MB04, MB06, MB07, MB10, MB11, MB12, MB14, MB16, MB18
golden beard grass	*Chrysopogon fallax*	MB05, MB10, MB12, MB13, MB14, MB15, MB17
granite lovegrass	*Eragrostis alveiformis*	MB12
green panic*	*Panicum maximum* var. *trichoglume*	MB18
grey rattlepod	*Crotalaria dissitiflora*	MB11, MB15
greybeard grass	*Amphipogon caricinus*	MB17
gum-topped ironbark	*Eucalyptus decorticans*	MB02
hairy panic	*Panicum effusum*	MB07, MB14
hooky grass	*Ancistrachne uncinulata*	MB01
hoop Mitchell grass	*Astrebla elymoides*	MB09, MB11

Common name	Scientific name	Page
Indian bluegrass*	*Bothriochloa pertusa* var. Medway	MB14
ironbark	*Eucalyptus* sp.	MB08
ironwood	*Acacia excelsa*	MB15, MB17
jericho wiregrass	*Aristida jerichoensis*	MB06, MB07, MB11, MB12, MB15, MB17
kangaroo grass	*Themeda triandra*	MB02, MB08, MB10, MB12, MB13, MB14, MB17
kerosene wiregrass	*Aristida contorta*	MB02, MB10, MB13
kurrajong	*Brachychiton populneus*	MB13
lancewood	*Acacia shirleyi*	MB01, MB08
leopardwood	*Flindersia maculosa*	MB16
lignum	*Muehlenbeckia cunninghamii*	MB05
limebush	*Citrus glauca*	MB04
lippia*	*Phyla canescens*	MB05, MB11
lovegrasses	*Eragrostis* spp.	MB18
lucerne*	*Medicago sativa*	MB03, MB04, MB05, MB09, MB18
leucaena*	*Leucaena leucocephala*	MB03, MB04, MB05, MB09, MB18
many-headed wiregrass	*Aristida caput-medusae*	MB01, MB06, MB07, MB10, MB13
Maranoa wattle (or womal)	*Acacia maranoensis*	MB04
Miles mulga	*Acacia aprepta*	MB01
mimosa*	*Acacia farnesiana*	MB09
mintweed*	*Salvia reflexa*	MB03, MB09, MB16, MB18
mother-of-millions*	*Bryophyllum delagoense*	MB07, MB11, MB12, MB13, MB15, MB16
mountain coolibah	*Eucalyptus orgadophila*	MB13, MB18
mountain wanderrie grass	*Eriachne mucronata*	MB06, MB08, MB14, MB17
mulga	*Acacia aneura*	MB08, MB14, MB17
mulga fern	*Cheilanthes tenuifolia*	MB06, MB07, MB08, MB14, MB15
mulga Mitchell grass	*Thyridolepis mitchelliana*	MB01, MB08, MB14, MB17

Common name	Scientific name	Page
mulga oats	*Monachather paradoxus*	MB08, MB14, MB17
myall	*Acacia pendula*	MB05, MB09
narrow-leaved ironbark	*Eucalyptus crebra*	MB01, MB06, MB07, MB10, MB13
native couch	*Brachyachne convergens*	MB09
native indigo	*Indigofera linifolia*	MB06, MB07, MB08, MB10, MB13 MB14, MB17
native millet	*Panicum decompositum*	MB05, MB09, MB12
native oatgrass	*Themeda avenacea*	MB10, MB13
native sensitive plant	*Neptunia gracilis forma gracilis*	MB11, MB12
neverfail	*Eragrostis setifolia*	MB05, MB15
Noogoora burr*	*Xanthium occidentale*	MB03, MB04, MB05, MB09, MB11, MB18
ooline	*Cadellia pentastylus*	MB16
parkinsonia*	*Parkinsonia aculeata*	MB05
parthenium*	*Parthenium hysterophorus*	MB03, MB04, MB05, MB09, MB18
pigweed	*Portulaca oleracea*	MB03, MB07, MB09, MB14, MB15, MB16, MB18
pimelea	*Pimelea* sp.	MB06, MB07, MB08, MB14, MB15, MB16
pitted bluegrass	*Bothriochloa decipiens*	MB01, MB02, MB06, MB07, MB08, MB10, MB11, MB12, MB13, MB14, MB15, MB16
poplar box	*Eucalyptus populnea*	MB01, MB03, MB05, MB07, MB09, MB11, MB12, MB13, MB14, MB15, MB16, MB17
poverty grass	*Eremochloa bimaculata*	MB01, MB06, MB10, MB13
prickly pear*	*Opuntia stricta*	MB03, MB04, MB16
purple lovegrass	*Eragrostis lacunaria*	MB01, MB07, MB11, MB17
purple pigeon grass*	*Setaria incrassata* cv. Inverell	MB04, MB05, MB18
purple wiregrass	*Aristida ramosa*	MB06, MB07, MB10, MB11, MB12, MB13, MB15, MB16
Queensland bluegrass	*Dichanthium sericeum*	MB03, MB04 MB05, MB09, MB11, MB12, MB13, MB14, MB16, MB18
quinine	*Petalostigma pubescens*	MB10

Common name	Scientific name	Page
rare panic	*Paspalidium rarum*	MB01
rat's tail couch	*Sporobolus mitchellii*	MB03, MB04, MB05, MB18
red Flinders grass	*Iseilema vaginiflorum*	MB05
red Natal grass*	*Melinis repens*	MB06
Rhodes grass*	*Chloris gayana*	MB06, MB07, MB11, MB12, MB13, MB16, MB14, MB15, MB18
rhynchosia	*Rhynchosia minima*	MB02, MB09
river red gum	*Eucalyptus camaldulensis*	MB05
rough speargrass	*Austrostipa scabra*	MB01, MB08, MB14, MB15, MB14, MB17
rusty gum	*Angophora leiocarpa*	MB01, MB02, MB10
scrub leopardwood	*Flindersia dissosperma*	MB04
serradella*	*Ornithopus compressus* cvv. Santorini, Madeira; *O. pinnatus* cv. Jebala; *O. sativus* cvv. Cadiz, Erica	MB06, MB07
sesbania pea	*Sesbania cannabina*	MB05
silky browntop	*Eulalia aurea*	MB09, MB14
silky umbrella grass	*Digitaria ammophila*	MB07, MB14, MB17
silkyheads	*Cymbopogon obtectus*	MB02, MB17
silver-leaved ironbark	*Eucalyptus melanophloia*	MB01, MB06, MB07, MB10, MB13, MB14, MB15
slender chloris	*Chloris divaricata*	MB03, MB04, MB12, MB18
slender tick trefoil	*Desmodium varians*	MB08, MB10, MB12, MB14, MB17
small Flinders grass	*Iseilema membranaceum*	MB09
small mulga Mitchell grass	*Thyridolepis xerophila*	MB01
snail medic	*Medicago scutellata* cvv. Sava, Kelson	MB03, MB04, MB05, MB09, MB18
spinifex	*Triodia* sp.	MB14
spurred vetch	*Vicia monantha*	MB09
tall chloris	*Chloris ventricosa*	MB11, MB16
tall finger grass*	*Digitaria milanjiana* cv. Strickland	MB06, MB07, MB13, MB15, MB16, MB18
three-awn wanderrie grass	*Eriachne aristidea*	MB17

Common name	Scientific name	Page
Toreador medic*	*Medicago tornata* x *littoralis* hybrid	MB11, MB12, MB13, MB15, MB16
tumbledown gum	*Eucalyptus dealbata*	MB06
twirly windmill grass	*Enteropogon ramosus*	MB03, MB04
umbrella canegrass	*Leptochloa digitata*	MB05
umbrella grass	*Digitaria divaricatissima*	MB01
Wardell's wattle	*Acacia wardellii*	MB01
Warrego summer grass	*Paspalidium jubiflorum*	MB03, MB04
weeping lovegrass	*Eragrostis parvifolia*	MB05
weir vine	*Ipomoea calobra*	MB06, MB08, MB14
western white gum	*Eucalyptus argophloia*	MB04
white cypress pine	*Callitris glaucophylla*	MB13
white speargrass	*Aristida leptopoda*	MB03, MB04, MB09, MB15
whitewood	*Atalaya hemiglauca*	MB09
wilga	*Geijera parviflora*	MB11, MB12, MB18
wiregrasses	*Aristida* spp.	MB08
woolly glycine	*Glycine tomentella*	MB01, MB18
woollybutt	*Eucalyptus chartaboma*	MB17
Wynn cassia	*Chamaecrista rotundifolia* var. *rotundifolia* cv. Wynn	MB06, MB07
yabila grass	*Panicum queenslandicum*	MB09
yapunyah	*Eucalyptus ochrophloia*	MB05

* Denotes non-native species

Bendee ridges

Landform	Undulating country and low scarps. Slopes 1.5–6%.
Woody vegetation	Bendee or lancewood or Miles mulga (near Yuleba and Glenmorgan), poplar box, silver-leaved ironbark, narrow-leaved ironbark, rusty gum, cypress pine, currant bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Hooky grass, umbrella grass, mulga Mitchell grass, small mulga Mitchell grass.
Intermediate	Pitted bluegrass, bottlewasher grasses, curly windmill grass.
Non-preferred	Many-headed wiregrass, poverty grass, purple lovegrass, rough speargrass.
Legumes	Woolly glycine.
Annual grasses	Rare panic.
Suitable sown pastures	Not suitable for sown pastures.
Introduced weeds	
Soils	Colour varies from reddish brown to light grey-brown to yellowish brown. All are skeletal soils and shallow massive earths.
Description	***Surface*:** Firm to hard-setting; ***Surface texture*:** Fine sandy clay loam; ***Subsoil texture*:** weathered sandstone.
Water availability	Very low.
Rooting depth	Very shallow.

Fertility	Low to moderate total nitrogen; very low phosphorus.
Salinity	Non-saline
Sodicity	Non-sodic
pH	Acid pH throughout profile.
Utilisation	15%
Enterprise	Breeding and some growing.
Land use and management recommendations	• Limited to timber production and sparse grazing of poorly productive native pastures. • Suitable for bee-keeping if suitable tree species are present e.g. ironbarks.
Land use limitations	• Regrowth difficult to control. • Very shallow and stony soils. • Plant available water capacity is very low. • Fertility levels very low to medium.
Conservation features and related management	• Bendee scrubs and woodlands, especially those deeper soils, have been preferentially cleared and subject to structural alteration. • These areas provide habitat for rare and threatened species fauna (the little pied bat, brigalow scaly-foot) and flora (Wardell's wattle); and a wide range of mammals (e.g. wallaroo), birds (e.g. grey-crowned babbler, thornbills, pardalotes, honeyeaters), and reptiles (e.g. spiny knob-tailed gecko and striped skinks). • These areas can be heavily impacted by goats, which decimate the ground layer. • Maintenance of vegetative cover is important in minimising excessive runoff and erosion of associated lands. • Control of feral animals can help prevent degradation of the ground layer.
Regional ecosystems	11.7.1, 11.7.2, 11.7.5a-b, 11.7.7.
Land units; map units; land resource areas, soil associations	Land Units (Galloway *et al* 1974) 22; Map Units (DPI 1984) 5,15d, 35, 41; LRA, Soil Associations (DPI 1996) Light Forests, Minnabilla 9a/9b/9c; LRA (DPI 1987) 11 Straun.

Bloodwood-ironbark woodland on steep rocky hills

Landform	Sandstone hills and ranges.
Woody vegetation	Gum topped ironbark, brown bloodwood, rusty gum, budgeroo.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Black speargrass, kangaroo grass.
Intermediate	Pitted bluegrass, silkyheads, barbwire grass, early spring grass.
Non-preferred	Wiregrasses (e.g. dark).
Legumes	Rattlepods, glycine pea.
Annual grasses	Comet grass. Kerosene (non-preferred).
Suitable sown pastures	Not suitable for sown pastures.
Introduced weeds	
Soils	Predominately shallow (<35 cm), stony or gravelly texture contrast and sandy soils.
Description	***Surface*:** Hard-setting or occasionally loose; ***Surface texture*:** clay loam or loamy sand; ***Subsoil texture*:** light clay or loamy sand or decomposing rock.
Water availability	Very low
Rooting depth	Generally shallow (<35 cm)

Fertility	Low to moderate total nitrogen; low to moderate phosphorus.
Salinity	Low to high (depending on landscape position)
Sodicity	Non-sodic
pH	Strongly alkaline
Utilisation	20%
Enterprise	Breeding
Land use and management recommendations	• Not suitable for development. • Stock conservatively to maintain 3P grasses.
Land use limitations	• Hard-setting surface affects infiltration. • Low fertility.
Conservation features and related management	• This land type provides habitat for rare and threatened fauna (glossy-black cockatoo, collared delma, brigalow scaly-foot, golden-tailed gecko) and flora (a number of wattles and eucalypts, *Bertya calycina, Calytrix islensis*). • Many areas have been extensively logged which has meant the removal of many 'habitat' trees. • The large, old, hollow-bearing trees are very important for koalas and possums and gliders (e.g. yellow-bellied, squirrel and sugar gliders), large parrots, cockatoos and owls to use for nesting. • The system has a high diversity of birds, including honeyeaters, thornbills and pardalotes.
Regional ecosystems	11.5.21, 11.7.4.
Land units; Map units; Land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 1; LRA, Soil Associations (DPI 1996) Light Forests, 9a/9b/9c; Land Resource Areas (DPI 1987) 12 Merivale, 10 Macwood (minor).

Brigalow belah scrub

Landform	Undulating plains (1–3%) and short footslopes to 8% associated with low hills and ridges.
Woody vegetation	Brigalow open forest and brigalow in association with belah, poplar box or bauhinia.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Queensland bluegrass, buffel grass*.
Intermediate	Slender chloris, early spring grass, twirly windmill grass, brigalow grass, Warrego summer grass.
Non-preferred	White speargrass, rat's tail couch.
Legumes	Rhynchosia, gilgai darling pea.
Suitable sown pastures	Buffel grass, Bambatsi, creeping bluegrass, Gatton panic, desmanthus, medic (barrel, burr), Caatinga stylo, leucaena. Short term (2 to 5 years) lucerne, burgundy bean, snail medic.
Introduced weeds	Bladder ketmia, parthenium, Noogoora burr, Bathurst burr, prickly pear.
Soils	Brown or grey cracking clay (brown vertosol).
Description	***Surface*:** Finely structured self-mulching; ***Surface texture*:** medium clay; ***Subsoil texture*:** heavy clay.
Water availability	Low
Rooting depth	Moderate
Fertility	Low to moderate total nitrogen; low to moderate phosphorus.
Salinity	Medium to very highly saline.

Sodicity	Subsoils are sodic to strongly sodic.
pH	Surface mildly alkaline; subsoils strongly alkaline; deep subsoils strongly acid.
Utilisation	30%
Enterprise	Finishing
Land use and management recommendations	• Most areas of brigalow belah scrub have been cleared and established to improved pastures. • Retain trees on beds and banks of watercourses to minimise erosion. • Maintain vegetation belts for wildlife habitats and corridors. • Suitable for long-term cropping – grain and fodder crops.
Land use limitations	• Regrowth of some species. • Surface sealing soils. • Lower subsoils are strongly sodic and very dispersible with medium to very high levels of salinity – these conditions reduce the actual rooting depth and hence the available water and nutrients. • Dense stands of burrs (galvanised) and broad-leaved plants (mintweed, pigweed, darling pea) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• Brigalow, particularly in association with belah, provides potential habitat for a wide range of rare and threatened fauna. These include birds (e.g. glossy black-cockatoo, painted honeyeater, black-chinned honeyeater); mammals (greater long-eared bat, little pied bat); reptiles (woma python, golden-tailed gecko, brigalow scaly-foot); frogs; and even some insects (imperial hairstreak butterfly). • These areas have a very high bird diversity (e.g. yellow-tailed black-cockatoo, blue bonnet, red-winged parrot, many honeyeaters, thornbills, speckled warbler, spotted bowerbird), and a high diversity of reptiles (e.g. velvet geckos, slider skinks (*Lerista* spp.), striped skinks (*Ctenotus* spp.). • Some areas are prone to scalding and many areas have been, extensively cleared for cropping and pasture. Use of a combination of soil conservation techniques will help minimise soil erosion and scalding. • Introduced pasture grasses (e.g. buffel or green panic) may invade native pastures, increase fuel loads in the ground layer and make them sensitive to fire damage. • Control of feral animals such as pigs and foxes can help to protect native wildlife in this habitat.
Regional ecosystems	11.3.1, 11.9.5, 11.9.5a, 11.9.6.
Land units; Map units; land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 40, 41, 43, 53; Map Units (DPI 1984) 5, 6, 7, 9 (123, 124, 131); LRA, Soil Associations (DPI 1996) Brigalow Rises, Ulimaroa 5a/5b/5c; LRA (DPI 1987) 2 - Brigalow Uplands.

Brigalow with melonholes

Landform	Undulating scrub plains.
Woody vegetation	Brigalow belah open forest, false sandalwood, currant bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Forest bluegrass, Queensland bluegrass, buffel grass*.
Intermediate	Slender chloris, twirly windmill grass, brigalow grass, Warrego summer grass.
Non-preferred	White speargrass, curled wiregrass, rat's tail couch, fairy grass.
Legumes	Glycine pea, gilgai darling pea.
Suitable sown pastures	Buffel grass, Bambatsi, purple pigeon, Angleton grass, desmanthus, medic (barrel, burr), Caatinga stylo. Leucaena where soils >120 cm. Short term (2 to 5 years) lucerne, burgundy bean, snail medic.
Introduced weeds	Parthenium, Noogoora burr, Bathurst burr, prickly pear.
Soils	Gilgaied, deep, grey or brown cracking clays (brown or grey vertosol).
Description	***Surface*:** Variations between self-mulching to hard-setting (depends on depressions and mounds); ***Surface texture*:** medium to heavy clay; ***Subsoil texture*:** medium to heavy clay.
Water availability	Low to moderate (usually lower on mounds).
Rooting depth	Shallow

Fertility	Low to moderate total nitrogen; low to moderate phosphorus.
Salinity	Deep subsoils are highly (depressions) to very highly (mounds) saline.
Sodicity	Subsoils are sodic to strongly sodic.
pH	Neutral to alkaline at surface, becoming strongly alkaline with depth, and then grades to strongly acid in deep subsoil.
Utilisation	30%
Enterprise	Finishing
Land use and management recommendations	• Land use in heavily gilgaied areas is predominantly grazing of cattle on improved pastures. • Suitable for continuous grain and fodder cropping where melonholes are not severe.
Land use limitations	• Melonholes and poor surface structure. • Regrowth, particularly limebush, can limit productivity. • Subsoil sodicity. • Effective soil depth – levelling will expose strongly sodic and highly saline subsoils which will increase plant growth problems. • Difficult to blade plough effectively. • Dense stands of burrs (galvanised) and broad-leaved plants (pigweed) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• The brigalow areas provide potential habitat for rare and threatened flora species (e.g. western white gum, Maranoa wattle or womal), *Eleocharis blakeana*, *Solanum stenopterum*, *Xerothamnella herbacea*); birds (e.g. glossy black-cockatoo, painted honeyeater, black-chinned honeyeater); mammals (greater long-eared bat, little pied bat); reptiles (golden-tailed gecko, brigalow scaly-foot); frogs (rough frog); and insects (imperial hairstreak butterfly). • Melonhole or gilgai areas are extremely important wetland habitat as many species prefer breeding in temporary, rather than permanent, water sources. These areas provide breeding habitat for many frogs (e.g. burrowing frogs such as water-holding, rough, and New Holland; salmon-striped, marsh, barking and holy-cross). They are also important for aquatic insects adapted to temporary waterholes (e.g. shield shrimps). • This land type has been extensively cleared for cropping and pasture and often exists primarily as regrowth, isolated paddock trees, or small clumps of brigalow/belah. • Use of a combination of soil conservation techniques will help minimise soil erosion and scalding. • Natural regeneration should be encouraged to develop connectivity with other areas of remnant vegetation; provide shelter for stock/crops; enhance grass growth and productivity. • Control of feral animals such as pigs and foxes can help to protect native wildlife in this habitat.
Regional ecosystems	6.4.2, 11.4.3, 11.4.3b.
Land units; Map units; land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 44, 58; Map Units (DPI 1984) 6 (124); LRA, Soil Associations (DPI 1996) Brigalow Plains, Tara 4a/4b; LRA (DPI 1987) 5 - Tartulla (minor area).

Coolibah floodplains

Landform	Flat plains (0–1%).
Woody vegetation	Coolibah, river red gum, black box, myall, poplar box, yapunyah, lignum and gidgee.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Forest bluegrass, Queensland bluegrass, buffel grass*.
Intermediate	Mitchell grass (bull), golden beard grass, early spring grass, neverfail, native millet.
Non-preferred	Weeping lovegrass, umbrella canegrass, rat's tail couch, fairy grass.
Legumes	Sesbania pea, gilgai darling pea.
Annual grasses	Red Flinders grass.
Suitable sown pastures	Bambatsi, Angleton grass, purple pigeon grass, desmanthus, medic (barrel) Caatinga stylo. Leucaena where not frequently or severely flooded. Short term (2 to 5 years) lucerne, burgundy bean, snail medic.
Introduced weeds	Bathurst burr, Noogoora burr, lippia, parkinsonia, parthenium.
Soils	Soils are deep cracking clays (black or brown vertosol).
Description	***Surface*:** Fine self-mulching; ***Surface texture*:** medium heavy clay; ***Subsoil texture*:** heavy clay.
Water availability	Low
Rooting depth	Moderate
Fertility	Low total nitrogen; high phosphorus.

Salinity	Deep subsoils are highly to very highly saline.
Sodicity	Subsoils are sodic to strongly sodic.
pH	Strongly alkaline.
Utilisation	30%
Enterprise	Growing and Finishing.
Land use and management recommendations	• Mainly grazing of sheep and cattle on native pastures. • Suitable for pasture improvement.
Land use limitations	• Establishment problems with improved pastures due to crusting / cracking or coarse self-mulching surface. • Restricted access in wet conditions. • Flooding is a moderate hazard. • Potential for weed invasion from upstream sources following flooding. • Overgrazing native pastures may lead to an invasion of lippia. • Dense stands of burrs (galvanised) and broad-leaved plants (pigweed) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• These grassy woodlands provide habitat for rare and threatened species (e.g. squatter pigeon, black-chinned honeyeater, little pied bat, and powerful owl). • Coolibah flood plains are very important for a whole suite of woodland-dependant birds (e.g. finches, fairy wrens, brown treecreeper and speckled warbler). • Mature trees provide hollows for nesting birds, possums and gliders, and some hollow-dwelling reptiles like the freckled monitor (a small goanna) and the pale-headed snake. • The tussock grasses provide habitat and refuge for mammals such as bandicoots, swamp wallabies and rufous bettongs. • These areas have incurred extensive modification to the tree canopy structure, including the removal of large hollow-bearing trees, and to the ground layer and cover of tussock grasses. • Coolibah floodplains are adapted to periodic flooding events, and hydrological changes (e.g. damming upstream, levee banks) can threaten the long term health of this system, and impact on episodic regeneration events. Parkinsonia and parthenium have invaded some areas. • Maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff, improve water quality and protect the wildlife habitat. • Vigilance in controlling weed and feral animals can help prevent the degradation of these areas.
Regional ecosystems	11.3.3, 11.3.37, 11.3.4, 11.3.15, 11.3.15a, 11.3.16, 11.3.20, 11.3.25, 11.27a-d, 11.3.27f-g, 11.3.27h.
Land units; Map units; land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 71; Map Units (DPI 1984) 32a, 32b; LRA, Soil Associations (DPI 1996) Clay Alluvial Plains, Condamine1b; LRA (DPI 1987) 6 - Balonne.

Cypress pine on deep sands

Landform	Rolling to undulating.
Woody vegetation	Cypress pine, tumbledown gum, silver-leaved and/or narrow-leaved ironbark, bulloak.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Black speargrass, buffel grass*.
Intermediate	Curly windmill grass, pitted bluegrass.
Non-preferred	Wiregrasses (many-headed, Jericho, purple), poverty grass, mountain wanderrie grass, red Natal grass*.
Legumes	Glycine pea, native indigo
Suitable sown pastures	Rhodes grass, digit grass, tall finger grass, buffel grass, serradella, Wynn cassia, fine stem stylo.
Introduced weeds	African lovegrass.
Soils	Deep, reddish brown to yellowish brown sands (siliceous sand).
Description	***Surface*:** Weak, soft sandy loam; ***Surface texture*:** sandy loam; ***Subsoil texture*:** sand.
Water availability	Low

Rooting depth	Deep
Fertility	Very low total nitrogen; low phosphorus.
Salinity	Non-saline
pH	Medium acid throughout profile.
Utilisation	20% (25% where sown pastures are well established).
Enterprise	Breeding
Land use and management recommendations	• Major use is state forest and apiculture. • There are some low intensity grazing leases on native pastures in state forests. • Not suitable for farming. • Maintain surface cover to minimise erosion.
Land use limitations	• Low fertility. • Low plant available water capacity (due to excessive drainage). • Dense stands of burrs (galvanised) and broad-leaved plants (mulga fern, pimelea, weir vine) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• Habitat for rare and threatened fauna including the pink cockatoo, woma python, golden-tailed gecko and little pied bat. • Many species are found in these areas including birds (e.g. red-tailed black cockatoo, babblers, treecreepers, lorikeets, white-winged triller, speckled warbler); and reptiles (ground-dwelling and tree-living geckoes, litter skinks, burrowing skinks, small nocturnal red-naped and Dwyer's snakes). • Timber harvesting, by removing the oldest and largest trees, can alter the structure and habitat of these woodlands. • The distribution and abundance of cypress pine may reflect fire history as regular burning prevents the regeneration of this species. • Use of fire could assist in controlling woody weeds and enhance productivity of the land zone.
Regional ecosystems	6.5.19, 11.3.19, 11.10.6, 11.10.6a, 11.10.9.
Land units; Map units; land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 7; Map Units (DPI 1984) 8, 19a; LRA, Soil Associations (DPI 1996) Cypress Pine Sands, 3a; LRA (DPI 1987) 10 – Macwood, 12 - Merivale.

Cypress pine on duplex soils

Landform	Undulating country.
Woody vegetation	Cypress pine, poplar box, silver-leaved and /or narrow-leaved ironbark, bulloak, false sandalwood.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Silky umbrella grass, black speargrass, hairy panic, buffel grass*.
Intermediate	Pitted bluegrass, barbwire grass, curly windmill grass, purple lovegrass.
Non-preferred	Wiregrasses (many-headed, Jericho, purple).
Legumes	Glycine pea, native indigo.
Suitable sown pastures	Rhodes grass, digit grass, tall finger grass, buffel grass, serradella, Wynn cassia, fine stem stylo.
Introduced weeds	Mother-of-millions, African lovegrass.
Soils	Soils are texture contrast with sandy surfaces over yellow-brown or red subsoils.
Description	***Surface*:** Soft sandy loam; ***Surface texture*:** sand to loamy sand; ***Subsoil texture*:** light to medium clay.
Water availability	Very low.

Rooting depth	Depends on depth of surface soils (0.3–1 m).
Fertility	Low to very low total nitrogen; medium phosphorus.
Salinity	Low
Sodicity	Sodic subsoils.
pH	Surface is medium acid to neutral, neutral subsoils.

Utilisation

15% (20% where sown pastures are well established).

Enterprise

Breeding

Land use and management recommendations

- Major use is state forest and apiculture.
- There are some low intensity grazing leases on native pastures in state forests.
- Not suitable for farming.
- Maintain surface cover to minimise erosion.

Land use limitations

- Low levels of most nutrients, particularly nitrogen, and very low levels of available water in the shallower surface soils.
- Subsoils are poorly structured and sodic.
- Dense stands of broad-leaved plants (mulga fern, pimelea, pigweed) may limit pasture growth, productivity and be toxic to stock.

Conservation features and related management

- Habitat for rare and threatened fauna including the pink cockatoo, woma python, golden-tailed gecko and little pied bat.
- Many species are found in these areas including birds (e.g. red-tailed black cockatoo, babblers, treecreepers, lorikeets, white-winged triller, speckled warbler); and reptiles (ground-dwelling and tree-living geckoes, litter skinks, burrowing skinks, small nocturnal red-naped and Dwyer's snakes).
- Timber harvesting, by removing the oldest and largest trees, can alter the structure and habitat of these woodlands.
- The distribution and abundance of cypress pine may reflect fire history as regular burning prevents regeneration of this species.
- Use of fire could assist in controlling woody weeds and enhance productivity of the land zone.

Regional ecosystems

11.3.18, 11.8.9, 11.10.11, 11.10.11a.

Land units; Map units; Land resource areas, Soil associations

Land Units (Galloway *et al* 1974) 8, 29, 30; Map Units (DPI 1984) 19b; LRA, Soil Associations (DPI 1996) Cypress Pine Sands 3b; LRA (DPI 1987) 9 - Yuleba.

Hard mulga

Landform	Rolling hills and hard ridges with slopes of 2–8%.
Woody vegetation	Mulga, lancewood, ironbark and bendee.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Mulga oats, mulga Mitchell grass, box grass, kangaroo grass.
Intermediate	Pitted bluegrass, curly windmill grass, mountain wanderrie grass.
Non-preferred	Rough speargrass, wiregrasses.
Legumes	Slender tick trefoil, native indigo, Birdsville indigo.
Suitable sown pastures	Not suitable for sown pastures
Introduced weeds	
Soils	Soils shallow to moderately deep (30–90 cm), stony or gravelly loamy red earths with areas of ironstone.
Description	***Surface*:** Loamy hard surfaces; ***Surface texture*:** Sandy clay loam to clay loam; ***Subsoil texture*:** clay content may increase down profile to light clay; ironstone gravel common throughout profile.
Water availability	Low to medium.

Rooting depth	Shallow
Fertility	Very low (phosphorus, nitrogen, carbon).
Salinity	Very low
Sodicity	Non-sodic
pH	Acid to neutral throughout profile.
Utilisation	15%
Enterprise	Mixed sheep and cattle or adult wethers only.
Land use and management recommendations	• Stock lightly during dry periods and post-drought to maintain ground cover. • Any grass cover is better than none. • Mulga fodder provides drought reserves. • Wiregrasses often predominate in areas cleared of mulga. • Opportunistic use of fire as management tool to control woody weeds. • Maintenance of ground cover to minimise water and wind erosion and maximise rainfall use. • Strip clearing is preferable to clearing of large areas to minimise erosion and degradation.
Land use limitations	• Fragile grazing lands. • Difficult to reclaim if degraded. • Poor surface structure, soil acidity and stoniness limit mechanical treatment options. • Dense stands of broad-leaved plants (mulga fern, pimelea, weir vine) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• These areas provide potential habitat for rare and threatened fauna such as the pink cockatoo, woma python and yakka skink; and flora such as climbing caustic (*Euphorbia sarcostemmoides).* • Hard mulga has been extensively cleared, and the remaining extent often has a highly modified structure and plant species composition. • These areas can be heavily impacted by goats, which decimate the ground layer. • Maintenance of vegetative cover is important in minimising excessive runoff and erosion of associated lands. • Control of feral animals can help prevent degradation of the ground layer.
Regional ecosystems	6.7.1.
Land units; Map units; Land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 24; Map Units (DPI 1984) 3 (89), 43; LRA (DPI 1987) Areas of hard mulga may occur in isolated patches in 10 - Macwood, 11 – Straun, 4 – Coogoon.

Mitchell grasslands

Landform	Flat to gently undulating plains (1–3%).
Woody vegetation	Commonly treeless, but may be associated with tree lines of myall, coolibah, poplar box, belah, whitewood or bauhinia along water courses and lower slopes.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Curly and hoop Mitchell grasses, Queensland bluegrass, yabila grass, silky browntop.
Intermediate	Native millet, early spring grass.
Non-preferred	Feathertop wiregrass, white speargrass.
Legumes	Burr medic (naturalised), rhynchosia, emu foot, spurred vetch.
Annual grasses	Native couch, small Flinders grass.
Suitable sown pastures	Purple pigeon grass, Bambatsi, Angleton bluegrass, desmanthus, medic (barrel), Caatinga stylo. Leucaena where soils >120 cm. Short term (2 to 5 years) lucerne, burgundy bean, snail medic.
Introduced weeds	Noogoora burr, Bathurst burr, parthenium.
Soils	Soils are deep cracking self-mulching clays (black or brown vertosol).
Description	***Surface*:** Strong and fine self-mulching; ***Surface texture*:** medium to heavy clay; ***Subsoil texture*:** medium to heavy clay.
Water availability	Low to fair.
Rooting depth	Less than 1 m.

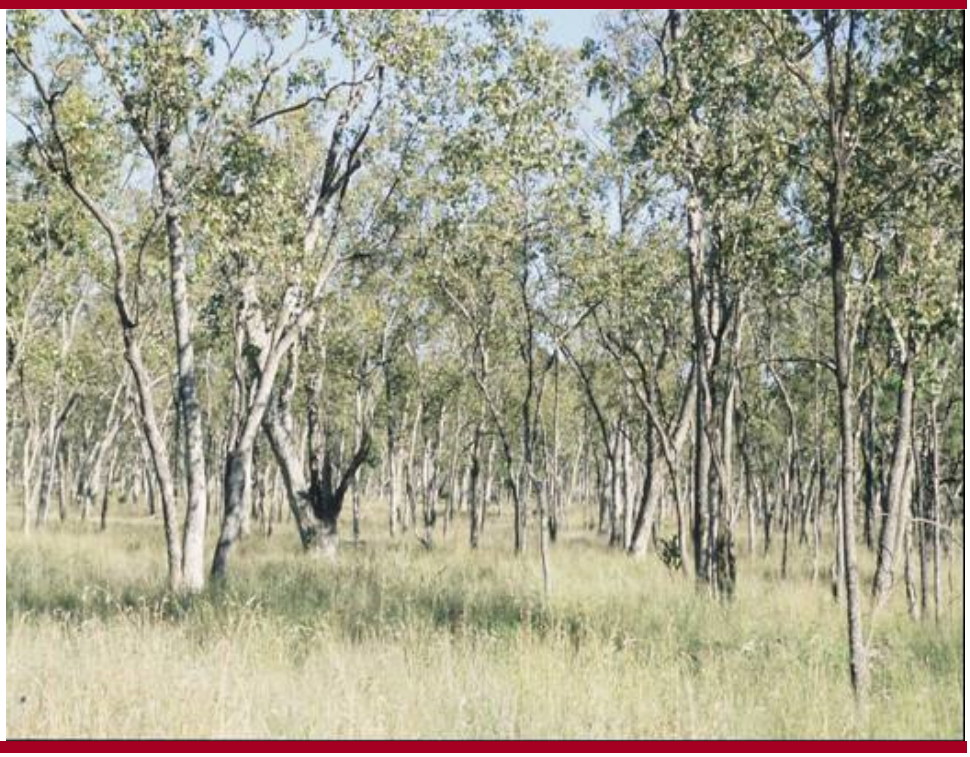
Fertility	Low total nitrogen; low to moderate phosphorus.
Salinity	Low to medium.
Sodicity	Sodic to strongly sodic below 30 cm.
pH	Neutral at surface, becoming strongly alkaline below 30 cm.
Utilisation	30%
Enterprise	Finishing
Land use and management recommendations	• Most of the Mitchell grass country is currently utilised for farming. • Grazing on native pastures by cattle and some sheep does occur. • Maintain surface cover to minimise erosion. • In open areas, fire is only useful to remove older (rank) grass. Burning should occur only after adequate rainfall as a dry, hot fire could kill the grass. • This land type has some potential for pasture improvement.
Land use limitations	• Subsoil sodicity is common. • Soil erosion hazard when cultivated. • Rooting depth (in some shallow soils). • Establishment problems with some small seeded plants and pastures. • Dense stands of burrs (galvanised) and broad-leaved plants (mintweed, mimosa, pigweed, darling pea) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• The Mitchell grasslands provide habitat for rare and threatened flora species (austral toadflax, native hawk weeds, native thistle, lobed bluegrass, finger panic) and the endangered grey snake and the vulnerable Dunmall's snake. • Deep soil cracks provide important refuges for mammals (e.g. common and striped faced dunnarts, common and narrow-nose planigales) and reptiles (e.g. earless dragons and soil-crack skink); whilst grassy ground cover is important for birds such as the brolga and bustards. • Many birds (e.g. cockatiel, red-rumped parrot, corella) feed on the grasslands but nest elsewhere. • Mitchell grasslands have been extensively modified through cultivation and grazing practices. • Maintenance of ground cover in grasslands is important to minimise risk of sheet and gully erosion, reduce runoff, improve water quality and protect the wildlife habitat. • Some areas are being degraded by weed infestation (e.g. parthenium). Vigilance in controlling weed and feral animals can help prevent the degradation of these areas.
Regional ecosystems	11.9.3. 11.9.3a, 11.3.21, 11.4.4, 11.8.11, 11.9.14, 12.5.15.
Land units; Map units; land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 14, 19; Map Units (DPI 1984) 66, 67; LRA, Soil Associations (DPI 1996) Rolling Downs, 6a, 6b; LRA (DPI 1987) 1 - Open Downs.

Narrow-leaved ironbark

Landform	Plains to rises.
Woody vegetation	Narrow-leaved ironbark, cypress pine, bulloak, silver-leaved ironbark, rusty gum, budgeroo and quinine.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Desert bluegrass, forest bluegrass, native oatgrass, black speargrass, kangaroo grass.
Intermediate	Pitted bluegrass, golden beard grass, bottlewasher grasses, barbwire grass.
Non-preferred	Wiregrasses (curled, kerosene, purple, many-headed), poverty grass, buck spinifex.
Legumes	Native indigo, Birdsville indigo, glycine pea, slender tick trefoil.
Suitable sown pastures	Not suitable for sown pastures.
Introduced weeds	African lovegrass.
Soils	A mix of shallow earths, deep sands and texture contrast soils.
Description	***Surface*:** Hard-setting or loose; ***Surface texture*:** sandy loam; ***Subsoil texture*:** sandy loam to medium heavy clay.
Water availability	Very low.
Rooting depth	Less than 80 cm.

Fertility	Very low to low total nitrogen; very low to low phosphorus.
Salinity	Low
Sodicity	Subsoils sodic to strongly sodic.
pH	Acid to strongly acid throughout.
Utilisation	20%
Enterprise	Breeding
Land use and management recommendations	• Low intensity grazing of cattle on mainly native pastures. • Not suitable for cropping. • Suitable in some areas for pasture improvement with careful management.
Land use limitations	• Main limitation is the gravel and stone throughout the profile. • Shallow soil. • Subsoils are sodic to strongly sodic, highly dispersible and prone to erosion if exposed. • Hard-setting surface. • Regrowth. • Dense stands of burrs (galvanised) and broad-leaved plants (mulga fern, pimelea, weir vine, pigweed) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• These woodlands provide habitat for rare and threatened flora species (e.g. *Dodonaea macrossanii*, Chinchilla wattle) and fauna (e.g. glossy black-cockatoo, brigalow scaly-foot, collared delma and little pied bat). • The areas support a high diversity of birds (e.g. honeyeaters, thornbills, flycatchers, babblers, varied sittella, yellow-tailed black cockatoo), and ground-dwelling mammals (e.g. native mice and red-necked wallabies), particularly where a good cover of native grasses is maintained. Koalas, brushtail possums and gliders (e.g. yellow-bellied, squirrel, sugar and feathertail) can also be found where there are mature, hollow-bearing trees available for nesting. • Use of a combination of soil conservation techniques will help minimise the risk of soil erosion on these skeletal, sodic soils. • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat.
Regional ecosystems	11.5.1, 11.5.2a, 11.5.9, 11.10.1d, 11.10.4.
Land units; Map units; Land resource areas; Soil associations	Land Units (Galloway *et al* 1974) 20, 2; LRA, Soil Associations (DPI 1996) Light Forests, 9b; LRA (DPI 1987) 3 - Amby (along dividing range).

Poplar box on alluvial plains



Landform	Back plains, levees and terraces generally not flooded, slopes <1%.
Woody vegetation	Poplar box, belah, bulloak, boonaree, bauhinia, false sandalwood, wilga.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Forest bluegrass, desert bluegrass, Queensland bluegrass, buffel grass*.
Intermediate	Mitchell grasses (hoop, curly), pitted bluegrass, tall chloris, curly windmill grass, purple lovegrass, box grass.
Non-preferred	Five-minute grass, wiregrasses (purple, Jericho).
Legumes	Grey rattlepod, glycine pea, native sensitive plant.
Suitable sown pastures	Rhodes grass, buffel grass, creeping bluegrass, Gatton panic, Caatinga stylo, medic (barrel, Toreador). Flooded areas: Bambatsi, Angleton grass.
Introduced weeds	Noogoora burr, Lippia, mother-of-millions.
Soils	Soils are deep texture contrast (sodosol).
Description	***Surface*:** Firm to hard-setting ***Surface texture*:** clay loam, loam or sandy clay loam; ***Subsoil texture*:** medium clay to medium heavy clay.
Water availability	Low
Rooting depth	Shallow due to sodicity and salinity.
Fertility	Low to moderate total nitrogen; low to high phosphorus.

Salinity	Medium in subsoil, becoming very high to extreme in deep subsoil.
Sodicity	Subsoils strongly sodic.
pH	Surface pH slightly acid, subsoils alkaline.
Utilisation	25% (native), 30% (sown).
Enterprise	Growing and finishing.
Land use and management recommendations	• Suitable for grazing native and sown pastures. • Fodder crops are grown while developing and renovating land.
Land use limitations	• Shallow effective rooting depth due to relatively impermeable subsoils which are strongly sodic and very saline. • Low plant water availability. • High erosion risk as subsoils are highly dispersible. • Poplar box regrowth problem. • Management of woody weed control is difficult as control methods usually not cost effective. • Maybe subject to seasonal flooding on valley floors. • Dense stands of pigweed may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• These alluvial poplar box woodlands provide habitat for rare and threatened flora species (e.g. *Homopholis belsonii*), and fauna (e.g. greater long-eared bat, little pied bat and squatter pigeon). • This land type can have support a high diversity of fauna including birds (e.g. brown treecreeper, kingfishers, honeyeaters and thornbills); brushtail possums, sugar gliders and many insectivorous bats that use mature trees with hollows; a variety of geckoes, dragons and litter skinks that use logs and fallen woody material; echidnas, and sometimes koalas. Rufous bettongs are present where there are few (or no) foxes and a good groundcover of tussock grasses. • Poplar box woodlands have been extensively cleared and modified. • Invasion and regrowth can cause high understorey shrub densities (e.g. currant bush, Ellangowan poison bush). • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat. • Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land type. • Control of feral animals such as pigs and foxes can help to protect native wildlife in this habitat.
Regional ecosystems	11.3.2, 11.3.39.
Land units; Map units; Land resource areas; Soil associations	Land Units (Galloway *et al* 1974) 62, 64, 68; Map Units (DPI 1984) 23, 24; LRA, Soil Associations (DPI 1996) Clay Alluvial Plains, Bogandilla 1b, 1c; LRA (DPI 1987) 4 – Coogoon, 5 - Tartulla (minor).

Poplar box on duplex soils

Landform	Undulating; slopes 0.5–2.5%.
Woody vegetation	Poplar box, belah, wilga, brigalow, false sandalwood, limebush, scrub leopardwood.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Desert bluegrass, Queensland bluegrass, cotton panic, kangaroo grass, buffel grass*.
Intermediate	Pitted bluegrass, slender chloris, golden beard grass, curly windmill grass, native millet, early spring grass, box grass.
Non-preferred	Granite lovegrass, five-minute grass, wiregrasses (Jericho, purple, dark).
Legumes	Glycine pea, slender tick trefoil, emu foot, native sensitive plant.
Suitable sown pastures	Buffel grass, creeping bluegrass, Rhodes grass, digit grass, medic (barrel, Toreador), Caatinga stylo.
Introduced weeds	Mother-of-millions, African boxthorn, African lovegrass.
Soils	Deep, brown or grey texture contrast soils (sodosol).
Description	***Surface*:** Firm to hard-setting; ***Surface texture*:** sand to sandy clay loam; ***Subsoil texture*:** light to medium clay.
Water availability	Low
Rooting depth	Moderate
Fertility	Low to very low total nitrogen; low to moderate phosphorus.

Salinity	Subsoil very highly saline.
Sodicity	Subsoil sodic to strongly sodic.
pH	Surface neutral and subsoil strongly to very strongly alkaline.
Utilisation	25%
Enterprise	Breeding and growing.
Land use and management recommendations	• Predominately grazing of cattle on native pastures. • Suitable for pasture improvement in some areas. • Contour banks are required on roads/tracks to control erosion. • Unsuitable for cropping.
Land use limitations	• Low soil fertility, low soil moisture storage, shallow effective rooting depth. • Highly erodible soils. • High levels of regrowth. • Hard-setting surface soils. • Germination problems may be encountered as surface sets hard when dry. • Root growth may be inhibited, and water and air movement restricted, due to sodic and relatively impermeable subsoils. • Dense stands of burrs (galvanised) and broad-leaved weeds (mulga fern, pigweed, weir vine) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• These alluvial poplar box woodlands provide habitat for rare and threatened flora species (e.g. *Homopholis belsonii*), and fauna (e.g. greater long-eared bat, little pied bat and squatter pigeon). • This land type can have support a high diversity of fauna including birds (e.g. brown treecreeper, kingfishers, honeyeaters and thornbills); brushtail possums, sugar gliders and many insectivorous bats that use mature trees with hollows; a variety of geckoes, dragons and litter skinks that use logs and fallen woody material; echidnas, and sometimes koalas. Rufous bettongs are present where there are few (or no) foxes and a good groundcover of tussock grasses. • Poplar box woodlands have been extensively cleared and modified for cropping or grazing use. • Invasion and regrowth can cause high understorey shrub densities (e.g. currant bush, Ellangowan poison bush). • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat. • Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land type. • Control of feral animals such as pigs and foxes can help to protect native wildlife in this habitat.
Regional ecosystems	11.9.7, 11.9.7a.
Land units; Map units; Land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 33; LRA, Soil Associations (DPI 1996) Poplar Box Rises Coalbah 8a, 8b; Land Resource Areas (DPI 1987) 5 - Tartulla (minor area), 2 - Brigalow Upland (minor area).

Poplar box and silver-leaved ironbark

Landform	Upper slopes and crests of rolling hills.
Woody vegetation	Silver-leaved ironbark, poplar box, narrow-leaved ironbark, white cypress pine, mountain coolibah, bulloak, and kurrajong.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Forest bluegrass, Queensland bluegrass, native oatgrass, kangaroo grass, buffel grass*.
Intermediate	Pitted bluegrass, golden beard grass, barbwire grass, bottlewasher grasses.
Non-preferred	Wiregrass (curled, purple wiregrass, many-headed), poverty grass, buck spinifex.
Annual grasses	Kerosene (non-preferred).
Legumes	Native indigo, Birdsville indigo.
Suitable sown pastures	Rhodes grass, creeping bluegrass, buffel grass, digit grass, tall finger grass, medic (barrel, Toreador), Caatinga stylo.
Introduced weeds	Mother-of-millions.
Soils	Soils range from stony, grey clays to clayey texture contrast soils.
Description	***Surface*:** Firm to hard-setting; ***Surface texture*:** sandy loam; ***Subsoil texture*:** sandy clay loam to light clay.
Water availability	Very low to low.
Rooting depth	Variable with slope position, but generally 80–130 cm.

Fertility	Low to moderate total nitrogen; extremely low to very low phosphorus.
Salinity	Moderate below 60–90 cm.
Sodicity	High below 30 cm.
pH	Medium acid to strongly acid throughout.
Utilisation	20%
Enterprise	Breeding and growing.
Land use and management recommendations	• Suitable mainly for grazing of native and improved pastures. • Contour banks are required on tracks to control erosion.
Land use limitations	• Subsoil sodicity is common, low moisture storage. • Low fertility and low water holding capacity in root zone. • Hard-setting surface soils. • High levels of regrowth. • The saw fly, *Platypsectra interrupta,* is an insect which has produced poisoning in cattle. The saw flies descend from trees, primarily from silver-leaved ironbark, onto the ground where they die and decompose. Cattle apparently acquire a taste for these dead and decomposing larvae. It is thought that the unusual craving is due to a phosphorus and/or protein deficiency. To date, the removal of cattle from infected areas or the destruction of the silver-leaved ironbark in selected areas has been the only means of control. • Dense stands of burrs (galvanised) and broad-leaved weeds (mulga fern, pigweed, pimelea, weir vine) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• These grassy woodlands can provide habitat for rare and threatened species (pink cockatoo, squatter pigeon, leaden delma, yakka skink, little pied bat); and woodland-dependant birds (e.g. grey-crowned babbler, brown treecreeper, finches). • Mature trees provide hollows for fauna especially nesting birds, possums and gliders, and some hollow-dwelling reptiles like the freckled monitor (a small goanna) and the pale-headed snake. • This land type has been prone to extensive clearing, and modification to the structure of the tree canopy has occurred by the removal of many of the larger hollow-bearing silver-leaved ironbark trees. • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat. Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land type.
Regional ecosystems	11.3.26, 11.3.6, 11.5.5, 11.5.5a, 11.5.9a, 11.8.15, 11.8.4, 11.8.5, 11.9.2, 11.10.7, 11.10.7a.
Land units; Map units; Land resource areas; Soil associations	Land Units (Galloway *et al* 1974) 25; Map Units (DPI 1984) 19b; LRA, Soil Associations (DPI 1996) Light Forest, 9b Flinton; LRA (DPI 1987) 3 – Amby, 11 – Straun, 7 - Bymount (minor).

Poplar box with mulga understorey

Landform	Plains to undulating hills with slopes to 4%.
Woody vegetation	Poplar box, mulga, silver-leaved ironbark, false sandalwood, currant bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Desert bluegrass, Queensland bluegrass, cotton panic, black speargrass, mulga oats, mulga Mitchell grass, kangaroo grass, hairy panic, buffel grass*.
Intermediate	Pitted bluegrass, golden beard grass, silky umbrella grass, mountain wanderrie grass, curly windmill grass, silky browntop, box grass, spinifex.
Non-preferred	Bottlewasher grasses, cane panic, rough speargrass, five-minute grass, buck spinifex.
Legumes	Slender tick trefoil, native indigo, Birdsville indigo, glycine pea.
Suitable sown pastures	Buffel grass, Indian bluegrass.
Introduced weeds	African boxthorn.
Soils	Soils are shallow to moderately deep gravelly red earths.
Description	***Surface*:** Hard-setting; ***Surface texture*:** light sandy clay loam to clay loam; ***Subsoil texture*:** sandy light to medium clay, red, yellow or grey in colour.
Water availability	Low to moderate.
Rooting depth	Low
Fertility	Low to moderate total nitrogen, low to moderate phosphorus.
Salinity	Low

Sodicity	Non-sodic
pH	Generally neutral to acid, increasing with depth.
Utilisation	25%
Enterprise	Breeding ewes and cows.
Land use and management recommendations	• Suitable for low intensity grazing of sheep and cattle. • Limited potential for pasture improvement with careful management. • Pastures respond to light to moderate falls of rain (25–50 mm) in areas that receive runoff and have higher productive potential than surrounding lands. • Can be developed with sown pastures if phosphorus levels are adequate (>20 mg/kg). • Use fire judiciously as a management tool to control woody weeds. • Strip clearing is preferable to clearing of large areas to minimise erosion and degradation. • Maintenance of ground cover to minimise shrub invasion and wind and water (gully) erosion.
Land use limitations	• Rapid decline and soil physical deterioration follows clearing or overgrazing. • Regrowth and high shrub densities can limit productivity. • Low soil fertility, low soil moisture storage. • Dense stands of burrs (galvanised) and broad-leaved weeds (weir vine, mulga fern, pigweed, pimelea) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• This land type can support a high diversity of fauna including birds (e.g. brown treecreeper, rainbow bee-eater, red-backed kingfisher, honeyeaters and thornbills) and many insectivorous bats (e.g. broad-nosed, little forest and long-eared bats). • Mammals such as sugar glider, swamp wallaby and dunnarts (carnivorous marsupial-mice) can be found here. • The presence of logs and fallen woody material can provide habitat for a variety of reptiles, including geckoes (wood, velvet and dtella geckoes), legless lizards, burrowing skinks and dragon lizards (e.g. Burn's lash-tail). • Poplar box woodlands have been extensively cleared and modified. • Invasion and regrowth can cause high understorey shrub densities (e.g. currant bush, Ellangowan poison bush). • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat. • Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land type. • Control of feral animals such as pigs and foxes can help to protect native wildlife in this habitat.
Regional ecosystems	6.5.17a.
Land units; Map units; Land resource areas, Soil associations	Land Units (Galloway *et al* 1974) 23, 24; Map Units (DPI 1984) 20 (43); LRA, Soil Associations (DPI 1996) Light Forests 9a; LRA (DPI 1987) 4 - Coogoon (minor), 10 – Macwood, 11 - Straun (minor).

Poplar box with sandalwood understorey

Landform	Flat to undulating.
Woody vegetation	Poplar box, silver-leaved ironbark, false sandalwood, ironwood, boonaree, butter bush, currant bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	
Intermediate	Neverfail, curly windmill grass, pitted bluegrass, early spring grass, golden beard grass, buffel grass*.
Non-preferred	Wiregrasses (curled, purple, Jericho), white speargrass, fairy grass.
Annual grasses	Button grass.
Legumes	Grey rattlepod.
Suitable sown pastures	Creeping bluegrass, digit grass, tall finger grass, buffel grass, Caatinga stylo, medic (barrel, Toreador).
Introduced weeds	African box thorn, African lovegrass, mother-of-millions.
Soils	Reddish brown, hard-setting texture contrast soils.
Description	***Surface*:** Structureless and hard-setting; ***Surface texture*:** sandy clay loam; ***Subsoil texture*:** light medium to medium clay.
Water availability	Low
Rooting depth	Moderate
Fertility	Very low total nitrogen; low phosphorus.
Salinity	Deep subsoils medium to highly saline.

Sodicity	Subsoils strongly sodic.
pH	Slightly to strongly acid pH, rising to strongly alkaline in subsoil. Some profiles may become strongly acid in deep subsoil.
Utilisation	25%
Enterprise	Breeding and growing.
Land use and management recommendations	• Predominantly cattle grazing on native and improved pastures. • Unsuitable for cropping.
Land use limitations	• Low soil fertility. • Low soil moisture storage. • Management of these soils is affected by low plant available water capacity, seedbed conditions that are less than optimal and a high erosion risk. • Problems with soil erosion occur because of the high erodibility of the surface soil. • Management of woody weed regrowth is difficult because control measures are usually not cost effective • Dense stands of burrs (galvanised) and broad-leaved weeds (mulga fern, pigweed, pimelea) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• This land type can support a high diversity of fauna including birds (e.g. brown treecreeper, rainbow bee-eater, red-backed kingfisher, honeyeaters and thornbills) and many insectivorous bats (e.g. broad-nosed, little forest and long-eared bats). • Mammals such as sugar glider, swamp wallaby and dunnarts (carnivorous marsupial-mice) can be found here. • The presence of logs and fallen woody material can provide habitat for a variety of reptiles, including geckoes (wood, velvet and dtella geckoes), legless lizards, burrowing skinks and dragon lizards (e.g. Burn's lash-tail). • Poplar box woodlands have been extensively cleared and modified. Invasion and regrowth can cause high understorey shrub densities (e.g. currant bush, Ellangowan poison bush). • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat. • Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land type. • Control of feral animals such as pigs and foxes can help to protect native wildlife in this habitat.
Regional ecosystems	11.4.12a, 11.9.7a.
Land units; Map units; Land resource areas; Soil associations	Land Units (Galloway *et al* 1974) 26; Map Units (DPI 1984) 19, 20 (43), 23, 24; LRA, Soil Associations (DPI 1996) Polar Box Rises, 8a Weengallon; (DPI 1987) 3 - Amby (minor) 5 - Tartulla (minor), 4 - Coogoon.

Poplar box and brigalow

Landform	Undulating, slopes to 4%.
Woody vegetation	Poplar box, brigalow, belah, false sandalwood, leopardwood, currant bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Queensland bluegrass, cotton panic, buffel grass*.
Intermediate	Pitted bluegrass, tall chloris, curly windmill grass, brigalow grass, box grass, early spring grass.
Non-preferred	Purple wiregrass, curled wiregrass, barbwire grass.
Legumes	Glycine pea.
Suitable sown pastures	Creeping blue grass, Gatton panic, digit grass, tall finger grass, buffel grass, Rhodes grass, medic (barrel, Toreador), Caatinga stylo.
Introduced weeds	Mother-of-millions, prickly pear, African boxthorn.
Soils	Deep reddish brown texture contrast soils.
Description	***Surface*:** Hard-setting; ***Surface texture*:** sand to sandy clay loam; ***Subsoil texture*:** sandy clay.
Water availability	Low to very low.
Rooting depth	Approximately 60 cm.
Fertility	Low total nitrogen; very low to low phosphorus.

Salinity	Very low.
Sodicity	Non sodic at the surface; highly sodic in deep subsoil.
pH	Neutral to acid.
Utilisation	25%
Enterprise	• Growing and finishing.
Land use and management recommendations	• Predominantly cattle grazing on native and improved pastures.
Land use limitations	• Highly erodible. • Regrowth. • Hard-setting. • Highly sodic at depth. • Dense stands of burrs (galvanised) and broad-leaved weeds (mintweed, pigweed, pimelea) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• Brigalow woodlands with an overstorey of poplar box are habitat for a wide range of rare and threatened fauna including birds (e.g. glossy black-cockatoo, painted honeyeater, black-chinned honeyeater); mammals (greater long-eared bat, little pied bat); reptiles (collared delma, brigalow scaly-foot, golden-tailed gecko); frogs (rough frog); and insects (imperial hairstreak butterfly). • Often these areas support a high diversity of birds (e.g. yellow-tailed back-cockatoo, red-winged parrot, many honeyeaters, thornbills, speckled warbler, grey-crowned babbler, spotted bowerbird); and reptiles (e.g. velvet geckos, slider skinks, striped skinks). • Some areas are prone to scalding and many areas have been extensively cleared for cropping and pasture. The threatened plant ooline can sometimes occur in this community. • Careful management of grazing pressure and maintenance of ground cover is important to minimise risk of sheet and gully erosion, reduce runoff and protect the wildlife habitat. • Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land type.
Regional ecosystems	11.3.17, 11.9.10.
Land units; Map units; Land resource areas; Soil associations	Land Units (Galloway *et al* 1974) 37, 39; Map Units (DPI 1984) 22; LRA, Soil Associations (DPI 1996) Poplar Box Rises, 8a; LRA (DPI 1987) 5 – Tartulla and 4 – Coogoon.

Soft mulga

Landform	Flat to gently undulating plains.
Woody vegetation	Mulga, false sandalwood, cypress pine, poplar box, beefwood and ironwood.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Silky umbrella grass, cotton panic, mulga oats, kangaroo grass, mulga Mitchell grass, buffel grass*.
Intermediate	Golden beard grass, silky heads, curly windmill grass, woollybutt, purple lovegrass, mountain wanderrie grass, bottlewasher grasses.
Non-preferred	Wiregrasses (e.g. Jericho, dark), five-minute grass, three-awn wanderrie grass, rough speargrass, greybeard grass.
Legumes	Slender tick trefoil, native indigo, Birdsville indigo.
Suitable sown pastures	Buffel grass, digit grass.
Introduced weeds	
Soils	Shallow to moderately deep (50–120 cm) red sandy or loamy earths.
Description	***Surface:*** Loamy hard or moderately hard surfaces; ***Surface texture:*** light sandy loam to clay loams; ***Subsoil texture*****:** clay content increasing down profile to light to medium clays.
Water availability	Low to very low.

Rooting depth	Shallow
Fertility	Low (phosphorus, carbon, nitrogen).
Salinity	Very low.
Sodicity	Non-sodic
pH	Usually acid throughout profile of red loams.
Utilisation	15%
Enterprise	Breeding ewes and cows.
Land use and management recommendations	• Mulga fodder provides drought protein reserves. • Stock lightly during dry periods and post drought to maintain ground cover to minimise water and wind erosion, and to maximise rainfall capture. • Use fire opportunistically as management tool to control woody weeds and dense mulga.
Land use limitations	• Fragile grazing lands. • Wiregrasses often predominate in areas cleared of mulga and on sandier soils. • Mulga density and/or woody weed invasion commonly limits pasture growth. • Strip clearing is preferable to clearing of large areas to minimise erosion and degradation • Soil nutrient deficiencies (phosphorus, sulphur, calcium, magnesium), acidity and poor surface structure. • Dense stands of burrs (galvanised) and broad-leaved weeds (weir vine, pigweed, mulga fern, pimelea) may limit pasture growth, productivity and be toxic to stock.
Conservation features and related management	• A high diversity of birds including babblers, thornbills, honeyeaters, pardalotes, parrots such as Mallee ringneck, blue bonnet and red-winged parrot can be found in the soft mulga woodlands. • Mulga groves also provide habitat for the rare and threatened pink cockatoo, painted honeyeater, yakka skinks and the woma python. • Native mammals found here include swamp wallaby, dunnarts and Forrest's mouse – particularly where good ground cover is maintained. • Many areas have been extensively cleared or thinned, and significant areas are in poor condition due to irreversible sheet erosion. • A grazing regime that allows spelling and control of feral animals (especially goats) can help to maintain cover in the ground layer and prevent erosion. • Use of fire could assist in controlling woody weeds and enhance productivity and habitat potential of the land zone.
Regional ecosystems	6.5.1.
Land units; Map units; Land resource areas; Soil associations	Land Units (Galloway *et al* 1974) 24; Map Units (DPI 1984) 3 (89), 43; LRA, (DPI 1987) Areas of soft mulga may occur in 4 – Coogoon, 10 - Macwood.

Softwood vine scrub on clay or loam

Landform	Ridges, slopes and sheltered gullies.
Woody vegetation	Brigalow, belah, wilga, bottle trees, mountain coolibah, scrub trees, false sandalwood.
Expected pasture composition	*Uncleared sparse pasture.* ** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Queensland bluegrass.
Intermediate	Brigalow grass, buffel grass*.
Non-preferred	Lovegrasses, dark wiregrass, rat's tail couch, slender chloris.
Legumes	Woolly glycine, glycine pea.
Suitable sown pastures	Bambatsi, purple pigeon grass, Angleton grass, creeping bluegrass, Rhodes grass, buffel grass, green panic, digit grass, tall finger grass, desmanthus, medic (barrel, burr), Caatinga stylo, leucaena. Short term (2 to 5 years) lucerne, burgundy bean, snail medic.
Introduced weeds	Parthenium, Bathurst burr, Noogoora burr.
Soils	Brown and grey brown clays (vertosols).
Description	***Surface*:** Loose to weakly crusting; ***Surface texture***: light to medium clay; ***Subsoil texture*:** medium clay.
Water availability	Moderate
Rooting depth	Between 30 to 90 cm.

Fertility	Low total nitrogen; moderate phosphorus.
Salinity	Very low.
Sodicity	Sodic to strongly sodic below 30 cm.
pH	Slightly alkaline.
Utilisation	30% (sown).
Enterprise	Finishing

Land use and management recommendations

- Most areas of softwood scrub have been cleared and established to improved pastures.
- Retain trees on beds and banks of watercourses.
- Maintain vegetation belts for wildlife habitats and corridors.

Land use limitations

- Regrowth of some species.
- Surface sealing soils.
- Subsoil sodicity is common.
- Dense stands of burrs (galvanised) and broad-leaved plants (mintweed, pigweed) may limit pasture growth, productivity and be toxic to stock.

Conservation features and related management

- Habitat for many rare and threatened plants including ooline, Bailey's cypress, *Atalaya calcicola, Croton magneticus, Ehretia grahamii* and *Wrightia versicolor*.
- Softwood scrubs provide important habitat for threatened species (e.g. common death adder, brigalow scaly-foot, short-necked worm-skink, greater long-eared bat); a large number of rare and endemic invertebrates (e.g. land snails and native dung beetles); and species that like to shelter in dense cover, such as black-breasted button-quail (now probably extinct from the region), barking owls, bandicoots and black-striped wallabies.
- Many animals – particularly birds – that live in rainforests or wet forests further east (e.g. emerald dove, wonga pigeon, scrubwrens, eastern yellow robin) can be found in these softwood scrubs.
- These habitats can be sensitive to fire and invasion by introduced pasture grasses such as buffel grass, which also provides fuel for damaging fires.
- In some cases, wallaby populations (where there are no predators such as dingos) can build up enough numbers to over-graze the ground layer of isolated remnant scrubs and vine thickets.

Regional ecosystems

11.8.2a, 11.8.3, 11.9.4a, 13.11.7a.

Land units; Map units; Land resource areas; Soil associations

Land Units (Galloway *et al* 1974) 9; Map Units (DPI 1984) 1; LRA, Soil Associations (DPI 1996) Brigalow Rises, 5c; Land Resource Areas (DPI 1987) 2 - Brigalow Uplands, Eumamurrin.