

# Mitchell Grass Downs region Grazing Land Management land type information

## Plant Index

Common name	Species name	Page
African box thorn*	<i>Lycium ferocissimum</i>	MGD07
Angleton grass*	<i>Dicanthium aristatum</i> cv. Floren	MGD01, MGD14
annual verbine	<i>Cullen cinereum</i> (formerly <i>Psoralea cinerea</i> )	MGD01, MGD02, MGD05, MGD16
Australian dropseed	<i>Sporobolus australasicus</i>	MGD16
Bambatsi*	<i>Panicum coloratum</i> var. makarikariense	MGD01, MGD14
barley Mitchell grass	<i>Astrebla pectinata</i>	MGD03, MGD13
bastard mulga	<i>Acacia stowardii</i>	MGD09, MGD13
Bathurst burr*	<i>Xanthium spinosum</i>	MGD01, MGD02, MGD03, MGD04, MGD07, MGD16
bauhinia	<i>Lysiphyllum gilvum</i> , <i>Lysiphyllum</i> sp.	MGD01, MGD06, MGD14
beefwood	<i>Grevillea striata</i>	MGD11, MGD12, MGD13, MGD14
belalie	<i>Acacia stenophylla</i>	MGD14, MGD16
bellyache bush*	<i>Jatropha gossypifolia</i>	MGD05, MGD07, MGD14, MGD15
bendee	<i>Acacia catenulate</i>	MGD13
black gidgee	<i>Acacia argyrodendron</i>	MGD07
black roly poly	<i>Sclerolaena muricata</i>	MGD01, MGD02, MGD03, MGD04, MGD06, MGD07, MGD16
blackwood <i>see</i> black gidgee	<i>Acacia argyrodendron</i>	
bluegrass/es <i>see also</i> desert, Queensland bluegrass	<i>Dichanthium</i> spp. and <i>Bothriochloa</i> spp.	MGD15
boonaree	<i>Alectryon oleifolius</i>	MGD01, MGD03, MGD05, MGD06
boree	<i>Acacia tephрина</i>	MGD05, MGD06, MGD07, MGD14, MGD15
bottlewasher grasses	<i>Enneapogon</i> spp.	MGD01, MGD03, MGD05, MGD06, MGD07, MGD08, MGD09, MGD10, MGD11, MGD12, MGD13
broom bush	<i>Apophyllum anomalum</i>	MGD05, MGD06, MGD07, MGD08, MGD11, MGD12
buck spinifex	<i>Triodia mitchellii</i>	MGD12
buffel grass*	<i>Pennisetum ciliare</i> (formerly <i>Cenchrus ciliaris</i> )	MGD01, MGD06, MGD07, MGD08, MGD14, MGD15
bull Mitchell grass	<i>Astrebla squarrosa</i>	MGD04, MGD16

Common name	Species name	Page
burrs <i>see</i> Bathurst, copperburrs, daisy, gidgee, goathead, lifesaver, Noogoora burrs		
button grass	<i>Dactyloctenium radulans</i>	MGD01, MGD02, MGD03, MGD04, MGD05, MGD06, MGD07, MGD08, MGD14, MGD16
cactus*	<i>Cylindropuntia</i> and <i>Harrisia</i> spp.	MGD14
cassia	<i>Senna artemisioides</i> and <i>Senna</i> spp.	MGD03, MGD05, MGD06, MGD08, MGD09, MGD10, MGD11
caustic vine <i>see</i> pencil caustic		
channel millet <i>see also</i> native sorghum	<i>Echinochloa turneriana</i>	MGD15, MGD16
channel nut grass <sup>#</sup>	<i>Cyperus</i> sp.	MGD16
chinee apple*	<i>Ziziphus mauritiana</i>	MGD07, MGD14, MGD15
coolibah	<i>Eucalyptus coolabah</i>	MGD12, MGD13, MGD14, MGD15, MGD16
Cooper clover <sup>#</sup>	<i>Trigonella suavissima</i>	MGD16
copperburrs	<i>Sclerolaena</i> spp.	MGD01, MGD02, MGD03, MGD04, MGD06, MGD07, MGD08, MGD09, MGD10, MGD14, MGD15, MGD16
coral cactus*	<i>Cylindropuntia fulgida</i> var. <i>mamillata</i>	MGD05, MGD06, MGD07, MGD08, MGD09, MGD10, MGD11, MGD13, MGD15
corkwood	<i>Acacia sutherlandii</i>	MGD01
cotton panic	<i>Digitaria brownii</i>	MGD09, MGD10, MGD11
cow vine <sup>#</sup>	<i>Ipomoea lonchophylla</i>	MGD01, MGD02, MGD04, MGD10, MGD14, MGD15, MGD16
crumbweed	<i>Dysphania</i> sp.	MGD09
curly windmill grass	<i>Enteropogon acicularis</i>	MGD14
currant bush	<i>Carissa</i> sp.	MGD11
daisies	<i>Asteraceae</i> spp.	MGD16
daisy burr	<i>Calotis hispidula</i>	MGD01, MGD02, MGD03
desert bluegrass	<i>Bothriochloa ewartiana</i>	MGD05, MGD11, MGD12, MGD14, MGD15
devil's rope cactus*	<i>Cylindropuntia imbricata</i>	MGD05, MGD06, MGD07, MGD08, MGD09, MGD10, MGD11, MGD13, MGD15
downs couch	<i>Brachyachne convergens</i>	MGD01, MGD02, MGD03, MGD06, MGD07
downs nutgrass <sup>#</sup>	<i>Cyperus bifax</i>	MGD16

<b>Common name</b>	<b>Species name</b>	<b>Page</b>
eastern dead finish	<i>Archidendropsis basaltica</i>	MGD06, MGD11, MGD12, MGD13, MGD14, MGD15
emu apple	<i>Owenia acidula</i>	MGD01
fairy grass	<i>Sporobolus caroli</i>	MGD05, MGD06, MGD07, MGD08, MGD16
false sandalwood	<i>Eremophila mitchellii</i>	MGD05, MGD06, MGD07, MGD08, MGD11, MGD12, MGD15
feathertop	<i>Aristida latifolia</i>	MGD01, MGD02, MGD03, MGD05, MGD06, MGD07
finger panic	<i>Digitaria coenicola</i>	MGD01, MGD02, MGD03, MGD05
five minute grass	<i>Tripogon loliiformis</i>	MGD09
flame spider-flower	<i>Grevillea kennedyana</i>	MGD09
flannel weed	<i>Abutilon</i> sp.	MGD07, MGD08, MGD13
Flinders grass	<i>Iseilema</i> sp.	MGD01, MGD02, MGD03, MGD04, MGD05, MGD07, MGD14, MGD15, MGD16
florestina*	<i>Florestina tripteris</i>	MGD01, MGD02, MGD07
flowering lignum	<i>Eremophila polyclada</i>	MGD07
foxtails	<i>Ptilotus</i> spp.	MGD09
fruit salad plant	<i>Pterocaulon sphacelatum</i> usually, sometimes <i>P. serrulatum</i>	MGD04
galvanised burr see goathead burr		
ghost gum	<i>Corymbia aparrerinja</i>	MGD13
gidgee	<i>Acacia cambagei</i>	MGD06, MGD07, MGD08, MGD09, MGD13, MGD14, MGD15
gidgee burr	<i>Sclerolaena</i> sp.	MGD03, MGD06, MGD07, MGD08, MGD09
glycine	<i>Glycine falcata</i>	MGD01, MGD02, MGD03, MGD05
goathead burr	<i>Sclerolaena bicornis</i>	MGD01, MGD02, MGD03, MGD04, MGD06, MGD07, MGD08
goodenia	<i>Goodenia</i> sp.	MGD10, MGD14, MGD15
gooramurra	<i>Eremophila bignoniiflora</i>	MGD16
green crumbweed	<i>Dysphania rhadinostachya</i>	MGD10
grey rattlepod	<i>Crotalaria dissitiflora</i>	MGD03, MGD05
gundabluie	<i>Acacia victoriae</i>	MGD02, MGD06, MGD07

<b>Common name</b>	<b>Species name</b>	<b>Page</b>
hairy ribbon grass	<i>Chionachne hubbardiana</i>	MGD01, MGD02, MGD14, MGD15
hakea	<i>Hakea</i> sp.	MGD09, MGD11, MGD12
hard burrs <i>see</i> gidgee burrs		
hard spinifex	<i>Triodia basedowii</i>	MGD13
harrisia cactus*	<i>Harrisia</i> sp.	MGD05, MGD06, MGD07, MGD08, MGD09, MGD10, MGD11, MGD12, MGD13, MGD15
hibiscus	<i>Hibiscus</i> sp.	MGD08, MGD09
hoop Mitchell grass	<i>Astrelba elymoides</i>	MGD04
hopbush	<i>Dodonaea</i> sp.	MGD09
ironwood	<i>Acacia excelsa</i>	MGD06, MGD11, MGD15
kangaroo grass	<i>Themeda triandra</i>	MGD10, MGD11, MGD12, MGD13
katoora	<i>Sporobolus actinocladius</i>	MGD05, MGD06, MGD07, MGD08, MGD15
knottybutt grass	<i>Eragrostis xerophila</i>	MGD03, MGD06, MGD08
lamb's tongue	<i>Plantago</i> sp.	MGD01, MGD02, MGD03
lancewood	<i>Acacia shirleyi</i>	MGD09, MGD13
leopardwood	<i>Flindersia maculosa</i>	MGD03, MGD05, MGD06, MGD07, MGD11
lifesaver burr	<i>Sida platycalyx</i>	MGD11
lignum	<i>Muehlenbeckia cunninghamii</i>	MGD12, MGD16
lovegrass/es	<i>Eragrostis</i> spp.	MGD03, MGD06, MGD07, MGD09, MGD11, MGD12, MGD13, MGD15
mesquite (hybrid)*	<i>Prosopis</i> sp.	MGD01, MGD02, MGD03, MGD04, MGD05, MGD06, MGD07, MGD14, MGD15, MGD16
Mexican poppy*	<i>Argemone ochroleuca</i> ssp. <i>ochroleuca</i>	MGD07, MGD14, MGD15
mimosa*	<i>Acacia farnesiana</i>	MGD02, MGD05, MGD06, MGD07
mineritchie	<i>Acacia cyperophylla</i>	MGD13, MGD14
mint bush	<i>Streptoglossa adscendens</i>	MGD04
Mitchell grass/es <i>see also</i> barley, bull, hoop Mitchell grass	<i>Astrelba</i> spp.	MGD01, MGD02, MGD03, MGD05, MGD06, MGD07, MGD08, MGD13, MGD14, MGD15
mother-of-millions*	<i>Bryophyllum delagoense</i>	MGD05, MGD06, MGD07, MGD08, MGD09, MGD10, MGD11, MGD15

<b>Common name</b>	<b>Species name</b>	<b>Page</b>
mountain yapunyah	<i>Eucalyptus thozetiana</i>	MGD09, MGD13
mountain wanderrie grass	<i>Eriachne mucronata</i>	MGD08, MGD09, MGD10, MGD11, MGD13
Mueller's saltbush	<i>Atriplex muelleri</i>	MGD03
mulga	<i>Acacia aneura</i>	MGD09, MGD10, MGD11, MGD12, MGD13, MGD14
mulga Mitchell	<i>Thyridolepis mitchelliana</i>	MGD10, MGD11
Napunyah see mountain yapunyah		
narrow-leaved indigo	<i>Indigastrum parviflorum</i> (formerly <i>Indigofera parviflorum</i> )	MGD11, MGD12
native cotton	<i>Gossypium australe</i>	MGD11, MGD12
native millet see star grass		
native sorghum see channel millet	<i>Echinochloa turneriana</i>	
Noogoora burr*	<i>Xanthium pungens</i>	MGD07, MGD14, MGD15
Normanton box	<i>Eucalyptus normantonensis</i>	MGD12, MGD13
paper rose	<i>Operculina aequisepala</i>	MGD02
parkinsonia*	<i>Parkinsonia aculeata</i>	MGD02, MGD05, MGD07, MGD14, MGD15
parthenium*	<i>Parthenium hysterophorus</i>	MGD01, MGD02, MGD03, MGD04, MGD05, MGD06, MGD07, MGD08, MGD14, MGD15, MGD16
peabush	<i>Sesbania campylocarpa</i>	MGD02
pencil caustic	<i>Sarcostemma viminale</i> ssp. <i>australe</i>	MGD13
pepper grass	<i>Panicum laevinode</i>	MGD02, MGD03, MGD16
pigweed	<i>Portulaca oleracea</i>	MGD01, MGD02, MGD03, MGD05, MGD06, MGD07, MGD08
pimelea	<i>Pimelea</i> sp.	MGD03, MGD05, MGD06, MGD08
pincushion spinifex	<i>Triodia molesta</i>	MGD09
poplar box	<i>Eucalyptus populnea</i>	MGD10, MGD14, MGD15
potato bush	<i>Solanum</i> sp.	MGD03, MGD05, MGD06, MGD07, MGD08, MGD12
potato weed see potato bush		
pretty polly	<i>Polycarpaea</i> sp.	MGD09

<b>Common name</b>	<b>Species name</b>	<b>Page</b>
prickly acacia*	<i>Acacia nilotica</i>	MGD01, MGD02, MGD03, MGD04, MGD05, MGD06, MGD07, MGD14, MGD15, MGD16
purple pigeon grass*	<i>Setaria incrassata</i> cv. <i>Inverell</i>	MGD01, MGD14
Queensland bluebush#	<i>Chenopodium auricomum</i>	MGD07, MGD16#
Queensland bluegrass	<i>Dichanthium sericeum</i>	MGD01, MGD02, MGD03, MGD04, MGD05, MGD06, MGD07, MGD14
rat's tail couch	<i>Sporobolus mitchellii</i>	MGD16
red spinach	<i>Trianthema triquetra</i>	MGD03, MGD05, MGD06, MGD07
red-stem pigweed see red spinach		
rhynchosia	<i>Rhynchosia minima</i>	MGD01, MGD02, MGD03, MGD05
river red gum	<i>Eucalyptus camaldulensis</i>	MGD12, MGD13, MGD14, MGD15, MGD16
roly poly	<i>Salsola kali</i>	MGD01, MGD02, MGD03, MGD04, MGD06, MGD07, MGD08, MGD16, MGD16
rubbervine*	<i>Cryptostegia grandiflora</i>	MGD05, MGD06, MGD07, MGD14, MGD15
ruby saltbush	<i>Enchylaena tomentosa</i>	MGD07
saltbush/es see also Mueller's, ruby saltbush	<i>Atriplex</i> spp.	MGD03, MGD05, MGD08, MGD14, MGD15
sandalwood	<i>Santalum lanceolatum</i>	MGD08, MGD15
sida	<i>Sida</i> spp.	MGD01, MGD02, MGD03, MGD05, MGD06, MGD08, MGD12, MGD13
silky bluebush	<i>Maireana villosa</i>	MGD09, MGD10, MGD11, MGD12
silky browntop	<i>Eulalia aurea</i>	MGD04, MGD15
silky umbrella grass	<i>Digitaria ammophila</i>	MGD10, MGD11
snake cactus*	<i>Cylindropuntia spinosior</i>	MGD05, MGD06, MGD07, MGD08, MGD09, MGD10, MGD11, MGD13, MGD15
soda bush	<i>Neobassia proceriflora</i>	MGD03, MGD05, MGD06, MGD07, MGD16
soft spinifex	<i>Triodia pungens</i>	MGD09, MGD12, MGD13
speedy weed	<i>Flaveria australasica</i>	MGD02
spiked malvastrum*	<i>Malvastrum americanum</i>	MGD01, MGD02, MGD05, MGD06
spinifex	<i>Triodia</i> spp.	MGD08, MGD09

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spotted emu bush	<i>Eremophila maculata</i>	MGD13
spurge	<i>Phyllanthus</i> sp.	MGD02
star grass	<i>Panicum decompositum</i>	MGD01, MGD02, MGD03, MGD04, MGD05, MGD07
tarvine	<i>Boerhavia</i> sp.	MGD01, MGD02, MGD04, MGD05, MGD11, MGD12, MGD16
Thozet's box see mountain yapunyah		
three-awn wanderrie grass	<i>Eriachne aristidea</i>	MGD10, MGD11
tomato bush	<i>Solanum</i> sp.	MGD11
tropical speedwell	<i>Evolvulus alsinoides</i>	MGD10, MGD11
turkey bush	<i>Eremophila</i> spp.	MGD05, MGD06, MGD07, MGD09, MGD10, MGD11, MGD12
umbrella canegrass	<i>Leptochloa digitata</i>	MGD15
vine tree	<i>Ventilago viminalis</i>	MGD01, MGD03, MGD05, MGD06, MGD07
Warrego summer grass	<i>Paspalidium jubiflorum</i>	MGD04, MGD14, MGD15
western bloodwood	<i>Corymbia terminalis</i>	MGD03, MGD09, MGD10, MGD11, MGD12, MGD13
white speargrass	<i>Aristida leptopoda</i>	MGD01
whitewood	<i>Atalaya hemiglauca</i>	MGD01, MGD03, MGD05, MGD06, MGD07, MGD08, MGD10, MGD11
wild carrot	<i>Daucus glochidiatus</i>	MGD01, MGD02, MGD03
wild orange	<i>Capparis</i> sp.	MGD07, MGD08, MGD11
wilga	<i>Geijera parviflora</i>	MGD07
windmill grass	<i>Chloris pectinata</i>	MGD10, MGD11
wiregrasses	<i>Aristida</i> spp.	MGD07, MGD08, MGD09, MGD10, MGD11, MGD12, MGD13, MGD14
woollybutt wanderrie grass	<i>Eriachne helmsii</i>	MGD08, MGD09, MGD10, MGD11, MGD13
yapunyah see mountain yapunyah		

\* Denotes non-native species

# Denotes non-grass species that are important to grazing and land condition values in annually dominated land types.

# Open downs

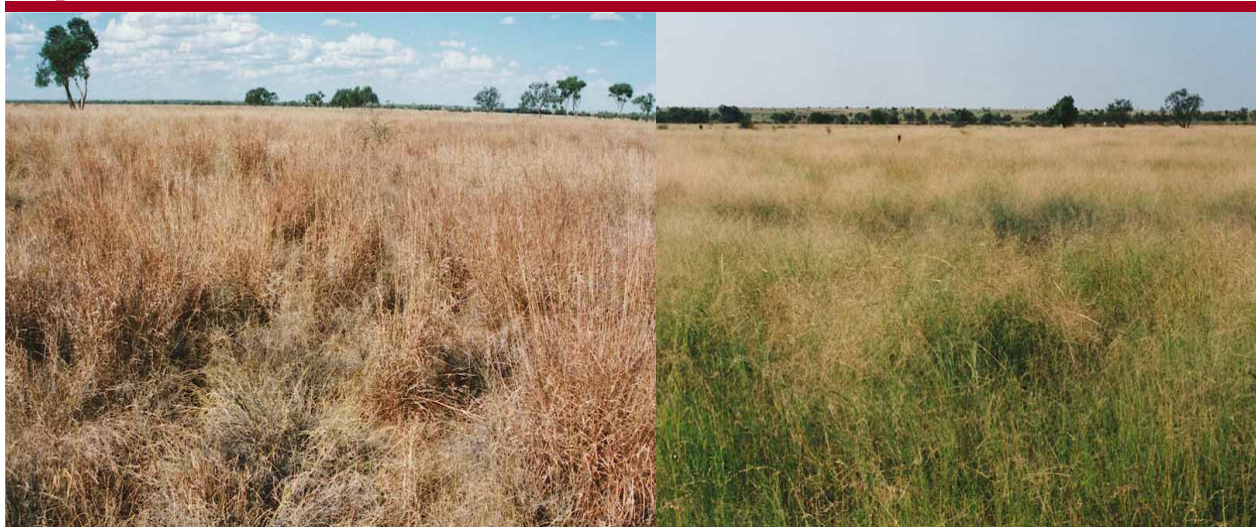


Photo: F3 (Winton) Land System

## General description

Undulating open Mitchell grass plains on cracking clay soils with scattered or isolated trees. Minor areas of sparse forbland on scalds. Generally drain into open alluvial plains and adjoin gidgee woodlands, jump ups or soft mulga sand ridges.

## Landform

Undulating plains.

## Woody vegetation

Whitewood, bauhinia, vine tree, corkwood, emu apple and boonaree on sandstone outcrops and ridges.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Mitchell grass, Queensland bluegrass, finger panic.

### Intermediate

Star grass/native millet, bottlewasher grasses.

### Non-preferred

Feathertop, white speargrass (in the south), hairy ribbon grass (in the north).

### Annual grasses

Flinders grass, button grass, downs couch.

### Common forbs

Native legumes (e.g. glycine, rhynchosia), lamb's tongue, daisy burr, wild carrot, sida, annual verbine, tarvine, cow vine, pigweed. Non-preferred species include black roly poly, goathead burr, copperburrs, roly poly.

## Suitable sown pasture

Mitchell grass, Queensland bluegrass. Buffel grass, Bambatsi, purple pigeon grass, and Angleton grass may be useful in scald reclamation.

## Introduced weeds

Parthenium, mesquite (hybrid), prickly acacia, Bathurst burr, florestina, spiked malvastrum.



<b>Soil</b>	Deep grey, brown and red, strongly cracking clays with self-mulching surfaces derived from freshwater sandstone sediment. Nearly half of the soils are shallower and occur on scattered outcrop ridges.												
Description	<b>Surface:</b> Self-mulching with some crusting; <b>Surface texture:</b> heavy clay; <b>Subsoil texture:</b> heavy clay.												
Features	Seasonal scalding occurs. Calcium carbonate nodules and or gypsum occur at depth.												
Water availability	High												
Rooting depth	Deep												
Infiltration	High initially on a dry soil profile, slowing to moderate levels after 50 mm of rain as cracks close and to low levels after 75 mm of rain. Increasing runoff following 75 mm of rain. Estimates based on low to moderate intensity storm rain.												
Fertility	Moderately high.												
Salinity	Non-saline												
Sodicity	Non-sodic at surface; subsoils sodic.												
pH	Alkaline throughout profile.												
<b>Utilisation</b>	22%												
<b>Enterprise</b>	Breeding, fattening and wool production.												
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Rotational wet season spelling to maintain perennial pasture composition.</li> <li>• Maintain adequate ground cover to minimise soil erosion.</li> <li>• Strategic burning to manage feathertop with mid dry season clean fires, and woody species (e.g. prickly acacia, gidgee) with late dry season hot fires.</li> </ul>												
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Shade and browse trees limited to crests and stony outcrops.</li> <li>• Heavier clay soils require 50–75 mm of rain for Mitchell grasses to grow.</li> </ul>												
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Maintaining groundcover and tussock structure is important for crack dwelling marsupials and reptiles e.g. dunnarts, planigales and Collett's snake.</li> </ul>												
<b>Regional ecosystems</b>	4.4.1c-g, 4.4.1x4, 4.4.1x7, 4.4.2, 4.9.1, 4.9.1a-b, 4.9.2, 4.9.2b, 4.9.4a, 4.9.4x1, 4.9.4x1a-c, 4.9.8.												
<b>WARLUS land systems</b>	<table border="1"> <thead> <tr> <th>I</th> <th>II</th> <th>III</th> <th>IV</th> <th>V</th> <th>VI</th> </tr> </thead> <tbody> <tr> <td>F1</td> <td>F1, F3, F6, F7, F8</td> <td>A1, A2, A3</td> <td>F3</td> <td>F3, F4</td> <td>F2, F3</td> </tr> </tbody> </table>	I	II	III	IV	V	VI	F1	F1, F3, F6, F7, F8	A1, A2, A3	F3	F3, F4	F2, F3
I	II	III	IV	V	VI								
F1	F1, F3, F6, F7, F8	A1, A2, A3	F3	F3, F4	F2, F3								

# Ashy downs



Photo: F1 (Allaru) Land System

## General description

Gently undulating very open Mitchell grass plains on heavily cracking clay, ashy soils often with mimosa bush conspicuous along drainage lines. Can be dominated by sparse forbland or annual grassland. Generally drain into open alluvial plains and adjoin open downs, wooded downs or gidgee woodlands.

## Landform

Gently undulating plains.

## Woody vegetation

Mimosa bushes in minor drainage lines and occasionally gundabluie.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Mitchell grass, Queensland bluegrass, finger panic.

### Intermediate

Star grass/native millet.

### Non-preferred

Hairy ribbon grass, feathertop.

### Annual grasses

Flinders grass, button grass, downs couch, pepper grass.

### Common forbs

Native legumes (e.g. glycine, rhynchosia, peabush), lamb's tongue, daisy burr, wild carrot, sida, annual verbine, tarvine, cow vine, pigweed, speedy weed, paper rose, spurge. Non-preferred species include black roly poly, goathead burr, copperburrs, roly poly.

## Suitable sown pasture

Mitchell grass.

## Introduced weeds

Parthenium, mesquite (hybrid), prickly acacia, Bathurst burr, florestina, spiked malvastrum, parkinsonia along drainage lines.

<b>Soil</b>	Deep grey and brown, strongly self-mulching cracking clays with ashy surface. Derived from predominantly salt water mudstone sediments.					
Description	<b>Surface:</b> Strongly self-mulching; <b>Surface texture:</b> heavy clay; <b>Subsoil texture:</b> heavy clay.					
Features	Large cracks are prevalent during dry periods. Calcium carbonate nodules and or gypsum occur at depth. Soils are weakly gilgaied with occasional scattered stone.					
Water availability	Moderate to high.					
Rooting depth	Deep					
Infiltration	High initially on a dry soil profile, slowing to low levels after 25–30 mm of rain as the surface seals. High runoff following 30 mm of rain. Good soaking rain required to wet the soil profile. Estimates based on low to moderate intensity storm rain.					
Fertility	Moderate					
Salinity	Non-saline at surface, increasing to high to very high values with depth.					
Sodicity	Non-sodic at surface; subsoils often sodic.					
pH	Alkaline throughout profile.					
<b>Utilisation</b>	22%					
<b>Enterprise</b>	<ul style="list-style-type: none"> <li>Breeding, fattening and wool production.</li> </ul>					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>Suitable for grazing of native pastures.</li> <li>Rotational wet season spelling to maintain perennial pasture composition.</li> <li>Maintain adequate ground cover to minimise soil erosion.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>Lack of shade and browse trees.</li> <li>Soils are highly dispersive with a high risk of erosion on steeper slopes (&gt;3%).</li> <li>Heavier clay soils require 75–100 mm of rain for Mitchell grasses to grow.</li> <li>Seasonal scalds may occur at the base of slopes and adjacent to the alluvial soils of watercourses.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>Maintaining groundcover and tussock structure is important for crack-dwelling marsupials and reptiles e.g. dunnarts, planigales and Collett's snake.</li> </ul>					
<b>Regional ecosystems</b>	4.9.1c, 4.9.20.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
				F1, F2	F1, F2, F6	F1

# Pebbly downs



Photo: F5 (Vergemont) Land System

## General description

Flat to very gently sloping open Mitchell grass plains on moderately cracking clay soils with ironstone or gidgee stone cover prominent. Can be dominated by sparse forbland or annual grassland. Generally drain into open or wooded alluvial plains and adjacent to soft mulga and/or hard gidgee.

## Landform

Flat to very gently sloping plains.

## Woody vegetation

Scattered whitewood, vine tree, leopardwood, boonaree and occasionally western bloodwood or cassias.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Mitchell grass (mainly barley), Queensland bluegrass, finger panic.

### Intermediate

Star grass/native millet, lovegrasses, knottybutt grass, bottlewasher grasses.

### Non-preferred

Feathertop.

### Annual grasses

Flinders grass, button grass, downs couch, pepper grass.

### Common forbs

Native legumes (e.g. grey rattlepod, glycine, rhynchosia), lamb's tongue, daisy burr, wild carrot, sida, potato bush, saltbush (e.g. Mueller's), pigweed, red spinach, soda bush. Non-preferred species include black roly poly, goathead burr, gidgee burr, copperburrs, roly poly.

## Suitable sown pasture

Not suitable for sown pastures.

## Introduced weeds

Parthenium, mesquite (hybrid), prickly acacia, Bathurst burr.

## Soil

Deep, red clays with self-mulching surfaces dominated by scattered stones through to stone pavement in parts with some shallower clay soils. Clay soils moderately cracking to depth.

## Description

**Surface:** Self-mulching with stone cover; **Surface texture:** heavy clay; **Subsoil texture:** heavy clay.

<b>Features</b>	Prevalent ironstone and gidgee stone cover. Gilgai depressions benefit from run-on. Gypsum is present at depth.					
<b>Water availability</b>	Moderate					
<b>Rooting depth</b>	Deep					
<b>Infiltration</b>	High initially on a dry soil profile, slowing to moderate levels after 35 mm of rain as cracks close and to low levels after 60 mm of rain. High runoff following 60 mm of rain. Estimates based on low to moderate intensity storm rain.					
<b>Fertility</b>	Moderate					
<b>Salinity</b>	Non-saline at surface, increasing to very high levels with depth.					
<b>Sodicity</b>	Non-sodic at surface; subsoils sodic.					
<b>pH</b>	Neutral to mildly alkaline throughout profile.					
<b>Utilisation</b>	22%					
<b>Enterprise</b>	Breeding, fattening and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Rotational wet season spelling to maintain perennial pasture composition.</li> <li>• Maintain adequate ground cover to minimise soil erosion.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Lack of shade and browse trees.</li> <li>• Seasonal prominence of poisonous plants, such as pimelea.</li> <li>• Light clay soils that require 25–50 mm of rain for Mitchell grasses to grow.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Potential habitat for rare and threatened fauna including bilby, kowari and plains wanderer.</li> </ul>					
<b>Regional ecosystems</b>	4.4.1x5, 4.4.1x6, 4.9.2a, 4.9.5, 4.9.5a, 4.9.5b, 4.9.5d.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	F2, F3	F2, F3, F4	F1		F5	F4

# Flooded Mitchell grasslands

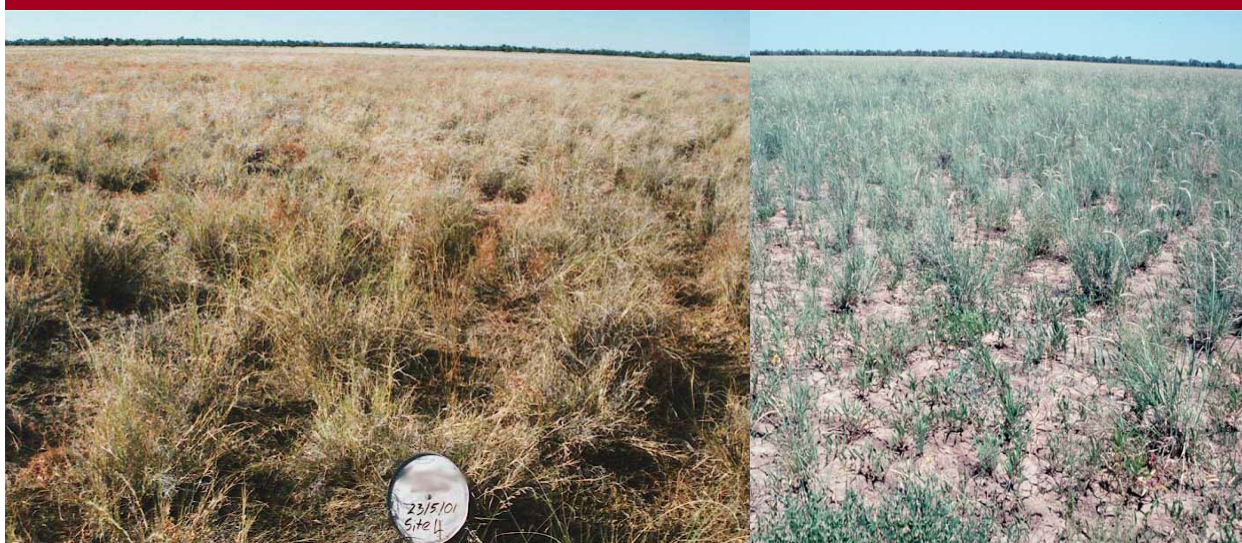


Photo: A1 (Jundah) Land System

## General description

Flat plains adjacent to rivers and streams and higher areas between braided streams which are occasionally flooded. Open-tussock grassland, generally dominated by bull or hoop Mitchell. Generally drain internally and are adjacent to open alluvial plains and floodplains.

## Landform

Flat plains adjacent to rivers and streams.

## Woody vegetation

None.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Bull and hoop Mitchell grasses, Queensland bluegrass, Warrego summer grass.

### Intermediate

Star grass/native millet, silky browntop.

### Non-preferred

### Annual grasses

Flinders grass, button grass.

### Common forbs

Mint bush, cow vine, tarvine, fruit salad plant. Non-preferred species include roly poly, copperburrs, black roly poly, goathead burr.

## Suitable sown pasture

None.

## Introduced weeds

Parthenium, mesquite (hybrid), prickly acacia, Bathurst burr.

## Soil

Deep to very deep moderately to strongly cracking brown, grey and red clays.

## Description

**Surface:** Fine self-mulching, some crusting; **Surface texture:** medium to heavy clay; **Subsoil texture:** medium to heavy clay.

<b>Features</b>	Some seasonal scalding and weak gilgai formation. Calcium carbonate throughout profile with gypsum present at depth.					
<b>Water availability</b>	Moderate to high.					
<b>Rooting depth</b>	Deep >1 m.					
<b>Infiltration</b>	High initially on a dry soil profile, slowing to moderate levels after 50 mm of rain as cracks close and to low levels after 75–100 mm of rain. Estimates based on low to moderate intensity storm rain. Good soaking rain or flooding required to wet up the soil profile.					
<b>Fertility</b>	Moderate to high.					
<b>Salinity</b>	Non-saline					
<b>Sodicity</b>	Non-sodic at surface; sodic to strongly sodic at depth.					
<b>pH</b>	Alkaline throughout profile.					
<b>Utilisation</b>	22%					
<b>Enterprise</b>	Breeding, wool production and opportunistic fattening after seasonal flooding.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Good grazing capacity.</li> <li>• Intermittent flooding provides the greatest pasture production.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Lack of shade and browse trees.</li> <li>• Prone to some scalding.</li> <li>• Heavier clay soils require 75–100 mm of rain, or flooding, for Mitchell grasses to grow.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Gilgai areas are potential breeding habitat for burrowing frogs.</li> </ul>					
<b>Regional ecosystems</b>	4.3.15.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
		A1, areas of A5		A1	areas within A1, A3, A4	areas within A1, A2

# Boree wooded downs



Photo: T2 (Kentle) Land System

## General description

Flat to gently undulating plains of boree wooded Mitchell grassland on brown and grey moderately cracking clays. Dense stone cover in patches is common. Generally drain into open or wooded alluvial plains and adjacent to open downs, soft gidgee or wooded downs.

## Landform

Flat to gently undulating plains.

## Woody vegetation

Boree, occasionally with whitewood, boonaree, leopardwood, vine tree, broom bush, mimosa, and a cassia or turkey bush layer. Often with false sandalwood.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Mitchell grasses, desert bluegrass, Queensland bluegrass, finger panic.

### Intermediate

Star grass/native millet, fairy grass, bottlewasher grasses, katoora.

### Non-preferred

Feathertop.

### Annual grasses

Flinders grass, button grass.

### Common forbs

Native legumes (e.g. grey rattlepod, glycine, rhynchosia), annual verbine, sida, potato bush, soda bush, pigweed, saltbush, tarvine, red spinach.

## Suitable sown pasture

Not suitable for sown pastures.

## Introduced weeds

Parthenium, rubbervine, bellyache bush, mother-of-millions, cactus (snake, devil's rope, harrisia and coral), spiked malvastrum, mesquite (hybrid), prickly acacia, parkinsonia.

## Soil

Moderately deep to deep brown and grey clays derived from freshwater siltstone, usually with dense gravel cover. Clay soils moderately cracking to depth.

### Description

**Surface:** Self-mulching beneath weak crusts; **Surface texture:** heavy clay, occasionally light clay; **Subsoil texture:** heavy clay.

### Features

Usually patches of dense stone cover which limit cracking. Ironstone occurs throughout the profile. Lime and gypsum are present in profile.



<b>Water availability</b>	Moderate												
<b>Rooting depth</b>	Deep												
<b>Infiltration</b>	High initially on a dry soil profile, slowing to moderate levels after 35 mm of rain as cracks close and to low levels after 60 mm of rain. High runoff following 60 mm of rain. Estimates based on low to moderate intensity storm rain.												
<b>Fertility</b>	Moderately high.												
<b>Salinity</b>	Non-saline at surface, rapidly increasing to very high levels >20 cm.												
<b>Sodicity</b>	Non-sodic												
<b>pH</b>	Moderately alkaline throughout profile.												
<b>Utilisation</b>	22%												
<b>Enterprise</b>	Breeding, fattening and wool production.												
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Provides valuable shade with sparse top-feed.</li> <li>• Rotational wet season spelling to maintain perennial pasture composition.</li> <li>• Maintain adequate ground cover to minimise soil erosion.</li> <li>• Strategic burning to manage thickening with late dry season hot fires may be required in some areas.</li> </ul>												
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Dense stone cover may restrict infiltration and limit productivity, but reduces erosion.</li> <li>• Seasonal prominence of poisonous plants, such as pimelea.</li> <li>• Boree thickening in some areas.</li> <li>• High salt levels close to the surface (&gt;20 cm) may limit productivity.</li> <li>• Moderate clay soils that require 50–75 mm of rain for Mitchell grasses to grow.</li> </ul>												
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Wooded grassland is habitat for seed and insect eating birds; tussock structure is important for crack-dwelling specialists such as dunnart, planigale and Collett's snake.</li> </ul>												
<b>Regional ecosystems</b>	4.9.7, 4.9.7a.												
<b>WARLUS land systems</b>	<table border="1"> <tr> <td>I</td> <td>II</td> <td>III</td> <td>IV</td> <td>V</td> <td>VI</td> </tr> <tr> <td></td> <td>T1, T2, T4</td> <td></td> <td>T2</td> <td>T2</td> <td></td> </tr> </table>	I	II	III	IV	V	VI		T1, T2, T4		T2	T2	
I	II	III	IV	V	VI								
	T1, T2, T4		T2	T2									

# Wooded downs



Photo: T3 (Mackunda) Land System

## General description

Flat to gently undulating open wooded plains dominated by Mitchell grass and other short grasses on clay soils, often with seasonal scalding and light stone cover. Generally drain into open or wooded alluvial plains and adjacent to hard gidgee, open downs or eucalypt woodlands.

## Landform

Flat to gently undulating plains.

## Woody vegetation

Bauhinia, whitewood, boonaree, eastern dead finish, ironwood, vine tree, leopardwood, patchy gidgee or boree and occasionally mimosa, gundabluie, broom bush. Often with a false sandalwood layer and occasionally cassia or turkey bush.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Mitchell grasses, Queensland bluegrass, buffel grass\*.

### Intermediate

Knottybutt grass, bottlewasher grasses, katoora, lovegrasses.

### Non-preferred

Feathertop, fairy grass.

### Annual grasses

Button grass, downs couch.

### Common forbs

Sida, potato bush, pigweed, red spinach, soda bush. Non-preferred species include black roly poly, goathead burr, gidgee burr, copperburrs, roly poly.

## Suitable sown pasture

Not suitable for sown pastures.

## Introduced weeds

Parthenium, rubbervine, mother-of-millions, cactus (snake, devil's rope, harrisia and coral), mesquite (hybrid), spiked malvastrum, prickly acacia.

<b>Soil</b>	Shallow to moderately deep grey and brown clays and minor texture contrast soils. Clay soils moderately cracking to depth.					
Description	<b>Surface:</b> Moderate crust; <b>Surface texture:</b> heavy clay; <b>Subsoil texture:</b> heavy clay.					
Features	Light stone cover. Ironstone and lime occurs throughout the profile.					
Water availability	Moderate to low.					
Rooting depth	Variable, moderately deep to shallow.					
Infiltration	Moderate to low initially on a dry soil profile, slowing to low levels after 25–35 mm of rain as cracks close. Increasing runoff following 35 mm of rain. Estimates based on low to moderate intensity storm rain.					
Fertility	Moderate					
Salinity	Non-saline at surface, increasing to moderate levels in subsoils.					
Sodicity	Non-sodic					
pH	Moderately to strongly alkaline throughout profile.					
<b>Utilisation</b>	20%					
<b>Enterprise</b>	Breeding, fattening and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Potential for goat and/or meat sheep production.</li> <li>• Good shade with top-feed usually present.</li> <li>• Rotational wet season spelling to maintain perennial pasture composition.</li> <li>• Maintain adequate ground cover to minimise soil erosion.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Shallow soils may limit productivity.</li> <li>• Thickening of woody species, especially false sandalwood.</li> <li>• Minor erosion and seasonal scalding.</li> <li>• Seasonal impact from poisonous plants, such as pimelea and turkey bush.</li> <li>• Moderate clay soils that require 50–75 mm of rain for Mitchell grasses to grow.</li> </ul>					
<b>Conservation and related management</b>	<ul style="list-style-type: none"> <li>• Shrubland or woodland with grassy ground layer is habitat for seed and insect eating birds. Invasion by buffel grass reduces habitat quality.</li> </ul>					
<b>Regional ecosystems</b>	4.3.21x50, 4.3.23, 4.5.5x1, 4.5.6x1, 4.5.8x1, 4.9.12x2, 4.9.12x4b, 4.9.12x5, 4.9.12x6, 4.9.12x7a-d, 4.9.18, 4.9.6, 4.9.8b.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
		T3, T4, F5		T1, S1	T3	

# Soft gidgee

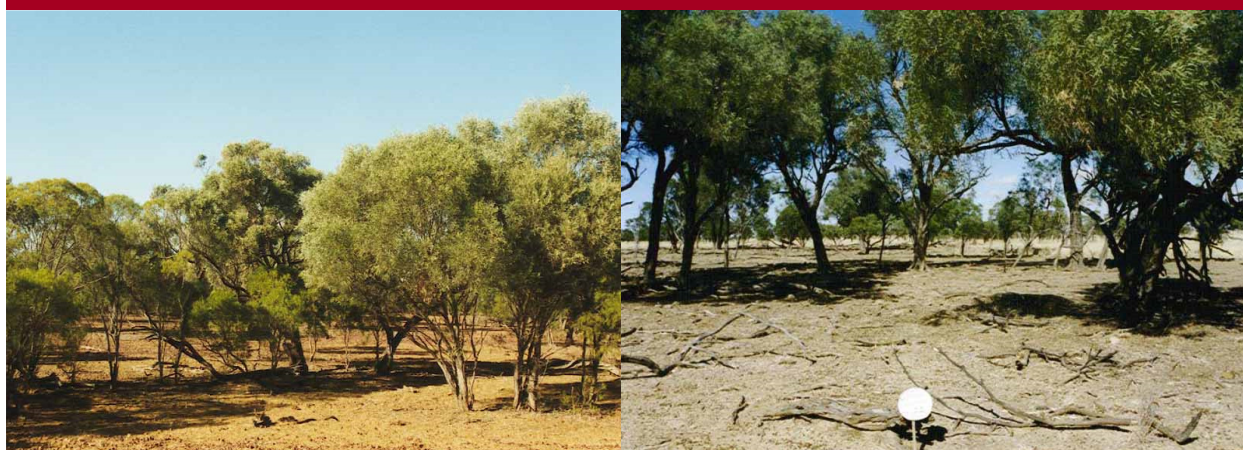


Photo: T1 (Accord) Land System

## General description

Flat to gently undulating closed to open gidgee wooded plains on clay soils often with patchy Mitchell grass and minor stone cover. Generally drain into open or wooded alluvial plains and adjacent to open downs, hard gidgee, jump-ups and eucalypt woodlands.

## Landform

Flat to gently undulating plains.

## Woody vegetation

Gidgee, often associated with black gidgee and mimosa, and occasional low shrubs of gundabluie and flowering lignum. Occasionally with boree, whitewood, leopardwood, wilga, vine tree, wild orange, ruby saltbush, broom bush, turkey bush and Queensland bluebush in depressions. Often with a dense false sandalwood layer.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Mitchell grasses, buffel grass\*.

### Intermediate

Star grass/native millet, katoora, lovegrasses, bottlewasher grasses, fairy grass.

### Non-preferred

Feathertop, wiregrasses.

### Annual grasses

Flinders grass, button grass, downs couch.

### Common forbs

Red spinach, soda bush, potato bush, flannel weed, pigweed. Non-preferred species include black roly poly, goathead burr, gidgee burr, copperburrs, roly poly.

## Suitable sown pasture

Buffel grass, Mitchell grass, Queensland bluegrass.

## Introduced weeds

Parthenium, parkinsonia, rubbervine, bellyache bush, Noogoora burr, Bathurst burr, mother-of-millions, cactus (snake, devil's rope, harrisia and coral), mesquite, prickly acacia, Mexican poppy, florestina, African box thorn, Chinee apple.

<b>Soil</b>	Moderately deep to deep brown and grey clays with soft self-mulching surfaces. Surface gravel is common in timbered areas. Clay soils moderately cracking to depth.												
<b>Description</b>	<b>Surface:</b> Soft self-mulching; <b>Surface texture:</b> medium to heavy clay; <b>Subsoil texture:</b> medium to heavy clay.												
<b>Features</b>	Light gravel and stone cover is common. Gypsum occurs at depth. Ironstone and quartz inclusions. Weak to moderate gilgais.												
<b>Water availability</b>	Moderate to high.												
<b>Rooting depth</b>	Deep												
<b>Infiltration</b>	High initially on a dry soil profile, slowing to moderate levels after 50 mm of rain as cracks close and to low levels after 100 mm of rain. Increasing runoff following 100 mm of rain. Estimates based on low to moderate intensity storm rain.												
<b>Fertility</b>	Moderate to high.												
<b>Salinity</b>	Non-saline at surface, increasing with depth.												
<b>Sodicity</b>	Non-sodic												
<b>pH</b>	Generally alkaline throughout profile.												
<b>Utilisation</b>	18% (native); 30% (improved).												
<b>Enterprise</b>	Breeding and wool production (unimproved); breeding, fattening and wool production (improved).												
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures and sown pastures.</li> <li>• Rotational wet season spelling to maintain perennial pastures.</li> <li>• Maintain adequate ground cover to minimise soil erosion.</li> <li>• Strategic burning to manage gidgee thickening with late dry season hot fires.</li> </ul>												
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Dense gidgee or false sandalwood thickening limits productivity.</li> <li>• Rundown of buffel pastures in the long term (&gt;20 years).</li> <li>• Moderate clay soils that require 50–75 mm of rain for Mitchell grasses to grow.</li> </ul>												
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Very diverse woodland / shrubland which has been extensively cleared.</li> <li>• Biodiversity value is related to size and connectivity of remnant patches.</li> </ul>												
<b>Regional ecosystems</b>	2.5.3a, 4.5.6, 4.5.6x2a-c, 4.5.6x4, 4.5.7a-b, 4.5.9, 4.9.10a-d, 4.9.11, 4.9.11x1, 4.9.14x1, 4.9.14x40a-c, 4.9.14x41, 4.9.14x42, 4.9.16, 4.9.7x1.												
<b>WARLUS land systems</b>	<table border="1"> <tr> <td>I</td> <td>II</td> <td>III</td> <td>IV</td> <td>V</td> <td>VI</td> </tr> <tr> <td>G4, G5</td> <td>T5, G1, G4</td> <td>G1, G2, G3</td> <td>G1, G3, areas of W4</td> <td>T1, G1, G2</td> <td></td> </tr> </table>	I	II	III	IV	V	VI	G4, G5	T5, G1, G4	G1, G2, G3	G1, G3, areas of W4	T1, G1, G2	
I	II	III	IV	V	VI								
G4, G5	T5, G1, G4	G1, G2, G3	G1, G3, areas of W4	T1, G1, G2									

# Hard gidgee

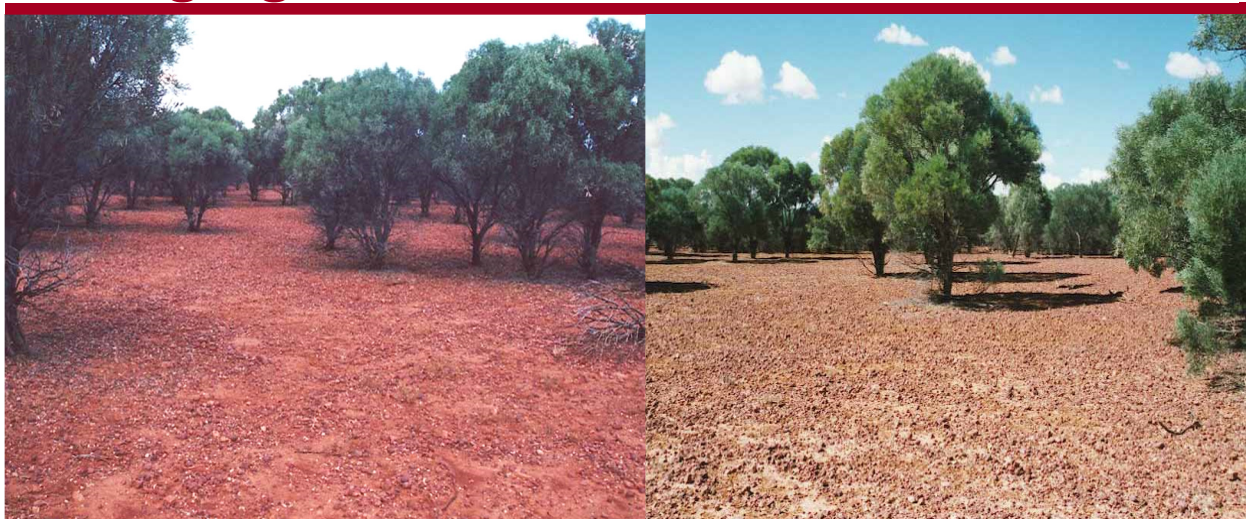


Photo: G3 (Spoilbank) Land System

## General description

Flat to sloping closed gidgee woodland plains on brown cracking clays with dense stone and gravel cover. Generally drain into wooded alluvial plains and adjacent to soft mulga sandridge, soft gidgee, boree wooded downs and jump-ups.

## Landform

Flat to sloping plains.

## Woody vegetation

Gidgee often in association with false sandalwood, sandalwood, whitewood, broom bush, wild orange and cassia.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Katoora, occasionally Mitchell grasses.

### Intermediate

Woollybutt wanderrie grass, mountain wanderrie grass, fairy grass, bottlewasher grasses, knottybutt grass, and spinifex in sandy soils.

### Non-preferred

Wiregrasses.

### Annual grasses

Button grass.

### Common forbs

Pigweed, hibiscus, sida, flannel weed, saltbush, potato bush. Non-preferred species include goathead burr, gidgee burrs, copperburrs, roly poly.

## Suitable sown pasture

Generally not recommended, some areas may be suited to buffel or Mitchell grass.

## Introduced weeds

Parthenium, mother-of-millions, cactus (snake, devil's rope, harrisia and coral).

## Soil

Deep brown clays derived from fresh and salt water mudstone and sandstone sediments with dense stone and gravel cover, and deep sandy texture contrast soils. Clay soils weakly cracking to depth.

### Description

**Surface:** Usually dense stone and gravel cover; **Surface texture:** sandy clay to medium clay; **Subsoil texture:** medium clay.

<b>Features</b>	Variable gilgai development. Usually dense gravel and stone cover. Soils are fragile and actively eroding. Often shallow topsoil, subsoil very dispersive.					
<b>Water availability</b>	Moderate					
<b>Rooting depth</b>	Shallow to moderate.					
<b>Infiltration</b>	Moderate initially on a dry soil profile, slowing to low levels after 25 mm of rain as topsoil is saturated. High runoff following 25 mm of rain. Estimates based on low to moderate intensity storm rain.					
<b>Fertility</b>	Low to moderate.					
<b>Salinity</b>	Non-saline at surface, increasing rapidly to high level in subsoils.					
<b>Sodicity</b>	Non-sodic at surface; sodic at depth.					
<b>pH</b>	Neutral to alkaline at surface; strongly alkaline at depth.					
<b>Utilisation</b>	15%					
<b>Enterprise</b>	Breeding and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Generally unsuited to clearing.</li> <li>• Maximise ground cover to reduce soil erosion.</li> <li>• Reduce erosion risk by preventing subsoils from being exposed.</li> <li>• These areas provide good runoff for adjacent country.</li> <li>• Provides shade and sparse top-feed.</li> <li>• Strategic burning to manage gidgee encroachment with late dry season hot fires.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Dense gidgee thickening, stone and gravel cover, slope and fragile soils limit productivity.</li> <li>• High erosion risk.</li> <li>• Seasonal impact from poisonous plants such as pencil caustic, turkey bush and pimelea.</li> <li>• Thickening of woody species (false sandalwood) may limit productivity.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• High reptile habitat value. Size, connectivity and condition of ground layer vegetation determine fauna values.</li> </ul>					
<b>Regional ecosystems</b>	4.5.6x2d, 4.7.4, 4.7.4a-d, 4.9.16a.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	G1, G2, G3	G2, G3			G3, G4, G5	T1, T2

# Hard mulga



Photo: H1 (Opalton) Land System

## General description

Flat to gently undulating plains, grading into dissected hills (slopes to 10%), with mulga and bastard mulga tall shrublands, occurring on shallow red earths and gravelly brown clays. These areas are often associated with (or perched on top of) jump-ups, where rock and large pebbles cover the shallow sandy soils, or with soft mulga.

## Landform

Flat to gently undulating plains to dissected hills (slopes to 10%).

## Woody vegetation

Mulga and bastard mulga, groved in places, occurring with gidgee, lancewood and western bloodwood. Occasional areas of gidgee spinifex low open woodland and areas devoid of vegetation. Occurrences of mountain yapunyah, turkey bush, hakea, hobbush and cassia.

## Expected pasture composition

\* Denotes non-native "Expected Pasture Composition" species.

### Preferred

Soft spinifex, lovegrasses, cotton panic.

### Intermediate

Woollybutt wanderrie grass, mountain wanderrie grass, bottlewasher grasses, pincushion spinifex, five-minute grass.

### Non-preferred

Wiregrasses.

### Annual grasses

Lovegrasses.

### Common forbs

Crumbweed, silky bluebush, pretty polly, foxtails, hibiscus. Non-preferred species include gidgee burr, copperburrs.

## Suitable sown pastures

Not suitable for sown pastures.

## Introduced weeds

Mother-of-millions, cactus (snake, devil's rope, harrisia and coral).



<b>Soil</b>	Very shallow red earths, gravely ironstones and desert loams with shallow, stony clays in depressions.					
Description	<b>Surface:</b> Variable stone and gravel cover; <b>Surface texture:</b> sandy loam to sandy clay loam; <b>Subsoil texture:</b> sandy loam to sandy clay loam.					
Features	Extensive outcropping of parent material and/or extensive cover of rock and rubble. Soils are often scalded and severely eroded.					
Water availability	Low					
Rooting depth	Shallow					
Infiltration	Very low. High proportion of runoff following 5 mm of rain, even under low intensity rainfall. Runoff contributes to neighbouring land types.					
Fertility	Low to very low.					
Salinity	Non-saline					
Sodicity	Non-sodic					
pH	Strongly acid.					
<b>Utilisation</b>	15%					
<b>Enterprise</b>	Limited breeding and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for conservative seasonal grazing of native pastures.</li> <li>• Maximise ground cover to reduce soil erosion.</li> <li>• These areas provide good runoff for adjacent country.</li> <li>• Provides shade and limited top feed.</li> <li>• Mosaic burning to increase spinifex palatability and availability of green forage.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Dense mulga and cassia thickening, stone and gravel cover, slope and fragile soils limit productivity.</li> <li>• Severe sheet erosion evident and some scalding.</li> <li>• Generally need phosphorus supplements for livestock.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• These areas provide potential habitat for rare and threatened flora species including <i>Grevillea kennedyana</i>.</li> <li>• Maintenance of ground cover will minimise extensive loss of topsoil and degradation of these areas.</li> </ul>					
<b>Regional ecosystems</b>	4.5.2, 4.5.3x70.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	H1 to H5	H1 to H5	H1, H2, H3, H4	H1	H1	H1

# Soft mulga



Photo: M1 (Tonkoro) Land System

## General description

Flat to gently sloping plains of red earths and light clays with mulga low woodland to tall shrublands that are often distinctly groved. Generally drain into wooded alluvial plains and adjoin soft mulga sandridge, spinifex sandplains, hard mulga or hard gidgee.

## Landform

Flat to gently sloping plains.

## Woody vegetation

Mulga occurring with whitewood, and western bloodwood in some areas. Often with a cassia or turkey bush understorey. To the south of the region may occur in association with poplar box.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Cotton panic, kangaroo grass, silky umbrella grass, mulga Mitchell.

### Intermediate

Woollybutt wanderrie grass, mountain wanderrie grass, bottlewasher grasses.

### Non-preferred

Wiregrasses.

### Annual grasses

Three-awn wanderrie grass, windmill grass.

### Common forbs

Goodenia, silky bluebush, tropical speedwell, green crumbweed. Non-preferred species include copperburrs.

## Suitable sown pastures

None suitable.

## Introduced weeds

Mother-of-millions, cactus (snake, devil's rope, harrisia and coral).

## Soil

Mostly moderately deep to deep sandy light clays, with some deep sandy red earths, overlaying clay soils.

## Description

**Surface:** Loamy hard or moderately hard surfaces; **Surface texture:** light sandy loam to clay loam; **Subsoil texture:** clay content increasing down profile to light to medium clays.

<b>Features</b>	Ironstone present on soil surface and in profile. Sinkholes associated with sandy light clays.					
<b>Water availability</b>	Low to very low.					
<b>Rooting depth</b>	Deep					
<b>Infiltration</b>	High to very high.					
<b>Fertility</b>	Low to very low.					
<b>Salinity</b>	Non-saline					
<b>Sodicity</b>	Non-sodic					
<b>pH</b>	Medium to strongly acid throughout.					
<b>Utilisation</b>	15%					
<b>Enterprise</b>	Breeding and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Maximise ground cover to reduce soil erosion.</li> <li>• These areas provide good run-off for adjacent country.</li> <li>• Provides shade and useful top feed.</li> <li>• Responds to small falls of rain.</li> <li>• Strategic burning with hot fires may be needed to reduce thickening.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Dense mulga thickening, stone and gravel cover and infertile fragile soils limit productivity.</li> <li>• Generally require phosphorus supplements for livestock.</li> <li>• Little evidence of erosion.</li> <li>• Woodland thickening and encroachment.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Mulga soils tend to have modified ground layer.</li> <li>• Fencing to manage total grazing pressure and wet season spelling can be beneficial.</li> <li>• Size, shape and connectivity of remnant patches will determine their biodiversity values.</li> </ul>					
<b>Regional ecosystems</b>	4.5.3a, 4.5.3x2.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	M1, M2, M3, M4, M5	M1, M2, M3, M4	M1, M2, M3, M4, M5	M1, M2	M1	M1

# Soft mulga sandridge



Photo: S1 (Sunnyside) Land System

## General description

Flat to very gently sloping sandplains and deep red earths dominated by mulga shrubland with eastern dead finish, beefwood and western bloodwood. Usually drains into wooded alluvial plains and adjoins open downs and jump ups.

## Landform

Flat to very gently sloping sandplains.

## Woody vegetation

Mulga associated with eastern dead finish, beefwood, ironwood and western bloodwood. Leopardwood and whitewood are locally common. Occurrences of turkey bush, cassia, hakea, native cotton, wild orange, broom bush, currant bush and false sandalwood.

## Expected pasture composition

*\* Denotes non-native "Expected Pasture Composition" species.*

### Preferred

Desert bluegrass, kangaroo grass, silky umbrella grass, mulga Mitchell, cotton panic.

### Intermediate

Woollybutt wanderrie grass, mountain wanderrie grass, bottlewasher grasses.

### Non-preferred

Wiregrasses.

### Annual grasses

Bottlewasher grasses, lovegrasses, three-awn wanderrie grass, windmill grass.

### Common forbs

Tarvine, silky bluebush, tropical speedwell, tomato bush, narrow-leaved indigo. Non-preferred species include lifesaver burr.

## Suitable sown pastures

Not suitable for sown pastures.

## Introduced weeds

Mother-of-millions, cactus (snake, devil's rope, harrisia and coral).

## Soil

Mostly moderately deep sandy red earths and minor sandy light clays with some sandy texture contrast soils.

### Description

**Surface:** Loose; **Surface texture:** sand to sandy loam; **Subsoil texture:** sand to sandy loam.

<b>Features</b>	Nodules of ironstone and manganese are present in the profile as well as ironstone gravel and lime inclusions.					
<b>Water availability</b>	Low to moderate.					
<b>Rooting depth</b>	Deep					
<b>Infiltration</b>	High to very high in deep sands, low to moderate in texture contrast soils. High runoff following 10 mm of rain on texture contrast soils. Estimates based on low to moderate intensity storm rain.					
<b>Fertility</b>	Moderate to low.					
<b>Salinity</b>	Non-saline					
<b>Sodicity</b>	Non-sodic					
<b>pH</b>	Slightly acid to moderately alkaline.					
<b>Utilisation</b>	15%					
<b>Enterprise</b>	Breeding and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• In texture contrast soils, maximise surface cover, particularly with standing pasture, to increase infiltration and increase pasture production.</li> <li>• Maximise ground cover to reduce soil erosion.</li> <li>• These areas provide good runoff for adjacent country.</li> <li>• Provides shade and reasonable top-feed.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Dense gidgee thickening, stone and gravel cover, slope and fragile soils limit productivity.</li> <li>• Thickening of woody species (false sandalwood) may limit productivity.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Mulga soils tend to have modified ground layer.</li> <li>• Spinifex areas are potential habitat for endangered night parrot.</li> <li>• Spinifex needs patch burning regime to maintain diversity and reduce risk of extensive wildfires.</li> <li>• Fencing to manage total grazing pressure and wet season spelling can be beneficial.</li> </ul>					
<b>Regional ecosystems</b>	4.5.3x1a, 4.5.3x1b, 4.5.4, 4.5.5a, 4.5.5c.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	S1, S2	S1,S2,S3	S1,S3		S1	

# Spinifex sandplains



Photo: S2 (Athelstane) Land System

<b>General description</b>	Flat sandplains supporting wooded spinifex grassland on alluvial clay depressions and occasional low rises, of deep sandy red earths. Often internally drain into clay swamps and adjacent to soft mulga.
<b>Landform</b>	Flat sandplains.
<b>Woody vegetation</b>	Western bloodwood, beefwood, mulga and eastern dead finish, occasionally with Normanton box on harder country, coolibah and river red gum fringing swamps with lignum within the swamps. Generally with a well developed shrub layer of turkey bush, hakea, broom bush, native cotton and false sandalwood.
<b>Expected pasture composition</b>	<i>* Denotes non-native "Expected Pasture Composition" species.</i>
Preferred	Soft spinifex, desert bluegrass, kangaroo grass.
Intermediate	Lovegrasses, buck spinifex.
Non-preferred	Wiregrasses.
Annual grasses	Bottlewasher grasses.
Common forbs	Tarvine, silky bluebush, sida, potato bush, narrow-leaved indigo.
<b>Suitable sown pastures</b>	Not suitable for sown pastures.
<b>Introduced weeds</b>	Harrisia cactus.
<b>Soil</b>	Deep sandy red earths and sandy texture contrast soils with minor desert loams associated with rock shelves and shallow grey clays in swamps.
Description	<b>Surface:</b> Loose; <b>Surface texture:</b> sand to sandy loam; <b>Subsoil texture:</b> sand to sandy loam.
Features	Ironstone gravel, lime and manganese inclusions in the profile.

<b>Water availability</b>	Low to moderate.					
<b>Rooting depth</b>	Deep					
<b>Infiltration</b>	High to very high in deep sands, low to moderate in texture contrast soils. High runoff following 5 mm of rain on texture contrast soils. Estimates based on low to moderate intensity storm rain.					
<b>Fertility</b>	Moderate to low.					
<b>Salinity</b>	Non-saline					
<b>Sodicity</b>	Non-sodic					
<b>pH</b>	Slightly acid to moderately alkaline.					
<b>Utilisation</b>	15%					
<b>Enterprise</b>	Breeding and wool production.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Provides shade and limited top feed.</li> <li>• In texture contrast soils, maximise surface cover, particularly with standing pasture, to increase infiltration and increase pasture production.</li> <li>• Maximise ground cover to reduce soil erosion.</li> <li>• Mosaic burning to increase spinifex palatability and availability of green forage.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Low fertility soils limit production.</li> <li>• Livestock may need phosphorus supplements.</li> <li>• Texture contrast soils are prone to scalding and sheet erosion.</li> <li>• Some erosion and thickening.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Spinifex areas are potential habitat for rare bird, pictorella mannikin.</li> <li>• Spinifex needs patch burning regime to maintain diversity and reduce risk of extensive wildfires.</li> </ul>					
<b>Regional ecosystems</b>	4.5.8, 4.5.8x1.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
		S2, S4, S6	S2, N1		S2	S1, S2

# Jump-ups



Photo: R4 (Bladensburg) Land System

## General description

Flat-topped and rounded hills with steep eroding slopes (mesas and buttes) that have been modified by weathering, chemical alteration of sediments and extensive erosion. Stone cover and rock outcrops are extensive and soil development is minimal. Sitting the highest in the landscape, jump-ups usually represent the divisions between drainage zones. Generally adjacent to spinifex sandplains, pebbly downs or hard gidgee.

## Landform

Mesas and buttes.

## Woody vegetation

Mulga, bende, lancewood open scrub to tall open scrubland on the scarps, with Normanton box, mineritchie tall open shrubland on lower stages; western bloodwood, beefwood, eastern dead finish on flat tops; a variety of other trees, including bastard mulga, mountain yapunyah and gidgee. Coolibah, river red gum, ghost gum along shallow creeks.

## Expected pasture composition

\* Denotes non-native "Expected Pasture Composition" species.

### Preferred

Kangaroo grass, soft spinifex, barley Mitchell grass.

### Intermediate

Lovegrasses, mountain wanderrie grass, woollybutt wanderrie grass, hard spinifex.

### Non-preferred

Wiregrasses.

### Annual grasses

Bottlewasher grasses.

### Common forbs

Sida, flannel weed.

## Suitable sown pastures

Not suitable for sown pastures.

## Introduced weeds

Cactus (snake, devil's rope, harrisia and coral).

## Soil

Skeletal soils and shallow red earths; texture contrast soils and stony brown clays on steep slopes at the base of cliffs; often extensive rock outcropping.

### Description

**Surface:** Variable stone and gravel cover; **Surface texture:** sandy loam to none; **Subsoil texture:** weathered parent material.



<b>Features</b>	Extensive rock outcropping and/or extensive cover of rock, rubble and gravel.					
<b>Water availability</b>	Very low.					
<b>Rooting depth</b>	Very shallow.					
<b>Infiltration</b>	Very low. High proportion of runoff following 5 mm of rain, even under low intensity rainfall. Runoff contributes to neighbouring land types.					
<b>Fertility</b>	Very low.					
<b>Salinity</b>	Non-saline					
<b>Sodicity</b>	Non-sodic					
<b>pH</b>	Very acidic.					
<b>Utilisation</b>	10%					
<b>Enterprise</b>	Rarely grazed.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• These lands are generally unproductive but are of value for water-shedding and recreation.</li> <li>• These areas provide good runoff for adjacent country.</li> <li>• Provide shade.</li> <li>• Maximise ground cover to reduce soil erosion, especially on slopes</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Naturally unstable with high rates of erosion.</li> <li>• No top-feed.</li> <li>• Livestock may need phosphorus supplements.</li> <li>• Stock water is often limiting.</li> <li>• Often poisonous plants such as spotted emu bush and pencil caustic.</li> <li>• Woodland thickening, stone and gravel cover, slope and fragile soils limit productivity.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Spinifex areas are potential habitat for rare bird, pictorella mannikin.</li> <li>• Spinifex needs patch burning regime to maintain diversity and reduce risk of extensive wildfires.</li> </ul>					
<b>Regional ecosystems</b>	4.5.5, 4.7.1, 4.7.1a-b, 4.7.2, 4.7.2x1 a-c, 4.7.2x2, 4.7.3, 4.7.6a, 4.7.6x1, 4.7.7x1, 4.7.8a-b, 4.9.13a-d, 4.9.13x1.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	R1 to R6	R1 to R8	R1, R2, R3	R1, R2, R3, R4	R1, R2, R3, R4	R1, R2, R3, R4

# Open alluvial plains



Photo: A3 (Landsborough) Land System

<b>General description</b>	Seasonally flooded flat alluvial plains dominated by annual pastures and associated with braided rivers and streams. Scalding is often present on less frequently flooded inter-channel ridges. Generally adjacent to open downs and hard gidgee.
<b>Landform</b>	Flat alluvial plains.
<b>Woody vegetation</b>	Coolibah, belalie, river red gum open-woodland fringing channels with minor areas of gidgee low woodland to low-open woodland. Boree open woodland often fringes the stream margins. Within the WARLUS Part II region, eastern dead finish, beefwood, bauhinia, mulga, mineritchie and poplar box may occur.
<b>Expected pasture composition</b>	<p><i>* Denotes non-native "Expected Pasture Composition" species.</i></p> <p><i># Denotes non-grass species that are important to grazing and land condition values in annually dominated land types.</i></p>
Preferred	Mitchell grass, desert bluegrass, Warrego summer grass.
Intermediate	Curly windmill grass.
Non-preferred	Wiregrasses.
Annual grasses	Flinders grass, button grass.
Common forbs	Goodenia, saltbush, cow vine#. Non-preferred species include copperburrs.
<b>Suitable sown pastures</b>	Mitchell grass, Queensland bluegrass. Buffel grass, bambatsi, purple pigeon grass, Angleton grass may be useful in scald reclamation.
<b>Introduced weeds</b>	Parthenium, parkinsonia, mesquite (hybrid), prickly acacia, rubbervine, bellyache bush, Noogoora burr, cactus, chinee apple, Mexican poppy.
<b>Soil</b>	Generally highly productive deep to very deep brown and grey alluvial cracking clays with self-mulching surfaces associated with seasonal scalds, to sandy grey claypans with very hard crusting surfaces. Areas of gilgai.
Description	<b>Surface:</b> Self-mulching clays with areas of claypan with very hard crusting surfaces and/or seasonal scalding; <b>Surface texture:</b> heavy clay; <b>Subsoil texture:</b> heavy clay.
Features	Lime and gypsum are present, with dense concentrations of gypsum at depth in some locations. Mottling may occur at depth. Ironstone and manganese also present in some locations. Natural water-ponding in some scalded areas due to very low infiltration rates.

<b>Water availability</b>	Low to moderate.					
<b>Rooting depth</b>	Shallow to moderate.					
<b>Infiltration</b>	High initially on a dry soil profile, slowing to low levels after 75–100 mm of rain as cracks close. Good soaking rain or flooding required to wet the soil profile. Low on claypans, with water-ponding following 5 mm of rain or less as the surface seals.					
<b>Fertility</b>	Moderate to high.					
<b>Salinity</b>	Non-saline or low at surface; variable at depth from low to very high.					
<b>Sodicity</b>	Non-sodic					
<b>pH</b>	Generally moderate to strongly alkaline throughout. Neutral grading to acid at depth in association with mottled soils.					
<b>Utilisation</b>	18%					
<b>Enterprise</b>	Breeding, wool production and opportunistic fattening after seasonal flooding.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Maximise ground cover to reduce soil erosion.</li> <li>• These areas receive runoff from adjacent country.</li> <li>• Provides shade.</li> <li>• Some clay pan areas can be returned to deep cracking clays using shallow pondage systems.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Scalded areas may limit productivity.</li> <li>• Evidence of gully erosion adjacent to scalds.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Hollows in coolibah and river red gums are essential breeding sites for parrots, owls, waterbirds and bats.</li> <li>• Timbered drainage lines provide refuge areas and connectivity across grassy landscapes.</li> <li>• Maintaining diversity of ages and species of trees is important.</li> <li>• Associated wetland areas provide critical breeding habitat and food chains for fish and wetland birds.</li> <li>• Managing grazing pressure, feral animals and weed invasions are priority issues.</li> </ul>					
<b>Regional ecosystems</b>	4.3.10a-b, 4.3.11, 4.3.11a-e, 4.3.11x1, 4.3.14, 4.3.16a, 4.3.17, 4.3.17a-b, 4.3.18a, 4.3.18x1a-b, 4.3.20, 4.3.20x1, 4.3.22, 4.3.23, 4.3.2a-b, 4.3.3, 4.3.3a, 4.3.3c, 4.3.4, 4.3.4a, 4.3.4c-f, 4.3.4x1, 4.3.4x2a-d, 4.3.5a-b, 4.3.5a-b, 4.3.8, 4.3.8e-f, 4.3.9, 4.3.9a-b.					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	A1 to A4	A2 to A6			A1 to A6	A1, A2

# Wooded alluvial plains



Photo: W3 (Ravensbourne) Land System

<b>General description</b>	Flooded alluvial plains with numerous braided channels supporting (generally) dense tree cover which drain surrounding clay soils of downs and gidgee lands with some umbrella canegrass swamps.
<b>Landform</b>	Alluvial plains.
<b>Woody vegetation</b>	Coolibah and river red gum grassy low open-woodland to open-woodland on channels; and gidgee low woodland on inter-channel areas. Other trees may also be present including boree, eastern dead finish, ironwood, poplar box and false sandalwood.
<b>Expected pasture composition</b>	<i>* Denotes non-native "Expected Pasture Composition" species.</i>
Preferred	Bluegrasses, silky browntop, umbrella canegrass, Warrego summer grass, Mitchell grasses on interchannel areas, buffel grass*.
Intermediate	Lovegrass, katoora, desert bluegrass.
Non-preferred	
Annual grasses	Flinders grass, channel millet (preferred).
Common forbs	Goodenia, saltbush, cow vine. Non-preferred species include copperburrs.
<b>Suitable sown pastures</b>	None suitable.
<b>Introduced weeds</b>	Parkinsonia, mesquite (hybrid), prickly acacia, chinee apple, parthenium, rubbervine, bellyache bush, Noogoora burr, mother-of-millions, cactus (snake, devil's rope, harrisia, coral), Mexican poppy.
<b>Soil</b>	Deep to very deep cracking clays and gilgaied sandy grey alluvial clays with some seasonal scalding. Deep siliceous texture contrast soils when draining sandy country.
Description	<b>Surface:</b> Cracking clay, thin surface crust may be present; <b>Surface texture:</b> medium to heavy clay; <b>Subsoil texture:</b> medium to heavy clay.
Features	Coarse sand, ironstone concretions and gravel throughout the profile. Lime and gypsum concentrations common.

Water availability	Moderate to high in cracking clays, low in texture contrast soils.
Rooting depth	Deep
Infiltration	High initially on a dry soil profile, slowing to low levels after 50–75 mm of rain as cracks close. Good soaking rain or flooding required to wet the soil profile. Low to moderate on texture contrast soils, runoff increasing following 10 mm of rain as the surface seals.
Fertility	Moderate to low.
Salinity	Low at surface, increasing to very high at depth.
Sodicity	Non-sodic
pH	Alkaline throughout.

**Utilisation** 18%

**Enterprise** Breeding, wool production and opportunistic fattening after seasonal flooding.

**Land use and management recommendations**

- Suitable for grazing of native pastures.
- Maximise ground cover to reduce soil erosion.
- These areas receive runoff from adjacent country.
- Provides shade and useful top-feed.
- Strategic burning to manage gidgee thickening with late dry season hot fires.

**Land use limitations**

- Thickening of woody species (false sandalwood or gidgee) may limit productivity in areas.

**Conservation features and related management**

- Coolibah and river red gum have hollows which are essential breeding sites for parrots, owls, waterbirds and bats.
- Timbered drainage lines provide refuge areas and connectivity across grassy landscapes.
- Maintaining diversity of ages and species of trees is important.
- Associated wetland areas provide critical breeding habitat and food chains for fish and wetland birds.
- Managing grazing pressure, feral animals and weed invasions are priority issues.

**Regional ecosystems**

4.3.1, 4.3.1a, 4.3.1b, 4.3.2, 4.3.8f, 4.5.6x5.

**WARLUS land systems**

I	II	III	IV	V	VI
W1,W2, W3,W4, W5,W6, W7	W1, W2, W3, W4, W5, W6, W7	W1, W2, W3, W4, W5, W6, W7, W8	W1, W2, W3, W4, W5	W1, W2, W3, W4	W1, W2

# Floodplains



Photo: C1 (Kendall) land system

<b>General description</b>	Flat, generally treeless, alluvial plains supporting annual pastures with one or more main channels, smaller secondary channels and numerous shallow channels (gutters) on deep cracking clays with sand and silt intermixed. Lignum and Queensland bluebush swamps can be found adjacent to main channels.
<b>Landform</b>	Flat alluvial plains with channels.
<b>Woody vegetation</b>	Coolibah and river red gum lining the channels; belalie, gooramurra, lignum.
<b>Expected pasture composition</b>	<p><i>* Denotes non-native "Expected Pasture Composition" species.</i></p> <p><i># Denotes non-grass species that are important to grazing and land condition values in annually dominated land types.</i></p>
Preferred	Bull Mitchell grass, Queensland bluebush#.
Intermediate	Rat's tail couch, fairy grass.
Non-preferred	Difficult to determine.
Annual grasses	Flinders grass, channel millet (preferred), pepper grass, button grass, Australian dropseed.
Common forbs	Annual verbine, soda bush, Cooper clover#, cow vine#, tarvine, daisies, downs nut grass#, channel nut grass#. Non-preferred species include roly poly, copperburrs, black roly poly.
<b>Suitable sown pastures</b>	Not suitable for sown pastures.
<b>Introduced weeds</b>	Mesquite (hybrid), prickly acacia, parthenium, Bathurst burr.
<b>Soil</b>	Very deep cracking clays with sand and silt intermixed.
Description	<b>Surface:</b> Self-mulching crusting may occur; <b>Surface texture:</b> silty clay to heavy clay; <b>Subsoil texture:</b> heavy clay.
Features	Sand and silt bands common in the profile. Flooding provides greater benefit than rain as >100 mm generally required for a response.

<b>Water availability</b>	Moderate to high.					
<b>Rooting depth</b>	Deep					
<b>Infiltration</b>	High initially on a dry soil profile, slowing to low levels after 30–60 mm of rain as the surface seals. Good soaking rain or flooding required to wet the soil profile.					
<b>Fertility</b>	Moderate to high.					
<b>Salinity</b>	Non-saline at the surface increasing to very high at depth.					
<b>Sodicity</b>	Non-sodic at the surface increasing to strongly sodic at depth.					
<b>pH</b>	Alkaline throughout.					
<b>Utilisation</b>	Estimated at 15%, but difficult to determine due to high variability of pasture growth following flooding.					
<b>Enterprise</b>	Breeding, wool production and opportunistic fattening after seasonal flooding.					
<b>Land use and management recommendations</b>	<ul style="list-style-type: none"> <li>• Suitable for grazing of native pastures.</li> <li>• Intermittent flooding provides the greatest pasture production.</li> </ul>					
<b>Land use limitations</b>	<ul style="list-style-type: none"> <li>• Thickening of lignum may limit productivity.</li> <li>• Heavier clay soils generally require &gt;100 mm of rain, with localised flooding or ponding of water, to respond.</li> </ul>					
<b>Conservation features and related management</b>	<ul style="list-style-type: none"> <li>• Coolibah and river red gum have hollows which are essential breeding sites for parrots, owls, waterbirds and bats.</li> <li>• Timbered drainage lines provide refuge areas and connectivity across grassy landscapes.</li> <li>• Maintaining diversity of ages and species of trees is important.</li> <li>• Associated wetland areas provide critical breeding habitat and food chains for fish and wetland birds.</li> <li>• Managing grazing pressure, feral animals and weed invasions are priority issues.</li> <li>• Mound springs are an endangered regional ecosystem occurring in this land type and contain rare plants and aquatic animals.</li> <li>• Stock trampling, introduced weeds and feral pigs are important management issues.</li> </ul>					
<b>Regional ecosystems</b>	4.3.12a-b, 4.3.12d, 4.3.13, 4.3.24, 4.3.24a-b					
<b>WARLUS land systems</b>	I	II	III	IV	V	VI
	C1, C2, C3	L1			C1, (L1)	C1,C2, C3