Desert Uplands Region Plant Index

Common name	Scientific name	Page
applejack	*Corymbia setosa*	DU13
artesian milfoil	*Myriophyllum artesium*	DU09
barbwire grass	*Cymbopogon refractus*	DU08
barley Mitchell grass	*Astrebla pectinata*	DU04, DU12
bauhinia	*Lysiphyllum cunninghamii*	DU01, DU06, DU12
beefwood	*Grevillea striata*	DU01, DU06
belah	*Casuarina cristata*	DU12
bellyache bush*	*Jatropha gossypiifolia*	DU01
bendee	*Acacia catenulata*	DU09
black gidgee *see* blackwood	*Acacia argyrodendron*	
black speargrass	*Heteropogon contortus*	DU01, DU05, DU08, DU13
blackbutt	*Eucalyptus cambageana*	DU09, DU11, DU12
blackwood	*Acacia argyrodendron*	DU04, DU06, DU11, DU12
bloodwood	*Corymbia* spp.	DU03, DU05, DU07
thornless blue devil	*Eryngium fontanum*	DU09
blue gum	*Eucalyptus tereticornis*	DU05
boree	*Acacia tephrina*	DU04, DU11
bottlewasher grasses	*Enneapogon* spp. (e.g. *E. polyphyllus*; *E. avenaceus*; *E. gracilis*	DU01, DU03, DU05, DU07, DU08, DU11, DU12, DU13
box	*Eucalyptus* spp.	DU02, DU05
brown beetle grass	*Leptochloa fusca*	DU10
brigalow	*Acacia harpophylla*	DU11
buck spinifex	*Triodia mitchellii*	DU07, DU09, DU13
buffel grass*	*Cenchrus ciliaris*	DU01, DU06, DU08, DU10, DU11, DU12
bull Mitchell grass	*Astrebla squarrosa*	DU04, DU02, DU11, DU12

Common name	Scientific name	Page
bushhouse paperbark	*Melaleuca tamariscina*	DU09
button grass	*Dactyloctenium radulans*	DU10, DU12
carbeen *see* Moreton Bay ash	*Corymbia tessellaris*	
Caribbean stylo cvv. Verano stylo *see* Verano stylo*	*Stylosanthes hamata* cvv. Verano	DU08
canegrass	*Ophiuros exaltatus*	DU02
Clarkson's bloodwood	*Corymbia clarksoniana*	DU07, DU08
clustered lovegrass	*Eragrostis elongata*	DU01, DU03, DU08
conkerberry *see* currant bush	*Carissa ovata*	
cooba *see* sally wattle	*Acacia salicina*	
coolabah *see* coolibah	*Eucalyptus coolabah*	
coolibah	*Eucalyptus coolabah*	DU02, DU03, DU05, DU11, DU12
copperburr	*Sclerolaena* spp.	DU02, DU10
cotton panic	*Digitaria brownii*	DU01
comet grass	*Perotis rara*	DU10
curly bluegrass	*Dichanthium fecundum*	DU08
curly Mitchell grass	*Astrebla lappacea*	DU03, DU04, DU11, DU12
curly windmill grass *see* windmill grass	*Enteropogon acicularis*	
currant bush	*Carissa ovata*	DU01, DU02, DU03, DU06, DU07, DU08, DU11, DU12
cypress pine	*Callitris glaucophylla*	DU08
Dallachy's gum *see* ghost gum	*Corymbia dallachiana*	
dark wiregrass	*Aristida calycina*	DU01, DU02, DU03, DU05, DU06, DU07, DU08, DU09, DU11, DU13
Dawson gum *see* blackbutt	*Eucalyptus cambageana*	
desert bluegrass	*Bothriochloa ewartiana*	DU01, DU02, DU05, DU08, DU11, DU12
desert oak	*Acacia coriacea*	DU01 DU07
eastern dead finish	*Archidendropsis basaltica*	DU01, DU08
Ellangowan poison bush	*Eremophila deserti*	DU01
eurah	*Eremophila bignoniiflora*	DU11
fairy grass	*Sporobolus caroli*	DU02, DU03, DU11, DU12
false sandalwood	*Eremophila mitchelli*	DU01, DU06, DU07, DU08, DU11, DU12

Common name	Scientific name	Page
feathertop wiregrass	*Aristida latifolia*	DU02, DU03, DU04, DU05, DU11
five-minute grass	*Tripogon lolliformis*	DU06, DU07, DU11
Flinders grass	*Iseilema* spp.	DU11, DU12
forest bluegrass	*Bothriochloa bladhii* subspecies *bladhii*	DU01, DU02, DU03, DU08, DU12, DU13
Forest red gum *see* blue gum	*Eucalyptus tereticornis*	DU05
fringe rushes@	*Fimbristylis* spp.	DU06, DU10
ghost gum	*Corymbia dallachiana*	DU01, DU03, DU04, DU05, DU06, DU07, DU08, DU13
gidgee	*Acacia cambagei*	DU03, DU04, DU11
gidgee burr	*Sclerolaena* spp.	DU12
gidyea *see* gidgee	*Acacia cambagei*	
golden beard grass	*Chrysopogon fallax*	DU01, DU02, DU03, DU08, DU09, DU13
green couch*	*Cynodon dactylon*	DU02
gulf feathertop	*Aristida pruinosa*	DU01, DU02, DU03, DU11
gundabluie	*Acacia victoriae*	DU06
harrisia cactus*	*Harrisia martini*	DU11
heartleaf poison bush	*Gastrolobium grandiflorum*	DU13
high sida	*Sida trichopoda*	DU11
hoop Mitchell grass	*Astrebla elymoides*	DU12
Indian bluegrass*	*Bothriochloa pertusa*	DU03, DU08
Indian couch* *see* Indian bluegrass*	*Bothriochloa pertusa*	
ironbark	*Eucalyptus* spp.	DU12
ironwood	*Acacia excelsa*	DU01, DU06, DU08
Jericho wiregrass	*Aristida jerichoensis*	DU01, DU02, DU03, DU05, DU06, DU07, DU08, DU09, DU11, DU13
kangaroo grass	*Themeda triandra*	DU01, DU02, DU03, DU05, DU07, DU08, DU09, DU13
Lake Buchanan bluebush	*Lawrencia buchananensis*	DU06
lancewood	*Acacia shirleyi*	DU09
large-fruited bloodwood	*Corymbia plena*	DU03, DU04, DU05, DU08
leafy nineawn *see* bottlewasher grasses	*Enneapogon polyphyllus*	
Leichhardt's rusty jacket *see* yellowjacket	*Corymbia leichhardtii*	
leopardwood	*Flindersia maculosa*	DU11, DU12

Common name	Scientific name	Page
lovegrasses	*Eragrostis* spp.	DU06, DU10
mallee box	*Eucalyptus persistens*	DU07
many-headed wiregrass	*Aristida caput-medusae*	DU01, DU03, DU05, DU06, DU07, DU08, DU09, DU11, DU13
marine couch	*Sporobolus virginicus*	DU06, DU10
mimosa*	*Acacia farnesiana*	DU02, DU04, DU11, DU12
Mitchell grass	*Astrebla* spp.	DU04
Moreton Bay ash	*Corymbia tessellaris*	DU03, DU05
mother-of-millions*	*Bryophyllum delagoense*	DU11, DU12
napunyah *see* yapunyah	*Eucalyptus thozetiana*	
mulga	*Acacia aneura*	DU09
mountain yapunyah *see* yapunyah	*Eucalyptus thozetiana*	
narrow-leaved ironbark	*Eucalyptus crebra*	DU05, DU07, DU08, DU09
native millet	*Panicum decompositum*	DU04
native oatgrass	*Themeda avenacea*	DU03
Normanton box	*Eucalyptus normantonensis*	DU09
northern wanderrie grass	*Eriachne obtusa*	DU07, DU08, DU13
parkinsonia*	*Parkinsonia aculeata*	DU01, DU02, DU03, DU04, DU05, DU06, DU08, DU10, DU11, DU12
parthenium*	*Parthenium hysterophorus*	DU03, DU04, DU05, DU11, DU12
pink gidgee	*Acacia crombiei*	DU09
poplar box	*Eucalyptus populnea*	DU01, DU08, DU09
prickly acacia*	*Acacia nilotica*	DU04
prickly pine	*Bursaria incana*	DU08
prickly wattle *see* gundabluie	*Acacia victoriae*	
purple lovegrass	*Eragrostis lacunaria*	DU01, DU03, DU06, DU08
purple wiregrass	*Aristida personata*	DU01, DU02, DU05, DU11, DU13
purpletop chloris*	*Chloris inflata*	DU06
Queensland bluegrass	*Dichanthium sericeum*	DU03, DU04, DU08, DU12
Queensland's yellowjacket *see* yellowjacket	*Eucalyptus similis*	
quinine	*Petalostigma pubescens*	DU07, DU08, DU13
red Flinders grass	*Iseilema vaginiflorum*	DU04
red Natal grass*	*Melinis repens*	DU08
red spinach	*Trianthema triquetra*	DU10
reed grass	*Arundinella nepalensis*	DU03

Common name	Scientific name	Page
Reid river box	*Eucalyptus brownii*	DU01, DU03, DU06, DU08, DU09, DU11
ribbon grass *see* golden beard grass	*Chrysopogon fallax*	
river cooba	*Acacia stenophylla*	DU10
river red gum	*Eucalyptus camaldulensis*	DU01, DU02, DU03, DU05, DU12
rock grass *see* mountain wanderrie grass	*Eriachne mucronata*	DU07, DU08, DU13
round-leaved myrtle	*Micromyrtus rotundifolia*	DU09
rubber vine*	*Cryptostegia grandiflora*	DU01, DU05
ruby saltbush	*Enchylaena tomentosa*	DU10
sabi grass *see* urochloa*	*Urochloa mosambicensis*	
sally wattle	*Acacia salicina*	DU06
saltbush@ *see* ruby saltbush	*Enchylaena tomentosa*	
salt pipewort	*Eriocaulon carsonii*	DU09
saltwater couch *see* marine couch	*Sporobolus virginicus*	
samphire@	*Halosarcia* spp.	DU06, DU10
sand couch *see* marine couch	*Sporobolus virginicus*	
mistletoe	*Amyema* spp.	DU11
sedges	*Cyperus* spp.	DU03, DU06
shiny-leaved bloodwood	*Corymbia lamprophylla*	DU09
Shrubby stylo*	*Stylosanthes scabra* cv. Seca	DU01, DU08, DU09
sida	*Sida* spp.	DU01, DU12
silky browntop	*Eulalia aurea*	DU12
silky oil grass	*Cymbopogon bombycinus*	DU03, DU07, DU08, DU09
silver sida	*Sida fibulifera*	DU11
silver-leaved ironbark	*Eucalyptus melanophloia* *Eucalyptus shirleyi*	DU07, DU08
soap tree	*Alphitonia excelsa*	DU13
soft roly poly	*Salsola kali*	DU12
soft spinifex	*Triodia pungens*	DU01, DU07, DU08, DU09, DU13
spiked malvastrum*	*Malvastrum americanum*	DU04
spreading nut-heads	*Epaltes australis*	DU10
tall bottlewashers	*Enneapogon intermedius*	DU13
tea tree	*Melaleuca* spp.	DU07
Thozet's box *see* napunyah	*Eucalyptus thozetiana*	
turpentine grass *see* barbwire	*Cymbopogon refractus*	

Common name	Scientific name	Page
umbrella canegrass	*Leptochloa digitata*	DU03
urochloa*	*Urochloa mosambicensis*	DU03, DU05, DU08
velvety tree pear	*Opuntia tomentosa*	DU11
vine tree	*Ventilago viminalis*	DU01
water bush	*Myoporum acuminatum*	DU11
wattle	*Acacia* spp.	DU02, DU03, DU07, DU08, DU09, DU11, DU13
western bloodwood	*Corymbia terminalis*	DU07, DU13
White Mountain's wattle	*Acacia ramiflora*	DU09
white speargrass	*Aristida leptopoda*	DU04
White's ironbark	*Eucalyptus whiteii*	DU02, DU04, DU07, DU08
whitewood	*Atalaya hemiglauca*	DU04
windmill grass	*Enteropogon acicularis*	DU03
wiregrass	*Aristida* spp.	DU03
woodland paperbark	*Melaleuca nervosa*	DU06
yakka grass *see* fairy grass	*Sporobolus caroli*	
yapunyah	*Eucalyptus thozetiana*	DU09, DU11
yellowjacket	*Eucalyptus similis*	DU09, DU13
yellowjacket	*Corymbia leichhardtii*	DU13, DU03, DU07, DU08, DU13

* Denotes non-native species
@ Denotes non-grass species that are important to grazing and land condition values in ephemeral lake and swamp land types.

Box country

Landform	Fans, plains, hillslopes, footslopes and drainage depressions.
Woody vegetation	Poplar box or Reid river box woodlands. Associated with river red gum and ghost gum. Variable shrubby understorey of ironwood, vine tree, eastern dead finish, Ellangowan, desert oak, beefwood, false sandalwood, currant bush and bauhinia.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Black speargrass, kangaroo grass, forest bluegrass, desert bluegrass, golden beard grass, buffel grass*, soft spinifex.
Intermediate	Lovegrasses (e.g. clustered, purple), cotton panic, bottlewasher grasses.
Non-preferred	Wiregrasses (e.g. dark, many-headed, Jericho, purple, gulf feathertop).
Common forbs	Sida (non-preferred).
Suitable sown pastures	Buffel grass, Shrubby stylo.
Introduced weeds	Parkinsonia, rubber vine, bellyache bush.
Soil	Sandy loam topsoils with sodic clayey subsoils.
Description	***Surface*:** Soft; ***Surface texture*:** sandy loam; ***Subsoil texture*:** clay.
Water availability	Moderate to good.
Rooting depth	0.60 m
Fertility	Low to moderate; moderate nutrient status.
Salinity	Low
Sodicity	Subsoils are usually sodic.
pH	Slightly acid to neutral surface and subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 419 – 489 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1440 - 1820	25%	6.4 – 8.1
	4 TBA 10 FPC	1120 - 1220	25%	9.6 – 10.4

Enterprise

Breeding and growing.

Land use and management recommendations

- Suitable for grazing.
- Capable of high pasture growth.
- These areas can be prone to overgrazing.
- Currant bush regrowth can be a problem

Land use limitations

- Topsoils are susceptible to sheet erosion and scalding, particularly if ground cover is reduced.
- Sodic, dispersive subsoils are susceptible to gully erosion.
- Prone to seasonal flooding.
- Ellangowan (toxic) may be present.
- Variable soil erosion hazard. Highly erodible where subsoil is exposed, particularly along fence lines, tracks and on sloping lands and drainage lines.

Conservation features and related management

- These floristically diverse, hollow-bearing woodlands are fertile, productive and widespread in the Desert Uplands and support a diverse number of vertebrate species. Box woodlands are particularly significant for many declining woodland bird species (e.g. speckled warbler, black-throated finch, hooded robin, grey-crowned babbler, brown treecreeper); granivorous birds, and some restricted reptiles. The woodlands support a high diversity of mammals (e.g. koala, squirrel glider, sugar glider, common brushtail possum, rufous bettong), and hollow-roosting bats including significant species such as *Chalinolobus picatus* and *Vespadelus finlaysoni*.
- As box woodlands are highly productive for cattle grazing, there is potential for conflict between managing for special wildlife and managing for stock. Ideally, these woodlands should be spelled in the wet summer months to allow native perennial pastures to re-seed and prevent degradation of the soil cover. Wet season spelling would also be of benefit for native species and long-term production.
- Avoid overgrazing as this reduces the competition of pasture species, prevents fires (which should be reintroduced to control woody vegetation thickening) and leads to an increase in density of false sandalwood and currant bush.

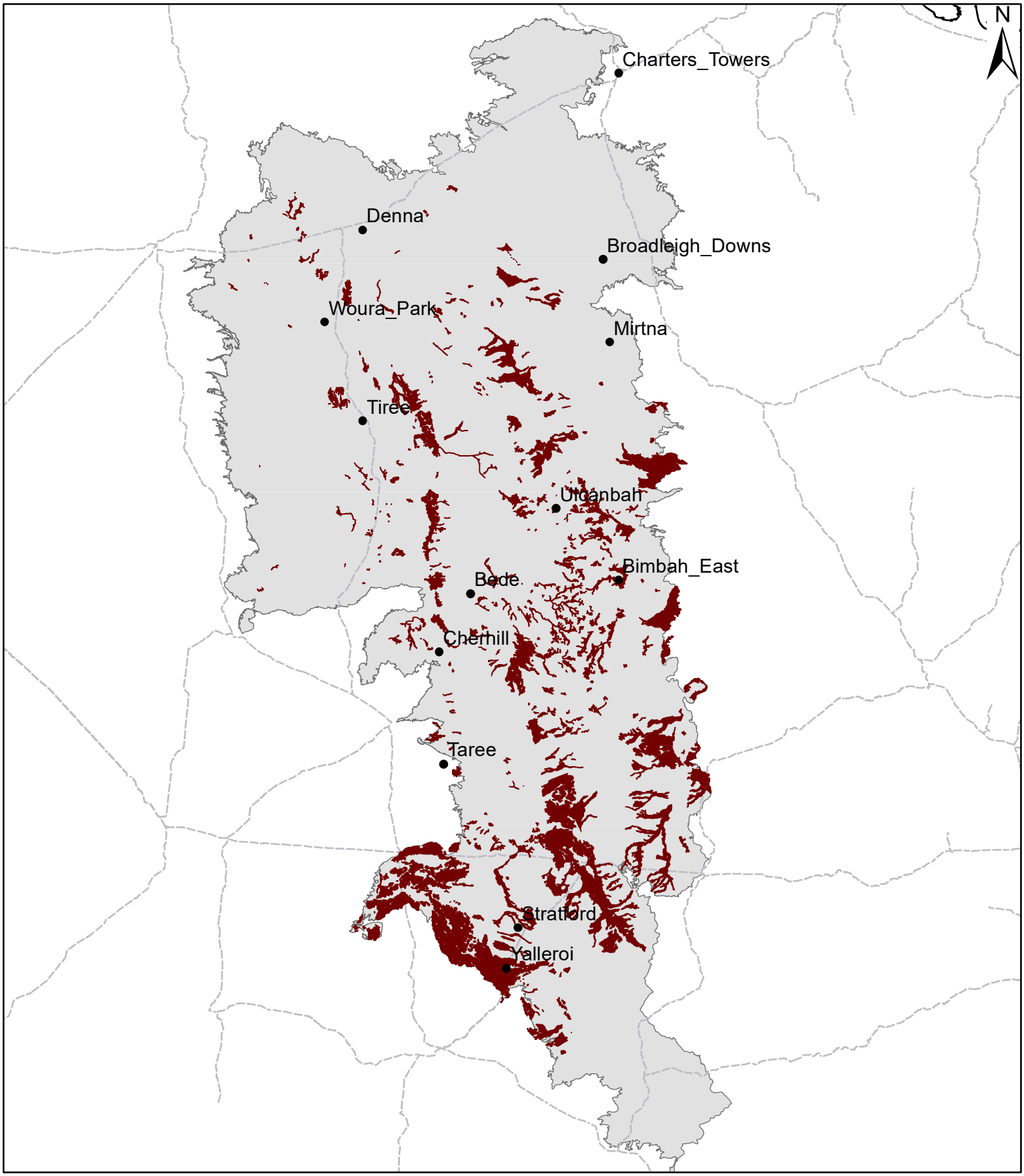
Regional Ecosystems

10.3.6a, 10.3.6ax1, 10.3.6ax2, 10.3.6ax3, 10.3.6ax4, 10.3.15k, 10.3.27a, 10.3.27c, 10.5.12, 10.9.8, 11.5.3, 11.3.10, 11.9.7a.

DUSLR project land units

AC2, BE3, CR5, DS2, NP3, NP4, RD1, TF2, TS2, VA4 (Lorimer 2003).

DU01 Box country



Area of land type in region: 8%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 64%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Channels and swamps associated with major streams

Landform	Stream beds, levees, freshwater lakes, swamps, billabongs, and river channels.
Woody vegetation	Coolibah, river red gum and box woodlands associated with White's ironbark, currant bush, wattle and mimosa.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Green couch*, bull Mitchell grass, forest bluegrass, desert bluegrass, golden beard grass, kangaroo grass.
Intermediate	Fairy grass.
Non-preferred	Copperburr, wiregrass (e.g. dark, Jericho, feathertop, purple, gulf feathertop), canegrass.
Suitable sown pastures	Generally not suitable for sown pastures. Buffel grass limited by waterlogging.
Introduced weeds	Parkinsonia.
Soil	Mostly sands, but also sandy loams over clays and clays.
Description	***Surface*:** Loose or soft to firm; ***Surface texture*:** sand, sandy loam or clay; ***Subsoil texture*:** sand or clay.
Water availability	Good to moderate.
Rooting depth	Deep
Fertility	Good; moderate nutrient status.
Salinity	Non-saline
Sodicity	Duplex soils are highly sodic.

pH

Slightly acid to neutral surface and subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 419 – 520 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1410 - 1910	25%	6.1 – 8.3
	4 TBA 10 FPC	1010 - 1480	25%	7.9 – 12

Enterprise

Breeding and growing.

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of high pasture growth.
- Ideally these areas are fenced off and managed separately to encourage preferred grasses and maintain good production.

Land use limitations

- These areas are prone to inundation for extended periods. The clay soils can remain wet and boggy, even after surface water has disappeared.
- Susceptible to invasion by parkinsonia. It can form an impenetrable thicket around dams and waterholes, and can spread downstream into adjacent paddocks and properties.
- Pigs are also attracted to these areas.
- Pasture can be limited to annuals.
- Limited soil erosion hazard. Prone to stream bank erosion during peak flow periods.

Conservation features and related management

- These seasonal freshwater swamps and watercourses provide an important habitat for migratory waterbirds, breeding frogs, and watering for many bird species that need to drink daily (e.g. grain-eating birds). The concentration of wildlife also means that these locations are significant for native predator species such as snakes.
- Ideally, these wetland areas should be fenced off from stock to maintain their wildlife habitat values. If water storage is proposed from one of these wetlands, the water storage should be fenced, and the watering points for stock located away from the wetland.
- These areas are susceptible to weed infestations if ground cover is degraded and disturbed unduly.
- Pigs can inflict a lot of damage on these areas and therefore may need to be controlled by trapping or hunting.

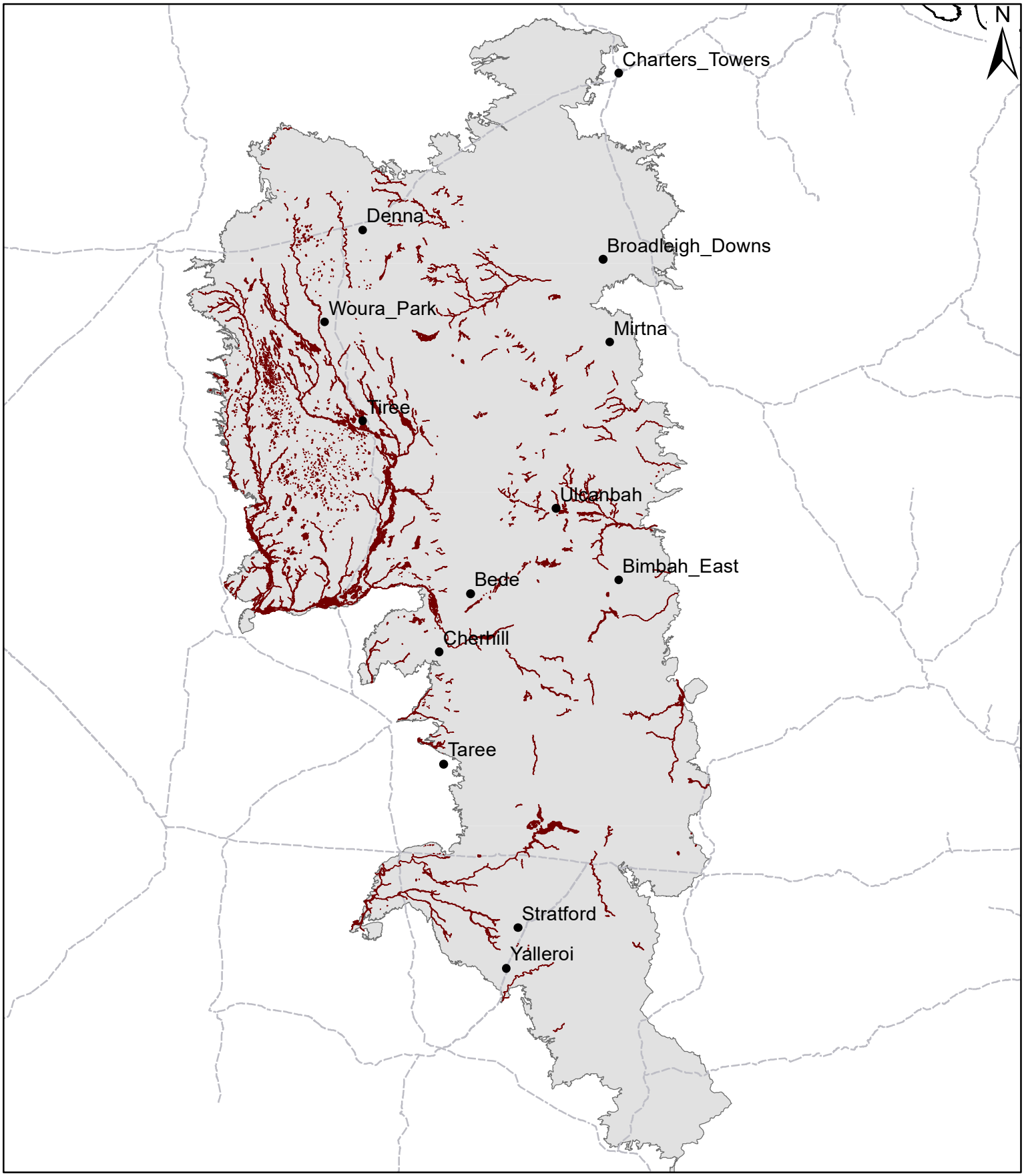
Regional Ecosystems

10.3.13a-b, 10.3.14a-b, 10.3.14d, 10.3.14ax1, 10.3.14f, 10.3.14i-j, 10.3.15a, 10.3.15ax1, 10.3.15b-c, 10.3.15ex1, 10.3.15e-g, 10.3.15j, 10.3.15l, 10.3.15hx1, 10.3.15n-o.

DUSLR project land units

AA3, AC5, BF3, CC1, CR2, DE3, DT4, LC2, LD4, LD6, LE3, LG5, LH3, LH6, LW2, SN5, TK2, TM3, TM6, WL2, WL3, WV5, WY4.

DU02 Channels and swamps associated with major streams



Area of land type in region: 2%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 73%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Coolibah flats

Landform

Plains, drainage depressions (mainly on the Belyando and Suttor rivers).

Woody vegetation

Coolibah open woodlands. Associated species may include river red gum, Reid river box, bloodwoods (e.g. yellowjacket, large-fruited), gidgee, wattles, ghost gum, currant bush and Moreton Bay ash.

Expected pasture composition

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

Preferred

Buffel grass*, curly Mitchell grass, black speargrass, forest bluegrass, golden beard grass, kangaroo grass, Queensland bluegrass.

Intermediate

Bottlewasher grasses, umbrella canegrass, silky oil grass, native oatgrass, urochloa*, fairy grass, lovegrass (e.g. clustered, purple), windmill grass, Indian bluegrass*.

Non-preferred

Wiregrass (e.g. dark, many-headed, Jericho, feathertop, Gulf feathertop), reed grass.

Common forbs

Sedges.

Suitable sown pastures

Buffel grass may be restricted by waterlogging.

Introduced weeds

Parthenium, parkinsonia.

Soil

Deep cracking clays.

Description

***Surface*:** Cracking; ***Surface texture*:** medium to heavy clay; ***Subsoil texture*:** medium to heavy clay.

Water availability

Good

Rooting depth

Deep

Fertility

Moderate; moderate nutrient status.

Salinity: Non-saline

Sodicity: Moderate to high sodicity in subsoil.

pH: Neutral surface and mildly alkaline with depth.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 419 – 466 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1400 - 1420	25%	8.2 – 8.3
	4 TBA 10 FPC	880 - 890	25%	13

Enterprise

Breeding and growing.

Land use and management recommendations

- Suitable for grazing of native pastures.
- Capable of high pasture growth.
- Ideally these areas are fenced off and managed separately to encourage preferred grasses and maintain good production.

Land use limitations

- These areas are prone to inundation for extended periods that can result in a lack of persistence of perennial grasses.
- Pasture can be limited to annuals.
- Variable soil erosion hazard. Highly prone to sheet erosion despite gentle slopes.

Conservation features and related management

- These woodlands provide important habitat for a range of wildlife. Seed eating birds make use of the frontage grasses for food and shelter (e.g. finches, parrots, doves). Coolibahs flower regularly and reliably, providing a major blossom and nectar source for gliders, nectarivorous birds, fruit bats and native bees. The hollows in the large coolibahs are important nest sites for owls and possums.
- In some places coolibah flats have become woodlands of predominantly older trees with little to no regeneration. This phenomenon is related to water storage systems interrupting the natural flooding cycle required by these woodlands to regenerate. As the trees decline in health due to age, drought or disease, substantial losses can occur.
- Where insufficient regeneration is present, fencing of riparian areas with parts of the river or creek can permit management of grazing pressure in these woodlands and limit the impact of cattle grazing young gum seedlings.
- Natural water flows and flooding should be allowed if possible. Placement of artificial watering points away from the streams will reduce trampling damage, erosion and weed invasion on the riverbanks.
- Low disturbance and low usage of fire in these areas is recommended as weed infestations readily establish after flood events.

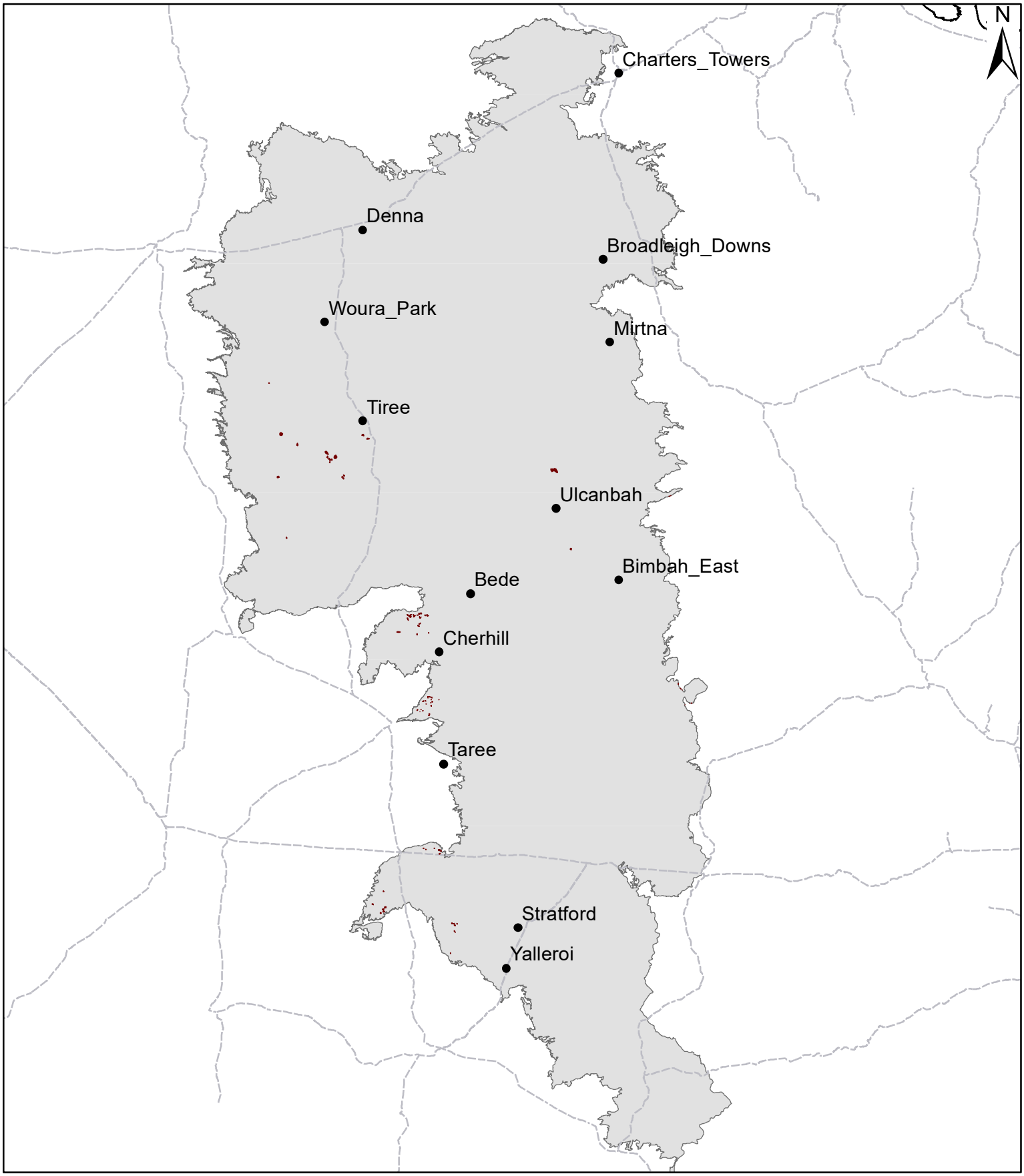
Regional Ecosystems

10.3.15h, 10.3.15hx1, 10.3.15i, 11.3.3.

DUSLR project land units

AR3, DE3, TK2, TK4.

DU03 Coolibah flats



Area of land type in region: 0.03%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 75%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Downs

Landform	Open ‘Downs’ country.
Woody vegetation	Predominantly treeless Mitchell grasslands. Whitewood, blackwood, White’s ironbark, ghost gum, bloodwood (e.g. large-fruited), mimosa, gidgee and boree species may occur.
Expected pasture composition	** Denotes non-native “Expected Pasture Composition” species.*
Preferred	Curley, barley and bull Mitchell grasses, Queensland bluegrass, native millet.
Intermediate	
Non-preferred	Feathertop and whitespear wiregrasses.
Annual grasses	Red Flinders grass (Intermediate species).
Common forbs	
Suitable sown pastures	Not suitable for sown pastures.
Introduced weeds	Parkinsonia, parthenium, prickly acacia, spiked malvastrum.
Soil	Deep grey or brown cracking clay soils with a self-mulching surface.
Description	***Surface*:** Cracking and self-mulching; ***Surface texture*:** medium to heavy clay; ***Subsoil texture*:** medium to heavy clay.
Water availability	Moderate
Rooting depth	Deep
Fertility	Good; good nutrient status.
Salinity	Moderate
Sodicity	Moderate to high sodicity in subsoil.
pH	Mostly neutral, some with strong acidity or alkalinity.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 400 – 466 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	770 - 970	25%	12 - 15
	4 TBA 10 FPC	500 - 620	25%	19 – 23

Enterprise

Breeding and growing.

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of high pasture growth.
- These highly productive areas can be used strategically for growing stock, or meeting periods of high nutritional demand for the breeding herd. This gives the added benefit of spelling the less productive land types.

Land use limitations

- These land types have very productive, resilient soils; however, they are susceptible to infestation by parthenium.
- Light falls of rain can close the surface cracks subsequently limiting infiltration and resulting in a poor pasture growth response.
- Shallow-rooted annuals have a short growing season.
- Variable soil erosion hazard. Highly prone to sheet erosion despite gentle slopes.

Conservation features and related management

- The tussock grasslands of the Prairie–Torrens Creek Alluvials subregion are outliers of the more extensive Mitchell grasslands to the west. These grasslands have a high number of species of conservation significance compared with those in the woodlands, and those animals that do occur are specialised and almost entirely restricted to this habitat.
- The dense tussock grass cover and deep cracking soils are important habitat features (nesting, food and shelter) for small ground dwelling birds (e.g. red-chested button quail, white-winged fairy-wren), mammals (planigales, dunnarts including a disjunct occurrence of the endangered marsupial *Sminthopsis douglasi),* dragons (e.g. lined earless dragon), snake lizards, and native predators (e.g. barn owls, Collette's snake).
- Avoidance of over-grazing that consistently removes all ground cover and causes compaction of the soil structure will impact on animals that live in the cracks and tussocks. Loss of ground cover also allows feral predators such as the fox and cat to hunt more effectively.
- While native annuals are quite nutritious during the growing season they are short-lived and will be quickly grazed out if subjected to a continuous grazing regime.
- A dense pasture biomass should always be maintained to protect the soil surface, maximise infiltration and protect and maintain biodiversity.
- Avoid burning during dry months. As a rule of thumb, introduce 'cool' burns after heavy rain.

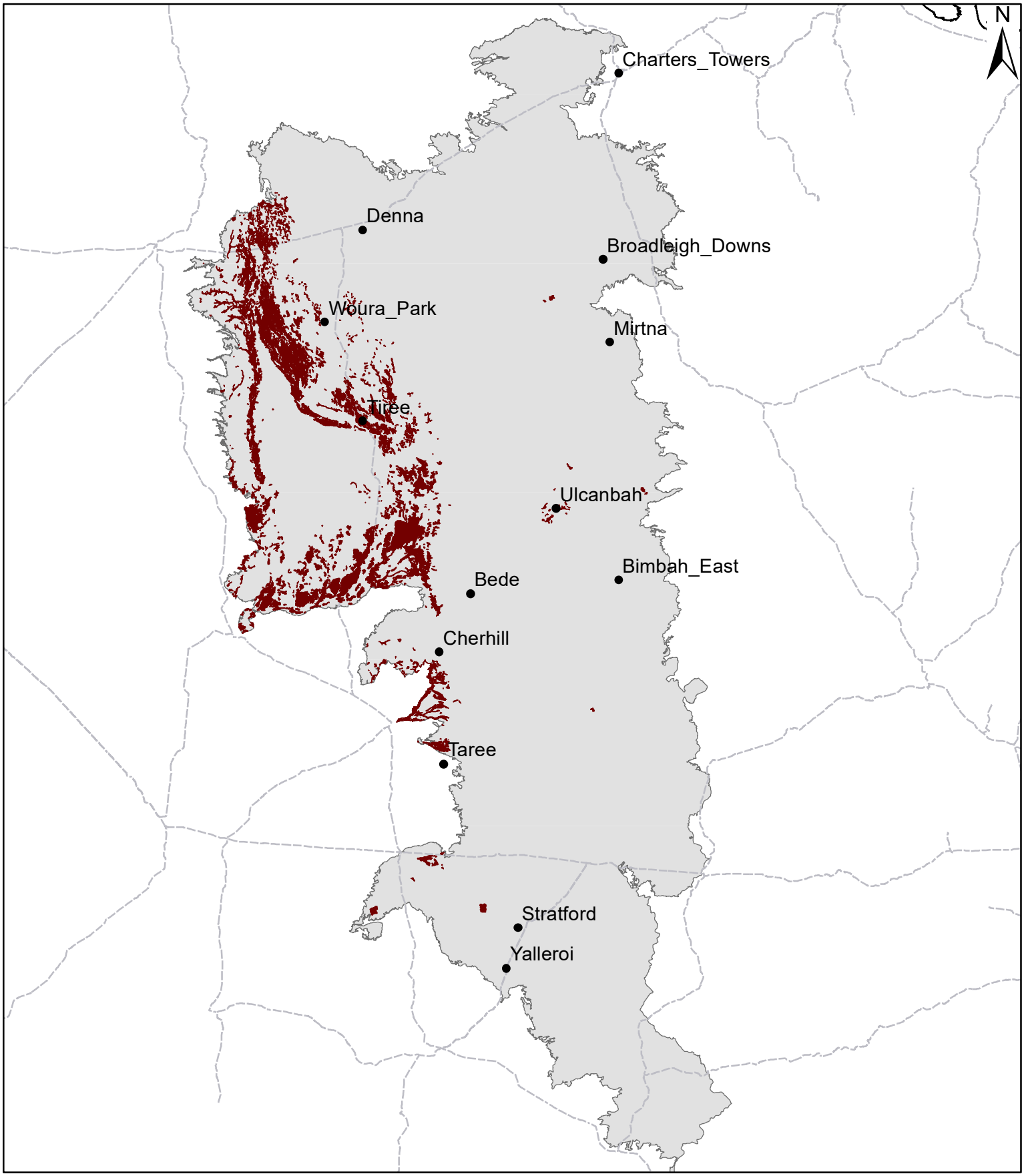
Regional Ecosystems

10.3.7a-b, 10.3.8a, 10.3.8c, 10.4.6a-b, 10.4.8, 10.4.8x1-3, 10.9.1d, 10.9.2d, 10.9.1f, 10.9.2d, 10.9.2dx1-2, 10.9.2e.

DUSLR project land units

AL1, AR2, BA1, BA3, DE2, MH2, PP3, RD4, TC2, TK1.

DU04 Downs



Area of land type in region: 3%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 19%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Frontage

Landform	Levee (mainly on the Cape and Campaspe rivers).
Woody vegetation	Frontage woodlands of river red gum, narrow-leaved ironbark and Moreton Bay ash. Bloodwoods (e.g. Clarkson's, large-fruited, ghost gum), coolibah and box species may occur.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Black speargrass, desert bluegrass, kangaroo grass.
Intermediate	Bottlewasher grasses, urochloa*.
Non-preferred	Wiregrass (e.g. dark, many-headed, Jericho, purple, feathertop).
Suitable sown pastures	Generally not suitable for sown pastures. Buffel and Shrubby stylo limited by waterlogging.
Introduced weeds	Parthenium, parkinsonia.
Soil	Deep silty to clay loam over clay.
Description	***Surface*:** Firm to hard-setting; ***Surface texture*:** silty to clay loam; ***Subsoil texture*:** clay.
Water availability	Good
Rooting depth	Deep
Fertility	Good; good nutrient status.
Salinity	Non-saline
Sodicity	Duplex soils are highly sodic.
pH	Neutral surface over mildly alkaline subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 400 – 520 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1040 - 1570	25%	7.4 - 11
	3 TBA 8 FPC	750 - 1240	25%	9.4 – 16

Enterprise

Breeding and growing.

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of high pasture growth.
- Ideally these areas are fenced off and managed separately to encourage preferred grasses and maintain good production. While they are productive areas, preferential grazing can be a problem.

Land use limitations

- Although flooding is infrequent, these areas are prone to preferential grazing.
- Variable soil erosion hazard. Prone to rill and gully erosion, highly erodible along tracks, fence lines and drainage lines.

Conservation features and related management

- Riparian zones in the western subregion, where the climate is more variable and the adjacent landscape has less large hollow-bearing trees, have high conservation values. The large gum trees provide important wildlife corridors, seasonal refuges and resources (nesting, roosting, nectar) for a variety of species. These include arboreal mammals (e.g. koalas, particularly at Companion Creek), birds of prey (e.g. square-tailed kite), woodland birds (e.g. dollarbirds, kookaburras, owlet nightjars), migratory birds (e.g. waterbirds, painted and banded honeyeaters, varied lorikeets), hollow-roosting species (e.g. bats), and amphibians.
- In many places, river gums and coolibahs have become woodlands of predominantly older trees with little to no regeneration. This phenomenon is related to changes in water flow, overgrazing of the banks and weed infestations. As these trees decline in health due to age, drought or disease, substantial losses can occur.
- Where insufficient regeneration is present, fencing of riparian areas with adjacent floodplain can permit management of grazing pressure and limit the impact of cattle grazing young gum seedlings.
- Placement of artificial watering points away from streams will reduce trampling damage, erosion, sedimentation of water and weed invasion on the riverbanks.
- Low disturbance and low usage of fire in these areas is recommended as weed infestations readily establish after flood events. Parkinsonia is a serious problem in some parts of the Desert Uplands and control of these major infestations with fire has been successful.

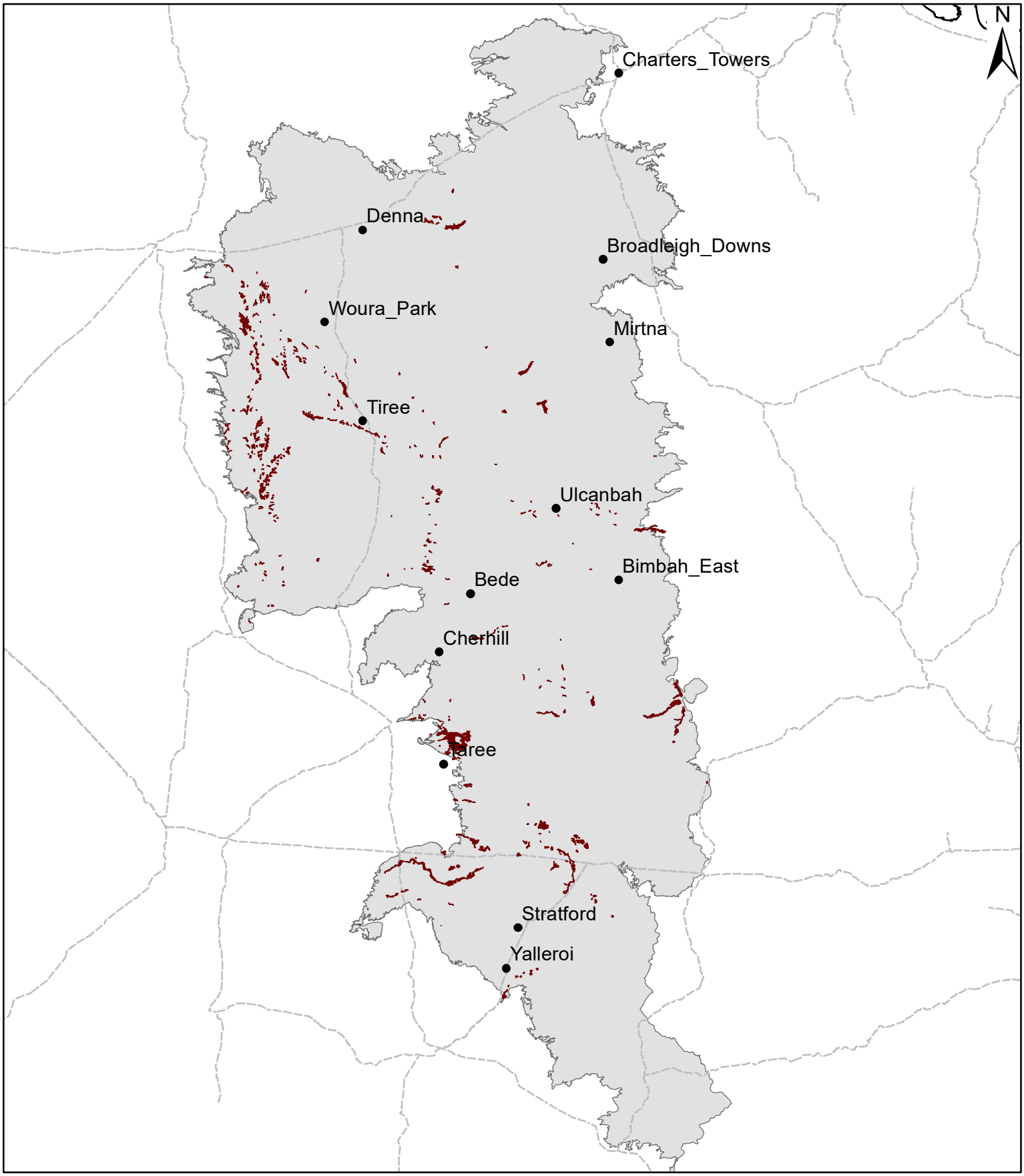
Regional Ecosystems

10.3.12a, 10.3.12b, 10.3.15m, 10.3.25, 10.3.25x1, 10.3.25x2, 10.3.25x5, 10.3.25x9, 10.3.26, 10.3.31a, 11.3.25, 9.3.6a.

DUSLR project land units

AE3, BA2, BB4, BR3, CA5, CC4, CE5, JC1, JC4, LR4, TC3, TF4, TK4.

DU05 Frontage



Area of land type in region: 1%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 58%
Median FPC: 8%
Median TBA: 3 m2/ha

Queensland Government

Frontal dunes

Landform	Dunes and lunettes on lake fringes, plains.
Woody vegetation	Low open woodland of sally wattle, ironwood and beefwood on lake-fringing dunes. Other species that may occur in the mostly sparse tree layer include gidgee, ghost gum, Reid river box, gundabluie, woodland paperbark, currant bush, blackwood, false sandalwood and bauhinia. Often sparse ground layer.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Marine couch, buffel grass*.
Intermediate	Purpletop chloris*, lovegrasses (e.g. purple), five-minute grass.
Non-preferred	Wiregrasses (e.g. dark, many-headed, Jericho).
Common forbs	Sedges.
Suitable sown pastures	Buffel grass; Shrubby stylo on lighter, sandier soils.
Introduced weeds	Parkinsonia.
Soil	Deep sandy soils or sandy topsoil over saline grey clays.
Description	***Surface*:** Loose; ***Surface texture*:** sandy; ***Subsoil texture*:** sandy or light to moderate grey clays.
Water availability	Low
Rooting depth	Shallow
Fertility	Low; low nutrient status.
Salinity	High when nearer the lakebeds.
Sodicity	Variable
pH	Neutral, moderately acid or alkaline.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 464 – 489 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	810 - 840	15%	23 - 24
	4 TBA 10FPC	440 - 510	15%	38 – 44

Enterprise

Breeding

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of low pasture growth.
- Any cover of trees, shrubs, grass or annual forbs is beneficial to the stability of the fragile pockets within this land type.

Land use limitations

- While some of the sandy soils can grow buffel, there are also areas of sandy topsoils over saline heavy clays which have little production and are fragile.
- High erosion hazard. Prone to wind erosion, limited sheet and rill erosion due to high soil permeability.

Conservation features and related management

- The beach-ridge and dune formation of Lake Buchanan is a most unusual and unique geomorphological feature that occurs in the semi-arid tropical zone of Australia. Its sequence of parallel beach ridges and silty lakebed layers has the potential to help unravel the wet and arid climates of the past. The delta formations along the lake margin and the diverse range of insect, rotiferal and crustacean species in the mud and briny waters of the lake are also unique.
- *Lawrencia buchanensis* (Lake Buchanan bluebush), a small shrub listed as vulnerable, is restricted to sandy areas adjacent to Lake Buchanan. Herbfields and low shrublands of fringe rushes, samphire, lovegrasses and other salt tolerant species occur on low sand plains adjacent to Lake Buchanan. The shallow sand surfaces overlay sodic clays and a calcrete hardpan.
- Wildlife populations are sparse, but those species that occur have unusual or restricted distributions (e.g. short-tailed mouse, centralian blue-tongued lizard). Some wetland bird species use these areas for nesting.
- The prime objective for the sandy dunes around Lake Buchanan, Lake Dunne and Lake Galilee is to stabilise the dune formations by maintaining ground cover. These ecosystems are ‘endangered’ because of their limited extent and the adverse impacts of high total grazing pressure.
- Additional fencing and watering points may be needed to control stock numbers and the length of time spent grazing these sensitive areas. Overgrazing can reduce or remove the low bushes and shrubs that would otherwise provide protection for small ground fauna and nesting birds.
- In previously cleared areas, a little gidgee regeneration could be encouraged to provide some wind protection and habitat for wildlife around the lakes.

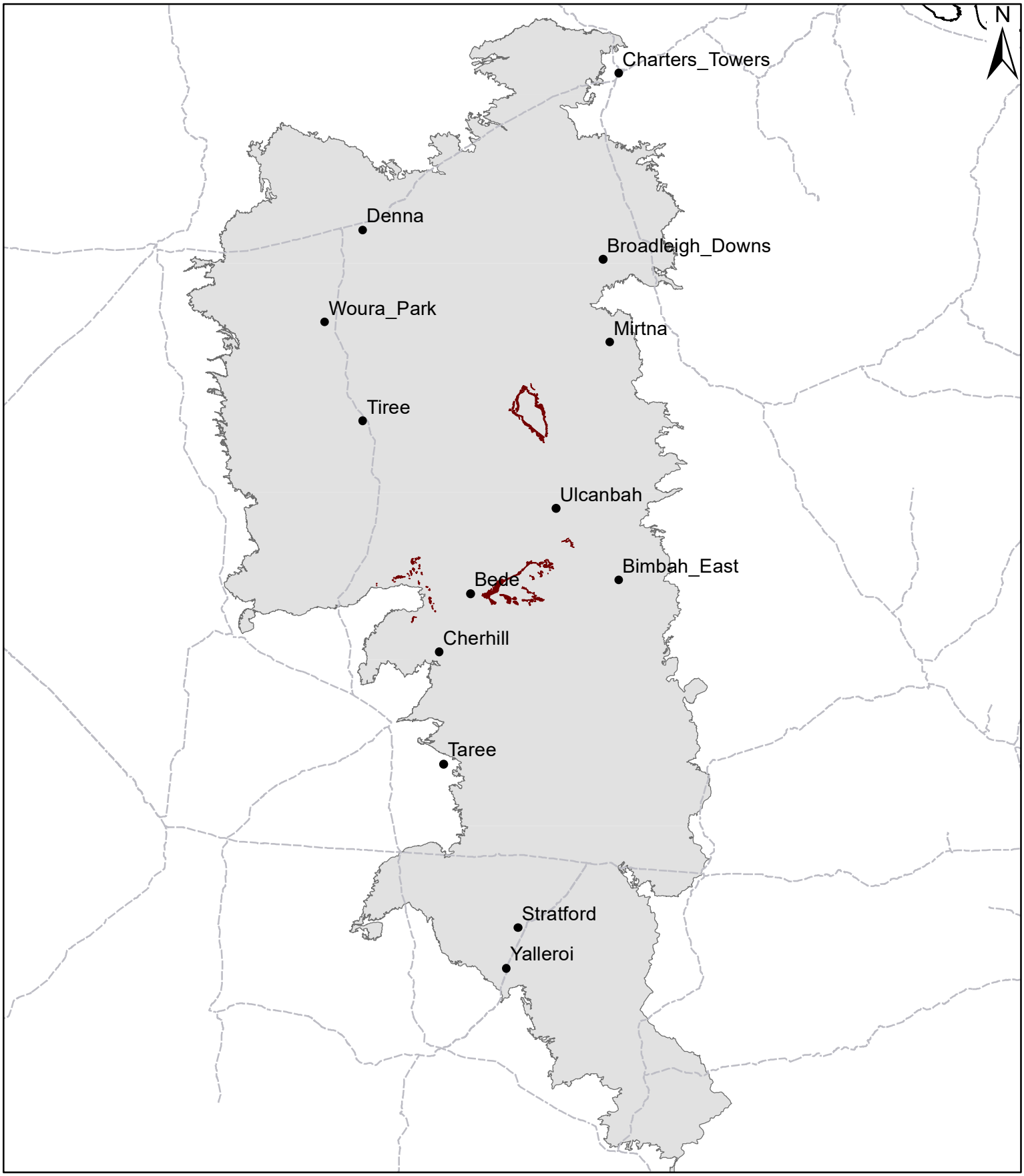
Regional Ecosystems

10.3.17a-b, 10.3.19, 10.3.20, 10.3.21, 10.3.22e-f, 10.3.29a.

DUSLR project land units

LB1, LB2, LB4, LG6, LH1, LH2.

DU06 Frontal dunes



Area of land type in region: 0.2%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 62%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Hard ironbark country

Landform

Hillcrest, hillslope, footslope and fans.

Woody vegetation

Open to low open woodland of silver-leaved, narrow-leaved and White's ironbarks. Occasional occurrences of mallee box, bloodwood (e.g. Clarkson's, yellowjacket, western), desert oak, false sandalwood, currant bush, ghost gum, wattles, quinine and tea tree in sparse, variable understorey.

Expected pasture composition

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

Preferred	Kangaroo grass, soft spinifex, buck spinifex.
Intermediate	Bottlewasher grasses, wanderrie grass (mountain, northern), five-minute grass, silky oil grass.
Non-preferred	Wiregrass (e.g. dark, many-headed, Jericho).

Suitable sown pastures

Generally not suitable for sown pastures.

Introduced weeds

Generally not a problem.

Soil

Sandy loam topsoil over sodic sandy clay subsoil. A hardpan or ironstone occurs within 0.5 m of the surface.

Description	***Surface*:** Soft; ***Surface texture*:** sandy loam; ***Subsoil texture*:** sandy clay.
Water availability	Low
Rooting depth	0.25–0.5 m.
Fertility	Low; low with phosphorus deficient nutrient status.
Salinity	Moderate
Sodicity	Mainly sodic subsoils.

pH

Slightly acid to strongly alkaline surface over medium acid to mildly alkaline subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 419 – 520 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	560 - 1040	20%	14 - 26
	3 TBA 8 FPC	420 - 1040	20%	25 – 35

Enterprise

Breeding

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of moderate pasture growth.
- These areas require conservative management as they are low productivity, on fragile soils and unsuited to improved pastures.

Land use limitations

- Run-off can be high after heavy rainfall.
- Low fertility.
- High erosion hazard. Prone to sheet erosion and shallow gullying.

Conservation features and related management

- These woodlands, while simple in structure, have a dominant soft spinifex ground cover with important wildlife values and are characterised by a wide variety of plant species at ground level and shrub level.
- Spinifex and inter-tussock annual herbs and forbs provide seasonal food sources for small mammals (e.g. desert mouse, striped-faced dunnart, delicate mouse); ground reptile populations (skinks, geckoes, legless lizards) including mulga snakes that are in decline as a result of ingesting the poisonous cane toad; granivorous birds (pigeons, quail, parrots and finches); and migrating birds that are often attracted from inland arid Australia (e.g. crimson chats).
- Dense pasture and a good ground cover of litter are necessary to maintain good infiltration characteristics. Maintaining a good biomass of native perennial grasses with a cover of over 40%, not only ensures a rapid response to rain and optimum grass production but holds the rain and allows time for infiltration.
- A good retention of pasture biomass at the end of the dry season provides a stable habitat for ground fauna, seed source for granivorous birds and is a good preventative measure for soil erosion.
- Fire is an important management tool in this habitat and spelling after fire to allow pasture recovery is very important.

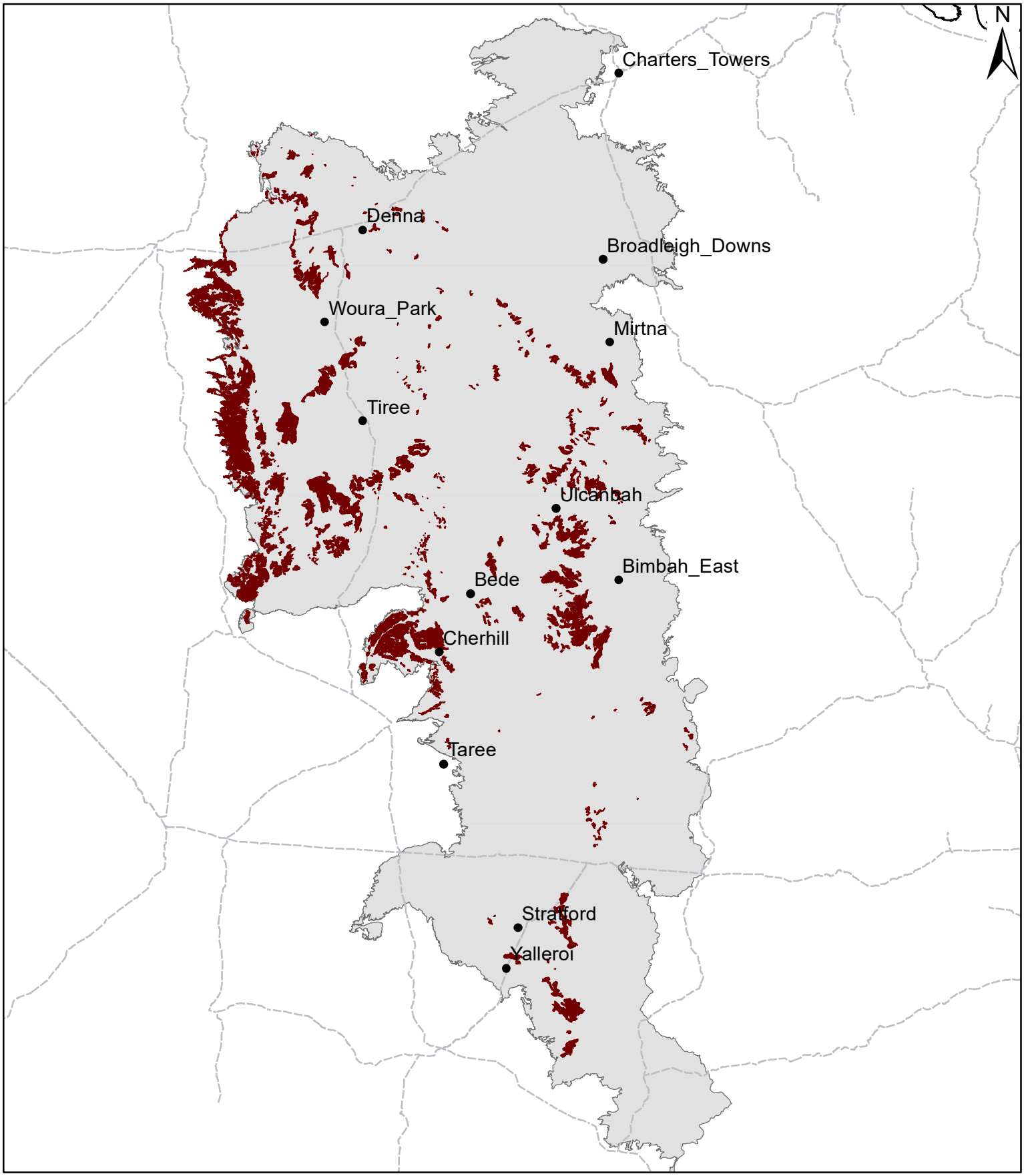
Regional Ecosystems

10.3.16a-c, 10.5.4c, 10.5.9a-b, 10.7.1a-f, 10.7.10a-c, 10.7.1bx1, 10.7.9, 10.7.11a-b, 10.7.12a.

DUSLR project land units

BD3, BB1, CM2, CM1, GK1, AB2, BT4, TM1, AB3, SS1.

DU07 Hard ironbark country



Area of land type in region: 6%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 69%
Median FPC: 8%
Median TBA: 3 m2/ha

Queensland Government

Ironbark country

Landform	Hillslopes, plains, fans and sometimes ridges.
Woody vegetation	Open woodland of silver-leaved ironbark, White's ironbark, narrow-leaved ironbark, ghost gum and bloodwood (e.g. Clarkson's, yellowjacket, large-fruited). Scattered occurrences of wattle, currant bush, poplar box, ironwood, false sandalwood, prickly pine, quinine, eastern dead finish, Reid river box and cypress pine.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Black speargrass, soft spinifex, kangaroo grass, Queensland bluegrass, desert bluegrass, forest bluegrass, curly bluegrass, golden beard grass.
Intermediate	Bottlewasher grasses, lovegrasses (e.g. clustered, purple), silky oil grass.
Non-preferred	Wiregrass (e.g. dark, many-headed, Jericho), wanderrie grass (mountain, northern), barbwire grass, red Natal grass*.
Suitable sown pastures	Buffel grass and Shrubby stylo throughout. Urochloa, Indian bluegrass and Caribbean stylo in the north.
Introduced weeds	Parkinsonia, red Natal grass.
Soil	Deep sandy loam over a sandy clay loam. Texture contrast profile with an ironstone hardpan usually present.
Description	***Surface*:** Soft; ***Surface texture*:** sandy loam; ***Subsoil texture*:** sandy clay loam.
Water availability	Good
Rooting depth	Deep; hardpan can limit rooting depth.
Fertility	Moderate; low to moderate, phosphorus deficient nutrient status.
Salinity	Very low salt content in most areas.
Sodicity	Mainly non-sodic. NP1 has a sodic subsoil.

pH

Slightly acid surface over medium acid to moderately alkaline subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 400 – 520 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	970 - 1420	25%	8.2 - 12
	4 TBA 10 FPC	580 - 1040	25%	11 – 20

Enterprise

Breeding

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of moderate pasture growth.
- High density of perennial grasses ensures rapid response to rain and, therefore, optimum grass production.

Land use limitations

- Topsoils are susceptible to crusting or compaction and sheet erosion.
- Good ground cover essential to minimise erosion.
- Variable soil erosion hazard. Prone to sheet erosion.

Conservation features and related management

- As with the box woodlands, the ironbark open woodlands are equally widespread and one of the most significant habitats for vertebrate fauna in the Desert Uplands. These woodlands, and the variety of micro-habitats associated with the different soils, ground cover and shrub layers, support a very high diversity of reptiles; woodland bird species that have declined in south-eastern Australia (e.g. square-tailed kite, Australian bustard, bush stone-curlew, squatter pigeon, black-throated finch, hooded robin, grey-crowned babbler and brown treecreeper); and of terrestrial and arboreal mammals (e.g. koalas, squirrel gliders, common brushtail possums, rufous bettongs and spectacled hare-wallabies).
- Retention of a minimum pasture biomass of 1500 kg/ha and a minimum ground cover of 50% is recommended to ensure a good diversity of native pasture species, especially those species most palatable or sensitive to grazing, is retained over time.
- Grazing on a rotational basis is encouraged with paddock spelling occurring at least once every 3 to 4 years.
- Burning, after the first summer rains, once every 7–10 years is recommended to prevent tree thickening. Burning should be preceded by a paddock spell to ensure an effective burn and followed by spelling to ensure pasture re-establishment success.
- To ensure wildlife have a refuge area where they can exist without competition from stock, an area of ironbark woodlands should be kept at least three kilometres from artificial water.

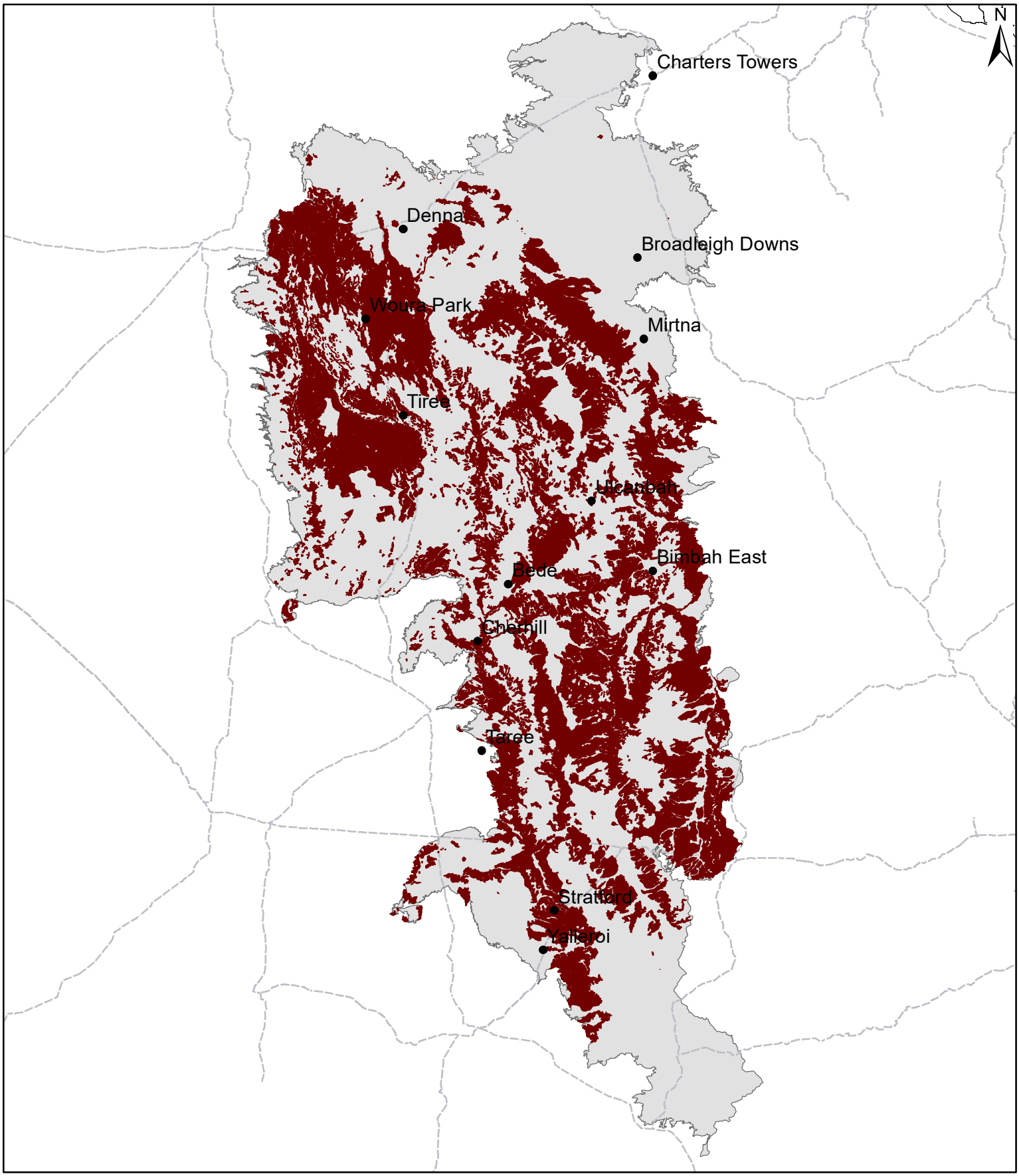
Regional Ecosystems

10.3.10, 10.3.10x1-2, 10.3.28a-b, 10.3.9, 10.3.9x1-2, 10.5.11a-c, 10.5.2a-b, 10.5.2ax1, 10.5.4a-c, 10.5.5a-c, 10.5.7a-b, 10.5.7ax1, 10.9.2e, 10.9.5a-b, 10.9.5ax1, 10.9.8, 10.9.8x1, 11.11.12, 11.5.12, 11.5.5.

DUSLR project land units

CA2, CA3, CO3, DT2, LE1, LN1, NP1, SP1, SP2, TF1.

DU08 Ironbark country



Area of land type in region: 30%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 75%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Jump-ups

Landform	Scarps, hills and ridges.
Woody vegetation	Low open woodlands to shrublands of lancewood, bendee, mulga and/or Normanton Box. Other scattered species that may occur include yellowjacket, yapunyah, narrow-leaved ironbark, blackbutt, poplar box, wattle, bloodwood (e.g. shiny-leaved), Reid river box, and bushhouse paperbark.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Soft spinifex, buck spinifex, kangaroo grass, golden beard grass, Shrubby stylo*.
Intermediate	Silky oil grass.
Non-preferred	Wiregrass (e.g. dark, many-headed, Jericho).
Suitable sown pastures	Not suitable for sown pastures.
Introduced weeds	
Soil	Shallow, stony soils on bedrock or with a hardpan of ironstone or silcrete at a depth <0.50 m. A gravelly surface which may have exposed rock. The topsoil is susceptible to compaction and sheet erosion.
Description	***Surface*:** Gravelly; ***Surface texture*:** stony loam; ***Subsoil texture*:** none or very limited horizon structure, underlain by bedrock.
Water availability	Very low.
Rooting depth	Restricted – due to shallow hardpan and soil depth.
Fertility	Low; very low phosphorus deficient nutrient status.
Salinity	Low
Sodicity	Some sodic subsoils.
pH	Strongly acid surface and subsoil. Some moderately alkaline subsoils.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 400 – 520 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	670 - 1050	15%	19 - 29
	6 TBA 15 FPC	310 - 400	15%	49 – 63

Enterprise

Breeding

Land use and management recommendations

- Suitable for grazing of native pastures. Capable of very low pasture growth.
- These areas are often useful for dam catchments.
- These areas are often mixed in with other land types and as they are generally not preferentially grazed do not justify fencing off and separate management.
- Lancewood and bendee timber make good stockyard rails.

Land use limitations

- Growing season for plants greatly reduced by the droughty nature of these soils. Frequency of rainfall has a direct bearing on the quality of growth.
- Runoff is high and shallow rooting depth limits water availability.
- Low fertility status limits the potential productivity of native/introduced pasture species.
- Roads and tracks increase runoff and can initiate erosion and can cause off-site problems such as deposition in dams/drains and along fence lines.
- Generally high erosion hazard associated with steep slopes.

Conservation features and related management

- The hummock grasslands and related low shrubby habitats occurring in the saline discharge zones, most commonly on the western margin of the Alice Tableland, are particularly significant for specialised and restricted fauna. A number of disjunct species more typical of arid central Australia are present (e.g. spinifex bird, centralian blue-tongue lizard, desert mouse). A few endangered and vulnerable shrubs associated with jump-ups include *Acacia ramiflora, Micromyrtus rotundiflora* (round-leaved myrtle) and *Acacia crombiei* (pink gidgee). At the base of the jump-ups on the west side of the Desert Uplands are artesian springs which support populations of two endangered fish species – the red-finned blue-eye and the Edgbaston goby. Mound springs in the Desert Uplands also provide habitat for three endangered plants – *Eriocaulon carsonii, Eryngium fontanum* and *Myriophyllum artesium.*
- A fragile equilibrium exists between the sparse vegetation ground cover and soils that are highly susceptible to erosion. Any form of soil disturbance, or reduction in ground cover, can initiate a degradation process that will be difficult to reverse. Fencing off this land type and allowing only minimal winter usage is recommended.
- Fire is important in the spinifex dominated communities and these areas should be spelled to allow recovery of the vegetation following burning.

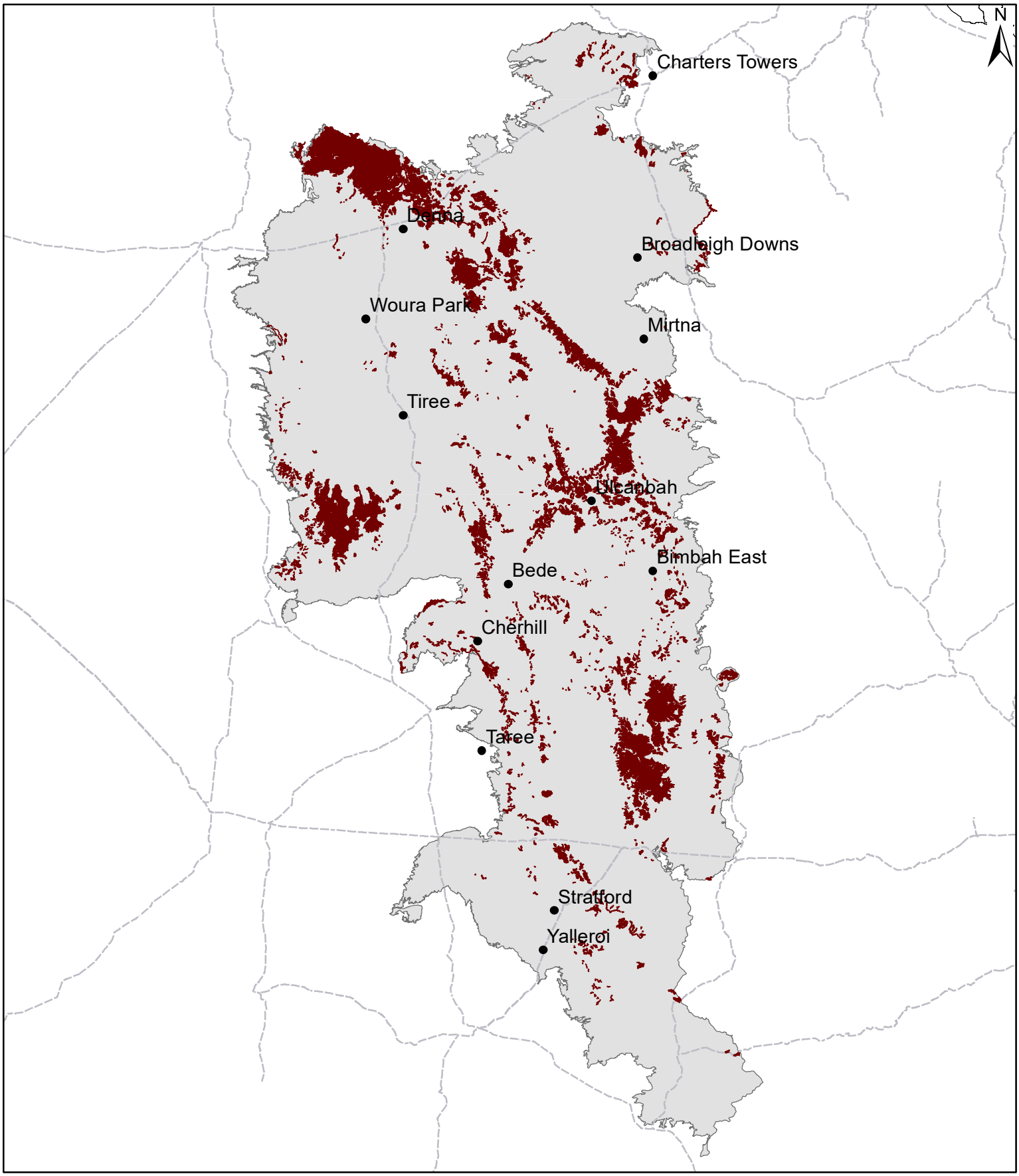
Regional Ecosystems

10.7.2a-e, 10.7.3a-g, 10.7.3ex1, 10.7.4-6, 10.7.6x1-3, 10.7.7a-d, 10.7.8a-b, 10.7.13, 10.7.13x1, 10.9.3c, 10.9.7, 10.10.1a-c, 10.10.2a-d, 10.10.3, 10.10.4a-d, 10.10.5a-e, 10.10.7,11.10.3, 11.5.10, 11.10.4c.

DUSLR project land units

BD1, BD2, BT3, CE2, CE3, CO2, DR2, LE5, VA3, WM1.

DU09 Jump-ups



Area of land type in region: 7%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 82%
Median FPC: 15%
Median TBA: 6 m2/ha

Queensland Government

Lakebeds

Landform	Shallow depressions and lakebeds.
Woody vegetation	Open shrublands of samphires, grasslands, sedgelands and ephemeral herblands. River Cooba may be present. Occurrences of parkinsonia.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.* *@ Denotes non-grass species that are important to grazing and land condition values in ephemeral lake and swamp land types.*
Preferred	Saltbush@, marine couch.
Intermediate	Samphire@, brown beetle grass, lovegrasses, fringe rushes@.
Non-preferred	
Annual grasses	Comet grass, button grass.
Common forbs	Spreading nut-heads, red spinach. Non-preferred species include copperburr.
Suitable sown pastures	Generally unsuitable, some buffel grass.
Introduced weeds	Parkinsonia.
Soil	Shallow sandy loam over saline clay or hardpan.
Description	***Surface*:** Soft; ***Surface texture*:** sandy loam; ***Subsoil texture*:** clay.
Water availability	Low
Rooting depth	Shallow
Fertility	Low; low nutrient status.
Salinity	High
Sodicity	High
pH	Mildly alkaline surface and neutral subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 464 – 511 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	840 - 1100	10%	27 - 35
	4 TBA 10 FPC	400 - 610	10%	48 – 73

Enterprise

Breeding

Land use and management recommendations

- Suitable for restricted grazing. Capable of low pasture growth.
- Cover of any trees, shrubs, grass or annual forbs is beneficial to the stability of this land type.

Land use limitations

- The vegetation is limited to plants that are tolerant of sodic clays and saline conditions. The added effect of windblown sand particles abrading plant tissue restricts plant growth.
- Generally low erosion hazard. Can be prone to wind erosion along open areas.

Conservation features and related management

- Both Lake Galilee and Lake Buchanan are wetlands of national significance, and have been widely recognised as providing significant waterbird habitat for seasonal migratory waterbirds when they are inundated. Large populations of pelicans, black swans, brolgas, ducks (freckled, hardhead, whistling, pink-eared, black), straw-necked ibis, white-faced herons, Caspian terns, spoonbill species, silver gulls and grey teals have been recorded feeding, breeding and nesting on the lakes.
- Apart from the lakes themselves, there are high terrestrial animal values in the samphire, saltbush, herbfield and dune woodlands associated with the margins of the lakes; especially as nesting sites for the waterbirds that feed on the lakes. The lake environs provide potential habitat for rare nomadic species that utilise the lake edges (e.g. yellow chat, orange chat, painted snipe).
- Parkinsonia infestations can be a problem on these moist areas.
- It is recommended that stock do not have direct access to the natural waterholes on the lakes, instead be watered at dams, tanks or troughs adjacent to the lakes.
- Artificial watering points and additional fencing may be necessary to decrease grazing pressure on the lake beds. Overgrazing of the ground cover of these lake beds reduces the habitat value of these unique areas for small ground fauna and nesting birds.
- Use of herbicides, fertilisers or pesticides (for parkinsonia control) in lake vicinities should only be undertaken with great caution.

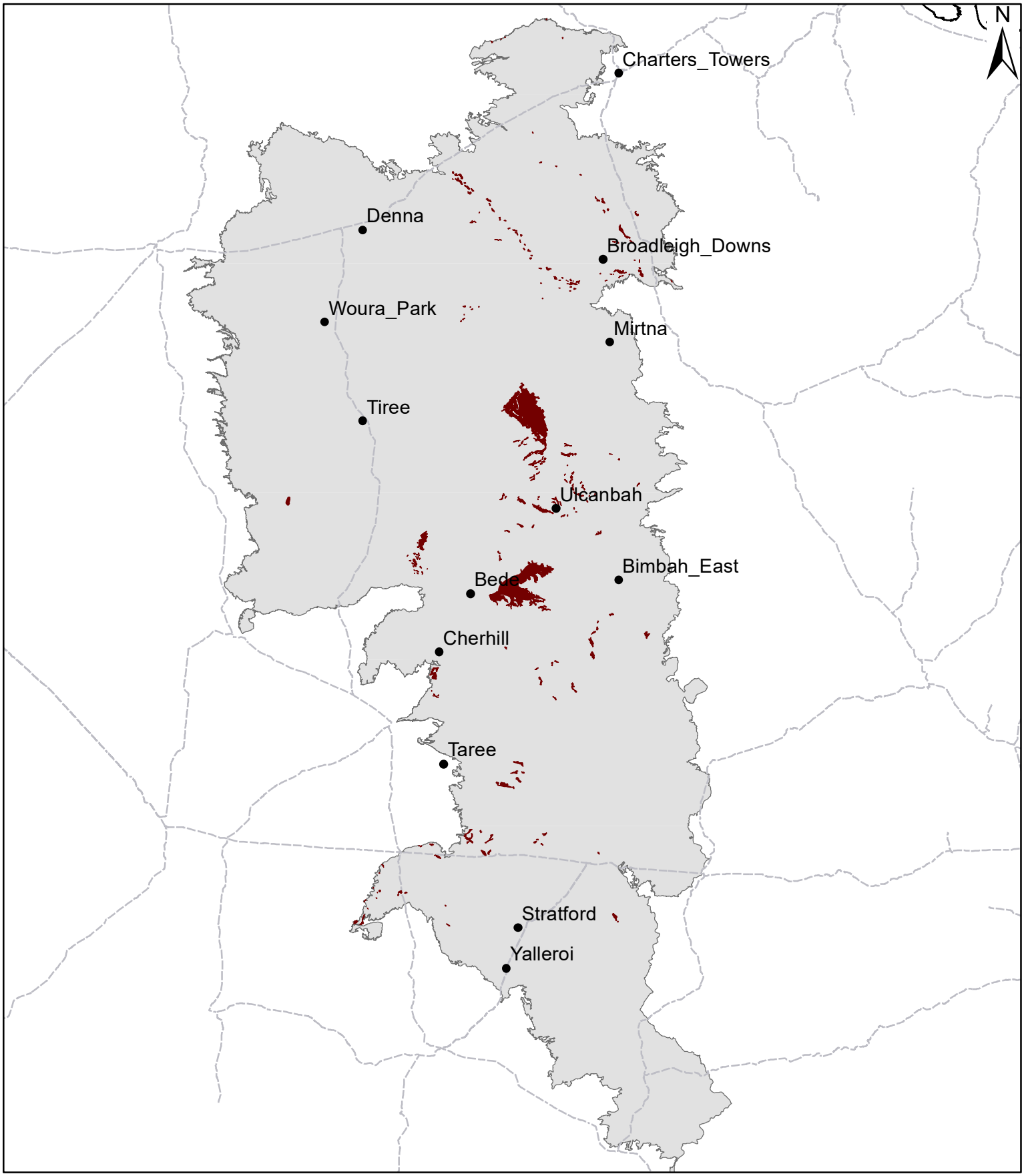
Regional Ecosystems

10.3.16d-f, 10.3.22a-d, 10.3.23a-d, 10.3.24.

DUSLR project land units

LB5, LG7, LG8, PT2.

DU10 Lakebeds



Area of land type in region: 1%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 18%
Median FPC: 10%
Median TBA: 4 m2/ha

Queensland Government

Scrubs on deep clays

Landform	Plains and hillslopes.
Woody vegetation	Gidgee and brigalow low open to low woodlands. Blackwood only occurs on red duplex or red clay soils. Associated species include boree, leopardwood, yapunyah, blackbutt, false sandalwood, mimosa, Reid river box, coolibah, eurah, currant bush, water bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Buffel grass*, bull Mitchell grass, curly Mitchell grass, bluegrasses (e.g. desert).
Intermediate	Bottlewasher grasses, fairy grass.
Non-preferred	Five-minute grass, wiregrasses (e.g. dark, many-headed, Jericho, feathertop, gulf feathertop, purple).
Annual grasses	Flinders grasses.
Common forbs	Non-preferred forbs include sidas (e.g. high, silver).
Suitable sown pastures	Buffel grass.
Introduced weeds	Parthenium, parkinsonia, mother-of-millions, velvet tree pear, harrisia cactus.
Soil	Deep to very deep uniform cracking clay soil.
Description	***Surface*:** Self-mulching; ***Surface texture*:** medium to heavy clay; ***Subsoil texture*:** medium to heavy clay.
Water availability	Good
Rooting depth	Deep to very deep, particularly on red duplex or red clay soils.
Fertility	High; moderate nutrient status.
Salinity	Often moderate salt content throughout profile.
Sodicity	Some sodicity at depth.
pH	Slightly acid to moderately alkaline surface and mildly to strongly alkaline subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 400 – 489 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1050 - 1640	30%	5.9 – 9.3
	6 TBA 15 FPC	460 - 740	30%	13 – 21
Buffel		2320 - 3170	35%	2.6 – 3.6

Enterprise

Growing

Land use and management recommendations

- Suitable for grazing. Capable of high pasture growth.
- These highly productive areas can be used strategically for growing stock, or meeting periods of high nutritional demand for the breeding herd. This gives the added benefit of spelling less productive land types.

Land use limitations

- These areas, while very productive and resilient soils, are susceptible to infestation by parthenium.
- Light falls of rain can close surface cracks subsequently limiting infiltration and resulting in a poor pasture growth response. The shallow-rooted annuals have a short growing season. Lower slopes/flats are prone to inundation.
- Limited soil erosion hazard. Prone to sheet, rill and gully erosion along tracks and fence lines and on sloping lands and drainage lines.

Conservation features and related management

- Open gidgee, blackwood or brigalow woodland fauna are often highly inter-connected and inter-related with the surrounding eucalypt woodland and riparian communities.
- The dense canopy, high levels of fallen and dead timber, cracking soils, and high cover of herbage in the acacia scrubs favour and support high numbers of particular animal guilds – arboreal mammals, arboreal and scansorial reptiles (geckos, dragons, skinks) and some woodland birds (e.g. painted honeyeaters that eat scrub mistletoe).
- The restricted legless lizard, the brigalow scaly-foot, is known to occur in scrub patches. Gidgee scrubs on alluvials in the Prairie–Torrens creek areas support an endangered small plant, *Nesaea robertsii,* which is very vulnerable to grazing. This plant is only known from two locations in Queensland.
- Most acacia remnants are small and fragmented and occur in the form of shade lines and stock shade near waters. These remnants can readily be enhanced by allowing natural regeneration of regrowth, particularly along fence lines, to re-establish landscape linkages across properties. Re-establishment of linkages to riparian areas, and buffers to riparian areas, are of high conservation benefit. The wider the regenerated strips, the more robust and effective they will be over time.
- Parthenium infestations and succulent weeds (mother-of-millions, velvet tree pear, harrisia cactus), are a problem along alluvial acacia scrub areas and can be controlled with selective use of fire, biological controls and herbicide sprays.

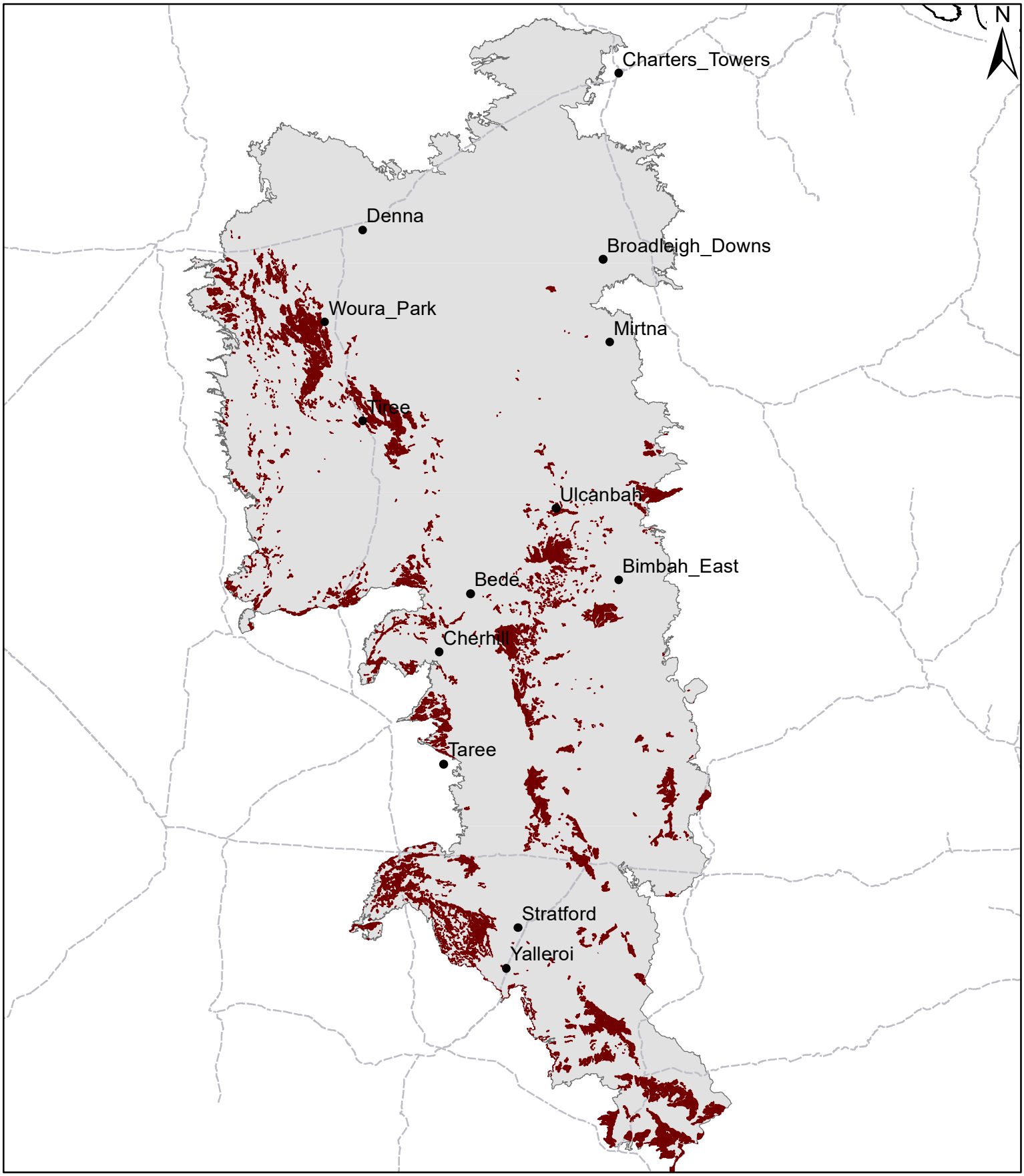
Regional Ecosystems

10.3.3a-b, 10.3.4a-d, 10.3.4dx1, 10.3.5, 10.3.14e, 10.3.15d, 10.3.15dx1, 10.3.15m, 10.3.30, 10.4.1, 10.4.1x1-3, 10.4.2, 10.4.3a-b, 10.4.5, 10.4.5x1-2, 10.4.7, 10.9.6, 10.9.6x1, 11.3.5, 11.4.8, 11.9.11.

DUSLR project land units

AR1, TK3, WV3, DS3, RD2, CA4, BR1, UH2, LG2, WY2.

DU11 Scubs on deep clays



Area of land type in region: 6%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 41%
Median FPC: 15%
Median TBA: 6 m2/ha

Queensland Government

Scrubs on shallow clays

Landform	Plains, footslopes and hillslopes.
Woody vegetation	Blackwood open woodland with scattered occurrences of coolibah, river red gum, blackbutt, false sandalwood, bauhinia, belah, ironbark, leopardwood, Reid river box, currant bush, mimosa.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Mitchell grasses (barley, bull, hoop, curly), desert bluegrass, Queensland bluegrass, forest bluegrass, silky browntop.
Intermediate	Fairy grass, bottlewasher grasses.
Non-preferred	
Annual grasses	Flinders grass, button grass.
Common forbs	Non-preferred forbs include gidgee burr, sida, soft roly poly.
Suitable sown pastures	Buffel grass more suited to central and southern part of the region.
Introduced weeds	Parthenium, mother-of-millions, parkinsonia.
Soil	Shallow, uniform grey and brown cracking clays with hard-setting topsoil over sodic subsoil.
Description	***Surface*:** Cracking; sometimes hard-setting; ***Surface texture*:** light to medium clay; ***Subsoil texture*:** medium clay.
Water availability	Low
Rooting depth	Shallow
Fertility	Moderate; moderate nutrient status.

Salinity

Subsoil has moderate to high levels of soluble salts.

Sodicity

Subsoils are usually sodic.

pH

Strongly acid to neutral surface over strongly acid to moderately alkaline subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 432 – 511 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1060 - 1130	25%	10 - 11
	3 TBA 8 FPC	670 - 770	25%	15 – 17

Enterprise

Breeding and growing.

Land use and management recommendations

- Suitable for grazing. Capable of moderate pasture growth.
- This is a suitable land type for growing stock if used according to capability.
- Adequate ground cover should be maintained to prevent the surface becoming bare and prone to annuals and parthenium infestation.

Land use limitations

- Native pasture species can be quite sparse under a dense tree canopy.
- Production is limited by lack of moisture, due to the inherent nature of these soils with high clay content holding water, rather than fertility.
- Sodic subsoils limit rooting depth.
- Limited soil erosion hazard. Prone to sheet, rill and gully erosion along tracks and fence lines and on sloping lines and drainage lines.

Conservation features and related management

- These acacia woodlands support high abundances of particular fauna guilds including arboreal mammals (e.g. sugar gliders), reptiles and some woodlands birds species (e.g. crested bellbird, grey-crowned babblers, brown treecreepers).
- The highly diverse reptile community, particularly geckoes, skinks, dragons and skinks, utilises fallen timber, dead trees and exfoliating bark.
- Retaining fallen timber and dead trees in this land type provides valuable habitat for birds and reptiles. Also, the gradual decomposition of timber is important in the ecosystem's nutrient cycling.
- It is important to maintain ground cover in the form of litter and pasture where possible as the soil B horizon is very sodic, dispersive, erosive and hard to re-pasture.

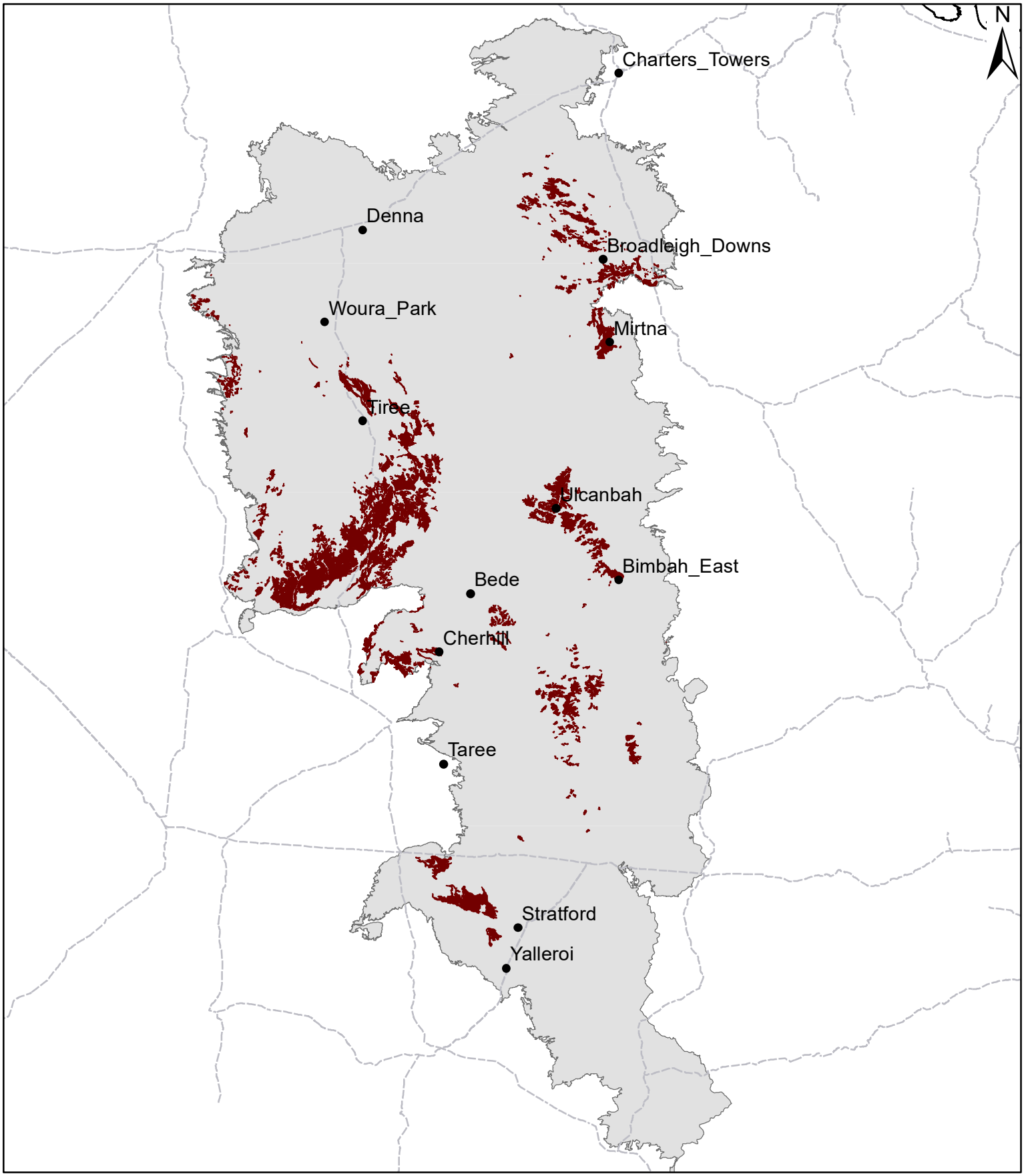
Regional Ecosystems

10.3.1, 10.3.2a, 10.3.2bx1, 10.4.1, 10.4.9, 10.9.1a-c, 10.9.2a-c, 10.9.2ax1, 10.9.6x2, 10.9.3a-b, 11.4.6.

DUSLR project land units

BK1, DE1, GK5, LD3, MH3, PK4, PP4, PT5, TC3, UH4, WV4, WY3.

DU12 Scubs on shallow clay



Area of land type in region: 4 %
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 58%
Median FPC: 8%
Median TBA: 3 m2/ha

Queensland Government

Yellowjacket country +/- wattles

Landform	Plains and hillslopes.
Woody vegetation	Low open woodland to open woodland of yellowjacket. Often associated with bloodwood (e.g. Clarkson's, yellowjacket, western), applejack, ghost gum and with dense understorey of wattles, quinine, soap tree and heartleaf poison bush.
Expected pasture composition	** Denotes non-native "Expected Pasture Composition" species.*
Preferred	Soft spinifex, black speargrass, kangaroo grass, golden beard grass, forest bluegrass.
Intermediate	Buck spinifex.
Non-preferred	Wiregrass (e.g. dark, many-headed, Jericho, gulf feathertop, purple), bottlewasher grasses, wanderrie (mountain, northern).
Suitable sown pastures	Generally not suitable for sown pastures.
Introduced weeds	
Soil	Very deep profile of sandy red loam surface, and/or yellow sandy soils. Fine sandy surface, with sandy clay loam subsoil.
Description	***Surface*:** Loose to soft; ***Surface texture*:** sandy or sandy loam; ***Subsoil texture*:** clay loam.
Water availability	Low
Rooting depth	Very deep.
Fertility	Very low; very low, phosphorus deficient nutrient status.
Salinity	Very low salt content.
Sodicity	Mostly non-sodic.
pH	Slightly acid surface over medium acid subsoil.

Long-term carrying capacity information (A condition)

Based on fully watered area for 1AE = 450 kg animal consuming 8kg DM/day				
Median annual rainfall 400 – 520 mm				
Pasture type	Median tree cover (TBA m^2/ha) (FPC %)	Median annual pasture growth (DM kg/ha)	Safe annual utilisation pasture growth (%)	LTCC (ha/AE)
Native species	0 TBA/FPC	1050 - 1420	20%	10 - 14
	6 TBA 15 FPC	440 - 680	20%	21 – 33

Enterprise

Breeding

Land use and management recommendations

- Suitable for grazing. Capable of moderate pasture growth.
- During extended dry conditions, these areas can provide useful grazing.
- Sown pastures may only persist under trees.
- Heartleaf poison bush is common and is responsible for high stock fatalities if grazed at the wrong time.

Land use limitations

- A good vegetative ground cover is required to protect the loose, sandy topsoils from erosion by runoff water and increased erosion. Sheet erosion can occur if ground cover is low.
- Pasture growth is limited by low nutrient status and poor water availability. South of Aramac the yellowjacket country is slightly more fertile because of the extended growing season and higher levels of organic matter.
- Spinifex-dominant pastures together with accumulated leaf litter under the bloodwoods are highly susceptible to wildfires started by pre-wet lightning strikes.
- Limited soil erosion hazard. Prone to sheet, rill and gully erosion along tracks and fence lines and on sloping lands.

Conservation features and related management

- These woodlands are the best remaining intact sub-tropical woodlands in Central Queensland and are the bioregional and biodiversity heartland of the Desert Uplands. The very deep soil profiles, with special characteristics of low runoff and high infiltration rates, represent a nationally important recharge zone for aquifers of the Great Artesian Basin.
- The woodlands are habitat to at least two endemic reptile species (*Ctenotus rosarium* and *Lerista chordae*). The deep red sandy soils and predominant spinifex cover provides habitat for an exceptional diversity of reptiles, many of which are threatened or restricted (e.g. *Simoselaps warro, Ctenotus pantherinus*).
- High mammal abundance of species (e.g. desert mouse, delicate mouse, striped-faced dunnart) can be found in these yellowjacket woodlands.
- A very high floristic diversity provides food sources for a wide array and abundance of woodlands birds, including the hooded robin which is increasingly threatened throughout its range in Australia.
- Maintenance of this extremely important habitat should be continued through low levels of grazing, minimal infrastructure, one or no watering points and burning after first summer rains every 7–8 years. The best time to burn is after the first good rains of the wet season, when the ground is moist.
- Tussock density and ground cover should be maintained at all times to minimise run-off and maximise the rate of infiltration.

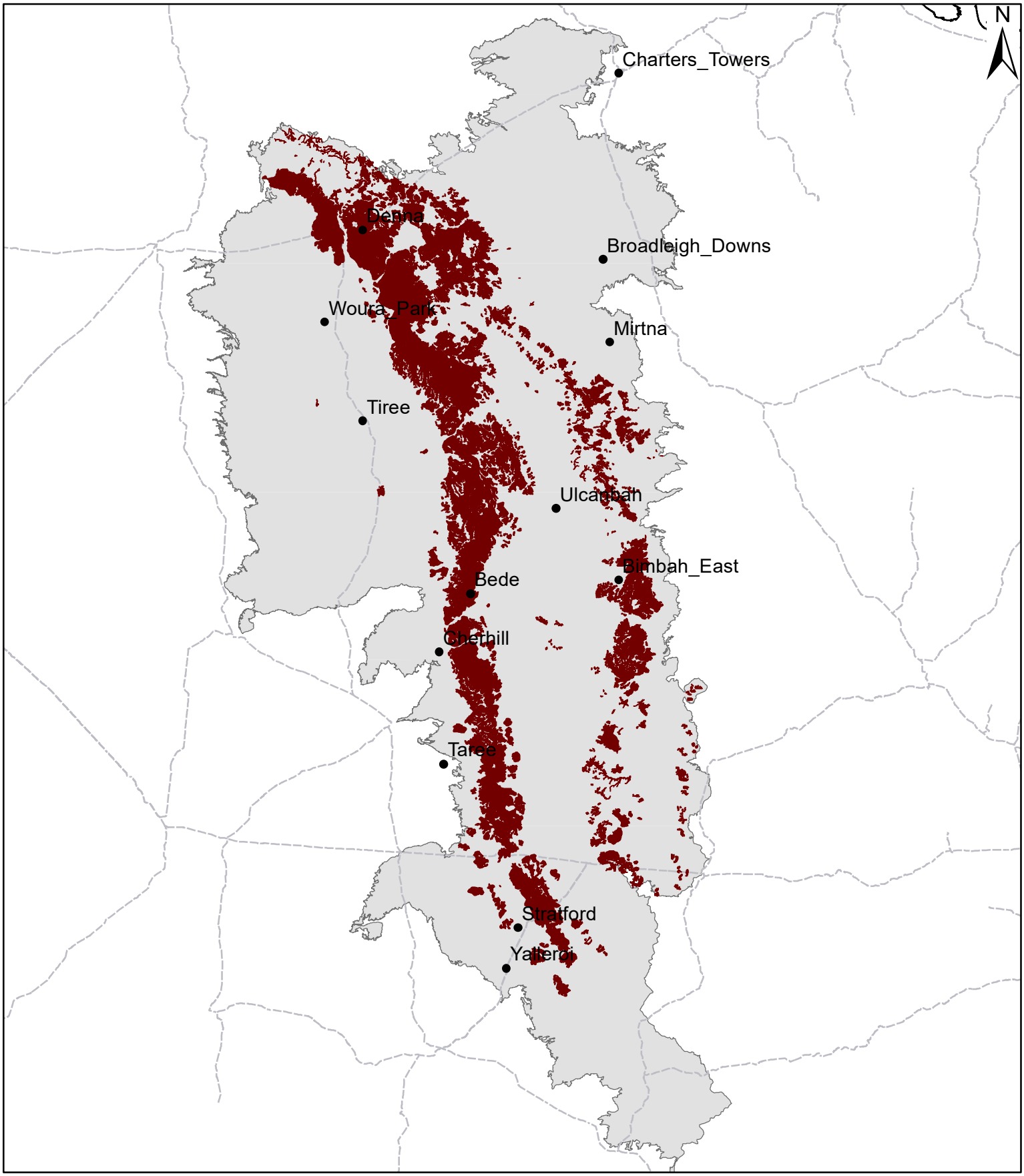
Regional Ecosystems

10.3.11a-c, 10.5.1a-j, 10.5.8a-b, 10.5.10.

DUSLR project land units

BN2, DT1, GT1, JJ1, NP2, OE3, WW3.

DU13 Yellowjacket country +/- wattles



Area of land type in region: 14%
Median rainfall (region): 400 – 608 mm
Average rainfall (region): 440 – 679 mm
Area of land type with FPC: 91%
Median FPC: 15%
Median TBA: 6 m2/ha

Queensland Government