



### GENERAL FEATURES

- Limit of mapping
- Land unit boundary
- Property boundary
- Pastoral homestead
- Highway
- Main road: sealed
- Local road / track
- Railway
- Bore
- Excavated tank or dam
- Fence
- Drainage line
- Relief ridge
- Spot height: metres AHD

### MAP LOCALITY

Base Information Data Sources:  
Northern Territory Department of Lands, Planning and the Environment, and Geoscience Australia, Australian Government  
Cartography by Spatial Data and Mapping, Water Resources NT, Department of Lands Resource Management, Northern Territory of Australia, January 2015  
Web: www.lrm.nt.gov.au/lrmaps.asp  
Map Reference: Upper-Todd R, Bond-Sps, Land-Res, 25k

### LAND UNIT DESCRIPTIONS

#### RISSES

- 1.1 Low hills and rises developed on weathered basement rock (Arunta Block gneiss and schist) with abundant rock outcrops, slopes of 2-10% and relief to 10m with narrow drainage lines. Shallow and gravelly (B) horizons (Sodosols) with shallow red earths (Red Kandosols) where wash deposits occur along drainage lines. *Acacia tempana* and *Acacia aneura* tall sparse shrubland with an *Eriosegopus aviculae*, *Eriosegopus polyphyllus* and *Artisida strogos* sparse grassland understorey.
- 2.1 Low hills and rises on deeply weathered substrates, outcrops of highly weathered rock on upper slopes and crests which shed a lag of heavy quartz gravel development, slopes of up to 10% and relief to 10m, dissected by narrow, non-tributary drainage lines. *Calcarosols* with shallow A horizons over pale mottled saprolite on the lower slopes and the upper slopes the soils are sandy and the weathered basement rock. *Eucalyptus* tall sparse forest mid high open mallee woodland with a *Triodia mitchelli* tall open hummock grassland understorey.

#### LOW RISSES

- 2.2 Breakways with short, steep slopes and dissected lower slopes on deeply weathered substrates, slopes of 2-3% with relief to 5m, drained by a closely spaced network of narrow, incised drainage channels. Weakly developed soils which are regularly covered by gravel development, slopes of up to 10% and relief to 10m, dissected by narrow, non-tributary drainage lines. *Calcarosols* with shallow A horizons over pale mottled saprolite on the lower slopes and the upper slopes the soils are sandy and the weathered basement rock. *Eucalyptus* tall sparse forest mid high open mallee woodland with a *Triodia mitchelli* tall open hummock grassland understorey.
- 2.3 Level plains or low rises and slopes on deeply weathered substrates with gradients up to 2%, rises are smoothly convex but may have flat crests, drainage occurs as short flow and stream channels are absent. Red-brown earths over mottled saprolite (Sodosols) with a well-developed surface lag gravel. Largely bare of vegetation, *Calcarosols* and *Acacia aneura* low open woodland with a *Sclerolaena lanicarpa*, *Sclerolaena dicartha* and *Triopogon litoralis*.
- 2.4 Plains downslope of Unit 2.3 formed on deeply weathered substrates with slopes of 1-2% and relief to 2m; dissected by drainage lines 1.5 to 3.0 km deep. Red-brown earths over mottled saprolite (Sodosols) with a well-developed surface lag gravel, shallower than the similar soils of Unit 2.3. *Sclerolaena dicartha* very sparse low woodland with *Eriosegopus* sp. and *Triopogon litoralis* grasses.
- 2.5 Low rises or benches with level crests or gently inclined surfaces formed on deeply weathered substrates, drains by sheet flow and occurs in association with Unit 2.3. Red-brown earths over mottled saprolite (Sodosols), *Acacia aneura* and *Acacia tempana* low open woodland with a *Sclerolaena lanicarpa* and *Maireana georgei* sparse forbland understorey with *Triopogon litoralis* grasses.
- 3.1 Planar surfaces with slopes of up to 4% and very low surface relief, occurring as low plateaus or crests formed from block dissection up to 1.5 km from a high ridge. Red-brown earths over mottled saprolite (Sodosols) with a well-developed surface lag gravel, shallower than the similar soils of Unit 2.3. *Sclerolaena dicartha* very sparse low woodland with *Eriosegopus* sp. and *Triopogon litoralis* grasses.
- 3.2 Plains, rises and low plateaus mantled with lateritic gravel. Red earths (Red Kandosols) characterised by gravelly A horizons. B horizons are weakly structured and grade into saprolite at depths of 0.3m to 1m. *Acacia aneura* low open woodland with very sparse tall sparse forest mid high open mallee woodland with a *Triodia mitchelli* tall open hummock grassland understorey.

#### PLAINS

- 4.1 Gently undulating plains developed on weathered sediments with slopes of less than 1% and very low surface relief, banded sheet flow drainage patterns are reflected in the grading. Red-brown earths (Sodosols), relatively deep and well-structured compared to soils from similar erosional landscapes in the area. Groves of *Acacia aneura* low woodland with an *Artisida contorta* low sparse grassland understorey. Intergrove areas support a non-groved *Acacia aneura* low open woodland or *Artisida contorta* and *Artisida inaequalis* sparse grassland.
- 4.2 Low crests with rounded profiles developed on weathered sediments, generally with featureless surfaces that drain by sheetflow; closed circular depressions (mapped as Unit 6.2) are widely spaced through the unit and collect topsoil. Red-brown earths (Sodosols) with structured B horizons (Red Dermosols), grade into weathered substrate at a relatively shallow depth. *Sclerolaena lanicarpa*, *Convolvulus* sp., *Maireana georgei*, *Artisida contorta*, mixed spp sparse forbland. Large tracts of this unit have no mature trees and support only very sparse juvenile *Acacia aneura*.
- 4.3 Plains, usually as linear ridge crests 100-150m wide and up to 2 dm long with axial slopes of 1% or less; runoff is sheet or sheet flow and incised drainage features are absent. Red earths (Red Kandosols) pedimental but *Dermosols* were also recorded; crested surfaces and thin A horizons occur throughout and infiltration rates are low. Large tracts of vegetation, isolated tracts of *Acacia aneura* over grasses and forbs of *Dactyloctenium* ruderalis and *Sclerolaena lanicarpa* exist on isolated islands of sandy soil.
- 4.4 Gently sloping plains developed on weathered sediments with slopes up to 3% and relief to 5m, surfaces often have low hummock microrelief and are drained by sheet flow. Soils are massive and earthy; red earths (Red Kandosols) or soilised brown soils (Calcarosols). *Acacia aneura* and *Acacia tempana* low open woodland with *Sclerolaena dicartha*, *Sclerolaena lanicarpa*, *Artisida contorta*, *Eriosegopus polyphyllus*, mixed spp. sparse forbland understorey.
- 4.5 Gentle slopes and plains developed on weathered sediments, inclined up to 2% with very low surface relief; low benches (up to 0.1m) aligned on the contour result in banded sheet flow drainage patterns. *Calcarosols* red earths (Red Kandosols), soils in the groves have sandier surface textures, deeper A horizons and are less alkaline than the soils in the bare, gravelly intergrove areas. Groved *Acacia aneura* low woodland or open woodland with a *Sclerolaena lanicarpa*, *Artisida contorta*, *Eriosegopus* sp., mixed spp. sparse forbland understorey. Intergrove areas are largely bare.
- 4.6 Low rises with smoothly convex crests developed on weathered sediments with slopes of less than 2% and relief up to 5m, drained by narrow, shallow drainage lines into broad drainage floors (Unit 6.4). Red-brown earths (Sodosols) with shallow A horizons mantled by lag gravel; a well-developed surface crust inhibits infiltration. *Sclerolaena lanicarpa*, *Sclerolaena dicartha*, *Triopogon litoralis*, *Asterbea pectinata*, mixed spp. sparse forbland understorey.
- 4.7 Low rises with smoothly convex crests developed on weathered sediments with slopes of less than 2% and relief up to 5m, drained by sheet flow into broad drainage floors (Unit 6.4). Red-brown earths (Sodosols) with sander and deeper A horizons than Unit 4.6, reflected in increased soil permeability and plant cover. *Eriosegopus duttoni* tall sparse shrubland with *Asterbea pectinata*, *Eriosegopus* sp., *Artisida latifolia*, *Sporobolus sciroccoides*, mixed spp. sparse grassland understorey.

#### DRAINAGE SYSTEMS

- 6.1 Tributary drainage floors up to 200m wide with slopes of less than 1%, generally drained by sheet flow but shallow channels occur in the lower reaches of large drainage floors where erosion is active. Red-brown earths (Sodosols) with an abrupt texture contrast between shallow, sandy loam or sandy clay loam A horizons and clay B horizons. *Sclerolaena lanicarpa* and *Sclerolaena dicartha* sparse low forbland with isolated shrubs of *Hakea laevis*, *Acacia tetragonophylla* and *Eriosegopus duttoni*.
- 6.2 Either linear drainage floors up to 200m wide with slopes of less than 1% that lack channel development and are drained by sheet flow or, instead, graded drainage depressions 100-200m wide that sometimes overflow after big rainfalls. Red earths (Dermosols), commonly with a light sandy clay loam A horizon and lacking strong texture contrast; deeper, less alkaline and lighter-textured than the soils of Unit 6.1. *Acacia aneura* mid high woodland with sparse grasses of *Triopogon litoralis*, *Eriosegopus* sp., *Eriosegopus acicularis*, *Fimbristylis dichotoma*.
- 6.3 Either broad drainage floors in the Station Creek subcatchment with slopes of less than 1%, very low surface relief and lacking channel development, or narrow, steep drainage floors incised by actively eroding channels in the Todd River subcatchment. Red earths (Red Kandosols) with a sandy loam surface layer. *Acacia aneura* low open woodland with sparse grasses of *Triopogon litoralis*, *Thyrisopis mitchelliana*, *Digitaria brownii*, *Fimbristylis dichotoma*.
- 6.4 Drainage floors up to 200m wide with weakly braided sandy channels, slopes of less than 1% and very low surface relief. Sandy sedimentary layers overlying heavy-textured materials, weathered sediments or basement rock (Vertosols), surfaces are characteristically yellow-red in colour. *Hakea laevis*, *Eriosegopus duttoni*, *Eriosegopus duttoni* tall sparse shrubland with a *Sclerolaena dicartha*, *Sclerolaena lanicarpa*, mixed spp. forbland understorey.
- 6.5 Broad, linear drainage floors 100-200m wide with planar surfaces and slopes of less than 1%; surfaces lack microrelief and defined channels. Deep, weathered red-brown earths (Sodosols) with distinct stratification of fine gravels at lower levels. *Triopogon litoralis*, *Fimbristylis dichotoma*, *Sclerolaena lanicarpa*, mixed spp. low sparse grassland.

#### Example of Land Unit Descriptions

Landform	Landform description	Soil description
6.5	Broad, linear drainage floors 100-200m wide with planar surfaces and slopes of less than 1%; surfaces lack microrelief and defined channels. Deep, weathered red-brown earths (Sodosols) with distinct stratification of fine gravels at lower levels. <i>Triopogon litoralis</i> , <i>Fimbristylis dichotoma</i> , <i>Sclerolaena lanicarpa</i> , mixed spp. low sparse grassland.	Vegetation description

### TECHNICAL REFERENCES:

McDonald, R.C., Isbell, R.F., Speight, J.G., Walker, J. and Hopkins, M.S. (1990). *AUSTRALIAN SOIL AND LAND SURVEY FIELD HANDBOOK*, 2nd Edition. Inkata Press, Melbourne.

Northcote K.H. (1979). *A FACTUAL KEY FOR THE RECOGNITION OF AUSTRALIAN SOILS*, 4th Edition. Rellim Publications, Glenisde, SA.

Land resource information has been derived from aerial photograph interpretation and field data describing landform, soil and vegetation. Mapping has been collected according to the national standards and prepared at a scale of 1:100 000.

Enlarging this map beyond this scale will not provide further detail.

A site inspection should always accompany mapping for specific areas.

### BIBLIOGRAPHIC REFERENCES:

Grant, A.R. (1993). *LANDSCAPE MORPHOLOGY AND PROCESSES IN THE UPPER TODD RIVER CATCHMENT, CENTRAL AUSTRALIA: THEIR IMPLICATIONS FOR LAND MANAGEMENT*. Technical Memorandum Number TM 94/2. Conservation Commission of the Northern Territory.

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## LAND RESOURCES OF UPPER TODD RIVER CATCHMENT (BOND SPRINGS STATION)

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