

ROR Rocky River Land System

A lowland area in the south west of Kangaroo Island. The main part of this area is a transition zone between the ironstone plateau region and the 'limestone' and shell sand coastal regions. This system includes the wet drainage flats around Knapmans Creek and nearby drainage areas, the river flats and low rises of the lower Rocky River, the plains and low rises from Yacca Flat to north of 'Tandanya', the river flats of the South West River, and the river flats of the streams flowing onto the 'Grassdale' alluvial plain. The system is named after the Research Station and National Park Headquarters at Rocky River.

Area: 100.9 km²

Annual rainfall: 625 - 800 mm average

Geology: This land system has two quite distinct geologies. The western part of the system has a predominant geology of calcreted calcarenite and shelly sediments of coastal origin; while the eastern and some of the western part of the system is dominated by alluvium/colluvium derived from the adjacent plateau region.

Plateau derived alluvium and associated geology: Quaternary alluvium/colluvium with sandy to loamy soils on mottled deep clayey sediments is very common in low-lying areas. Some recent alluvium, consisting of deep loamy to sandy sediments occurs in the lower South West and Rocky River valleys. Some Pliocene-Quaternary colluvium, with sandy to loamy soils often with ironstone gravel on mottled clays, has outwashed from the adjacent ironstone plateau region. There are a few remnant Pliocene plateau areas with ironstone gravel overlying mottled clayey sediments, having developed in situ from the underlying Kanmantoo meta-sediments. Some minor near surface occurrences of Early Cambrian age Kanmantoo Group meta-sandstones and Middle Cambrian age Flinders Chase Granite were observed. There are a few lagoonal depressions with Holocene lacustrine clayey sediments, which are often marly, and possibly marginally saline.

Wind-deposited sediments of coastal origin overlying older landscapes and sediments: mostly consisting of calcreted calcarenite (Pleistocene age Bridgewater Formation), which is the hardened cap of shelly sediments, and is overlain by shelly, calcareous or non-calcareous soil material. Some soils, calcareous and non-calcareous, have formed directly on massive but unconsolidated shelly sediments, but usually include some calcrete fragments. Some calcrete has formed in drainage depressions as the result of accumulation of carbonate rich water-borne sediments.

Topography: Low-lying plains, plains, with some rises, slopes and depressions. Some of the low rises are relict dunes and have a jumbled or linear remnant dune topography. In the north-west and centre-west of the system are some drainage depressions on plateau areas (this area includes some small lagoonal depressions). A large part of the system consists of drainage depressions/flats, which are significantly below the level of the adjacent plateau, and include the river flats of the lower reaches of the Rocky River in the north-west, Yacca Flat in the south-west, and the river flats of the lower reaches of the South West River and the other streams which flow into the alluvial plain around 'Grassdale' in the east of the system. The seasonally filled Lake Edward lagoon is on the 'Grassdale' alluvial plain.

Slopes are typically from 0 - 3%, but reach up to 12% on a few steeper slopes.

Elevation: From less than 10m elevation around 'Grassdale' and Lake Edward to 130m elevation on the plateau in the centre-north of the system. Elevations are typically from 20 m to 80 m.



Relief: Relief is generally less than 20 m, and typically less than 10 m.

Main Soils:

G3-F1-G4-F2	<u>Sandy to loamy topsoil over mottled clay</u>
B2-B3-A4-M1	<u>Shallow to moderate depth rubbly loamy to sandy soil</u>
I2-I1-H3-H2-G3c	<u>Very thick sands</u>
J2-M3	<u>Ironstone soils</u>
B1-A1-H1	<u>Shallow to moderate depth rubbly shelly soil</u>
B7-B6-F1d	<u>Texture contrast soil on calcrete</u>

Minor soil: **M1a** Deep loamy soil

Main Features: This land system is predominantly semi-arable to non-arable, due to wetness, shallow rubbly soils, and/or infertile sandy soils. Excessive wetness occurs due to the low-lying nature of most of the land, and also due to the poor drainage characteristics of the texture contrast soils with their relatively impermeable clay subsoils. The various soils are infertile for different reasons: soil with ironstone gravel has reduced fertility due to phosphorous fixation; the very thick sandy soils are leached and infertile; while the calcareous soils, especially when shelly, have nutrient availability problems and inherently low fertility. Many soils are shallow and contain hard carbonate rubble and so have limited waterholding capacities. Patches of saline seepage occur along some drainage lines.

The majority of this land system is covered by native vegetation, and much of the area is within the Flinders Chase National Park. Vegetation ranges from tall eucalypts on some sandy lower slopes/drainage areas, which are not excessively wet or excessively leached; to wet and infertile areas with leached sandy soils dominated by banksia shrubs. Some areas cleared for agriculture occur on the river flats in the east of the system, and on some plains and depressions in the centre of the system adjacent to the uncleared calcreted areas.

Soil Landscape Unit summary: Rocky River Land System (ROR)

SLU	% of area	Main features #
CCB	0.3	Semi-arable stony slopes: with soils formed on Kanmantoo Group meta-sandstone. Main soils: sandy loam with meta-sandstone fragments, often with quartz fragments and/or ironstone nodules, over mottled brown clay, on weathering rock K4 (stony Brown Chromosol-Sodosol). Some deeper non-stony soils occur F2-F1a (<i>Brown Chromosol-Sodosol</i>). CCB – rises (slopes 2-5%, 2-3e)
CFC	0.03	Semi-arable slopes: with soils formed on weathering granite. Main soils: sandy loam, often with some ironstone nodules, over brown sodic light clay with red mottles, quartz fragments and weathering rock fragments: K4 (Brown Sodosol over weathering rock). Substrate is Flinders Chase granite; some granite outcrops occur. CFC – slopes (4-10%, 3e, 3r)
FMA FME	1.1 0.5	Semi-arable areas with ironstone soils and some soils with calcrete fragments or calcrete. Main soils: sandy loam with ironstone gravel over mottled clay – ironstone gravel can be very thick J2-M3 (<i>Ferric Brown Chromosol-Sodosol</i>). Drainage areas have some texture contrast soils with little or no ironstone gravel F1a-F2 (<i>Brown Sodosol-Chromosol</i>). Minor to limited areas with shallow soils on calcrete or calcrete rubble occur B2-B3-A4-M1 (<i>Petrocalcic-Lithocalcic Calcarosol-Tenosol</i>). FMA – plain (slopes 0-2%, 1-2e) FME – depression/drainage area (slopes 0-2%, 1-2e, 4w)
FUA FUB FUC FUE	1.5 0.5 0.5 1.8	Semi-arable areas with ironstone soils and other texture contrast soils. Main soils: sandy to loamy soil with ironstone gravel over mottled clay; some of these soils contain quartz fragments; in flats or depressions these soils can have a bleached sandy clay loam ironstone gravel layer directly above the clay subsoil; adjacent to calcarenite areas these soils can have red



		coloured ironstone-gravelly layers: J2-M3 (<i>Ferric Brown Sodosol-Chromosol</i>). With some areas of sandy to loamy soil over mottled clay G3a-F1a-G3c-G4-F2 (<i>Brown Sodosol-Chromosol</i>). Very thick topsoils occur. Areas of soil with calcrete rubble, or deep sands, may occur. FUA – plains/very low rises (slopes 0-2%, 1-2e; 3-4w) FUB – wet low rises and slopes (slopes 1-4%, 2-1e; 4w) FUC – wet slopes (slopes 3-5%, 3e; 4w; 1-2g) FUE – wet low-lying plains (slopes typically 0-1%, 1-2e; 4w)
FVB	0.6	Arable areas with ironstone soils and some stony texture contrast soils. Main soils: sandy loam with ironstone gravel over brown mottled clay J2 (<i>Ferric Brown Chromosol-Sodosol</i>). With some texture contrast soils formed on weathering rock K4 (stony Brown Chromosol-Sodosol). Also possibly with some areas with deeper soils without ironstone gravel F1a-F2 (<i>Brown Chromosol-Sodosol</i>). Minor areas with soils formed on calcrete occur. FVB – slopes (1-4%, 2-1e)
FzA FzE	1.0 0.8	Semi-arable to non-arable ironstone-gravelly sandy plains. Main soils: very thick ironstone-gravelly topsoil, sand to light sandy loam often over sandy clay loam especially in depressions; overlying mottled clay; soils are usually bleached when in depressions: M3 (<i>Ferric Brown Chromosol-Sodosol</i>). FzA – raised plain (3w) FzE – low-lying plains (5-4w)
KCE	2.8	Semi-arable wet low-lying outwash areas: mostly texture contrast soils. Main soils: sandy to loamy soil over brown to grey sodic clay, usually with fine carbonate in the lower subsoil; soils with very thick topsoils can occur G3b-F1b (<i>Hypercalcic Brown-Grey Sodosol</i>). Minor areas of soil with ironstone gravel may occur J2 (<i>Ferric Brown Sodosol</i>). Minor areas with soil on calcrete or with calcrete fragments occur. KCE – alluvial flat (5-4w) with minor saline seepage (2s). 'Grassdale' alluvial plain. Some areas may be prone to flooding.
KEA KEE	1.2 0.7	Semi-arable low-lying outwash areas: mostly clay loamy soils. Main soils: clay loamy or sometimes loamy topsoil, over olive to grey clay, usually with fine carbonate in the lower subsoil M4-F1b (<i>Grey Dermosol-Sodosol</i>). Some areas with very thick sandy topsoil may occur (G3c). Some stony soils forming on weathering rock may also occur (F2c). KEA – low-lying outwash plain (3-4w) KEE – outwash flat and drainage depression (5w)
LqA LqE LqO LqT	0.7 1.6 5.7 1.7	Semi-arable wet low-lying outwash areas: mostly texture contrast soils. Main soils: sandy to loamy soil over brown to grey sodic clay; soils with very thick topsoils often occur G3a-F1a-G3c-G4-F2 (<i>Brown-Grey Sodosol</i>). Minor to common areas of soil with ironstone gravel occur J2-M3 (<i>Ferric Brown Sodosol</i>). Includes South West River flats and flats of streams flowing into the 'Grassdale' plain. LqA – low-lying plain (4w) with minor salinity (2-1s) LqE – river flat/alluvial flat (5-4w) with minor salinity (2s) LqO – drainage depression (4w) with 10% saline land (3+s) LqT – drainage depression (4w) with 10-50% saline land (4-3*s)
LyA LyE LyO	0.1 2.3 0.3	Non-arable wet low-lying outwash areas: mostly very thick sandy soils. Main soils: very thick bleached and often podsolized sands; underlain by mottled clay I2-H3-I1-G3c (<i>wet Podosol, or sandy Tenosol-Podosol, or very thick sandy Sodosol</i>). Often with some sand over mottled clay G3a-G4 (<i>Grey-Brown Sodosol</i>). LyA – raised drainage depression. Eg: 'Sunshine Ave.' (2-3w, G3c very thick sandy Sodosol) LyE – depression/flat. Yacca Flat and flat adjacent to Rocky River (7-5w, I2 wet Podosol). LyO – depression (5w, H3-I1 sandy Tenosol-Podosol and G3c very thick sandy Sodosol) with <10% saline land (3s)
MuA MuE MuEw	0.5 1.9 0.5	Semi-arable areas: shallow texture contrast soils on calcrete and some deeper texture contrast soils. Main soils: shallow to moderate depth, sandy loam over red-brown light clay, clay loam or sandy loam; overlying calcrete B6-B3-F1d-M1 (<i>Petrocalcic Sodosol or Petrocalcic Tenosol</i>). With deeper sandy loam over red-brown sodic clay F1a-F2 (<i>Brown-Red Sodosol</i>). Shallow calcareous soils on calcrete occur (B2). MuA – low-lying plain (4w) with some raised subsoil salinity levels (2s). MuE – drainage depression area (slopes 0-3%, 2-1e, 3w) with minor gullying (2-1g) and with some



		raised subsoil salinity levels (2s). MuEw - wetter drainage depression (slopes 0-3%, 2-1e, 4w) with some raised subsoil salinity levels (2s).
MkB	1.4	Non-arable areas: with shallow soils on calcrete and deeper texture contrast soils. Main soils: shallow loamy soil on calcrete or calcrete rubble, on very low rises B3-B2-M1-A4 (<i>Petrocalcic-Lithocalcic Tenosol-Calcarosol</i>). With deeper texture contrast soils with mottled brown to red clay subsoil, many probably with ironstone gravel some probably with rock fragments and formed on weathering rock F1a-J2-F2-F1c-F2c (<i>Brown-Red Chromosol-Sodosol</i>). MkB – slopes (1-4%, 2e)
MbE MbYA	3.4 0.8	Non-arable areas: moderate depth to shallow shelly soils on calcrete. Main soils: moderate depth to shallow sandy to loamy shell soils on calcrete A1-B1 (<i>Petrocalcic-Lithocalcic Shelly Calcarosol</i>). Some calcareous (non-shelly) to non-calcareous soils over calcrete can occur (B2-B3-A4-M1). MbE – low-lying plain with some very low rises (4-3w). MbYA – low dune topography (<5m).
MeA MeB MeYA MeYB MeYa	8.9 1.5 2.6 0.8 0.1	Non-arable areas: moderate to shallow rubbly calcareous soils on calcrete or shelly sediments. Main soils: moderate to shallow calcareous soil with calcrete rubble on shelly sediments or calcrete A4-B2 (<i>Lithocalcic Calcarosol</i>). Some rubbly shell soils occur A1 (<i>Lithocalcic Shelly Calcarosol</i>). Some rubbly red-brown non-calcareous soil overlying shell sand or calcrete can occur H2-M1 (<i>Lithocalcic Tenosol</i>). Areas of very thick yellow sand, sometimes bleached, can occur H2-H3-I1 (<i>sandy Tenosol-Podosol</i>). Also minor areas of texture contrast soils with may occur G3b (<i>Brown Chromosol-Sodosol</i>). MeA – low rises/very low dune topography and some flats (slopes 0-3%, 1e) MeB – rise/jumbled dune topography (slopes 3-5%, 2-1e) MeYA – low jumbled and linear dune topography (<5m) MeYB – jumbled dune topography (5-15m) MeYa – low linear dune topography (<5m) with <10% saline land (3+s)
MiYA MiYB	0.2 0.1	Non-arable areas: moderate depth sandy soils on calcrete. Main soils: moderate depth sandy soil, usually bleached, over calcrete H3-H2 (<i>sandy Tenosol</i> , over calcrete). Calcareous soils can occur B2-A4 (<i>Petrocalcic Calcarosol</i>). Some deeper soils probably occur. MiYA – low jumbled dune topography (<5m, 3w) MiYB – jumbled dune topography (5-15m).
M1A M1B M1D M1E	11.2 1.6 0.2 3.0	Non-arable areas: moderate to shallow rubbly soils on calcrete or shelly material with some deep sands. Main soils: moderate to shallow red sandy to loamy soil usually with calcrete rubble on calcrete or shell sand, some soils are calcareous throughout H2-B3-M1-A4-B2 (<i>Petrocalcic-Lithocalcic Tenosol-Calcarosol</i>). With some deep yellow sands, sometimes bleached, which may be calcareous at depth, on calcrete or clay, in flats/hollows H2-H3-I1 (<i>sandy Tenosol-Podosol</i>). Possibly with some texture contrast soils: G3a-F1a-G4-F2 and/or J2 (<i>Brown Sodosol-Chromosol</i> and/or <i>Ferric Brown Sodosol-Chromosol</i>). Areas of shell sand occur B1-A1 (<i>Petrocalcic-Lithocalcic Shelly Calcarosol</i>). M1A – plains/flats/very low rises (4-3w) M1B – rises/slopes (2-12%, 2-3e) M1D – slopes (10-20%, 4-3e) M1E – depressions (4w)
MnE	1.3	Semi-arable low-lying plain: moderate to shallow rubbly soils on calcrete, shelly sediments or clay loamy material; texture contrast soils; and rubbly calcareous soils. Mostly a well wooded area. Main soils: moderate to shallow reddish sandy loam, usually with calcrete fragments, over calcareous clay loam, shelly material, or calcrete F1b-M1-B3 (<i>Lithocalcic Tenosol</i> and <i>Hypercalcic Brown Sodosol</i>). Sandy loam over brown to red sodic mottled clay, usually with fine carbonate in the subsoil or lower subsoil, which can be underlain by calcrete F1b-F1d (<i>Brown-Red Sodosol</i>). Loamy to sandy calcareous soil, usually with calcrete fragments, and usually underlain by shelly material A4 (<i>Lithocalcic Calcarosol</i>). Minor areas of shelly soil may occur (A1). MnE – low lying plain (3-4w)
PdB PdE PdI	0.5 2.7 1.4	Non-arable wet drainage/depression areas: with sandy texture contrast soils and some deep sands. Main soils: thick to very thick sandy or sometimes loamy topsoil, over grey to brown mottled clay G3a-G3c-F1a (<i>Grey-Brown Sodosol-Chromosol</i>). With deep sand flats I2 (<i>wet Podosol</i>). Some sandy to loamy soil with ironstone gravel over mottled clay can occur (<i>Ferric Brown Sodosol-Chromosol</i>). Some



		<p>shell sand soils can occur near shell dune areas (H1).</p> <p>PdB – wet drainage depression slopes (5w; slopes 1-4%, 2e)</p> <p>PdE – wet depression (5w; slopes 0-1%)</p> <p>PdI – wet depression flats and drainage lines (5w; slopes 1-3%, 2e) with some gullying (2g). Includes Knapmans Creek flats and drainage lines.</p>
PhA PhAe PhB PhC PhAk	3.2 1.2 0.7 0.1 4.1	<p>Non-arable sand areas: with very thick bleached sands.</p> <p>Main soils: very thick bleached sands (some thick, especially on rises/slopes), overlying mottled clay, sometimes with a thin ironstone gravelly layer on top of the clay subsoil H3-I1-G3c-G3a (<i>sandy Tenosol-Podosol</i> or <i>very thick sandy Sodosol</i>). With some podsolized sands I2 (<i>wet Podosol</i>). Soils with ironstone gravel may occur (J2-M3). Some bleached soils with ironstone gravel may occur, especially on rises J2 (<i>Ferric Brown Chromosol-Sodosol</i>). Some shallow soil on calcrete can occur (B2-B3).</p> <p>PhA – sand plain (3w)</p> <p>PhAe – low-lying sandy plain/depression (3w)</p> <p>PhB – rise (slopes 1-5%, 2e, 2-3w)</p> <p>PhC – slopes (5-15%, 3e, 2-3w)</p> <p>-----</p> <p>PhAk – sand plains and slopes (0-3%, 3w). Deep yellow sands with some bleached sands H2-H3-I1 (<i>sandy Tenosol-Podosol</i>). This unit has patches of rubbly soil overlying shelly material or calcrete. Very close to a 'M' land type.</p>
PiE PiEk	4.1 1.9	<p>Non-arable sand plains/depressions: with very thick bleached podsolized sands.</p> <p>Main soils: very thick bleached podsolized sands I2 (<i>wet Podosol</i>). Some non-podsolized very thick sandy soils may occur H3-I1-G3c (<i>sandy Tenosol-Podosol</i> or <i>very thick sandy Sodosol</i>). Some calcrete outcrops can occur.</p> <p>PiE – wet and low-lying sand plain/drainage depressions (5w). These soils usually overlie an ironstone-gravelly layer sitting on mottled clay. There may be some patches of ironstone-gravelly soil with very thick bleached sandy to sandy loam topsoil.</p> <p>-----</p> <p>PiEk – sand filled depressions (4w). This unit has deep bleached sand over yellow sand H3-I1 (<i>sandy Tenosol-Podosol</i>). With some unbleached yellow sands; and some calcrete outcrops.</p>
PjC PjE PjI	0.6 0.5 2.0	<p>Non-arable gully slopes/river valley flats: with thick loamy to sandy texture contrast soils. Well wooded lower reaches of Rocky River, etc.</p> <p>Main soils: thick (with some very thick) sandy to loamy soil over brown to grey mottled clay; some soils have some quartz fragments or ironstone nodules; found on slopes and on some flats G3a-F1a-G3c (<i>Grey-Brown Sodosol-Chromosol</i>). Deep loamy to sandy organic soils in some river valley flats M1a (<i>loamy Tenosol</i>). Some deep sands occur I1-H3 (<i>sandy Tenosol-Podosol</i>). Minor areas of shelly soils or soils with calcrete rubble may occur (A1-A4).</p> <p>PjC – slopes (5-10%, 3e)</p> <p>PjE – drainage depression (3w)</p> <p>PjI – creek slopes, flats and gully (slopes 1-20%, 3e, 2g)</p>
PkE PkO	0.8 2.1	<p>Non-arable drainage depressions, flats or lower slopes: with loamy to sandy texture contrast soils.</p> <p>Main soils: sandy to loamy soil over grey or brown mottled clay G3a-F1a-G4-F2 (<i>Grey-Brown Sodosol</i>). Some soils with ironstone gravel (J2) and/or quartz fragments can occur.</p> <p>PkE – wet sloping drainage depression, lower slopes and flats beside river flats of Rocky River (slopes 0-3%, 2-1e, 5w)</p> <p>PkO – drainage depressions/flats (slopes 0-3%, 2-1e) with <10% saline land (3-2°s)</p>
PIE	0.5	<p>Semi-arable areas: with loamy to sandy texture contrast soils and some soils with calcrete fragments or calcrete.</p> <p>Main soils: thick to very thick sandy to loamy soil on brown mottled clay G3a-F1a-G3c (<i>Brown Chromosol-Sodosol</i>). Some soils with ironstone gravel J2 (<i>Ferric Brown Chromosol-Sodosol</i>). Soils formed on calcrete, or with calcrete fragments occur; the calcrete can be at moderate or shallow depth: B7-B6-F1d (<i>Petrocalcic-Lithocalcic Chromosol-Sodosol</i>).</p> <p>PIE – drainage depression (slopes 0-2%, 1-2e, 3w, 1-3s), probably with somewhat raised subsoil salinity levels (2s).</p>
XNJ	2.1	<p>Modern Watercourse. River flats and terraces of the South West River.</p> <p>Main soils: deep alluvial soil, sandy loam topsoil over a sandy to loamy bleached layer; underlain by sandy loam to sandy clay loam sediments at depth M1a (<i>loamy Tenosol</i>). With sandy to loamy soil over brown to grey sodic mottled clay G3a-F1a-G4-F2 (<i>Brown-Grey Sodosol</i>). Also includes some deep</p>



		bleached sandy soil I1-H3 (<i>sandy Tenosol-Podosol</i>). XNJ – mostly river flats and terraces (4-5w), with some raised salinity levels in some patches adjacent to creek lower slopes.
XVJ	1.0	Modern Watercourse. River flats of the meandering lower South West River. Main soils: sandy to loamy soil over grey sodic mottled clay, with soft carbonate at depth G3b-F1b (<i>Hypercalcic Grey Sodosol</i>). Some deep loamy to sandy soils occur M1a (<i>loamy Tenosol</i>). Also some calcareous or shell sand soils with calcrete fragments occur (A4-A1). XVJ – river flats (5w, 3s)
XWJ XWL	3.0 0.5	Modern watercourse. Wet river flats and terraces of the Rocky River. Main soils: clay loamy topsoil over grey mottled clay M4 (<i>Grey Dermosol</i>). Some texture contrast soils can occur F2-F1a (<i>Grey Sodosol</i>). With deep organic loamy soils, usually underlain by sand, and which may contain some fine carbonate M1a (<i>loamy Tenosol</i>). XWJ – river flats and terraces (5w) XWL – swampy river flats (7w)
XnC	0.03	Bare lagoonal depression. Not obviously saline (1-3s). Main soils: clay loam to sandy loam over sodic clay N3 (<i>Dermosolic to Sodosolic Hydrosol</i>). With an area of carbonate sand deposits H1 (<i>Shelly Rudosol</i>) at the western end of Snake Lagoon covering approximately 15-20% of the lagoon area. XnC – lagoonal depression (7w). Wet and seasonally flooded. Snake Lagoon.
ZA-	0.1	Saline depression (5s). Main soils: shallow soil on calcrete (B3-B2). And also sandy to loamy topsoil over wet grey clay (N2).
ZF-	0.5	Brackish seasonal lakes. Includes Lake Edward.
ZO-	0.2	Waterlogged depression. Not obviously saline (1-3s). Main soils: sand over wet grey clay N3 (<i>Grey Chromosol-Sodosol</i>).
ZP-	0.1	Lagoonal depression margin with melaleuca shrubs; mildly saline to non saline (slopes <0.5%, 5w, 1e, 2-1s). Main soils: sandy texture contrast soil with moderate depth loamy sand to sandy loam topsoil G4 (<i>Brown Chromosol</i>).
ZQ-	0.1	Bare lagoon. Marginal salinity or less (3-4s) Main soils: wet calcareous clay loam over grey clay N2-N3 (<i>Calcarosolic Hydrosol</i>). Calcrete fragments can occur on lagoonal surfaces.

Classes in the 'Soil Landscape Unit summary' table (eg. 2-1e, 3w, 2y, etc) describe the predominant soil and land conditions, and their range, found in Soil Landscape Units. The number '1' reflects minimal limitation, while increasing numbers reflect increasing limitation. Letters correspond to the type of attribute:

a - wind erosion e - water erosion f - flooding g - gullyng
r - surface rockiness s - salinity w - waterlogging y - exposure

Detailed soil profile descriptions:

Main Soils:

G3a-F1a-G4-F2 Sandy to loamy topsoil over mottled clay (*Brown-Grey-Red Chromosol-Sodosol*)
Medium thickness to thick sandy loam to loamy sand, often with a bleached layer, and often with some ironstone nodules; over yellow-brown mottled clay. The clay is often a grey colour in wet low-lying areas, or red-brown when situated near calcreted calcarenite areas. The mottles are usually olive, or olive and red. The subsoil clay has a neutral to acid pH, and can be sodic. Mostly on flats in low-lying areas.

A variant of this soil found in low lying areas has fine carbonate in the subsoil and sandy to loamy topsoil over brown to grey sodic clay or clay loam **G3b-F1b** (*Hypercalcic Brown-Grey Sodosol*).

Another related soil, also found in low lying outwash areas, has clay loamy topsoil over olive to grey clay, and often has fine carbonate in the lower subsoil **M4** (*Grey Dermosol*).



Also some texture contrast soils occur, which have alkaline subsoils and often fine carbonate in the lower subsoil, and are formed on weathered rock **F1c-F2c** (*Brown-Red Chromosol-Dermosol*).

B2-B3-A4-M1 Shallow to moderate depth rubbly loamy to sandy soil (*Petrocalcic-Lithocalcic Calcarosol-Tenosol*)

Shallow to moderate depth red-brown, brown or grey sandy loam to loamy sand, usually with calcrete fragments; on calcrete or massive but unconsolidated shelly sediments. The soil can be calcareous or non-calcareous. Found on plains, low rises, dunes or depression areas.

I2-I1-H3-H2-G3c Very thick sands (*wet Podosol, sandy Tenosol-Podosol, or very thick sandy Sodosol*)

Very thick sands, usually with a bleached sub-surface layer. Bleached sands can be underlain by: dark coloured fine sandy loam with organic/iron compound accumulations which occur in wet low lying situations (*wet Podosol*); yellow sand (*sandy Tenosol-Podosol*); or mottled sodic and acidic clay (*very thick sandy Sodosol*). Some *sandy Tenosols* do not have a bleached layer and have yellow sand directly underlying the grey sandy surface soil. Bleached or unbleached *sandy Tenosols* can be underlain by calcrete or even massive shell sand sediments; or *sandy Tenosols* can be unbleached and reddish in colour, contain hard carbonate rubble, and overlie massive shell sand.

These sandy soils can be quite acidic, especially the highly leached *Podosols*. Ironstone nodules can occur directly on top of clay subsoil layers. Thick ironstone gravelly layers sitting upon mottled zone clays often underlie the organic/iron rich subsoil layers of *wet Podosols*. *Wet Podosols* are mostly found in wetter depressions associated with plateau areas; *sandy Tenosol-Podosols* and *very thick sandy Sodosols* are mostly found in depressions, drainage depressions, on some slopes and sometimes on river flats/terraces.

J2-M3 Ironstone soils (*Ferric Brown-Red Chromosol-Sodosol*)

Medium thickness to thick sandy loam to loamy sand with ironstone gravel, and often with a bleached layer; over yellow-brown mottled clay. Soils with very thick ironstone-gravelly layers occur, especially in depressions on the plateau area. The clay can be red-brown when situated near calcreted calcarenite areas. The mottles are usually olive, or olive and red. The subsoil clay has a neutral to acid pH, and can be sodic. Mostly found on low rises and plains associated with plateau areas.

B1-A1-H1 Shallow to moderate depth rubbly shelly soil (*Petrocalcic-Lithocalcic Shelly Calcarosol*)

Shallow to moderate depth, grey fine loamy sand to sandy loam, usually with calcrete fragments; on calcrete or massive but unconsolidated shelly material. The soil is composed of fine grains of shell material. Plains, dunes and rises.

B7-B6-F1d Texture contrast soil on calcrete (*Petrocalcic Sodosol*)

Shallow to moderate depth soil, with medium thickness to thick sandy loam over red to brown sodic clay with olive mottles; overlying calcrete. Often there is a thin calcareous layer just above the calcrete. Mostly found in drainage depressions.

Minor soil:

M1a Deep loamy soil (*loamy Tenosol*)

Sandy loam, often with one or more layers of bleached loamy sand. These soils are usually over 1 metre in depth, and are usually underlain by wet grey or olive sandy loam or sandy clay loam. Recent alluvium: river flats and terraces.

Further information: [DEWNR Soil and Land Program](#)

