

# CAB Camel Back Land System

A highly dissected plateau area. This land system lies to the north of the main Kangaroo Island plateau, and is separated from it by the escarpment following the Cygnet fault-line. The system is bordered by a poorly drained, less dissected plateau area to the west; rocky coastal slopes and gullies to the north; lower-level rises to the east; the low-level alluvial plain of the Cygnet River in the south-east; and rocky escarpment slopes and gullies to the south. This system is named after the 'Camel Back' homestead in the south of the system.

**Area:** 127.5 km<sup>2</sup>

**Annual rainfall:** 530 – 710 mm average

**Geology:** High plateau surfaces of Pliocene age ferricrete regolith occur: these consist of deeply weathered and mottled clay, usually overlain with an ironstone gravelly layer, and underlain at depth by early Cambrian age rock. Similar, but lower-lying plateau and slope areas of Pliocene-Quaternary age colluvium occur: these also have deeply weathered and mottled clay, are often overlain with an ironstone gravel layer, and are underlain by Cambrian age rock. Texture contrast soils, often with a sub-surface ironstone gravel layer, result.

Surface and near surface exposure of early Cambrian age rock occurs on some gully slopes and on a few summit surfaces, and in many creek lines. This rock, which is indicative of that which underlies the entire system, consists mostly of sandstone (Stokes Bay Sandstone and Smith Bay Shale (which includes sandstone)), with some siltstone, mudstone and shale (Mt. McDonnell Formation and Smith Bay Shale). Stony texture contrast soils, and rocky shallow soils form on these rocks. (The rocks found in this system are not as hard as the somewhat metamorphosed meta-sandstones of the main Kangaroo Island plateau.)

Colluvial and alluvial deposits of early Pleistocene age Hindmarsh occur, giving rise to texture contrast soils.

Younger Quaternary age alluvium has been deposited in the drainage depression of the Cygnet River and some of its tributaries. This includes clayey sediments, giving rise to texture contrast soils; and more recent loamy sediments, giving rise to uniformly textured soils.

**Topography:** The system can be divided into two parts: the higher-level dissected plateau area in the north-west, which then slopes down to a lower-level dissected plateau area in the south-east. The high plateau surfaces in the north and north-west of the system are highly dissected by south-east flowing creek lines, which become quite deep gullies in the centre of the system - giving a topography of low hills and rises with narrow remnant plateau summits. Lower-level plateau and summit surfaces in the south and south-east of the system are dissected by south and south-east flowing creek lines - giving a topography of rises with significant areas of gently undulating to level remnant plateau surfaces. Slopes vary from 0% to 30% (on the steepest gully slopes). Drainage is predominantly toward the south-east, with most creeks flowing into the valley of the Cygnet River, which then flows eastward. The Cygnet River, in the very south of the system, abuts the steep escarpment slope formed along the Cygnet fault-line, directly south of this system.

**Elevation:** From the highest point of 250 m on a plateau surface in the very north-west of the system; to 30 m in the valley of the Cygnet River in the very south-east of the system. Typical plateau surface elevations in the higher north-west of the system are over



200 m; while typical elevations of plateau surfaces in the lower-level south-east of the system are 60 m to 130 m.

**Relief:** Typically 30 m to 40 m in the north-west part of the system; and from less than 10m to 30m in the south-east part of the system. Relief reaches 60m in the steepest gullies.

**Main Soils:**

- J2** Ironstone soil
- F2-F1** Texture contrast soil
- K4** Stony texture contrast soil

**Minor Soils:** **M1** Moderate depth to deep loamy soil

**Main Features:** Mostly arable plateau surfaces and slopes; with non-arable to creek gullies and drainage lines. Topsoils are loamy. The main soils are loamy over clay, often with stones or ironstone gravel.

The dominant feature of the system is the presence of a relatively impermeable clayey subsoil layer, which impedes infiltration, thereby increasing run-off, and limiting the store of moisture available for plant growth. Sloping land and increased run-off can result in a water erosion risk. Stony soils are common; as are soils with a layer of ironstone gravel (particularly on plateau surfaces and upper slopes). The ironstone gravel reduces soil fertility by 'fixing' phosphorous so that much is unavailable for plant uptake. Salinity is of moderate importance in this system, with many patches of saline land occurring, especially along creek lines - generally the level of salinity in the landscape increases toward the south-east of the system (in the form of salt patches along creek lines and raised subsoil levels elsewhere).

The dominant vegetation on the lower-level plateau slopes and surfaces in the south-east of the system is, narrow leaf mallee, cup gum (on wetter areas), and other mallee trees; while on the higher-level plateau slopes and surfaces in the north-west of the system, stringybark gums become the dominant tree. Higher rainfall, and possibly somewhat less fertile and more acidic soils, may be the reason for this.

**Soil Landscape Unit summary:** Camel Back Land System (CAB)

SLU	% of area	Main features #
AOm AOY	15.4 0.1	Non-arable to semi-arable rocky and stony gullies. A significant number of soils with a bleached sub-surface layer occur. Main soils: <u>stony texture contrast soil</u> formed on weathered sandstone <b>K4</b> ( <i>stony Brown Chromosol-Sodosol</i> ). With shallow rocky soils <b>L1</b> (rocky Tenosol-Rudosol). Minor to limited areas of <u>ironstone soil</u> (especially on upper slopes and summit surfaces) <b>J2</b> ( <i>Ferric Brown Chromosol-Sodosol</i> ); and <u>texture contrast soil F2-F1</u> ( <i>Brown Chromosol-Sodosol</i> ) and <u>moderate depth to deep loamy soil</u> especially in creek flats <b>M1</b> ( <i>Tenosol</i> ).  <b>AOm</b> - gully slopes (8-30%; relief 10-50m, 1°s). <b>AOY</b> - summit surface (slopes <10%)
CAB CAC	0.2 1.1	Semi-arable to non-arable stony and rocky slopes. A significant number of soils with a bleached sub-surface layer occur. Main soils: <u>stony texture contrast soil</u> formed on weathered sandstone <b>K4</b> ( <i>stony Brown Chromosol-Sodosol</i> ). With some shallow rocky soil <b>L1</b> (rocky Tenosol-Rudosol).  <b>CAB</b> - slopes (1-3%, 2e) <b>CAC</b> - slopes (3-12%, 3e)
CEA CEB CEC CEN CECg CEH CEL	0.2 4.3 18.0 0.6 0.5 0.1 0.5	Arable to semi-arable slopes and drainage depressions with significant areas of stony soils. A significant number of soils with a bleached sub-surface layer occur. Main soils: <u>stony texture contrast soil</u> formed on weathered sandstone <b>K4</b> ( <i>stony Brown Chromosol-Sodosol</i> ). With some <u>texture contrast soil</u> without significant ironstone or rock fragments (weathered sandstone often at >1m depth) <b>F2-F1</b> ( <i>Brown Chromosol-Sodosol</i> ); and possibly some <u>ironstone soil</u> (especially on upper slopes) <b>J2</b> ( <i>Ferric Brown Chromosol-Sodosol</i> ); and with some <u>moderate depth to deep loamy soil</u> in creek-lines <b>M1</b> ( <i>Tenosol</i> ).



CEMg CENg CEE CEO CEZ CEZw	5.7 1.2 4.1 1.7 0.9 0.1	<p><i>Plains and slopes:</i></p> <p><b>CEA</b> - poorly drained raised plain (slopes 0-2%, 1-2e, 4w)</p> <p><b>CEB</b> - slopes (1-3%, 2-3e, 3-4w, 2-1s).</p> <p><b>CEC</b> - slopes (3-12%, 3e).</p> <p><b>CEN</b> - semi-arable slopes with &lt;10% saline seepage (8-15%, 4-3e, 2g, 3-2s, 4w).</p> <p><i>Slopes with drainage lines/creek lines:</i></p> <p><b>CECg</b> - slopes and creek lines (3-12%, 3e)</p> <p><b>CEH</b> - slopes with some eroded waterways (slopes 8-12%, 3-4e, 2-3g).</p> <p><b>CEL</b> - slopes; with saline patches along drainage lines and raised subsoil salinity levels elsewhere (slopes 1-4%, 2-3e, 2g, 3-2<sup>s</sup>-3-2<sup>s</sup>).</p> <p><b>CEMg</b> - slopes and drainage lines with saline patches along drainage lines and raised subsoil salinity levels elsewhere (slopes 3-12%, 3-4e, 2g, 3-2<sup>s</sup>-3-2<sup>s</sup>).</p> <p><b>CENg</b> - semi-arable slopes, creek lines and drainage lines with saline patches along creek and drainage lines and raised subsoil salinity levels elsewhere (slopes 8-20%, 4-3e, 2g, 3-2<sup>s</sup>-3-2<sup>s</sup>, 4w).</p> <p><i>Creek lines:</i></p> <p><b>CEE</b> - creek lines and slopes (slopes 2-10%, 3e, 2-3s, 5-4w). Raised subsoil salinity levels are common.</p> <p><b>CEO</b> - creek lines and slopes with saline patches along creek lines (slopes 3-8%, 3e, 3-2<sup>s</sup>-3-2<sup>s</sup>, 5-4w)</p> <p><i>Summit surfaces:</i></p> <p><b>CEZ</b> - summit surface (slopes 0-3%, 1-2e)</p> <p><b>CEZw</b> - wetter summit/plateau surface (0-1%, 1e, 4w)</p>
FOB FOC FOZ FOZw	2.2 5.3 2.4 0.1	<p>Mostly arable slopes: with ironstone, non-ironstone soils and stony soils. A significant number of soils with a bleached sub-surface layer occur, especially on steeper slopes. The thickest ironstone gravel occurs on plateau surfaces.</p> <p>Main soils: <u>ironstone soil</u> <b>J2</b> (<i>Ferric Brown Chromosol-Sodosol</i>). And <u>texture contrast soil</u> without significant ironstone <b>F2-F1</b> (<i>Brown Chromosol-Sodosol</i>). And <u>stony texture contrast soil</u> formed on weathered sandstone <b>K4</b> (<i>stony Brown Chromosol-Sodosol</i>).</p> <p><b>FOB</b> - slopes and sloping summit surfaces (1-4%, 2-3e)</p> <p><b>FOC</b> - slopes (2-10%, 3-2e).</p> <p><b>FOZ</b> - plateau surface (0-2%, 1e).</p> <p><b>FOZw</b> - lower lying, wetter plateau surface (0-1%, 1e)</p>
FRZ	12.6	<p>Mostly arable plateau surfaces: with ironstone soils with sandy loam topsoil. Very few soils with a bleached sub-surface layer occur. The thickest ironstone gravel occurs on plateau surfaces.</p> <p>Main soils: mostly <u>ironstone soil</u> <b>J2</b> (<i>Ferric Brown Chromosol-Sodosol</i>). Minor to limited areas with <u>texture contrast soil</u> without significant ironstone <b>F2-F1</b> (<i>Brown Chromosol-Sodosol</i>). And minor areas of <u>stony texture contrast soil</u> formed on weathered sandstone <b>K4</b> (<i>stony Brown Chromosol-Sodosol</i>).</p> <p><b>FRZ</b> - high plateau surfaces (slopes 0-2%, 1-2e).</p>
FUB FUBv FUBw FUC FUZ FUZv FUZw	1.5 0.5 0.1 0.1 14.4 0.7 1.0	<p>Mostly arable plateau surfaces and slopes: with ironstone and non-ironstone soils. A significant number of soils with a bleached sub-surface layer occur, especially on steeper slopes. The thickest ironstone gravel occurs on plateau surfaces.</p> <p>Main soils: <u>ironstone soil</u> <b>J2</b> (<i>Ferric Brown Chromosol-Sodosol</i>). And <u>texture contrast soil</u> without significant ironstone <b>F2-F1</b> (<i>Brown Chromosol-Sodosol</i>). Minor to limited areas of <u>stony texture contrast soil</u> formed on weathered sandstone <b>K4</b> (<i>stony Brown Chromosol-Sodosol</i>).</p> <p><b>FUB</b> - slopes and sloping summit surfaces (1-4%, 2e).</p> <p><b>FUBv</b> - slopes and sloping summit surfaces; with some shrink/swell clay subsoils (1-3%, 2e, 3w).</p> <p><b>FUBw</b> - wetter sloping summit surfaces (0-3%, 2-1e, 4-3w).</p> <p><b>FUC</b> - slopes (3-10%, 3e).</p> <p><b>FUZ</b> - plateau surfaces (slopes 0-2%, 1-2e)</p> <p><b>FUZv</b> - plateau surfaces; with some shrink/swell clay subsoils (0-1%, 1e, 4-3w).</p> <p><b>FUZw</b> - wetter plateau surface (0-1%, 1e, 4-3w).</p>
KWK	0.05	<p>Mostly arable high level outwash area with gilgai landscape features.</p> <p>Main soils: cracking clay soil <b>E3-M4</b> (<i>Vertosol-Dermosol</i>). With loamy soil, some probably with ironstone gravel, and with a sodic and shrink/swell clayey subsoil: <b>F2-F1</b> and <b>J2</b> (<i>Brown</i></p>



		Sodosol and Ferric Brown Sodosol).
		<b>KWK</b> - plain or slight basin with <10% saline seepage (0-1%, 1e, 2s)
XXS	4.3	Semi-arable drainage depression: with creek line, flats and stony lower slopes. Main soils: <u>texture contrast soil</u> on flats <b>F2-F1</b> ( <i>Brown Chromosol-Sodosol</i> ); <u>moderate depth to deep loamy soil</u> in creek lines and on some flats <b>M1</b> ( <i>Tenosol</i> ); <u>stony texture contrast soil</u> on lower slopes, mostly forming over sandstone <b>K4</b> ( <i>stony Brown Chromosol-Sodosol</i> ).  <b>XXS</b> - drainage depression with some swampy and some saline patches (slopes 0-3%, 2-1e, 5-4w, 3°s-3°s).

# 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:

**J2** Ironstone soil (*Ferric Brown Chromosol-Sodosol*). Medium thickness to thick sandy loam topsoil, or occasionally loam, with a sub-surface ironstone gravel layer which is sometimes bleached; over a subsoil of yellow-brown clay. On colluvial slopes the upper subsoil is sometimes bleached and has ironstone nodules/gravel. The upper subsoil clay layer is sometimes sodic. The subsoil or lower subsoil are mottled. Topsoil and subsoil pH's are generally acidic, but can be strongly acidic. The soil is not always texture contrast, sometimes the texture pattern down the profile is gradational. Mostly found on plateau surfaces and upper slopes.

**F2-F1** Texture contrast soil (*Brown Chromosol-Sodosol*). Medium thickness to thick sandy loam topsoil, often with a bleached layer (especially on slopes and flats), and sometimes with some ironstone nodules; over a subsoil of olive-brown to yellow-brown clay. (Topsoils can be very thick, especially in drainage depressions.) On colluvial slopes and depressions the upper subsoil can be bleached and can be as light textured as a sandy clay loam. The subsoil or upper subsoil is often sodic. The subsoil or lower subsoil are mottled. Topsoil and subsoil pHs are acidic or strongly acidic. (River flat/drainage depression/lower slope soils can have neutral pHs throughout the profile.) Topsoils in drainage depressions/river flats can have a number of alternately layered dark and bleached horizons. Slopes, plateau surfaces, flats, and drainage depressions/river flats.

**K4** Stony texture contrast soil (*stony Brown Chromosol-Sodosol*). Medium thickness to thick sandy loam topsoil, with coarse fragments of rock (usually sandstone, often with quartz), and often with a bleached sub-surface layer; over mottled clay; overlying weathering rock at shallow to moderate depth. The upper subsoil can be sodic. Rock fragments are most numerous in the sub-surface topsoil layer just above the clay subsoil. Topsoil and subsoil pHs are acidic to strongly acidic. Lower slopes, slopes, and some summit surfaces.

#### Minor Soils:

**M1** Moderate depth to deep loamy soil (*Tenosol*). Moderate depth to deep loamy soil, usually with a lighter coloured sub-surface layer with can have loamy sand texture. These soils can have numerous alternate layers of dark and light soil down the profile; the light layers often with a loamy sand texture. Minor coarse fragments, particularly of quartz occur in the profile. Neutral, acidic, or strongly acidic in the topsoil; subsoil pH's are neutral to acidic. These alluvial soils often overlie hard or weathering rock. River flats/drainage depressions; in particular the flats of the Cygnet River.

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

