

RIT Ritchie Land System

This land system covers the gullies and tributaries of the North East and North West Rivers. Also included are some remnant plateau surfaces. The majority of the system is situated in the northern part of the Hundred of Ritchie; most of the system lies within the Flinders Chase National Park.

Area: 122.5 km²

Annual rainfall: 700 - 875 mm average

Geology: The land system is dominated by areas where early Cambrian age Kanmantoo Group metasediments (Middleton Sandstone, a medium grained grey metasandstone; and Petrel Cove Formation, a fine to medium grained sandstone to mudstone) have near surface to surface expression. A few relatively flat remnants of the ironstone plateau occur. In these areas deeply weathered clayey sediments, often with a capping of ironstone gravel, overlie the deeper bedrock. Elsewhere, rivers and creeks have cut below the level of the plateau surface, exposing bedrock to soil forming processes, with resultant stony and rocky soils. Lower level plateau surfaces can also be stony, since they have been eroded down to bedrock below the level of the ironstone plateau. On some gently sloping lower slopes and upper drainage depression areas, deeper colluvial deposits occur, where loamy topsoils overlie clayey sediments and no stone is evident. The few river flats which occur, and some upper drainage depression areas, have deep loamy to sandy alluvial deposits.

Topography: This land system includes all but the lowest reaches of the North East and North West Rivers drainage areas. The system predominantly consists creek and river valleys, with valley slopes being the dominant feature. These slopes range from 3 to 80%, however, they are typically from 3 to 30%. Other features include: a few river flats, some of which are very wet; some poorly drained and gently sloping upper drainage depressions; and a few remnant plateau surfaces. Drainage is to the south. The North East and North West Rivers both join to form the beginning of the Stun'sail-Boom River south of this system.

Elevation: From 250 m in the north, to 40 m in the lower reaches of the North West River

Relief: From 20 to 80 m, typically from 40 to 60 m

Soils:

- K4** Acidic stony texture contrast soil.
- L1** Shallow rocky soil.
- J2** Ironstone soil.
- F2-F1** Acidic loamy texture contrast soil

Main features: This land system is dominated by native vegetation, and is mostly part of Flinders Chase National Park, so nature conservation is a major issue. Native vegetation varies from tall eucalypt forest on the well-watered river valley floors and lower slopes, to large stringybark on the relatively well-watered valley slopes, to mallee/banksia/sheoak on upper slopes and remnant plateau surfaces. This system covers the drainage system of the North East and North West Rivers. The majority of the system has stony or rocky soils. Topsoil textures are mostly sandy loam. Subsoils are typically clayey and often dispersive: restricting soil drainage and increasing susceptibility to waterlogging. However, the sloping nature of much of the landscape facilitates drainage. Soil pHs are acidic to strongly acidic. Valley slopes can be quite steep.



Soil Landscape Unit summary: Ritchie Land System (RIT)

SLU	% of area	Main features #
FVZ	4.9	<p>Plateau surfaces with ironstone soils and stony soils.</p> <p>Main soils: ironstone soil J2 (<i>Ferric Brown Chromosol-Kurosol-Sodosol</i>) and limited to extensive areas of stony soil K4 (<i>stony Brown Chromosol-Kurosol-Sodosol</i>). With minor to limited shallow soil on ferricrete J3 (<i>Petroferric Tenosol</i>). Also with minor to limited areas of texture contrast soil without stones or ironstone F2-F1 (<i>Brown Sodosol-Chromosol-Kurosol</i>).</p> <p>FVZ – remnant plateau surfaces (slopes 0-2%, 1-2e, 3-4w)</p> <p>Summary: small sections of remnant ironstone plateaux. Native vegetation is typically dominated by mallee, banksia and/or sheoak. Cup gums dominate on the wettest parts of the plateau surfaces. Patches of stringybark occur. Broombush dominates in a few areas where clayey subsoils are sodic/dispersive.</p>
CBB CBC CBM CBZ	3.5 19.2 0.3 1.4	<p>Plateau surfaces and slopes with stony soils and with ironstone soils.</p> <p>Main soils: stony soil K4 (<i>stony Brown Chromosol-Kurosol-Sodosol</i>) and limited to extensive areas of ironstone soil J2 (<i>Ferric Brown Chromosol-Kurosol-Sodosol</i>) especially on upper slopes.</p> <p>CBB – upper slopes (slopes 1-3.5%, 2e, 3-4w)</p> <p>CBC – slopes (2-12%, 3e, 3-4w)</p> <p>CBM – slopes with some saline seepage (2-10%, 3-2e, 3-4w, 2-1s⁺)</p> <p>CBZ – plateau surfaces (slopes 0-2%, 1-2e, 3-4w)</p> <p>Summary: stony areas with significant areas of soil with ironstone gravel. Native vegetation is typically dominated by mallee, banksia and/or sheoak. Cup gums dominate on the wettest parts of the plateau surfaces. Patches of stringybark occur. Broombush dominates in a few areas where clayey subsoils are sodic/dispersive.</p>
CFB CFC CFD	0.5 11.8 12.5	<p>Slopes with stony soils.</p> <p>Main soils: stony soil K4 (<i>stony Brown Chromosol-Kurosol-Sodosol</i>). With minor to extensive areas of shallow rocky soil L1 (<i>rocky Tenosol</i>) especially on steeper and lower slopes; and minor to limited areas of ironstone soil J2 (<i>Ferric Brown Chromosol-Kurosol-Sodosol</i>) especially on upper slopes.</p> <p>CFB – slopes and rises (slopes 0-4%, 2e, 3-4w)</p> <p>CFC – slopes (3-12%, 3-4e, 3w)</p> <p>CFD – slopes (10-20%, 4e, 2-3w)</p> <p>Summary: stony and rocky slopes, typically dominated by mallee, banksia and/or sheoak. Stringybark occurs in well watered areas; while cup gum occurs in waterlogged areas.</p>
HKB HKC HKO HKZ	0.4 0.2 0.1 1.3	<p>Low lying plateau surfaces, slopes and drainage depressions with texture contrast soils and some ironstone soils.</p> <p>Main soils: texture contrast soil F2-F1 (<i>Brown Sodosol-Chromosol-Kurosol</i>) and limited to extensive areas of ironstone soil J2 (<i>Ferric Brown Chromosol-Kurosol-Sodosol</i>). Some stony soil K4 (<i>stony Brown Chromosol-Kurosol-Sodosol</i>) can occur, especially on steeper slopes.</p> <p>HKB – slopes (1-3%, 2-1e, 4-5w)</p> <p>HKC – slopes (3-10%, 3e, 4w)</p> <p>HKO – upper drainage depression with some saline seepage (slopes 1-3.5%, 2-3e, 5w, 3-2s⁺)</p> <p>HKZ – low lying plateau surfaces (slopes 0-1%, 1e, 4-5w)</p> <p>Summary: quite wet plateau surfaces, slopes and drainage depressions, typically dominated by native vegetation suited to poorly drained areas, such as cup gum.</p>
AOm	43.2	<p>Rocky gullies: predominantly consisting of valley slopes, with fertile and well-watered lower slopes and valley floors.</p> <p>Main soils: stony soil K4 (<i>stony Brown Chromosol-Kurosol-Sodosol</i>). With some shallow rocky soil L1 (<i>rocky Tenosol</i>). Also with some deeper texture contrast soil F2-F1 (<i>Brown Sodosol-Chromosol-Kurosol</i>) especially on slopes and in upper drainage areas. Colluvial ironstone soils J2 (<i>Ferric Brown Chromosol-Kurosol-Sodosol</i>) can occur on slopes with stringybark. With minor areas of wet highly leached sand I2 (<i>Podosol</i>) in upper drainage flats; and minor areas of deep sandy loam M1 (<i>loamy Tenosol</i>) in wet valley flats. Possibly with minor areas of peat N1 (<i>Organosol</i>) in very wet creek flats.</p> <p>AOm – creek gullies (slopes 2-80% but typically from 10-30%, 5-6e, 4-5w with patches of 7w in creek flats, 2-1f, 1-2s)</p> <p>Summary: tall eucalypts dominate the fertile and well-watered valley floors and lower slopes; large stringybark eucalypts the relatively well watered slopes and some lesser drainage depression areas; sheoak and/or mallee the rocky gully slopes; and mallee or more waterlogging tolerant species the</p>



		relatively poorly drained upper drainage depressions.
XXS	0.8	River valley flat on the lower reaches of the North West River. Main soils: deep sandy loam M1 (<i>loamy Tenosol</i>). With stony soil K4 (<i>stony Brown Chromosol-Kurosol-Sodosol</i>) especially on lower slopes at the edge of the valley flat. And with deeper texture contrast soil F2-F1 (<i>Brown Sodosol-Chromosol-Kurosol</i>) especially on lower slopes. XXS – river valley flat (slopes 0-2%, 2-1e, 4w, 2-1f) Summary: native vegetation dominated by tall eucalypts; stringybark eucalypts inhabit lower slopes.

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:

- K4** Acidic stony texture contrast soil (*Brown Chromosol-Kurosol-Sodosol-Dermosol*)
Medium thickness to thick sandy loam, or occasionally clay loam, sometimes with a bleached subsurface layer, over clayey subsoil which is often silty and often contains weathered rock fragments. Weathered rock occurs at moderate depth. Topsoils typically contain metasandstone, sandstone, quartz and/or ironstone fragments. The metasandstone and sandstone fragments are often ferruginized, especially on more gentle slopes. Subsoils are yellow brown to olive brown with mottled colours increasing with depth. Upper subsoils are sometimes sodic/dispersive. Soil pH is acidic to strongly acidic. Typically found on valley slopes. Native vegetation is typically dominated by mallee, banksia and/or sheoak. Stringybark occurs on well-watered slopes. Broombush can dominate when subsoils are sodic/dispersive. Cup gum can dominate in wet areas.
- L1** Shallow rocky soil (*rocky Tenosol*)
Shallow sandy loam, or occasionally loamy sand, often grading into silty clay loam or silty light clay with weathered rock fragments. A layer of weathered rock is encountered at shallow depth. Numerous metasandstone, sandstone and quartz fragments occur in the profile. Soil pH is acidic to strongly acidic. Typically found on the steeper valley slopes. Native vegetation is typically dominated by large stringybark on the relatively well-watered valley slopes, or tall eucalypts on the well-watered and fertile valley floors and lower slopes. Sheoak (drooping?) can dominate very rocky and steep slopes. Banksia, sheoak and/or mallee dominate drier upper slopes.
- J2** Ironstone soil (*Ferric Brown Chromosol-Kurosol-Sodosol-Dermosol*)
Medium thickness topsoil with ironstone gravel, overlying yellow brown to yellow clayey subsoil. In situations where colluvial deposition can occur, there can be a clay loamy to light clayey transition layer between topsoil and subsoil which typically contains ironstone gravel. Soil pH is acidic or strongly acidic. Found on upper slopes and isolated remnant plateau surfaces. Native vegetation is typically dominated by low mallee, banksia or sheoak. Broombush can dominate where subsoils are sodic/dispersive. Cup gum can dominate in wet areas.
- F2-F1** Sandy loam over acid clay (*Brown Sodosol-Chromosol-Kurosol*)
Medium thickness to thick sandy loam, often with a bleached subsurface layer, overlying clayey subsoil. Small quartz fragments can occur in the profile and on the soil surface. There may be a clay loamy to light clayey transition layer between topsoil and subsoil. Subsoils are yellow brown to grey, depending on wetness (grey colours indicate wet soils). Subsoils are often sodic/dispersive. Minor quartz or ironstone can occur in the profile. Soil pH is acidic to strongly acidic. Found in poorly drained upper drainage depressions, gently sloping lower valley slopes, and on some plateau surfaces and upper slopes. Native vegetation is dominated by sedges, cup gum, broombush, stringybark, banksia and/or sheoak depending on wetness.

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

