JUT Jutland Land System

Undulating to rolling rocky low hills and valley flats east of Springton

Area: 37.9 km^2

Annual rainfall: 505 – 620 mm average

Geology: The underlying rocks include metamorphosed sandstones of the Backstairs Passage Formation, and granites and granitic gneisses. These rocks outcrop extensively. Between the high ground formed on the rocks are valleys filled with locally derived alluvium. These sediments are coarse grained, gritty and gravelly.

Topography: The landscape comprises undulating to rolling low hills and rises with slopes of 4% to 30%. The hills are characterized by extensive rocky outcrop, particularly on steeper slopes. Surface drainage is to the east. Most of the System drains into Saunders Creek, but in the north, the Marne River cuts through the hills as a separate system. The creeks occupy well defined valleys, with little or no rock outcrop protruding through the sedimentary cover. Most water courses have eroded at some time, and there is sporadic saline seepage.

Elevation: 300 m in the south east to 428 m in the north

Relief: 10 - 70 m

Soils: The soils are coarse grained, reflecting the parent rock. Soils on hillslopes are shallow to moderately deep, some with clayey subsoils and some without. Differences are due to parent rock type (i.e. granitic rocks or sandstones) and profile development. On creek flats, soils are deep and show varying degrees of profile development, but all are coarse textured at the surface. Typical soils are:

Hillslopes underlain by granitic rocks
L1 Shallow stony loamy sand – over granite (**L1a**) or over gneiss (**L1b)**
K3a Sandy loam over red sandy clay on granite
K3b Sandy loam over dispersive red or brown clay on gneiss
Hillslopes underlain by sandstones
K4 Loamy sand over brown sandy clay
L1c Shallow stony loamy sand to sandy loam
K5 Deep sandy loam
Valley flats and drainage depressions
M1a Deep alluvial sand
M1b Deep loamy sand
M1c Gradational loamy sand
F2 Loamy sand over sandy clay

Main features: The Jutland Land System is characterized by rocky low hills with shallow soils or moderately deep soils with clayey subsoils. All have sandy, stony surfaces which have low nutrient retention capacity and are highly susceptible to erosion. All but the gentler slopes are virtually non arable, mainly due to rocky outcrop. On gently sloping outwash fans and creek flats, there is little outcrop, and soils are deep, but sandy and gritty. Some have clayey subsoils which hold up water, but all have sandy surfaces with low fertility. Erosion is a potential problem due to high runoff from the adjacent rocky slopes. Water courses are particularly vulnerable. There is also some minor saline seepage in the creek flats.

Soil Landscape Unit summary: 7 Soil Landscape Units (SLUs) mapped in the Jutland Land System:

SLU	% of area	Main features #
AgB AgC	10.5 14.9	Rises and low hills formed on granitic and gneissic rocks. There is up to 50% surface stone and rock outcrop. **AgB** Rises and low hills with relief of 20 to 60 m, slopes of 8-20%, 10-20% rocky outcrop and minor water course erosion. **AgC** Rocky low hills with relief of 30-70 m, slopes of 10-30%, 20-50% rocky outcrop and minor water course erosion. Main soils: shallow stony bleached loamy sand - **L1a** (E), shallow stony loamy sand - **L1b** (C), sandy loam over red sandy clay - **K3a** (C) and sandy loam over dispersive red or brown clay - **K3b** (L). These soils are generally shallow, stony, infertile and acidic. The deeper soils (with clayey subsoils) are more fertile, but the K3b soils are poorly structured. Most of the land is non arable due to the extent of rock outcrop. Erosion potential is high because of the high runoff and sandy surface soils.
AiC	8.6	Rocky low hills formed on sandstones. Slopes are 10-30% and relief is 20-60 m. There is 10-20% rocky outcrop. Main soils: shallow stony loamy sand - **L1c** (E), deep sandy loam - **K5** (E) and loamy sand over brown sandy clay - **K4** (E). These soils are shallow to moderately deep, sandy, stony and infertile. Most of the land is non arable due to the slopes and associated erosion potential, and the extent of rocky outcrop and profile stone. Potential for erosion is high due to excessive runoff from rocky ground and sandy, erodible surface soils.
CVC CVD	26.7 13.1	Rises and low hills formed on sandstones. **CVC** Undulating rises and slopes with relief of 20 to 30 m, slopes of 4-10% and up to 10% rock outcrop. **CVD** Gently rolling low hills with relief to 40 m, slopes of 8-18% and 10-20% rock outcrop. Main soils: loamy sand over brown sandy clay - **K4** (E), shallow stony loamy sand - **L1c** (E) and deep sandy loam - **K5** (E). These soils are moderately deep to shallow, sandy, stony and infertile. Most of **CVC** is arable, but is only semi arable because of the extent of rocky outcrop. Erosion potential is moderately high due to the sandy erodible surface soils and high runoff coefficients. **CVC** represents the most favourable agricultural land in the system.
LVH LVe	5.7 20.5	Outwash fans and valley flats formed on coarse grained and gritty alluvium. **LVH** Fans with eroded water courses. Slopes are 2-6%. **LVe** Drainage depressions and valley flats with slopes of 1-4%, eroded water courses and minor saline seepage. Main soils: deep alluvial sand - **M1a** (E), deep loamy sand - **M1b** (C), gradational loamy sand - **M1c** (C) and loamy sand over sandy clay - **F2** (L). The soils are deep but infertile. The sandy soils are well drained, but the sand over clay soils are subject to waterlogging. Erosion is a key limitation, both on the slopes of **LVH** and the flats, where watercourses are generally unstable. Minor saline seepages occur on these flats.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(D) Dominant in extent (>90% of SLU)
(V) Very extensive in extent (60–90% of SLU)
(E) Extensive in extent (30–60% of SLU)
(C) Common in extent (20–30% of SLU)
(L) Limited in extent (10–20% of SLU)
(M) Minor in extent (<10% of SLU)

Detailed soil profile descriptions:

Hillslopes underlain by granitic rocks

L1a Shallow stony bleached loamy sand (Paralithic, Bleached-Leptic Tenosol)
Thick, gritty and gravelly loamy coarse sand to coarse sandy loam with a bleached A2 layer, grading to weathering rock before 50 cm.

K3a Sandy loam over red sandy clay (Mesotrophic, Brown Chromosol)
Thick gritty and gravelly loamy sand overlying a brown or red gritty sandy clay loam to sandy clay, grading to weathering granite by 70 cm.

L1b Shallow stony loamy sand (Lithic, Leptic Rudosol)
Thick gritty loamy sand to sandy loam with quartz and gneiss stones throughout, grading to weathering rock by 50 cm.

K3b Sandy loam over dispersive brown or red clay (Eutrophic / Calcic, Brown / Red Sodosol)
Thick gritty loamy sand to sandy loam with a bleached A2 layer, sharply overlying a red, yellow and grey brown dispersive clay, variably calcareous at depth, grading to weathering highly micaceous gneiss at about 100 cm.

Hillslopes underlain by sandstones

K4 Loamy sand over brown sandy clay (Mesotrophic, Brown Chromosol)
Brown loamy sand with variable sandstone gravel, overlying a massive red and yellowish brown sandy clay, grading to weathering sandstone.

L1c Shallow stony loamy sand (Lithic, Leptic Rudosol)
Medium thickness reddish brown massive loamy sand to sandy loam with abundant rock fragments, overlying hard metamorphosed sandstone.

K5 Deep sandy loam (Paralithic, Leptic/Brown-Orthic Tenosol)
Deep reddish brown to greyish brown loamy sand to silty loam with variable rock fragments, overlying metamorphosed sandstone or sandy schist by 100 cm.

Valley flats and drainage depressions

M1a Deep alluvial sand (Arenic Rudosol)
Very deep gravelly loamy sand formed on gritty red or brown alluvial sand.

M1b Deep loamy sand (Regolithic, Red-Orthic Tenosol)
Deep reddish brown loamy sand, overlying a reddish brown to brown sandy clay loam, grading to brown or yellow sand to clayey sand alluvium.

M1c Gradational loamy sand (Bleached, Brown Kandosol)
Very thick brown sand with bleached and rusty mottles, overlying a massive brown clayey sand to light sandy clay loam at about 100 cm, grading to coarse textured alluvium.

F2 Loamy sand over sandy clay (Eutrophic, Brown Sodosol)
Thick grey massive loamy sand with a bleached A2 horizon, overlying a yellow brown and grey mottled sandy clay loam to sandy clay with weak coarse structure, grading to alluvium.

Further information: DEWNR Soil and Land Program