SPR Springton Land System

Undulating to rolling low hills in the Springton - Eden Valley area

Area: 71.9 km^2

Annual rainfall: 575 – 675 mm average

Geology: The land is formed on Cambrian metasandstones of the Backstairs Passage Formation. These rocks outcrop sporadically. There are occasional outcrops of granitic rocks (usually gneisses) - these areas are characterized by extensive rocky outcrop. In places, the lateritized remnants of an older land surface are preserved. There are extensive deposits of locally derived alluvium in creek flats. These are mainly medium to coarse grained.

Topography: The landscape comprises undulating to rolling low hills. The land is mostly within the catchment of the Marne River, although there is a small area in the south east drained by Saunders Creek. The generally east flowing streams occupy well defined flats up to 500 m wide between the low hills. Sporadic rocky outcrop occurs on rising ground, and is extensive in places. However, outcrop is less widespread than much of the other land in the northern ranges on Kanmantoo Group rocks. There is some water course erosion and sporadic saline seepage, mainly on lower slopes and flats, but occasionally on mid slopes.

Elevation: 330 m where the Marne River flows out in the east to 480 m on the northern watershed.

Relief: 20 m to 60 m

Soils: Most soils are shallow to moderately deep over weathering basement rock. Surface textures are usually sandy. Many soils have brown and red clayey subsoils. On rockier slopes, shallow stony soils are common. Deep texture contrast and sandy soils are typical of valley flats.

Main soils:

Soils formed on metasandstones or schists

K4 Loamy sand over brown clay
L1a Shallow stony loamy sand over metasandstone
L1b Shallow stony loamy sand over schist

Minor soils:

Soils of valley flats

F2 Sandy loam over clay
G2 Thick sand over sandy clay loam
G3 Thick sand over clay
M1 Deep sandy alluvial soil

Soils formed on metasandstones or schists

K4/K3 Loamy sand over red or brown clay
K3a Sandy loam over red clay

Soils formed on gneissic rocks

K3b Sandy loam over red dispersive clay
L1c Shallow stony loamy sand

Soils formed on lateritic remnants

J2 Brown ironstone soil
K1 Red gradational sandy loam

Main features: The Springton Land System is characterized by undulating to rolling low hills with mixed texture contrast and shallow stony soils. These generally have sandy to sandy loam surfaces with moderately low to moderate natural fertility and a predisposition to acidification. The soils of the flats are deep with ample water holding capacities, and moderate fertility. They are subject to waterlogging and salinization. The dominant natural vegetation formation is red gum woodland indicating substantial soil water reserves. Seepage on breaks of slope, flats and some hillsides are common. Many of these are saline. Management practices should be focussed on increased water use. They should aim to improve fertility and ameliorate acidity for improved pasture productivity.

Soil Landscape Unit summary: 9 Soil Landscape Units (SLUs) mapped in the Springton Land System

SLU	% of area	Main features #
AgC	1.1	Rounded rocky rises to 30 m high with slopes of 6-12%, formed on gneissic basement rock. 20-50% of the surface has outcropping rock. Main soils: shallow stony loamy sand - **L1c** (E) and sandy loam over dispersive red clay - **K3b** (E). These areas are outliers of land similar to that of the Rathjen Land System. The soils are shallow to moderately deep, sandy surfaced and infertile. Extensive rocky outcrop limits the area of arable land. The soils are highly erodible due to sandy surfaces, rocky outcrop and common dispersive clay subsoils.
AmC	20.3	Rolling low hills with relief of 30 to 60 m and slopes of 12 to 25%, formed on meta-sandstones. There is 10-20% rocky outcrop. Main soils: loamy sand over brown clay - **K4** (E) and shallow stony loamy sand - **L1a** and **L1b** (E), with loamy sand over red or brown clay - **K4/K3** (L) and sandy loam over red clay - **K3a** (M). Soils as for **LUe** occur in unmapped creek flats. This land is moderately steep, and except for some minor gently sloping crests, is non arable. Soils are mainly shallow and stony with limited water holding capacity, but deeper soils with clayey subsoils are common. Fertility is moderately low. Sporadic rocky outcrops restrict access.
AnB AnC	1.2 3.4	Rocky low hills formed on metasandstones. This land is similar to **AmC**, but with more extensive rocky outcrop. In places there is up to 50% outcrop, but usually about 20%. **AnB** Rises to 30 m high with slopes of 5-12%. **AnC** Low hills to 40 m high with slopes of 12-30%. Main soils: shallow stony loamy sand - **L1a** and **L1b** (V), with loamy sand over brown clay - **K4** (L), loamy sand over red or brown clay - **K4/K3** (L) and sandy loam over red clay - **K3a** (M). This land is rocky and moderately steep, with mostly shallow stony soils. It is non arable.
CQC CQD	20.9 28.6	Rises and low hills formed on metasandstones. There is minor rock outcrop. **CQC** Rises with relief to 30 m and slopes of 4-8%. **CQD** Rises and low hills with relief of 20-70 m and slopes of 6-15%. Main soils: loamy sand over brown clay - **K4** (E) and shallow stony loamy sand - **L1a** and **L1b** (C), with loamy sand over red or brown clay - **K4/K3** (L) and sandy loam over red clay - **K3a** (M). There are limited occurrences of soils as for **LUe** on unmapped creek flats, minor occurrences of soils as for **FdZ** on ironstone crests, and as for **AgC** on granitic or gneissic intrusions. These soils are moderately deep to moderately shallow, with satisfactory moisture holding capacity. The main drawbacks are moderately low fertility and high erodibility. There are sporadic saline seepages, mainly on lower slopes.
FdZ	0.8	Upper slopes and crests formed on deeply weathered and lateritized metasandstones. Slopes are up to 10%. There is up to 20% (and sometimes more) surface ironstone. Main soils: brown ironstone soil - **J2** (E) and red gradational sandy loam - **K1** (E). These isolated areas have deep but infertile soils, caused by iron induced phosphate fixation and strong leaching. The deep weathering profiles are potential stores of salt.

LUe	21.3	Flats and drainage depressions formed on mixed alluvial sediments. There is substantial stream bank erosion, and some saline seepage. Main soils: sandy loam over clay - **F2** (E) and deep sandy alluvial soil - **M1** (E), with thick sand over clay - **G3** (L) and thick sand over sandy clay loam - **G2** (L). These soils are deep but imperfectly drained, due to dispersive clayey subsoils and low lying position in the landscape. Water holding capacities are good, but natural fertility is moderate to moderately low.
LVe	2.4	Valley flats and lower slopes of up to 4% formed on coarse grained and gritty alluvium. There is some stream bank erosion and sporadic saline seepage. Main soils: deep sandy alluvial soil - **M1** (E), with sandy loam over clay - **F2** (C), thick sand over clay - **G3** (L) and thick sand over sandy clay loam - **G2** (L). The soils are deep but infertile. The sandy soils are well drained, but the F2 soils are subject to waterlogging. Stream bank erosion is a significant management issue.

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:

F2 Sandy loam over clay (Calcic, Black / Brown Sodosol)
Thick grey massive sandy loam to loamy sand with a bleached A2 horizon, overlying a dark grey and yellow brown prismatic structured clay with soft calcareous segregations at depth, grading to alluvium.

G2 Thick sand over sandy clay loam (Bleached, Eutrophic, Brown Chromosol)
Thick greyish sand with a bleached A2 layer, sharply overlying a brown mottled moderately well structured sandy clay loam, grading to coarse grained alluvial sediments.

G3 Thick sand over clay (Eutrophic, Brown Sodosol)
Thick greyish sand with a bleached A2 layer, sharply overlying a brown mottled dispersive sandy clay to clay, grading to coarser grained material with depth.

J2 Brown ironstone soil (Bleached-Ferric, Mesotrophic, Brown Kurosol)
Medium thickness grey brown loamy sand with a bleached A2 horizon containing over 50% ironstone gravel, overlying a yellow brown clay with soft red inclusions of weathered ironstone, grading to a greyish silty clay forming in weathering schist or micaceous sandstone deeper than 200 cm.

K1 Red gradational sandy loam (Bleached, Mesotrophic, Red Dermosol)
Medium thickness grey massive sandy loam with a bleached A2 horizon and ironstone gravel throughout, grading to a red and grey coarse blocky clay merging with kaolinized metasiltstone or metasandstone at about 100 cm. Hard rock is deeper than 200 cm.

K4/K3 Loamy sand over red and brown clay (Eutrophic, Red / Brown Chromosol)
Medium thickness grey loamy sand with a quartz and sandstone gravelly bleached A2 horizon, overlying a red, brown and yellow sandy clay grading to weathering micaceous sandstone by 100 cm. Occurs on coarse grained rock strata in blue gum areas.

K3a Sandy loam over red clay (Eutrophic, Red Chromosol)
Medium thickness brown massive loamy sand to sandy loam, with a paler coloured, sandier and quartz gravelly A2 horizon, overlying a red blocky clay with parent rock and quartz fragments, grading to metasandstone between 50 and 100 cm.

K3b Sandy loam over red dispersive clay (Eutrophic, Red Sodosol)
Thick gritty sand to sandy loam with a bleached A2 horizon, overlying a red, yellow and grey brown dispersive clay, grading to weathering gneiss at about 100 cm.

K4 Loamy sand over brown clay (Eutrophic, Brown Chromosol / Sodosol)
Thick grey brown loamy sand with a bleached and gravelly A2 horizon, overlying a dark brown, yellow and red mottled clay with strong fine blocky structure, grading to weathered sandy schist or micaceous sandstone by 100 cm. Occurs in red gum areas.

L1a Shallow stony loamy sand (Lithic, Leptic Rudosol)
Thick grey brown loamy sand with up to 50% fragments of parent rock, grading to metamorphosed sandstone by 50 cm. Occurs on coarse grained rock strata in blue gum areas.

L1b Shallow stony loamy sand (Paralithic, Leptic Rudosol)
Thick dark brown loamy sand with up to 50% rock fragments, overlying sandy schist or micaceous sandstone at about 50 cm. Occurs in red gum areas, in association with rock outcrop.

L1c Shallow stony loamy sand (Lithic, Leptic Rudosol)
Thick gritty loamy sand to sandy loam with quartz and gneiss stones throughout, grading to weathering gneiss by 50 cm.

M1 Deep sandy alluvial soil (Eutrophic, Brown Kandosol / Basic, Arenic, Brown-Orthic Tenosol)
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 sandy alluvium.

Further information: DEWNR Soil and Land Program