GIL Giles Land System

Eastern slopes of the Mount Lofty Ranges extending from north of Woodchester to Victor Harbor

Area: 112.8 km^2

Annual rainfall: 450 – 755 mm average

Geology: The Land System is underlain by metamorphosed medium to coarse grained sedimentary rocks of the Tappanappa, Tunkalilla ad Backstairs Passage Formations of the Kanmantoo Group of rocks. Typical lithologies are schist, phyllite, metasandstone, metagreywacke and metasiltstone. The rocks were evidently lateritized at some point (probably during the Tertiary), but almost all of the laterite capping has been eroded away. The rocks are partially veneered by aeolian carbonates. Rainfall is sufficient to have leached the carbonates in some places but not entirely in others. Usually it occurs as soft segregations in rock fissures. Locally derived outwash sediments, commonly silty sands, clayey sands and sandy clays occur as fill in drainage depressions and outwash fans. These sediments are also partially mantled by soft carbonates. Although geologically unrelated, the granites of Rosetta Head are included in this Land System.

Topography: The System is a strongly dissected tableland forming the south eastern margin of the Mount Lofty Ranges. Remnants of the original lateritized land surface are evident as ironstone knobs and broad summit surfaces, but most of the land comprises undulating, rolling and occasionally steep slopes. Steepest slopes (gradients up to 50%) occur adjacent to larger watercourses which have cut gullies through the ranges on their way to the Lake Plains. Generally alluvial flats are narrow, but there are some broader flats and outwash fans in the south.

Elevation: 0 m at Rosetta Head to 320 m west of Strathalbyn

Relief: 20 m to 100 m

Soils: Most soils are moderately deep to shallow overlying basement rock. Surface textures range from loamy sands to loams. Most have more clayey subsoils (often a well defined red or brown structured clay), but shallow stony soils grading directly to rock are common, especially on steeper and rocky slopes. There is a wide variation in the amount of subsoil carbonate. Deep soils on alluvium are minor overall.

Main soils

K3a Acidic sandy loam over red clay on non calcareous rock
L1 Shallow stony soil on basement rock
L1a Acidic sandy loam
L1b Acidic loam
L1c Sandy loam on calcified rock
L1d Loam on calcified rock
K5 Acidic gradational sandy loam on rock
D1a Sandy loam over red clay on calcified rock

Minor soils

Texture contrast soils formed on weathering basement rock
D1 Sandy loam to loam over red clay on calcified rock
D1b Loamy surface soil
D1c Sandy loam surface soil, over highly calcareous rock

K2 Acidic loam over red to brown clay
K3b Acidic sandy loam over sodic red clay on non calcareous rock
K4 Acidic sandy loam over brown clay
Soils formed on lateritic residuals
J2 Ironstone soil
Soils formed on outwash sediments
D2 Sandy loam over red clay
D5 Hard loamy sand over red clay
F1 Loam over brown clay
F2a Sandy loam over poorly structured brown clay
F2b Sandy loam over poorly structured dark clay
M1 Deep sandy loam
M4 Gradational sandy loam

Main features: The Giles Land System is predominantly moderately steep to steep hill country with variable (often extensive) rocky outcrop. Almost 60% of the land area is non arable due to excessive slopes or rocky outcrop. Of the arable land, most is sloping and characterized by red texture contrast soils. These have poorly structured sandy loam to loam surfaces, with clayey subsoils varying from well structured to dispersive. Soil drainage consequently varies from well to imperfect. Most soils are relatively deep and inherently fertile, although surface acidification is a threat. Lower slopes and drainage depressions are minor overall and have deep but usually poorly structured soils prone to waterlogging. Erosion potential is moderate to high throughout the System. Watercourses are commonly eroded, severely in places. The overall productive potential of the arable land is moderate to high, provided that surface condition is improved and erosion is controlled.

Soil Landscape Unit summary: 36 Soil Landscape Units (SLUs) mapped in the Giles Land System:

SLU	% of area	Main features #
A-g	0.2	Rosetta Head, a rounded granite bluff, 100 m high with side slopes of up to 100%. There is extensive rocky outcrop. Main soils: shallow to thick gritty and gravelly red loamy sands overlying granite within 50 cm. This land is mostly reserve, and with shallow stony soils, steep slopes and extreme exposure, has no agricultural value.
AAC	3.4	Moderately steep hillslopes and rolling low hills with relief of 50-100 m and slopes of 20-30%, formed on metasiltstones and minor metasandstones of the Tappanappa Formation, partially calcified. Rock outcrop is common. Most soils have loamy surfaces overlying weathering rock or red clay subsoils. Apart from depth, variations are due to the presence of soft carbonate accumulations in the subsoil. Main soils: Shallow loam on calcified rock - **L1d** (E) Shallow acidic loam on rock - **L1b** (E) Shallow loam over red clay on rock - **D1b** (L) Acidic loam over red to brown clay on rock - **K2** (L) The soils are fertile, but variable depth and moderately steep slopes limit use to grazing.
AKC AKD AKI	2.2 3.2 11.8	Very rocky moderate to steep slopes formed on weakly calcified schists, metasandstones and metasiltstones of the Tappanappa Formation. Gently rolling low hills have slopes from 16%, while steep dissection slopes or ridges have slopes to 100%. Water courses are very well defined and are often gullied. Rock outcrop is very extensive, particularly on steeper slopes. **AKC** Rolling low hills and slopes with relief of 30-90 m and slopes of 16-30%. **AKD** Steep hillslopes and ridges with relief of 50-100 m and slopes of 30-100%. **AKI** Rolling low hills and moderate slopes with relief of 30-90 m, slopes of 16-30% and eroded watercourses. The soils are stony and usually overlie rock at shallow depth. Some profiles are deeper with a reddish clay layer forming in weathering rock. The rocks are variably calcified, with

		carbonate contents ranging from nil to 50% or more. Main soils: Acidic gradational sandy loam on rock - **K5** (E-C) Shallow sandy loam on calcified rock - **L1c** (E-V) Acidic sandy loam over red clay on rock - **K3a** (L) Most of this land is either too steep or stony for arable agriculture. Soils are shallow to moderately deep and moderately fertile. High runoff can cause severe sheet and gully erosion, so maintaining surface cover is essential. Watercourse erosion occurs in places.
ALC ALY	0.9 8.1	Rolling rises and low hills with rounded crests formed on schists, metasiltstones and metasandstones of the Tappanappa Formation, partially capped by fine carbonates. Slopes range from 5% to 30% and relief ranges from 20 to 80 metres. Rock outcrop is sporadic, but locally extensive. Watercourses are well defined and often gullied. **ALC** Rolling low hills and moderate slopes with relief to 80 m and slopes of 16-30%. **ALY** Gently undulating summit surfaces, steeper on margins with slopes of 5-20%. The soils are mostly very shallow to shallow with stony sandy to loamy surfaces grading directly to rock, or overlying clayey subsoils which grade to weathering rock. The parent rocks have variable amounts of soft carbonate, as thin coatings on fracture planes through to massive accumulations of soft white highly calcareous clay loam. The different soils reflect differences in depth, clay and carbonate content. Main soils: Shallow sandy loam on rock - **L1c** / **L1a** (E) Acidic gradational sandy loam on rock - **K5** (C) Acidic sandy loam over red clay on rock - **K3a** / **K3b** (L) Shallow sandy loam over red clay on rock - **D1a** / **D1c** (L) These slopes are less rocky than those of AKC, but are mostly too steep for cultivated agriculture. Soils are of variable depth and moisture holding capacity, but are moderately fertile, although prone to acidification. Erosion is a hazard in late summer, requiring control of grazing pressure.
APC APD API APJ APY	18.7 4.7 2.6 0.5 1.2	Dissected tableland formed on weakly calcified metasandstones, metagreywackes, phyllites and schists of the Tappanappa, Backstairs Passage and Tunkalilla Formations. The tableland comprises rounded, almost flat-crested summit surfaces, and short steep slopes enclosing narrow creek lines. Slopes range from about 5% on summit surfaces to 50% on steepest slopes. Maximum relief is 80 metres. Rock outcrop is common, more extensive on the steeper slopes. Watercourses are well defined and often gullied. **APC** Rolling low hills and moderate slopes with relief to 70 m and slopes of 16-30%. **APD** Steep hillslopes with relief to 80 m and slopes of 30-50%. **API** Rolling low hills and moderate slopes with relief to 70 m, slopes of 16-30% and eroded watercourses. **APJ** Steep hillslopes with relief to 80 m, slopes of 30-50% and eroded water courses. **APY** Gently undulating summit surfaces, steeper on margins with slopes of 5-20%. Most soils have loamy surfaces overlying clayey subsoils forming in weathering rock. On steeper slopes, soils are more commonly shallow over rock. There are variations in the type of clay and the amount of carbonate in the lower subsoil. Main soils: Shallow sandy loam and loam over rock - **L1a** / **L1b** (L-E) Acidic gradational sandy loam on rock - **K5** (C) Acidic sandy loam over red clay on rock - **K3a** (E-C) Shallow sandy loam over red clay on rock - **D1a** (L) Acidic loam over red to brown clay on rock - **K2** (M) Although often shallow, soils are inherently fertile, but susceptible to acidification. Variable water holding capacities cause patchy finishes in pastures. Erosion potential is high, and erosion in watercourses is locally a problem. Most of the land is too steep for cultivated agriculture. There is some minor salinization on lower slopes.
AoC AoD	1.0 0.5	Moderately steep to steep slopes formed on metasiltstones and phyllites of the Tappanappa Formation. Slopes range from 5% on rises and crests through to 60% on slopes adjacent to deeply dissected watercourses. Relief varies from 30 m to 80 m. Outcropping rock and surface stone are increasingly common on steeper slopes. **AoC** Moderate slopes to 80 m high with slopes of 18-30%. **AoD** Steep rocky slopes hillslopes to 40 m high with slopes of 30-60%. **Aom** Moderately steep to steep rocky slopes adjacent to the lower reaches of Waitpinga Creek. The predominant soils are loamy with characteristic red clay subsoils. Shallow forms without clay subsoils occur on steeper slopes. Soils typical of adjacent landscapes occur on sandier rock strata.

		Main soils: Loam over red clay - **K2** (E) Shallow stony loam - **L1** (C) Gradational loam - **K1** (L) Sandy loam over brown clay - **K4** (L) These soils are fertile and mostly moderately deep (**AoC**), but the slopes prevent uses involving regular cultivation. The presence of saline groundwater in this landscape (refer **BpM / BpN** below) indicates that irrigation is probably not sustainable. However, pasture production potential is high.
BpN	0.5	Undulating rises and rounded hills, and rolling low hills formed on metasiltstones and phyllites with interbedded pyrites of the Tappanappa Formation. Slopes range from 5% to 18%. Relief varies from 30 m to 70 m. Outcropping rock is rare and there is up to 5% surface stone in places. Saline seepages are a distinctive feature of these landscapes. **BpN** Rolling low hills and slopes with relief to 60 m and slopes of 10-18%. The predominant soils are loamy with characteristic red clay subsoils. Shallow forms without clay subsoils occur on steeper slopes. Soils typical of adjacent landscapes occur on sandier rock strata. Main soils: Loam over red clay - **K2** (V) Gradational loam - **K1** (M) Sandy loam over brown clay - **K4** (M) Shallow stony loam - **L1** (M) Sandy loam over red dispersive clay - **D3** (M) } on lower slopes and drainage Sandy loam over brown clay - **F1** (M) } depressions These soils are moderately deep to deep, and inherently fertile. However, saline water tables which are associated with this geological formation are near the surface over significant areas. Apart from the immediate effect on pasture productivity, salinization of water courses and dams, and reduction in utility of groundwater for irrigation, limit the land use options in these units. There is potential for the development of acid sulfate conditions in saline waterlogged areas.
DaC	0.3	Undulating to gently rolling low rises and footslopes formed on basement rocks. Slopes are generally less than 10%, but are occasionally steeper to 16%. Relief is invariably less than 30 metres. There is minor to limited rock outcrop. Drainage depressions are shallow and broad and water courses are moderately well defined and are sometimes gullied. **DaC** Undulating rises and gently inclined footslopes with relief to 30 m and slopes of 3-10%. Main soils: sandy loam over red clay - **D1** (E) with shallow loamy sand / sandy loam - **L1a/L1b** (L) and calcareous loam - **A2** (L). On lower slope outwash areas, profiles are deeper, the typical soil being sandy loam over red clay - **D2a** (L) over localized alluvium. These soils are moderately fertile and productivity potential is largely determined by soil depth and water storage capacity. Most have poorly structured hard setting surfaces which shed water and readily erode.
DbD DbI	2.4 2.3	Undulating to gently rolling rises and low hills with rounded crests formed on schists, metasiltstones and metasandstones of the Tappanappa Formation, partially calcified with soft carbonate segregations. Slopes range from 4% to 16% and relief ranges from 20 to 60 metres. Rock outcrop is sporadic. Watercourses are well defined and occasionally gullied. **DbD** Gently rolling low hills and moderate slopes with relief to 60 m and slopes of 8-16%. **DbI** Gently rolling low hills and moderate slopes with relief to 60 m, slopes of 8-16% and eroded water courses. The soils are mostly moderately deep with stony sandy loam to loam surfaces overlying clayey subsoils which grade to weathering rock. Surface soils grade directly to rock on steeper slopes. The parent rocks have variable amounts of soft carbonate, as thin coatings on fracture planes through to massive accumulations of soft white highly calcareous clay loam. The different soils reflect differences in depth, clay and carbonate content. Main soils: Shallow sandy loam over red clay on rock - **D1a** / **D1c** (E) Acidic sandy loam over red clay on rock - **K3a** / **K3b** (C) Shallow sandy loam on rock - **L1a** / **L1c** (L) } steeper or rockier land Acidic gradational sandy loam on rock - **K5** (L) } These soils are moderately fertile and generally deep enough to store adequate water. Poor subsoil structure is common, affecting permeability, root growth and erodibility. The land is mostly arable, but erosion potential is moderate to high.

DiC DiD DiH DiI DiZ	5.9 12.9 1.7 0.3 2.3	Undulating to gently rolling low hillslopes and occasional relatively flat summit surfaces formed on weakly calcified metasandstones, metagreywackes, phyllites and schists of the Tappanappa, Backstairs Passage and Tunkalilla Formations. Slopes range from about 3-16%, relief is up to 50 m. Rock outcrop is sporadic. Watercourses are well defined and sometimes gullied. **DiC** Gently inclined slopes with relief of 20-40 m and slopes of 3-8%. **DiD** Gently rolling low hills with relief to 50 m and slopes of 8-16%. **DiH** Gently inclined slopes with relief of 20-40 m, slopes of 3-8% and eroded watercourses. **DiI** Gently rolling low hills with relief to 50 , slopes of 8-16%, and eroded water courses. **DiZ** Gently undulating summit surfaces, steeper on margins with slopes of 5-20%. The soils invariably have loamy surfaces overlying clayey subsoils forming in weathering rock. There are variations in the type of clay and the amount of carbonate in the lower subsoil. Main soils: Acidic sandy loam over red clay on rock - **K3a** (E) Acidic loam over red to brown clay on rock - **K2** (L) Shallow sandy loam over red clay on rock - **D1a** (C) Shallow soils on rock - **L1c** / **L1d** (L) on steeper slopes These soils are inherently fertile although prone to acidification. They are moderately well to well drained and have moderate to high waterholding capacities. There is potential for water erosion due to the moderate slopes, and watercourse erosion caused by excessive runoff in the past is locally a problem. There is minor salting on lower slopes.
DjC DjH	0.5 0.3	Footslopes and lower slopes formed on schists, metagreywackes, metasandstones and associated localized outwash of the Tappanappa Formation. Slopes are variable, 3-10%, grading to creek flats. Most soils have sandy loam surfaces overlying reddish clay subsoils with variable soft carbonate accumulations in the lower subsoil. Depending on the position in the landscape, the soil is formed on rock or outwash sediment. In less well drained situations, the profiles tend to be grey brown in colour. Main soils: Shallow sandy loam over red clay on rock - **D1a** (E) } on slopes Acidic sandy loam over red sodic clay on rock - **K3b** (C) } Sandy loam over red clay - **D2** (C) } on lower slopes Sandy loam over poorly structured brown clay - **F2a** (L) } These soils are deep, moderately well to imperfectly drained and moderately fertile. Poorly structured subsoil clays (K3c and F2a) adversely affect drainage and root growth, and increase erodibility. There is minor salinity near watercourses. Overall the land has high productive potential.
DnC DnD	0.9 3.0	Undulating rises to gently rolling low hills formed on metasiltstones and minor metasandstones of the Tappanappa Formation, partially calcified. Slopes range from 3% to 20% and relief varies from 20 to 80 metres, but is usually less than 50 metres. There is occasional rock outcrop. **DnC** Gently inclined rises with relief to 20 m and slopes of 3-10%. **DnD** Moderately inclined slopes with relief of 40-80 m and slopes of 10-20%. Most soils have loamy surfaces overlying red clay subsoils. Variations are due to the presence of soft carbonate accumulations in the subsoil, and the parent rock or sediment. Main soils: Shallow loam over red clay on rock - **D1b** (V) Shallow loam on calcified rock - **L1d** (L) on steeper rockier slopes Sandy loam over red clay - **D2** (L-M) on lower slopes These soils are mostly deep, well drained and inherently fertile. Poor surface soil structure leading to excessive runoff and impaired emergence is a problem in places. There is minor salinity. Overall production potential is high.
FeZ	0.3	Flat topped to sharp crests of rolling hills, representing the last remnants of an ancient land surface. Slopes range from 3% on broader crests to 50% on the steepest side slopes, which are usually breakaway features. Relief is up to 40 metres above the surrounding hill slopes. Surface ferricrete is common. The underlying rocks are deeply weathered schists of the Kanmantoo Group. There is up to 20% surface ferricrete. Main soil: Ironstone soil - **J2** (D). These soils are deep but with low natural fertility due to excessive leaching and high content of phosphate fixing ironstone gravels. Runoff can be high on to adjacent slopes.
JHE JHc	1.9 1.1	Drainage depressions and outwash fans formed on alluvial silty sands, clayey sands and sandy clays derived from the localized erosion of coarse grained metamorphic rocks.

		Watercourses are well defined and often gullied. Slopes range from 2% in broader flats to 10% on lower slopes of adjacent hill slopes. **JHE** Narrow drainage depressions with slopes of 2-10%. **JHc** Fans with slopes of 3-10%, eroded watercourses and minor saline seepages. The diversity of parent sediments results in a variety of soils, all deep. Typical soils: Sandy loam over red clay - **D2** (E) Sandy loam over poorly structured brown clay - **F2a** (C) Loam over brown clay - **F1** (L) Hard loamy sand over red clay - **D5** (L) Sandy loam over poorly structured dark clay - **F2b** (M) Deep sandy loam - **M1** (M) These soils have high water holding capacities, but variable drainage. Poorly structured subsoils in F2a and F2b perch water, while the other soils are moderately well to well drained. Saline seepages occur sporadically. Most of the drainage depressions are too narrow to provide sufficient area for extensive enterprises. The slopes of JHc have some potential, but poor soil structure limits options for intensive development.
JTF	1.9	Flats of the lower Inman River. Main soil: Sandy loam over poorly structured dark clay - **F2b** (D) These soils are deep but imperfectly drained due to topographic position and poorly structured subsoils. Fertility is moderately high. The land has some potential for summer growing horticultural crops, provided that drainage is provided. The eroded river channel and sporadic salinity need attention.
JUB JUG JUH	0.1 1.3 0.1	Gently inclined outwash fans formed on weakly calcified sandy to silty clay alluvium derived from the erosion of Kanmantoo Group rocks and soils. Slopes are up to 10%. Watercourses are well defined and are often severely gullied. **JUB** Very gently inclined fans with slopes of 1-3%. **JUG** Very gently inclined fans with slopes of 1-3% and eroded watercourses. **JUH** Gently inclined fans with slopes of 3-10% and eroded watercourses. The predominant soils have sandy to loamy surfaces and reddish clay subsoils, some of which are sodic. Main soils: Sandy loam over red clay - **D2** (E) Hard loamy sand over red clay - **D5** (C) Gradational sandy loam - **M4** (C) on alluvial sediments Shallow sandy loam over red clay on highly calc. rock - **D1c** (M) on basement highs These soils are deep and moderately fertile. Drainage is satisfactory, although the poorly structured subsoils of D5 perch water. Severely eroded watercourses break up the land to some extent, affecting management operations. Overall productive potential is high once poor surface structure is ameliorated.
LkI LkJ	0.2 0.8	Drainage depressions and outwash fans formed on sandy to sandy clay alluvium. **LkI** Outwash fans with slopes of 8-16% and eroded watercourses. **LkJ** Drainage depressions with eroded watercourses. Main soils: Loam over brown clay - **F1** (E) Sandy loam over poorly structured brown clay - **F2a** (C) Hard loamy sand over red clay - **D5** (L) Sandy loam over red clay - **D2** (L) Soils are deep but imperfectly drained. Fertility is moderate, erosion potential is high.

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:

D1a Shallow sandy loam over red clay on rock (Hypocalcic, Red Chromosol)
Medium thickness reddish brown loamy sand to loam, overlying reddish brown well structured clay with abundant rock fragments, grading to weathering metamorphosed sandstone or greywacke with carbonate coatings on fracture planes.

D1b Shallow loam over red clay on rock (Calcic, Red Chromosol)
Thick dark reddish brown loam to clay loam with a paler coloured and gravelly A2 horizon, overlying a dark reddish brown clay with strong polyhedral structure, highly calcareous with depth, grading to weathering metamorphosed siltstone, usually deeper than 100 cm.

D1c Shallow sandy loam over red clay on highly calcareous rock (Hypercalcic, Red Chromosol)
Medium thickness reddish brown loamy sand to sandy clay loam, overlying a reddish brown well structured clay with abundant soft carbonate at shallow depth. Strongly calcified weathering metamorphosed sandstone or greywacke occurs between 50 and 100 cm.

D2 Sandy loam over red clay (Calcic, Red Chromosol)
Medium thickness loamy sand to fine sandy loam, with a paler coloured A2 horizon, overlying a dark reddish brown well structured clay, highly calcareous with depth, grading to yellow, red and brown mottled micaceous sandy clay loam to clay alluvium.

D5 Hard loamy sand over red clay (Hypocalcic, Subnatric, Red Sodosol)
Thick reddish brown loamy sand to sandy loam with a pink and sandier A2 horizon, overlying a red firm sandy clay loam to sandy clay with coarse prismatic structure and minor soft carbonate segregations at depth. The profile is formed in red clayey sand to sandy clay alluvium.

F1 Loam over brown clay (Sodic, Hypocalcic, Brown Chromosol)
Thick brown loamy sand to clay loam with a bleached A2 horizon, overlying a dark brown, red and yellowish brown mottled firm heavy clay, grading to clayey alluvium or very highly weathered metagreywacke below 100 cm.

F2a Sandy loam over poorly structured brown clay (Eutrophic, Mottled-Subnatric, Brown Sodosol)
Thick massive grey loamy sand to loam with a bleached and gravelly A2 horizon, overlying a grey brown, red and yellow brown mottled clay with prismatic structure, grading to silty alluvium or deeply weathered soft schist.

F2b Sandy loam over poorly structured dark clay (Calcic, Subnatric, Black Sodosol)
Thick grey massive loamy sand to sandy loam with a bleached A2 horizon, overlying a dark grey and yellow brown prismatic structured clay with soft calcareous segregations with depth, grading to alluvium.

J2 Ironstone soil (Ferric, Eutrophic, Red Chromosol)
Medium thickness ironstone gravelly sandy loam with a paler coloured A2 layer, over a red or orange finely structured clay grading to kaolinized basement rock, with soft and hard ironstone segregations from about 90 cm, continuing below 150 cm.

K2 Acidic loam over red to brown clay on rock (Eutrophic, Red Chromosol)
Medium thickness hard setting reddish brown sandy loam to clay loam, with a paler coloured and gravelly A2 horizon, overlying a red and greyish brown, strongly polyhedral structured clay subsoil grading to weathering schist, phyllite or micaceous sandstone before 100 cm.

K3a Acidic sandy loam over red clay on rock (Sodic, Eutrophic, Red Chromosol)
Medium thickness brown loamy sand to sandy loam with a paler coloured and gravelly A2 layer, overlying a reddish brown and brown firm sandy to heavy clay with strong blocky structure grading to weathering metagreywacke or sandy schist by 100 cm.

K3b Acidic sandy loam over red sodic clay on rock (Eutrophic, Subnatric, Red Sodosol)
Medium thickness reddish brown sandy loam with abundant quartz and schist gravel, overlying a dark reddish brown micaceous clay loam to clay with many rock fragments, grading to soft schist before 100 cm.

K4 Acidic sandy loam over brown clay on rock (Bleached, Mesotrophic, Brown Kurosol)
Medium thickness loamy sand to sandy clay loam with a gravelly and bleached A2 horizon, overlying a yellow brown or brown well structured clay grading to weathering metasandstone by 100 cm.

K5 Acidic gradational sandy loam on rock (Basic, Paralithic, Brown-Orthic Tenosol)
Thick brown loamy sand to loam with rock fragments throughout, grading to soft highly weathered soft schist or phyllite, becoming hard from about 100 cm.

L1a Shallow acidic sandy loam on rock (Basic, Lithic, Bleached-Leptic Tenosol)
Thick stony sandy loam with a very stony and pale coloured A2 horizon, grading to weathering metasandstone by 50 cm.

L1b Shallow acidic loam on rock (Basic, Lithic, Leptic Tenosol)
Thick dark brown loam with a paler brown clay loam A2 horizon containing up to 50% rock fragments, grading to metamorphosed siltstone or phyllite by 50 cm.

L1c Shallow sandy loam on calcified rock (Calcareous, Paralithic, Leptic Tenosol)
Medium thickness stony reddish brown loamy sand, overlying moderately to strongly calcified micaceous sandstone or schist.

L1d Shallow loam on calcified rock (Calcareous, Paralithic, Leptic Tenosol)
Thick reddish brown loam to clay loam with abundant siltstone gravel and stone, grading to weathering metamorphosed siltstone with fine carbonate in fissures.

M1 Deep sandy loam (Regolithic, Red-Orthic Tenosol)
Very deep gravelly loamy sand formed on gritty red or brown alluvial sand.

M4 Gradational sandy loam (Hypocalcic, Red Kandosol)
Thick reddish brown sand to sandy loam, overlying a reddish brown massive light sandy clay loam to sandy clay with occasional carbonate nodules, grading to variable silty, sandy and clayey, layered alluvial sediments.

Further information: DEWNR Soil and Land Program