KAN Kangarilla Land System

Flats and gentle slopes adjacent to the Willunga Escarpment near Kangarilla

Area: 5.1 km^2

Annual rainfall: 665 – 755 mm average

Geology: The land is underlain by clayey sediments derived from erosion and deposition of soil and rock from the escarpment to the east. There are minor accumulations of secondary carbonates on the clays. There is an isolated deposit of lateritized Tertiary sandy clay protruding through the younger outwash sediments. This is the last remnant of an ancient eroded land surface.

Topography: The landscape is an outwash fan abutting the Willunga Escarpment. Slopes are moderate (up to 12%) at the foot of the escarpment, but the land flattens out to a level plain in the west. Well defined water courses cross the slopes. The isolated Tertiary remnant is a low rise on the outwash slope.

Elevation: 160 m on the western edge to 300 m at the foot of the escarpment.

Relief: The land surface is evenly graded. The local elevation difference from the top to the bottom of the outwash fans is about 50 m.

Soils: The predominant soils are deep with texture contrast profiles over alluvium. Surface soils are usually thick sandy loams. Clayey subsoils vary from yellowish and greyish brown mottled poorly structured forms to well structured redder types, depending on drainage conditions and parent sediments. There are limited areas of heavy dark soils, and some ironstone gravelly sandy loams on rises.

Main soils *(formed on alluvium on flats and outwash fans)*
F1a Sandy loam over brown clay on fine grained alluvium
F1b Sandy loam over brown clay on kaolinitic clay
F1c Sandy loam over red and brown clay on alluvium
M2 Deep grey clay loam to clay

Minor soils *(formed on lateritized Tertiary sediments on rises)*
J2 Ironstone gravelly sandy loam over clay

Main features: The Kangarilla Land System is a gently sloping to flat landscape dominated by deep sandy loam over clay soils. These are reasonably fertile with high production potential provided that waterlogging is managed. This includes appropriate pasture species and grazing pressure control during winter. For horticultural uses, drainage and / or mounding is required to overcome the problem. Erosion is a potential threat on the upper (steeper) slopes.

Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Kangarilla Land System:

SLU	% of area	Main features #
FiB	3.7	Low rise, 10-20 m high with slopes of up to 10%, formed on lateritized Tertiary sandy clay. Main soil: Ironstone gravelly sandy loam over clay - **J2** (D) These soils are deep and moderately well drained but infertile (phosphate fixation problems). They are highly erodible but suitable for perennial horticulture or viticulture.
LjA	33.2	Level plain, drained by well defined water courses, formed on alluvial clays and sandy clays. Slopes are 0-1.5%. The dominant soils have sandy loam surfaces with clayey subsoils which are reddish mottled in the most common soil type and less commonly brown mottled. There are also grey clay loam profiles. Main soils: Sandy loam over red and brown clay - **F1c** (E) Sandy loam over brown clay - **F1a** (E) Deep grey clay loam - **M2** (C) These soils are deep and reasonably fertile. The main limitations are impeded drainage due to restrictive clay subsoils, and poor surface structure. The redder soils (F1c) are better drained than the others. Pasture production potential is high, but control of stocking is needed during winter to avoid soil compaction. Irrigated horticulture requires control of waterlogging, either by drain installation or mounding.
LsB LsC	20.2 40.8	Flats and outwash fans adjacent to the escarpment, formed on fine grained alluvium. Slopes range from 1% to 12% on upslope margins. **LsB** Very gently inclined fans with slopes of 1-3%. **LsC** Gently inclined fans with slopes of 3-12%. The soils are deep with variable sandy to clayey surfaces, but always with clayey subsoils. Main soils: Sandy loam over brown clay - **F1a** and **F1b** (V) Deep grey clay loam - **M2** (C) These soils are deep but imperfectly to poorly drained due to thick slowly permeable subsoil clays. They are moderately fertile but prone to acidification. Saline seepages occur sporadically. Erosion is a potential problem on cultivated, more sloping land.
LtE	2.1	Narrow drainage depressions formed on medium to coarse grained locally derived alluvium. Soils have thick sandy to loamy surfaces overlying mottled clayey subsoils. Main soils: Sandy loam over brown sandy clay loam - **F1** (V) Deep gradational sandy loam - **M1b** (L) Deep uniform sandy loam - **M1a** (L) These soils are deep and moderately fertile, but prone to waterlogging. Water courses are susceptible to erosion if banks are exposed. These areas are usually too narrow to allow significant development, particularly in view of the potential for water course degradation.

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:

Soils formed on alluvium on flats and outwash fans

F1a Sandy loam over brown clay (Bleached-Mottled, Hypocalcic, Brown Chromosol)
Thick loamy sand to sandy clay loam with a strongly bleached A2 horizon, overlying a yellowish brown, grey and red mottled clay grading to fine grained alluvium, weakly calcareous at base.

F1b Sandy loam over brown clay (Bleached-Mottled, Mesotrophic, Brown Kurosol)
Thick, greyish loamy sand to sandy clay loam with a bleached and ironstone gravelly A2 horizon, overlying a brownish yellow, brown and red well structured clay, grading to kaolinitic and ironstone gravelly clay continuing below 200 cm.

F1c Sandy loam over red and brown clay (Mottled, Eutrophic, Red Chromosol)
Medium thickness dark brown sandy loam to loam with a pink and gravelly A2 horizon, overlying a dark reddish brown and yellowish brown clay with strong blocky structure.

M2 Deep grey clay loam (Melanic, Calcic, Grey Dermosol)
Thick dark grey to black clay loam to light clay with granular structure (sometimes seasonally cracking), over a dark grey to black heavy clay with strong blocky structure. The clay is yellower and weakly calcareous with depth.

Soils formed on lateritized Tertiary sediments on rises

J2 Ironstone gravelly sandy loam over clay (Ferric, Mesotrophic, Yellow Chromosol)
Very thick firm sandy loam with a sandier, bleached and ironstone gravelly A2 layer, over a weakly structured yellow clay with ironstone gravel grading to kaolinitic sandy clay continuing below 100 cm.

Further information: DEWNR Soil and Land Program