KUL Kulpara Land System

Gently undulating rises and slopes in the Kulpara area

Area: 31.7 km^2

Annual rainfall: 400 – 465 mm average

Geology: The Land System is underlain by clayey sediments of Tertiary age (possibly Hindmarsh Clay equivalent). These are overlain in the north by medium to fine grained outwash sediments derived from the Hummock Range to the east. All sediments are mantled by fine secondary carbonates, usually as soft segregations, but sometimes in rubbly form.

Topography: The Kulpara Land System is a high level gently undulating plain or summit surface along the western edge of the Hummock Range. In the south, the land surface is level with the top of the range, but in the north, the range rises above the surface. Here, alluvium from the range has washed on to the land surface and formed fans which flatten out in a westerly direction. Slopes on the rises are 2 - 5% and on the fans, up to 8%.

Elevation: 240 m in the east to 150 m in the west

Relief: Maximum relief is 20 m

Soils: Deep gradational medium to fine textured soils are characteristic. Some are calcareous, some are clayey throughout.

Main soils

A3	Calcareous clay loam - extensive (fans)
A6	Calcareous clay loam over clay - extensive (flats and rises)
A5	Rubbly calcareous loam on clay - limited (upper slopes)

Minor soils

C3	Gradational clay loam - fans
E3	Brown cracking clay - rises

Main features: The Kulpara Land System is fully arable gently undulating to undulating land with mostly deep, medium to fine textured calcareous soils. The soils are potentially productive, the only limitations likely are high pH induced nutrient deficiencies and moderate subsoil boron levels. There is some potential for water erosion on steeper outwash fans adjacent to the range to the east.

Soil Landscape Unit summary: 4 Soil Landscape Units (SLUs) mapped in the Kulpara System:

SLU	% of area	Main features #
IBB	51.2	Gently undulating rises up to 20 m high with slopes of 2-5% formed on clayey sediments. Main soils: calcareous clay loam over clay - **A6** (V) with rubbly calcareous loam on clay - **A5** (L) and brown cracking clay - **E3** (L). These soils are deep, well structured and moderately fertile. Limitations are slight and due to high subsoil boron levels (which will cause some problems in drier years), and nutrient unavailability due to alkalinity.
KOA KOB KOC	6.2 31.0 11.6	Flats and outwash fans formed on medium to fine grained alluvium. **KOA** Plains with slopes of less than 2%. **KOB** Very gentle slopes of 2-4%. **KOC** Gentle slopes of 4-8%. Main soils: calcareous clay loam - **A3** (V) with gradational clay loam - **C3** (C). These slopes are fully arable, with deep well structured and moderately fertile soils. Limitations are slight, and due to the predominantly alkaline reaction of the soils and moderate subsoil boron levels. Erosion control is needed on steeper slopes adjacent to the range to the east.

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:

A3 Calcareous clay loam (Regolithic, Calcic Calcarosol)
10 - 20 cm calcareous clay loam to loam grading to a highly calcareous light clay with up to 20% nodular carbonate from about 50 cm, continuing in clay loam to light clay alluvium.

A5 Rubbly calcareous loam on clay (Regolithic, Supracalcic Calcarosol)
10 - 20 cm calcareous loam, becoming more clayey and calcareous with depth over Class III B rubbly carbonate at 25 cm, grading to substrate clay below 100 cm.

A6 Calcareous clay loam over clay (Pedal, Hypercalcic Calcarosol)
10 - 20 cm calcareous clay loam grading to a very highly calcareous moderately well structured light clay with abundant soft carbonate from 45 cm, merging with substrate Hindmarsh Clay or alluvium as shallow as 50 cm, but usually deeper than 100 cm.

C3 Gradational clay loam (Hypercalcic, Red Dermosol)
10 - 20 cm clay loam grading to a moderately to well structured red brown clay, very highly calcareous from 60 cm, over substrate clay to clay loam at 100 cm.

E3 Brown cracking clay (Brown Vertosol)
Strongly structured, calcareous, brown seasonally cracking clay becoming coarser structured, more clayey and calcareous with depth grading to Hindmarsh Clay within 100 cm.

Further information: DEWNR Soil and Land Program