HARD GRADATIONAL RED CLAY

General Description: *Clay loam to light clay grading to a coarsely structured hard red clay, calcareous with depth*

Landform: Gently inclined pediments with gilgai.

Substrate: Deeply weathered siltstone.

Vegetation:

Type Site:

Site No.:	CU053	1:50,000 mapsheet:	6532-4 (Wilmington)
Hundred:	Woolundunga	Easting:	226160
Section:	91	Northing:	6391570
Sampling date:	11/05/1995	Annual rainfall:	385 mm average

Upper slope of gently inclined pediment, 3% slope. Self-mulching surface with 10-20% siltstone.

Soil Description:

Depth (cm)	*Description*
0-15	Dark reddish brown firm light clay with strong polyhedral structure. Abrupt to:
15-30	Dark reddish brown friable medium clay with strong polyhedral structure. Abrupt to:
30-64	Dark reddish brown very hard heavy clay with strong coarse prismatic breaking to polyhedral structure and minor gravel. Clear to:
64-95	Yellowish red very hard moderately calcareous medium heavy clay with coarse angular blocky structure, 20-50% fine carbonate and 2-10% siltstone gravel. Gradual to:
95-110	Yellowish red very hard highly calcareous medium clay with strong polyhedral structure, 20-50% fine carbonate and 20-50% siltstone gravel (20-200 mm). Gradual to:
110-120	Weathering siltstone with more than 50% fine carbonate segregations in cleavages.

Classification: Vertic, Hypercalcic, Red Dermosol; medium, gravelly, clayey / clayey, deep

Summary of Properties

Drainage: Moderately well drained; some horizons remain wet for a week following heavy or prolonged rainfall

Fertility: Inherent fertility is high as indicated by the exchangeable cation data. Levels of all tested nutrients are satisfactory. Organic carbon concentrations are high.

pH: Slightly alkaline at the surface, strongly alkaline with depth.

Rooting depth: 64 cm in pit.

Barriers to root growth:

Physical: The hard coarsely structured clayey subsoil impedes root development to some extent.

Chemical: High pH from 95 cm is the only significant chemical barrier.

Waterholding capacity: Greater than 100 mm. Clay soils have high wilting points and will take longer to "wet up" and will "finish off" sooner in dry years than lighter soils.

Seedling emergence: No problems due to self-mulching nature of surface soil.

Workability: Good, although the soil is sticky and slippery when wet.

Erosion Potential:

Water: Moderately low

Wind: Low

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	CO_3 %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4 mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	8.5	7.8	0.9	0.11	0.64	1.7	33	488	-	1.8	-	-	-	-	31.6	27.93	4.40	0.53	1.76	1.7
0-15	8.3	7.7	0.5	0.10	0.59	1.9	45	525	-	1.7	-	-	-	-	31.4	27.42	3.72	0.22	1.81	0.7
15-30	8.3	7.8	0.4	0.14	0.61	1.1	<4	171	-	2.2	-	-	-	-	37.3	32.48	5.59	0.30	0.75	0.8
30-64	8.5	7.8	2.9	0.14	0.43	1.0	<4	148	-	2.7	-	-	-	-	38.8	30.28	8.41	0.83	0.71	2.1
64-95	9.1	8.0	37.1	0.17	0.48	0.2	<4	115	-	1.9	-	-	-	-	21.0	13.55	6.84	1.60	0.50	7.6
95-110	9.6	8.3	18.7	0.24	0.84	0.3	<4	90	-	2.0	-	-	-	-	11.2	5.89	5.04	2.41	0.26	21.5
110-120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Paddock sample bulked from cores (0-10 cm) taken around the pit.
CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.
ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.

Further information: DEWNR Soil and Land Program