THICK SAND OVER BROWN CLAY

General Description: *Thick sand to loamy sand with a bleached subsurface layer, over a brown coarsely structured clay*

Landform: Very gently undulating dune-swale systems

Substrate: Tertiary age sandy clay to clayey sand

Vegetation: Eucalyptus camaldulensis woodland

Type Site:

Site No.:	SE157B	1:50,000 mapsheet:	7024-4 (Keppoch)
Hundred:	Beamma	Easting:	473840
Section:	99	Northing:	5944950
Sampling date:	09/11/2007	Annual rainfall:	540 mm average

Very gently undulating swale. Soft surface with no stones. Irrigated lucerne.

Soil Description:

Depth (cm)	*Description*
0-22	Very dark greyish brown soft single grain loamy sand. Clear to:
22-65	Light brownish grey soft single grain sand with slightly clayey lamellae. Gradual to:
65-85	Light yellowish brown (bleached when dry) soft single grain sand with slightly clayey lamellae. Sharp to:
85-115	Brownish yellow, yellowish red and pale yellow firm coarse sandy light clay with weak very coarse columnar structure. Diffuse to:
115-140	Brownish yellow, and light yellowish brown firm coarse sandy light clay with weak very coarse prismatic structure. Gradual to:
140-160	Brownish yellow, yellowish red and pale yellow friable clay loam, coarse sandy, with weak very coarse prismatic structure.

Classification: Eutrophic, Mottled-Subnatric, Yellow Sodosol; very thick, non-gravelly, sandy / clayey, very deep

Summary of Properties

Drainage: Moderately well to imperfectly drained. Water may perch on top of the subsoil clay for a week or so following heavy or prolonged rainfall.

Fertility: Inherent fertility is low, as indicated by the exchangeable cation data. This is due to the low clay and relatively low organic matter contents of the surface layers. The bleached subsurface sand has negligible nutrient retention capacity. Laboratory data indicate that levels of all tested nutrients are satisfactory, although potassium, and trace elements are marginally low.

pH: Slightly alkaline at the surface (irrigation water effect), acidic below.

Rooting depth: 160 cm in sampling pit, but few roots below 115 cm.

Barriers to root growth:

Physical: The subsoil clay layer imposes a moderate restriction on root growth, mainly by confining many roots to the faces of coarse aggregates.

Chemical: There are no apparent chemical constraints (apart from low nutrient retention capacity), but note elevated salinity, chloride and sodicity, compared with non irrigated site SE157A.

Waterholding capacity: (Estimates for potential rootzone of irrigated crops)
Total available: 115 mm
Readily available: 45 mm

Seedling emergence: Satisfactory to fair, depending on degree of water repellence.

Workability: Sandy surface soils are easily worked.

Erosion Potential:

Water: Low.

Wind: Moderate.

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	EC1:5 dS/m	ECe dS/m	Cl mg/kg	Org.C %	NO_3+ NH_4 mg/kg	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	React Fe mg/kg	Boron mg/kg	Ext Al mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				Est. ESP
														Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
0-22	7.5	7.0	0.09	0.91	29	1.08	18	36	122	8.5	274	1.0	0	1.27	102	10.6	1.91	5.7	3.82	1.37	0.25	0.28	4.4
22-65	6.3	5.3	0.08	0.86	70	0.28	-	4	25	8.4	150	-	0.07	-	-	-	-	0.8	0.38	0.15	0.22	0.05	na
65-85	5.7	4.8	0.03	0.68	43	0.12	-	2	27	7.3	299	-	0	-	-	-	-	0.6	0.26	0.15	0.13	0.04	na
85-115	5.7	4.7	0.14	2.33	191	0.26	-	2	120	49.8	472	-	0.13	-	-	-	-	6.0	2.28	2.51	0.87	0.35	14.5
115-140	4.9	4.4	0.30	2.79	334	0.14	-	2	82	40.2	301	-	0.20	-	-	-	-	6.1	1.61	3.33	0.91	0.24	14.9
140-160	5.2	4.6	0.16	1.72	290	0.11	-	2	74	23.5	305	-	0.18	-	-	-	-	4.2	0.99	2.51	0.54	0.19	12.8

Note: Sum of cations, in a neutral to alkaline soil, approximates the CEC (cation exchange capacity), 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, in this case estimated by the sum of cations.

Further information: DEWNR Soil and Land Program