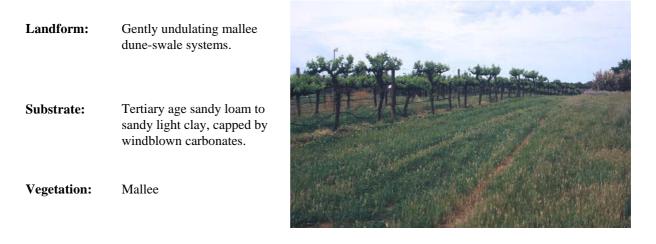# RUBBLY CALCAREOUS SANDY LOAM

General Description: *Calcareous sandy loam over rubbly carbonate at moderately shallow depth, grading to a very highly calcareous sandy clay loam with decreasing rubble*

Landform: Gently undulating mallee dune-swale systems.

Substrate: Tertiary age sandy loam to sandy light clay, capped by windblown carbonates.

Vegetation: Mallee

Type Site: Site No.: MR003

1:50,000 sheet:	7029-3 (Loxton)	Hundred:	Gordon
Annual rainfall:	275 mm	Sampling date:	22/09/04
Landform:	Upper slope of gently undulating dunefield, 3% slope		
Surface:	Soft with 2-10% calcrete fragments to 2 cm		

Soil Description:

Depth (cm) *Description*

0-20   Dark reddish brown highly calcareous soft massive light sandy loam. Sharp to:

20-35   Yellowish red highly calcareous soft massive light sandy loam. Abrupt to:

35-55   Yellowish red very highly calcareous soft massive sandy loam with more than 50% carbonate nodules (6-60 mm). Clear to:

55-90   Reddish yellow very highly calcareous firm massive sandy loam with more than 50% fine carbonate segregations and 2-10% carbonate nodules (2-6 mm). Diffuse to:

90-150 Yellowish red very highly calcareous hard massive light sandy clay loam with 20-50% fine carbonate segregations and 2-10% carbonate nodules (20-60 mm). Diffuse to:

150-170 Yellowish red and strong brown slightly calcareous firm massive sandy light clay with 20-50% fine carbonate segregations.

Classification: Ceteric, Regolithic, Lithocalcic Calcarosol; thick, slightly gravelly, loamy / clay loamy, very deep

Summary of Properties

Drainage: Well drained. The soil rarely remains saturated for more than a day following heavy or prolonged rainfall (or irrigation). Coarse textured rubbly carbonate layers are well drained, but the sandy clay substrate may impede deep drainage to some extent.

Fertility: Inherent fertility is moderately low, as indicated by the low clay content of the surface. Calcareous soils tend to tie up phosphorus, manganese and zinc. Copper levels are marginal at this site.

pH: Alkaline throughout.

Rooting depth: 150 cm, but few roots below 90 cm.

Barriers to root growth:

Physical: There are no physical barriers.

Chemical: Moderately high salinity and chloride levels from 90 cm restrict root growth, but in a horticultural situation, irrigation flushing of these salts would be expected over time.

Water holding capacity: (Estimates for potential root zone of irrigated crops)

Total available: 115 mm
Readily available: 50 mm

Seedling emergence: Satisfactory.

Workability: Calcareous sandy loams are readily worked over a wide range of moisture conditions, but soil will pulverize if worked too dry.

Erosion Potential

Water: Low.

Wind: Moderately low, but moderate if pulverized (see above).

Laboratory Data

Depth cm	pH H_2O	pH $CaCl_2$	CO_3 %	EC 1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	Cl mg/kg	SO_4-S mg/kg	Boron mg/kg	Trace Elements mg/kg (EDTA)				Sum cations cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-20	8.5	7.7	4	0.082	0.24	0.49	21	276	7	3.3	0.8	1.78	6.3	2.35	12.3	13.4	10.9	1.75	0.04	0.74	0.3
20-35	8.8	8.0	7	0.111	0.32	0.39	10	256	5	3.2	0.8	0.86	3.0	0.63	4.21	14.2	11.0	2.44	0.07	0.69	0.5
35-55	8.9	8.0	19	0.197	1.43	0.41	10	180	37	15	1.2	0.68	3.8	0.72	2.35	17.4	12.2	4.14	0.55	0.46	3.2
55-90	9.0	8.1	31	0.227	0.35	0.22	5	246	61	7.0	1.8	0.48	3.3	0.47	0.21	16.0	10.4	4.51	0.41	0.66	2.6
90-150	8.6	7.6	15	0.811	12.6	0.13	4	314	337	36	3.8	0.7	6.3	0.63	1.69	17.1	8.07	6.64	1.64	0.79	9.6
150-170	9.2	8.0	17	0.166	0.78	0.14	5	491	46	6.7	6.6	0.43	6.3	0.38	1.19	14.5	7.06	5.35	0.87	1.24	6.0

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.