

FLINTY SAND OVER BROWN CLAY

General Description: *Thick brown gravelly sand grading to pale sand over thin yellowish brown clay on marine limestone. Chert or flint gravels abundant throughout soil.*

Landform: Undulating marine plains and low stranded beach ridges.

Substrate: Marine limestone

Vegetation: -



Type Site: Site No.: SE080

1:50,000 sheet:	7022-3 (Schank)	Hundred:	Benara
Annual rainfall:	825 mm	Sampling date:	28/09/04
Landform:	Crest of low stranded beach ridge		
Surface:	Soft with 20% flint fragments		

Soil Description:

Depth (cm)	Description
0-20	Black weakly coherent organic single grain loamy sand with many (20%) flint cobbles. Abrupt change to:
20-75	Dark greyish brown slightly loamy fine sand with abundant (70%) flint cobbles. Diffuse change to:
75-115	Yellowish brown (bleached) loamy fine sand with abundant (85%) flint pebbles. Abrupt change to:
115-135	Yellowish brown light to medium clay with moderate medium size sub-angular blocky structure and abundant (70%) flint pebbles. Sharp change to:
135-170	Conglomerate of bryozoal marine limestone with abundant flint pebbles.



Classification: Bleached, Petrocalcic, Brown Chromosol; very thick, moderately gravelly, sandy/clayey, very deep

Summary of Properties

- Drainage:** Rapid. The soil is unlikely to remain saturated for more than a few hours.
- Fertility:** Inherent fertility is moderately low in upper layers as indicated by sum of cations, increasing to moderate (i.e. higher nutrient retention capacity) in the clay layer in the deep subsoil. Phosphorus levels are low, potassium adequate, sulphate low. Of the trace elements, copper levels are low and the others are satisfactory.
- pH:** Moderately acidic in surface, slightly alkaline in subsoil.
- Rooting depth:** More than 170 cm in sampling pit.
- Barriers to root growth:**
- Physical:** No barriers to 170 cm, but hard calcrete or limestone can be expected below this.
- Chemical:** No chemical toxicity.
- Water holding capacity:** Large amounts of impervious flinty gravel reduce available water holding capacity to about 55 mm.
- Seedling emergence:** Main constraint is presence of large flinty cobbles.
- Workability:** Excessive wear on ground engaging tools, but easily workable over wide range of moisture conditions.

Erosion Potential

- Water:** Low
- Wind:** Low to moderate – flints provide surface protection for the easily erodible sandy surface soil.

Laboratory Data

Depth cm	pH H ₂ O	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				Est. ESP
												Cu	Fe	Zn	Mn		Ca	Mg	Na	K	
0-20	6.0	4.7	0	0.04	0.36	3.2	12	163	11	6.2	0.4	1.2	349	18.5	44.1	7.5	6.35	0.57	0.13	0.41	1.7
20-75	6.3	5.3	0	0.02	0.18	0.4	5	73	4	3.4	0.2	0.1	29	6.7	4.0	1.5	1.17	0.11	0.04	0.18	n.a.
75-115	6.5	5.8	0	0.02	0.13	0.2	4	74	2	2.2	0.1	0.2	67	0.4	0.9	1.8	1.31	0.23	0.05	0.16	n.a.
115-135	7.4	7.0	1.1	0.15	0.29	0.5	4	131	20	6.6	0.4	0.2	127	0.4	24.4	19.3	15.6	2.97	0.39	0.32	2.0

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, the sum of cations).