

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 mapsheet: | 7022-3 (Schank) |
| | Hundred: | Benara | Easting: | 463790 |
| | Section: | 340 | Northing: | 5820030 |
| | Sampling date: | 28/09/2004 | Annual rainfall: | 760 mm average |

Crest of low stranded beach ridge.

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.
- Waterholding capacity:** Large amounts of impervious flinty gravel reduce available waterholding 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).

Further information: [DEWNR Soil and Land Program](#)

