

# RAM Ramsay Land System

A land system dominated by rising ground consisting of elevated plains, a few rises, and a few depressions

**Area:** 44.4 km<sup>2</sup>

**Landscape:** Elevated plains, with a few rises and depressions. The system is underlain at depth by Cambrian to Permian age sediments (Crawford, A.R., 1965). However, the area is dominated by shallow soils underlain by calcrete. In the few areas where calcrete does not occur, soils overlie clayey to clay loamy sediments. A few areas have soils formed in calcareous loess. To the west of the system is a stony valley, to the east is higher elevation land, and to the north and south are landscapes dominated by 'sand over clay' soils – consequently surface textures in this system are sandier in the very north and in the south.

**Annual rainfall:** 414 - 450 mm average

**Main soils:**

- B2** *shallow calcareous loam on calcrete*
- B3** *shallow loam on calcrete*
- D3** *loam over clay*
- B6** *shallow loam over clay on calcrete*

**Minor soils:**

- G4** *sand over clay*
- B7** *shallow sand over clay on calcrete*
- A5-A4** *calcareous loam*
- A6** *gradational calcareous clay loam*

**Main features:** This land system is mostly arable; however, significant areas of non arable stony land occur. The presence of calcrete at shallow depth, and the hard carbonate rubble in many soils limit profile water holding capacity and hence productive potential. Surface stones also interfere with many farming practices. Many soils have hardsetting surfaces, and hard subsoils which can be dispersive. Dispersive subsoils limit potential root exploration, and restrict internal drainage which can lead to seasonal waterlogging.

Loamy surfaces are the most common, but sandy and clay loamy surfaces also occur. The most common soils are shallow soils on calcrete.

Saline seepage affects some areas, especially depressions, where raised subsoil salinity levels result.

Where calcareous soils occur, they restrict the availability of certain nutrients: deficiencies of the major nutrient phosphorus and the trace element zinc are common, while deficiencies of the trace elements manganese and iron are possible. Temporary trace element deficiencies can occur in cold and wet conditions with susceptible crops. This is particularly true for soils with highly calcareous surfaces.

Where they occur, sandy topsoils are particularly prone to wind erosion, so care needs to be taken with surface management in these areas to minimise the risk of wind erosion.



**Soil Landscape Unit summary:** Ramsay Land System (RAM)

SLU	% of area	Main features
HFO HFK	0.2 30.3	Land dominated by loamy soils formed in clayey sediments. Main soils: <i>loam over red clay D3</i> grading to <i>sand over clay G4</i> , with some <i>shallow loam over clay on calcrete B6</i> grading to <i>shallow sand over clay on calcrete B7</i> . <b>HFO</b> – depression (slopes <1%). <b>HFK</b> – elevated gently undulating plain/rise with some drainage lows/drainage depressions (slopes 0-1.5%).
HVA	0.7	Land dominated by loamy soils formed in clayey sediments. Main soils: <i>loam over clay D3</i> grading to <i>shallow loam over clay on calcrete B6</i> . With some <i>gradational calcareous clay loam A6</i> , and some <i>shallow calcareous loam on calcrete B2</i> . <b>HVA</b> – low lying plains (slopes 0-1%).
IYO	1.1	Land dominated by calcareous soils formed in clayey sediments. Main soils: <i>gradational calcareous clay loam A6</i> grading to <i>loam over red clay D3</i> and <i>shallow loam over clay on calcrete B6</i> . <b>IYO</b> – depression (slopes <1%).
QKB	0.3	Land dominated by shallow calcareous soil on calcrete. Main soils: <i>shallow calcareous loam on calcrete B2</i> . Possibly with some <i>calcareous loam A4</i> . <b>QKB</b> – stony rise (slopes 0-1.5%)
QRA QRB QRBk QRO	27.6 5.7 1.6 0.6	Land dominated by shallow soil on calcrete. Main soils: <i>shallow calcareous loam on calcrete B2</i> grading to <i>shallow loam on calcrete B3</i> . There are minor areas of <i>calcareous loam A4</i> in places. <b>QRA</b> – elevated gently undulating plain/rise (slopes 0-1.5%): approximately 10% non arable stony land. <b>QRB</b> – stony rises (slopes 0-2.5%): mostly non arable stony land. With some <i>shallow loam over clay on calcrete B6</i> grading to <i>shallow sand over clay on calcrete B7</i> . <b>QRBk</b> – slopes (slopes 0.5-2%). <b>QRO</b> –depression with marginal salinity (slopes <1%).
QTA	20.1	Land dominated by shallow soil on calcrete. Main soils: <i>shallow calcareous loam on calcrete B2</i> , grading to some <i>shallow loam on calcrete B3</i> . Also with some <i>calcareous loam A4-A5</i> . <b>QTA</b> – elevated gently undulating plain/rise and some lower slopes (slopes 0-2%).
RRA RRB	4.6 5.0	Land dominated by shallow soil on calcrete. Main soils: <i>sand over clay on calcrete B7</i> grading to <i>shallow loam over clay on calcrete B6</i> . <b>RRA</b> – rise surface (slopes 0-1%). <b>RRB</b> – slopes (0-2.5%).
ShB	2.3	Land dominated by loamy soils formed in rubbly calcareous loess. Main soils: <i>rubbly calcareous loam A4</i> , with some <i>shallow calcareous loam on calcrete B2</i> grading to <i>shallow loam on calcrete B3</i> . <b>ShB</b> – rise with a few vague drainage lows (slopes 0-2%).



**Detailed soil profile descriptions:****Main soils:**

- B2** *shallow calcareous loam on calcrete* [Petrocalcic Calcarosol]  
Grey brown to brown calcareous loamy or occasionally clay loamy soil, with calcrete at shallow to very shallow depth. Surfaces are often hardsetting. Profiles often contain abundant hard carbonate rubble.
- B3** *shallow loam on calcrete* [Petrocalcic Tenosol]  
Red to red brown loam, with calcrete at very shallow to shallow depth. Surfaces are hardsetting. Profiles often contain abundant hard carbonate rubble. Typically found in slightly low lying areas.
- D3** *loam over clay* [Sodic-Effervescent Hypercalcic-Lithocalcic Red Sodosol]  
Medium thickness to thin loamy to clay loam topsoil overlying red to red brown clayey subsoil which grades to highly calcareous clay. Surfaces are often hardsetting. Profiles can be calcareous throughout, and often contain hard carbonate rubble. Subsoils are dispersive. Often found in depressions.
- B6** *shallow loam over clay on calcrete* [Petrocalcic Red-Brown Sodosol]  
Medium thickness to thin loamy to clay loam topsoil overlying red to brown clayey subsoil. This is underlain by calcrete at shallow depth. Profiles often contain abundant hard carbonate rubble. Surfaces are often hardsetting, and subsoils are typically dispersive. Profiles can be calcareous throughout. Often found in depressions.

**Minor soils:**

- G4** *sand over clay* [Hypercalcic-Lithocalcic Red-Brown Sodosol]  
Medium thickness sandy to light sandy loam topsoil overlying red to brown clayey subsoil which grades to highly calcareous clay. Profiles can contain hard carbonate rubble. Subsoils can be coarsely structured, and are dispersive. The sandy topsoils are often water repellent.
- B7** *shallow sand over clay on calcrete* [Petrocalcic Red-Brown Sodosol]  
Medium thickness to thin sandy to light sandy loam topsoil overlying red to brown clayey subsoil, which is underlain by calcrete at shallow depth. Profiles often contain hard carbonate rubble. Subsoils are dispersive. The sandy topsoils are often water repellent.
- A5-A4** *calcareous loam* [Regolithic Hypercalcic-Lithocalcic Calcarosol]  
Grey brown medium thickness calcareous loam, or possibly clay loam, grading to loamy to light clayey subsoil with abundant fine carbonate. Profiles often contain hard carbonate rubble, and can be underlain by clayey sediments (soil **A5**). Subsoils are usually strongly alkaline and dispersive. Typically found on rises.
- A6** *gradational calcareous clay loam* [Pedal Hypercalcic-Lithocalcic Calcarosol]  
Calcareous grey brown to brown medium thickness loam to clay loam grading to clayey subsoil with abundant fine carbonate. Fine carbonate content increases with depth. Subsoils are dispersive. Profiles can include hard carbonate rubble. Typically found in depressions. These grade to **D3** soils.

**References:** Crawford, A.R. (1965). 'The Geology of Yorke Peninsula'. *Bull. geol. Surv. S. Aust.*, 39.

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

