

# MAT Maitland Ridge Land System

Crests and east-facing slopes, forming a ridge adjacent to the Yorke Valley depression. This system forms part of the western section of the Yorke Peninsula central highlands zone.

**Area:** 11.2 km<sup>2</sup>

**Landscape:** Crests and east-facing slopes forming a relatively narrow ridge oriented roughly northeast-southwest (following the Urania-Maitland-Arthurton faultline). To the east is the Yorke Valley tectonic depression area, and to the west are slopes and elevated plains. The system is underlain by Proterozoic age rocks. Older metamorphosed pre-Adelaidean rock (eg gneiss) underlie the majority of the system, while some of the southern part of the system is underlain by younger Adelaide System 'shield Proterozoic' (Crawford, A.R., 1965) red sandstone. Many soils, particularly in the centre and north of the system, are formed in highly weathered rock; with saprolitic materials found at the base of many profiles. Clayey subsoils occur in such soils. Accessions of wind-deposited carbonate dust have infused into profiles, and hard carbonate rubble and/or calcrete are found in many soils. The southern part of the system in particular, is blanketed by calcrete overlain by shallow soils.

**Annual rainfall:** 415 – 480 mm average

**Main soils:**

<b>D1-C2-D2-C3</b>	<i>clay loam to loam over red clay</i>
<b>B2</b>	<i>shallow calcareous clay loam on calcrete</i>
<b>A2-A4</b>	<i>calcareous loam</i>

**Minor soils:** **B6** *shallow loam over clay on calcrete*

**Main features:** The system is mostly arable, however, a few slopes are too steep, and a few patches too stony to be cropped. The most common soils are clay loams overlying red clay, and shallow calcareous clay loams on calcrete. Shallow soils, and soils with abundant hard carbonate rubble have reduced effective water holding capacities, and hence reduced production potentials. Also, surface stones can interfere with some farming operations.

Soils on sloping land have potential for water erosion. This is particularly the case in drainage ways where water-flow can concentrate. It is likely some surface soil erosion has occurred since clearing and settlement.

Toxic accumulations of boron and sodium were not found to be a significant issue within most soil profiles. Levels can be high in subsoils on lower slopes. Also levels are often high in unconsolidated substrate sediments.

Although most soils in this system are relatively fertile, calcareous soils 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 the case for soils with highly calcareous surfaces.



**Soil Landscape Unit summary:** Maitland Ridge Land System (MAT)

SLU	% of area	Main features
EIB EIC	15.4 13.1	<p>Land dominated by soils formed in saprolitic sediments.</p> <p>Main soils: <i>calcareous loam A2</i> largely overlying saprolitic sediments, and typically containing abundant carbonate rubble, and extensive areas of <i>shallow calcareous clay loam on calcrete B2</i>. With some <i>clay loam over red clay D1-C2-D2-C3</i> in lows, mostly overlying saprolitic sediments, but with some deeper variants overlying clayey sediments on the crest area.</p> <p>EIB – crest with many lows (slopes 0-2%). EIC – slopes with drainage ways (slopes 5-12%).</p>
EGB EGC EGCc	4.6 12.8 14.5	<p>Land dominated by soils formed in saprolitic sediments.</p> <p>Main soils: <i>clay loam to loam over red clay D1-C2</i> overlying saprolitic sediments with subsoils as lightly textured as light clay, which grade to <i>gradational calcareous clay loams A6</i>. With some <i>shallow calcareous clay loam on calcrete B2</i> grading to <i>shallow loam over clay on calcrete B6</i>, and <i>calcareous loam A2-A4</i> often overlying saprolitic sediments.</p> <p>EGB – slopes (slopes 1-3.5%). EGC – slopes with drainage ways (slopes 2-10%). EGCc – slopes with contour banks (2-10%).</p>
QHD QHH QHZ	2.0 2.2 3.4	<p>Land dominated by shallow calcareous soils underlain by calcrete.</p> <p>Main soils: <i>shallow calcareous clay loam on calcrete B2</i>.</p> <p>QHD – non arable slopes (slopes 6-18%). QHH – drainage area: a minor creek gully and adjacent slopes (slopes 2-5%). QHZ – rise surface (slopes 0-2.5%).</p>
QKC	11.0	<p>Land dominated by shallow calcareous soils underlain by calcrete.</p> <p>Main soils: <i>shallow calcareous clay loam on calcrete B2</i>. With limited to common areas of <i>calcareous loam A4</i>.</p> <p>QKC – slopes (slopes 2-8%).</p>
QXB QXC QXCg	10.6 4.6 5.6	<p>Land dominated by shallow calcareous soils underlain by calcrete.</p> <p>Main soils: <i>shallow calcareous clay loam on calcrete B2</i>. With limited to common areas of <i>loam to clay loam over red clay to clay loam D1-C2</i> grading to <i>shallow loam over clay on calcrete B6</i>.</p> <p>QXB – crest (slopes 0-3%). QXC – lower slopes (slopes 2-8%). QXCg – slopes with drainage lines and contour banks (slopes 2-9%).</p>



**Detailed soil profile descriptions:****Main soils:****D1-C2-D2-C3** *clay loam to loam over red clay*

[Haplic-Effervescent-Sodic Hypercalcic Red Chromosol-Dermosol-Kandosol-Calcarosol]

Red brown to brown medium thickness to thin clay loam, or sometimes loam topsoil, overlying red to red brown clayey subsoil with a very highly calcareous base (subsoils can be as lightly textured as light clay). This grades to reddish yellow to pink, silty light clay to sandy loam, saprolitic sediments with abundant fine carbonate; or clayey sediments, particularly in crest areas. These substrate sediments are typically dispersive. Topsoils are often calcareous: as soils become more calcareous these soils grade to Calcarosols (soil **A6**).

**B2** *shallow calcareous clay loam on calcrete*

[Petrocalcic Calcarosol]

Brown to grey brown calcareous clay loam to loam overlying calcrete at very shallow to shallow depth. Subsoils are brown to red brown. The calcrete layer can be relatively thin (eg 10-20cm). This is typically underlain by highly calcareous sandy loam to clay loam saprolitic sediments; or sometimes weathered rock (eg red sandstone), particularly on crests. Profiles can contain abundant hard carbonate rubble, and sometimes rock fragments (which can be incorporated in calcrete layers). Some profiles are very shallow and rubbly.

**A2-A4** *calcareous loam*

[Paralithic-Regolith Hypercalcic-Lithocalcic Calcarosol]

Highly calcareous to calcareous soils. Topsoils are grey brown to brown clay loams and loams. Shallow variants typically have abundant hard carbonate rubble and overlie highly calcareous saprolitic sediments, weathered rock, or rock. Moderate depth to deep variants have loamy to light clayey subsoils which grade to highly calcareous loamy to clay loamy saprolitic sediments, calcareous loess, or clayey sediments. **A2** types have rocky to saprolitic substrates.

**Minor soils:****B6** *shallow loam over clay on calcrete*

[Effervescent-Sodic Petrocalcic Brown-Red Chromosol]

Brown medium thickness loamy topsoil overlying brown to red brown clayey subsoil. This is underlain by a calcrete layer which is typically relatively thin (eg 10 - 20 cm). Below the calcrete are highly calcareous sandy loam loess sediments, which are underlain by clayey sediments at depth (Hindmarsh Clay equivalent). Topsoils are often calcareous. Found on lower slopes.

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

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

