ARH Arthurton Highlands Land System

Summit surfaces, slopes, rises and low hills. A highland area which includes the highest elevation on the Yorke Peninsula (approximately 240 m). This system forms a northerly part of the Yorke Peninsula central highlands zone.

Area: 31.6 km^2

Landscape: Summit surfaces, slopes, rises and low hills. A highland area which includes the highest elevation on the Yorke Peninsula 240 m. This high point is situated on the crest of a low hill approximately 2.5k m northeast of Arthurton.

The system is underlain by pre-Adelaidean Proterozoic age, relatively coarse-grained and resistant, metamorphic rocks. Saprolitic materials are found at the base of many profiles. Texture contrast soil profiles have formed in these sediments. Weathered rock and rock fragments are found in and on many soils.

Accessions of wind-deposited carbonate dust have infused into profiles. Hard carbonate rubble and/or calcrete are found in many soils. Wind-deposited calcareous loess (Woorinen Formation) overlies older sediments in places.

Annual rainfall: 420 – 475 mm average

Main soils:

D3	Loam over poorly structured red clay (around 44% of area)
A4-A2	Rubbly calcareous loam (around 29% of area)
B6	Shallow loam over red clay on calcrete (around 25% of area)

Minor soils:

A6	Gradational calcareous clay loam (less than 1% of area)

Main features: The system is mostly arable. The most common soils are loams overlying clayey subsoil overlying saprolitic sediments. Many soils contain hard carbonate rubble and/or calcrete, and some rock fragments. Such soils have reduced effective water holding capacities, and hence reduced production potentials. Also, surface stones can interfere with some farming operations.

The texture contrast profiles in this system are particularly prone to water erosion. Poorly structured clayey subsoils at very shallow depth allow ready erosion of unprotected loamy topsoils. It is likely that there has been significant topsoil erosion since clearing and settlement.

Toxic accumulations of boron and sodium often occur in substrates. Toxic elements especially occur where a underlying layers restrict leaching.

Where they occur, 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 in the highly calcareous deep to moderate depth calcareous loams.

Soil Landscape Unit summary: Arthurton Highlands Land System (ARH)

SLU	% of area	Main features
HVB HVC HVCc HVD HVDc HVZ	46.3 43.8 1.2 4.5 1.9 2.2	Land dominated by texture contrast soils, mostly formed in saprolitic sediments. Main soils: often calcareous, *loam over poorly structured red clay* **D3**, including some overlying weathered rock on the steepest landscapes (soil **D7**). With limited to extensive areas of *shallow loam over red clay on calcrete* **B6** possibly with some *shallow calcareous loam on calcrete* **B2**. And limited to common areas of *rubbly calcareous loam* **A4**-**A2**, including some *gradational calcareous clay loam* **A6** in low lying areas. **HVB** – summit surfaces and upper to mid slopes with drainage lows (slopes 0 - 2.5%). **HVC** – slopes with drainage lines and a few drainage depressions (slopes mostly 3 - 8% but up to 12%). **HVCc** – rises and upper slopes with drainage lows and contour banks (slopes 2.5 - 8%). **HVD** – semi arable slopes: summit surfaces and upper slopes with a few drainage lines (slopes 5 - 20%). **HVDc** – semi arable slopes with a few drainage lines and contour banks (slopes 5 - 15%). **HVZ** – summit surfaces (slopes 0 - 1%).

Detailed soil profile descriptions:

Main soils:

D3 *Loam over poorly structured red clay*
[Sodic-Effervescent Hypercalcic-Supracalcic-Lithocalcic Red Chromosol]
Red brown to brown thin to medium thickness loamy topsoil overlying red to red brown clayey subsoil, grading to clayey to loamy saprolitic sediments with abundant fine carbonate and often including hard carbonate rubble. Upper subsoils typically have coarse prismatic structure. Topsoils can be calcareous. Weathered rock and rock fragments may occur in the profile or on the soil surface.

A4-**A2** *Rubbly calcareous loam* [Regolithic-Paralithic Hypercalcic-Lithocalcic Calcarosol]
Grey brown to brown medium thickness calcareous loamy to clay loamy topsoil grading to loamy to light clayey subsoil with abundant fine carbonate. Profiles often contain abundant carbonate rubble. Profiles are underlain by substrates of saprolitic sediments or weathered rock with abundant fine carbonate **A2**, or calcareous loess **A4**.

B6 *Shallow loam over red clay on calcrete* [Effervescent-Sodic Petrocalcic Red Chromosol]
Red brown to brown thin to medium thickness loamy topsoil overlying red to red brown clayey subsoil. Lower subsoil layers typically contain abundant hard carbonate rubble. Under this is a relatively thin calcrete layer (typically 10-30cm) which overlies saprolitic sediments or weathered rock with abundant fine carbonate. Subsoils have coarse or massive structure. Topsoils are often calcareous. Weathered rock and rock fragments may occur in the profile or on the soil surface.

Minor soils

A6 *Gradational calcareous clay loam*
Medium thickness calcareous brown clay loamy to light clayey topsoil grading to a brown or yellowish clayey subsoil with abundant fine carbonate. Underlain saprolitic sediments. Typically found in drainage depressions.

Further information: DEWNR Soil and Land Program