

# WOB Wool Bay Land System

Stony coastal plains on the lower east coast of Yorke Peninsula

**Area:** 259.5 km<sup>2</sup>

**Landscape:** Coastal plains with some depressions and some slight rises. Slopes are mostly slight: between 0% and 1.5%. Calcrete underlies the vast majority of soils at shallow depth. In some depression areas the calcrete has been 'dissolved' and deeper soils with clayey subsoils occur. Deeper loamy to clay loamy calcareous soils occur on some slight rises. It is likely that most of this area is underlain by blocky structured clayey sediments (Blanchetown Clay equivalent), which restricts deep drainage. A saline water table is not far below the surface, especially in depression areas, due to the relatively low elevation of this land system. However, surface expression of salinity is limited to some marginal salinity in some depression areas. Coastal slopes and low cliffs bound the sea coast.

**Annual rainfall:** 400 – 435 mm average

**Main soils:** **B2-B1** *Shallow calcareous loam on calcrete*  
**B3** *Shallow loam on calcrete*

**Minor soils:** **A4-A5-A1** *Calcareous loams*  
**A6-C4-D3** *Deep loam or clay loam over clay or clay loam*

**Main features:** A significant proportion of the land system is non arable due to very stony and very shallow soils. Surface soils are mostly loamy or sometimes clay loamy. Subsoils are mostly loamy to light clayey. Fine carbonate accumulations typically occur below the calcrete layer. Many soils are calcareous throughout. Those soils which are not calcareous throughout typically have alkaline surface soils. Agricultural use is mainly restricted by shallow and stony soils which limit plant available moisture storage, hard carbonate fragments which interfere with many farming practices, and raised salinity levels where relatively shallow saline watertables occur. Calcrete can be ripped for high value horticultural crops, however, this may not greatly increase rooting depth and plant available moisture, as the calcrete is mostly underlain by very highly calcareous sediments which are often clayey, have very high pH, high sodium and boron levels, and raised salinity levels. Calcareous soils have a reduced availabilities of certain nutrients; in particular phosphorus, zinc and manganese.

## Soil Landscape Unit summary: Wool Bay Land System (WOB)

SLU	% of area	Main features #
<i>Mostly non calcareous soils, often with some calcareous soils</i>		
RJA	28.7	Dominantly non-calcareous shallow and very shallow soils on calcrete.
RJA1	4.6	Main soils: <i>shallow loam to clay loam on calcrete</i> (soil <b>B3</b> ). Minor to limited areas of <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ). Minor areas of loam over clay in depression areas (soil <b>B6-D3</b> )
RJB1	0.4	
RJE	1.8	
		<b>RJA</b> – mostly arable plains (slopes 0-1.5%, 4r, 1-2s). <b>RJA1</b> – non arable plains, often slightly raised: very shallow soils dominate (slopes <1%, 5r, 1-2s). <b>RJB1</b> – mostly non arable slight slopes and rises (slopes 5-4r, 2-1s). <b>RJE</b> – semi-arable depressions (slopes 0-1.5%, 4-5r, 2s, 2-1w).



RKA RKE	2.1 1.6	Dominantly non-calcareous shallow soils on calcrete, with deeper soils. Main soils: <i>shallow loam on calcrete</i> (soil <b>B3</b> with some <b>B6</b> ). Limited to extensive areas of <i>loam over poorly structured clay or clay loam</i> (soil <b>D3-C4</b> ). Minor to limited areas of <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ). <b>RKA</b> – arable plains, often somewhat low lying (slopes 0-1.5%, 2-3r, 2-1s). <b>RKE</b> – mostly arable depressions (slopes <1%, 2w, 2-3r, 2s).
RSK	0.4	Dominantly non-calcareous texture contrast soils on calcrete. Main soils: <i>shallow sandy loam to loamy sand over clay to clay loam on calcrete</i> (soil <b>B6-B3-B7</b> ). Minor to common areas of <i>sandy loam to loamy sand over poorly structured clay or clay loam</i> (soil <b>D3-G4</b> ). Minor to limited areas of <i>shallow sandy loam on calcrete</i> (soil <b>B3-B2</b> ). <b>RSK</b> – mostly arable slight slopes / slight rises with some saline seepage (slopes 0.5-2%, 1-2e, 3-4r, 2-3s).
<i>Mixed calcareous and non calcareous soils</i>		
QnA	0.3	Calcareous and non-calcareous shallow soils on calcrete. Main soils: <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ) and extensive areas of <i>shallow loam on calcrete</i> (soil <b>B3</b> ). Minor areas of <i>deep rubbly calcareous loam</i> (soil <b>A4</b> ). <b>QnA</b> – mostly arable coastal plains (slopes <1%, 3-4r, 1-2s).
QoK	0.2	Calcareous and non-calcareous shallow soils on calcrete, with some deeper soils. Main soils: <i>shallow calcareous sandy loam on calcrete</i> (soil <b>B2</b> ) and common to extensive areas of <i>shallow sandy loam on calcrete</i> (soil <b>B3</b> ). Minor to common areas of <i>sandy loam over poorly structured clay</i> (soil <b>D3-A6</b> ). Minor to limited areas of <i>shallow sandy loam over clay to clay loam on calcrete</i> (soil <b>B6-B3</b> ). <b>QoK</b> – slight slopes / slight rises with some saline seepage (slopes 0-1.5%, 1e, 3-4r, 2-3s).
<i>Mostly calcareous soils, often with some non calcareous soils</i>		
QRA QRA1 QRK QRK1 QRH QRI	7.4 2.7 0.8 0.6 0.3 0.2	Mostly shallow and very shallow calcareous soils on calcrete. Main soils: <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ). Limited to common areas of <i>shallow loam on calcrete</i> (soil <b>B3</b> ). Minor to limited areas of <i>deep rubbly calcareous loam</i> (soil <b>A4</b> ) in arable land units. <b>QRA</b> – mostly arable plains (slopes 0-1.5%, 4-3r, 1-2s). <b>QRA1</b> – non arable plains, often slightly raised (slopes 0-1.5%, 5r, 1-2s): very shallow soils dominate. <b>QRK</b> – mostly arable somewhat low lying plains with some saline seepage (slopes <1%, 4-3r, 2-3s). <b>QRK1</b> – non-arable slight rises with some saline seepage (slopes 0-1.5%, 5r, 2-3s). <b>QRH</b> – semi arable coastal slopes and waterways (slopes 4-20%, 3-4e, 4r, 2s, 3-2g). <b>QRI</b> – mostly non arable coastal slopes and eroded gullies (slopes mostly 10-30% but up to 100% in the steeper gullies, 5-4-7e, 4r, 2s, 4-5g).
QTA QTK QTKs QTBg QTH	7.0 0.03 0.5 0.2 0.04	Mostly shallow calcareous soils on calcrete, with some deeper soils. Main soils: <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ). Limited to common areas of <i>shallow loam on calcrete</i> (soil <b>B3</b> ). Minor to common areas of <i>deep calcareous loam</i> (soil <b>A4</b> ). <b>QTA</b> – mostly arable plains / slight rises (slopes <1%, 3r, 1-2s). <b>QTK</b> – mostly arable low lying plains / slight depressions with some saline seepage (slopes 0-1.5%, 3r, 2-3s). <b>QTKs</b> – mostly arable relatively low lying coastal plains with some saline seepage (slopes <1%, 3r, 3s). <b>QTBg</b> – mostly arable slopes with waterways (slopes 1-2.5%, 2-1e 3r, 2s). <b>QTH</b> – semi arable eroded drainage line and adjacent slopes (slopes 1-5%, 3-2e, 3r, 2s, 3-2g).
QXE QXO	1.4 1.6	Mostly shallow calcareous soils on calcrete, with some deeper soils. Main soils: <i>shallow calcareous loam or clay loam on calcrete</i> (soil <b>B2</b> ) and minor to common areas of <i>shallow loam or clay loam on calcrete</i> (soil <b>B3</b> ). Minor to extensive areas of <i>gradational calcareous clay loam</i> (soil <b>A6-C4</b> ) and minor to limited areas of <i>deep calcareous loam</i> (soil <b>A5-A4</b> ). <b>QXE</b> – mostly arable low lying plains / depressions (slopes <1%, 4-3r, 2-1s, 2-1w). <b>QXO</b> – semi-arable to arable depressions (slopes <1%, 4-3r, 3s <sup>o</sup> , 2-1w).



<i>Dominantly calcareous soils</i>		
QHA	4.8	Dominantly shallow and very shallow calcareous soils on calcrete.
QHA1	1.4	Main soils: <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ).
QHK	2.2	<b>QHA</b> – mostly arable plains (slopes <1%, 4-3r, 1-2s).
QHK1	0.05	<b>QHA1</b> – non arable to semi arable plains, often slightly raised (slopes <1%, 5-4r, 1s). <b>QHK</b> – mostly arable somewhat low lying plains with some saline seepage (slopes 0-1.5%, <b>QHK1</b> – non arable to semi arable plains with some saline seepage (slopes <1%, 5-4r, 2-3s).
QJA	15.5	Mostly shallow calcareous soils on calcrete, with some deeper rubbly soils. Main soils: <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ). Minor to common areas of <i>deep rubbly calcareous loam</i> (soil <b>A4</b> ). <b>QJA</b> – arable slight rises (slopes 0-2.0%, 3-4r, 1s, 1e).
QLA	6.0	Mostly shallow calcareous soils on calcrete, with some deeper soils.
QLK	0.7	Main soils: <i>shallow calcareous loam on calcrete</i> (soil <b>B2</b> ). Limited to common areas of <i>deep calcareous loam</i> (soil <b>A4</b> ). <b>QLA</b> – mostly arable plains (slopes <1%, 3-4r, 1-2s). <b>QLK</b> – semi-arable to arable low lying plains with some saline seepage (slopes <1%, 3r, 3-2s).
<i>Dominantly calcareous to highly calcareous soils</i>		
QEA	5.0	Mostly shallow calcareous to highly calcareous soils, with some deeper rubbly soils.
QEA1	0.2	Main soils: <i>shallow calcareous to highly calcareous loam on calcrete</i> (soil <b>B2-B1</b> ). Minor to
QEB	0.3	common areas of <i>deep rubbly calcareous to highly calcareous loam</i> (soil <b>A4-A1</b> ).
QEB1	0.05	<b>QEA</b> – mostly arable gently undulating rises (slopes 0-1.5%, 4-5r, 1-2s). About 5% non arable
QEK1	0.1	rocky outcrops.
QEO	0.1	<b>QEA1</b> – non arable plains and slight slopes, usually slightly raised (slopes 0-1.5%, 5r, 1-2s). <b>QEB</b> – mostly arable slopes (slopes 1-3%, 4-3r, 1-2s, 2-1e). <b>QEB1</b> – non arable slopes (slopes 1-3%, 5r, 1-2s, 2-1e). <b>QEK1</b> – non arable flats (slopes <1%, 5r, 2-3s). <b>QEO</b> – mostly arable depression with some saline seepage (slopes <1%, 3r, 3s°): less shallow soils than the other <b>QE*</b> soil landscape units.
<i>Depressions with extensive areas of soils with clayey subsoils</i>		
IJO	0.05	Mostly calcareous soils with clayey subsoils. Main soils: <i>gradational calcareous clay loam</i> (soil <b>A6</b> ). With limited to extensive areas of <i>shallow loam or clay loam on calcrete</i> (soil <b>B2</b> possibly with some <b>B3</b> ) and minor to limited areas of <i>deep rubbly calcareous loam</i> (soil <b>A5</b> ). <b>IJO</b> – mostly arable depression with some saline seepage (slopes <1%, 2-3w, 3-2r, 3-2s).
<i>Coastal landscapes</i>		
WFE	0.1	Cliff top coastal dunes. Main soils: calcareous or shelly sand dunes overlying calcrete (soil <b>H1-H2</b> and <b>B1-B2</b> ). <b>WFE</b> – very low coastal dunes (5-4a, 2r).
WT-	0.2	Tidal flats
<i>Saline land</i>		
ZA-	0.01	Saline depression (7-5s, 5-7w). Situated at boundary with 'sand over clay' country.
<i>Quarries</i>		
-Q-	0.4	Kleins Point quarry

# Classes in the 'Soil Landscape Unit summary' table (eg. 2-1e, 3w, 2y, etc) describe the predominant soil and land conditions, and their range, found in Soil Landscape Units. The number '1' reflects minimal limitation, while increasing numbers reflect increasing limitation. Letters correspond to the type of attribute:

a - wind erosion      e - water erosion      f - flooding      g - gullyng  
r - surface rockiness      s - salinity      w - waterlogging      y - exposure



## Detailed soil profile descriptions:

### Main soils:

- B2-B1** *Shallow calcareous loam on calcrete* [Petrocalcic Tenosol-Sodosol]  
Shallow to very shallow rubbly soils on calcrete. Surface soil texture is usually loam, sometimes sandy loam, or occasionally clay loam or loamy sand. Surface soils often have a weak granular structure and are grey or brown. Very shallow soils typically have no distinct subsoil. Where subsoils occur, textures are clay loam, loam, or less often, sandy loam. Clay loamy subsoils are usually sodic and dispersive. Subsoils typically contain accumulations of hard carbonate rubble. Soils are calcareous throughout and are typically moderately to highly calcareous. A few soils in the south of the system are very highly calcareous (soil **B1**). An accumulation of fine carbonate occurs in the clay loamy to light clayey substrate below the calcrete, and this often grades to a blocky red clay. Conditions in the substrate are usually unsuitable for root growth, as pH is very high, boron and sodium levels are high, and salinity levels are raised.
- B3** *Shallow loam on calcrete* [Petrocalcic Calcarosol]  
Shallow to very shallow rubbly soils on calcrete. Surface soil texture is usually loam, sometimes clay loam, or occasionally sandy loam. Surface soils can have a weak granular structure and are red-brown or brown. Very shallow soils typically have no distinct subsoil. Where subsoils occur, textures are usually clay loam and sometimes loam. Clay loamy subsoils are usually sodic and dispersive. Subsoils typically contain accumulations of hard carbonate rubble. An accumulation of fine carbonate occurs in the clay loamy to light clayey substrate below the calcrete, and this usually grades to a blocky red clay. Conditions in the substrate are usually unsuitable for root growth, as pH is very high, boron and sodium levels are high, and salinity levels are raised.

### Minor soils:

- A4-A5-A1** *Calcareous loams* [Hypercalcic-Lithocalcic Calcarosol]  
These are moderately deep to deep soils with calcareous grey loamy topsoils (or occasionally loamy sand or clay loam) which grade to highly calcareous clay loams, light clays, or occasionally sandy loam. There is often an accumulation of hard carbonate rubble in the profile; some are very rubbly. Profiles are usually deep and well drained (soil **A4**), and are typically found on rises. Some profiles (soil **A5**), typically found in depressions, are underlain by a clayey substrate within 120 cm of the soil surface, restricting drainage and increasing the likelihood of toxic levels of boron and sodium in the subsoil. Some profiles in the south of the system are very highly calcareous (soil **A1**). **A4** and **A1** soils are intimately associated with shallow soils on calcrete. **A5** soils are associated with deep soils with clay loamy and clayey subsoils and shallow soils on calcrete.
- A6-C4-D3** *Deep loam or clay loam over clay or clay loam*  
[Hypercalcic Calcarosol, Red Dermosol-Kandosol and Red Sodosol-Chromosol]  
These are moderately deep to deep soils with red-brown, brown or grey loamy to clay loamy surface soil, and red-brown, red, brown or grey clay loamy to clayey subsoil. They are usually found in low lying areas where the calcrete has been 'dissolved'. **A6** soils are gradational, calcareous throughout, and have clayey subsoils which are sodic. **C4** and **D3** soils have non calcareous surface soils, an accumulation of fine carbonate in the subsoil which are often sodic. **C4** soils are gradational, while **D3** soils have are texture contrast with a distinct break between topsoil and subsoil. All these soils are characterised by high to moderate waterholding capacities, somewhat restricted drainage, and the likelihood of high levels of boron and sodium in the subsoil or lower subsoil.

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

