

# PIK Pink Lagoon Land System

A low lying drainage area which is dominated by 'sand over clay' soils. Landscapes consist of low lying plains, low stony rises, 'sand over clay' dunes, saline drainage areas, salt lakes, and drainage depressions.

**Area:** 41.4 km<sup>2</sup>

**Landscape:** A low lying drainage area which is dominated by 'sand over clay' soils. Landscapes consist of low lying plains, low stony rises, 'sand over clay' dunes, saline drainage areas, salt lakes, and drainage depressions. This land system is mostly underlain at depth by Permian age sediments associated with glacial activity (Crawford, A.R., 1965). Soils in this system are either underlain by unconsolidated clayey to clay loamy sediments, which probably grade to sandy sediments, or a calcrete layer. The majority of calcrete is remnant dune core material. In the very northwest, there is an area overlain by calcareous loess. Accessions of wind-deposited carbonate dust have infused into profiles in relatively recent geological times: most profiles have calcareous lower subsoils. Numerous drainage depressions feed into the system from the west. These connect to salinised drainage areas and salt lakes. One large salt lake occurs in the central-north of the system, and a series of old lunettes are situated to the east of the lake. This system is composed of similar soils and landscapes to the adjoining Stansbury Scrub 'sand over clay' area.

**Annual rainfall:** 405 – 445 mm average

**Main soils:** **B7** *shallow sand over clay on calcrete*  
**G4** *sand over clay*

**Minor soils:** **N2** *saline soil*  
**B3** *shallow loam on calcrete*  
**A4-A5** *calcareous loam*

**Main features:** The land system has arable, semi arable, and non-arable areas. The salt lakes and highly saline land is non arable, as is some land with very stony and shallow soils; while dunes with thick topsoil sands, low lying marginally saline areas, and stony low rises, are semi arable. Many arable areas are affected by saline seepage, resulting in raised subsoil salinity levels. Flooding is a risk in drainage depressions and other low lying areas. The most common soils are texture contrast soils with sandy to loamy topsoil. Many of these soils are underlain by calcrete at shallow depth. The presence of calcrete and/or hard carbonate rubble, limits profile waterholding capacity and hence productive potential. Surface stones also interfere with many farming practices.

Most soils have dispersive clayey to clay loamy subsoils, and these are often coarsely structured. Such subsoils restrict soil internal drainage and can lead to waterlogged conditions, particularly when situated in low lying areas. Dispersive, hard, and coarsely structured subsoils also limit potential root exploration.

Topsoils are most often sandy. Sandy soils have low nutrient retention capacities, since they allow soluble nutrients to be readily leached. Clayey subsoils restrict the downward movement of these nutrients, however, they may seep laterally along clay surfaces. Wind erosion is a significant issue with sandy soils, especially the loose and infertile sands on dunes. The water repellent nature of these topsoils compounds this problem. Care needs to be taken with surface management in these areas to minimise the potential for wind erosion.



**Soil Landscape Unit summary:** Pink Lagoon Land System (PIK)

SLU	% of area	Main features
GEO	4.0	Land dominated by sandy texture contrast soil.
GET	1.4	Main soils: <i>sand over clay G4</i> grading to <i>loam over clay D3</i> .
GEj	2.6	<b>GEO</b> – drainage depression (slopes 0-1.5%). <b>GET</b> – drainage depression with marginal salinity (slopes <1%). <b>GEj</b> – drainage depression with a central drainage line and marginal salinity (slopes <1%).
GHK	1.3	Land dominated by sandy texture contrast soil. Main soils: <i>sand over clay G4</i> with some <i>thick sand over clay G3</i> on low sandy rises. <b>GHK</b> – low lying plain with some low sandy rises (slopes 0-1.5%).
GMK	0.7	Land dominated by sandy texture contrast soil.
GMT	5.8	Main soils: <i>sand over clay G4</i> grading to <i>shallow sand over clay on calcrete B7</i> . <b>GMK</b> – low rise with some stony outcrop and adjacent flats (slopes 0-2%); an old lunette. <b>GMT</b> – low lying plain with highly saline drainage areas (slopes <1%); a series of low lunettes in the central part.
GUK	11.5	Land dominated by sandy texture contrast soil.
GUL	7.9	Main soils: <i>sand over clay G4</i> . With areas of <i>shallow sand over clay on calcrete B7</i> , and some <i>thick sand over clay G3</i> on low sandy rises.
GUO	1.7	<b>GUK</b> – gently undulating plain with some low stony rises, some drainage lows, and a few low sandy rises (slopes 0-1%). <b>GUL</b> – low rises with drainage lows/drainage ways and some low sandy rises (slopes 0-2%) <b>GUO</b> – low lying plains (slopes 0-1%).
OaC	0.6	Sand over clay dunes. Main soils: <i>thick sand over clay G3</i> with some <i>sand over clay G4</i> . <b>OaC</b> – sand dune.
ObD	0.7	Sand over clay dunes and spreads.
ObK	0.6	Main soils: <i>thick sand over clay G3</i> grading to <i>sand over clay G4</i> , <i>shallow sand over clay on calcrete B7</i> . <b>ObD</b> – low sand dune. <b>ObK</b> – sand spread.
OeP	13.2	Sand over clay dunefields. Dune soils: <i>thick sand over clay G3</i> with some <i>sand over clay G4</i> . Swale soils: <i>sand over clay G4</i> with some <i>shallow sand over clay on calcrete B7</i> . <b>OeP</b> – low lying dunefield with 30-60% sand dunes.
QoA	0.2	Land dominated by shallow soil on calcrete. Main soils: <i>shallow calcareous loam on calcrete B2</i> , and extensive areas of <i>shallow loam on calcrete B3</i> . With minor areas of <i>loam over clay D3</i> grading to <i>gradational calcareous loam A6</i> . <b>QoA</b> – low stony rise (slopes 0-1.5%).
RJA1	5.2	Land dominated by shallow soil on calcrete.
RJB1	2.3	Main soils: <i>shallow loam on calcrete B3</i> grading to <i>shallow sand over clay on calcrete B7</i> and <i>shallow loam over clay on calcrete B6</i> . <b>RJA1</b> – non-arable stony level plain (slopes <1%). <b>RJB1</b> – non-arable low stony rises (slopes 0.5-2%).
RRA	1.5	Land dominated by shallow soil on calcrete.
RRB	3.2	Main soils: <i>shallow sand over clay on calcrete B7</i> grading to <i>shallow loam over clay on calcrete B6</i> .
RRK	1.8	<b>RRA</b> – gently undulating plain (slopes 0-1%).
RRL	1.4	<b>RRB</b> – low rise/plains with a few drainage lows (slopes 0-1.5%). <b>RRK</b> – low rises/plains (slopes 0-1%). <b>RRL</b> – low rise/slopes (slopes 0-2%).
RSA	1.9	Land dominated by shallow soil on calcrete.
RSK	4.8	Main soils: <i>shallow sand over clay on calcrete B7</i> grading to <i>shallow loam over clay on calcrete B6</i> . With limited to common areas of <i>sand over clay G4</i> grading to <i>loam over red clay D3</i> , in lows.
RSL	2.1	<b>RSA</b> – plains (slopes 0-1%).
RSP	0.7	<b>RSK</b> – plains, low rises, and relatively low lying plains with drainage lows (slopes 0-1.5%). <b>RSL</b> – slopes (slopes 1-10%, mostly 1-4%). <b>RSP</b> – low lying plains (slopes 0-1%).



RTK	3.0	Land dominated by shallow soil on calcrete. Main soils: <i>shallow sand over clay on calcrete</i> <b>B7</b> . With limited to common areas of <i>sand over clay</i> <b>G4</b> grading to <i>loam over red clay</i> <b>D3</b> . Also with some patches of <i>thick sand over clay</i> <b>G3</b> . <b>RTK</b> – stony plains (slopes 0-1%)
SPA SPB SPK SPZ	5.2 1.9 6.4 0.3	Land dominated by soils formed in calcareous loess. Main soils: <i>calcareous loam</i> <b>A4-A5</b> . With minor to limited of <i>shallow calcareous loam on calcrete</i> <b>B2</b> grading to <i>shallow loam over clay on calcrete</i> <b>B6</b> and <i>shallow loam on calcrete</i> <b>B3</b> . Also with minor to limited areas of <i>gradational calcareous loam</i> <b>A6</b> grading to <i>loam over clay</i> <b>D3</b> , in lows. <b>SPA</b> – gently undulating plains (slopes 0-1%). <b>SPB</b> – slopes (slopes 0.5-2%). <b>SPK</b> – low lying plains and drainage areas (slopes 0-1%). <b>SPZ</b> – rise surface (slopes 0-1%).
ZA- ZD- ZE-	3.5 1.5 1.4	Saline land and salt lakes. Main soils: <i>saline soil</i> <b>N2</b> : mostly saline variants of soils <b>G4</b> and <b>D3</b> . <b>ZA-</b> – highly saline drainage areas with a few salt lakes. <b>ZD-</b> – salt lakes. <b>ZE-</b> – low lying complex of salinised land and salt lakes and minor sandy rises.

### Detailed soil profile descriptions:

#### Main soils:

- B7** *shallow sand over clay on calcrete* [Petrocalcic Red-Brown Sodosol]  
Medium thickness to thin sandy to light sandy loam topsoil overlying a red to brown clayey to clay loamy subsoil, which is underlain by calcrete at shallow depth. Profiles often contain hard carbonate rubble in the layer directly overlying the calcrete. Surfaces range from hard to loose, and subsoils are dispersive. Topsoils are often water repellent. These grade to similar soils with loamy topsoils: *shallow loam over clay on calcrete* **B6**.
- G4** *sand over clay* [Hypercalcic-Lithocalcic Red-Brown Sodosol]  
Medium thickness to thin sandy to light sandy loam topsoil overlying red to red brown clayey subsoil which becomes calcareous with depth. Subsoils can contain hard carbonate rubble. Surfaces range from hard to loose, and subsoils are dispersive. Profiles are sometimes underlain by calcrete at moderate depth. Topsoils are often water repellent.  
These soils grade to similar soils with thick to very thick loose sandy and strongly water repellent topsoils, often with bleached subsurface layers, which are usually found on sand dunes and sandy rises: *thick sand over clay* **G3**. They also grade to similar soils with loamy topsoils: *loam over clay* **D3**.

#### Minor soils:

- N2** *saline soil* [Salic Hydrosol]  
Saline variants of a number of soils. Mostly saline variants of soils **G4** and **D3**.
- A4-A5** *calcareous loam* [Regolithic Hypercalcic-Lithocalcic Calcarosol]  
Grey brown to brown medium thickness calcareous loamy topsoil grading to loamy or clay loamy subsoil with abundant fine carbonate. Surfaces are often hardsetting. Profiles often contain abundant hard carbonate rubble. Profiles are underlain by calcareous loess or clayey sediments (soil **A5**). Subsoils are strongly alkaline and dispersive. These occur in an area in the very northwest of the system.
- B3** *shallow loam on calcrete* [Petrocalcic Tenosol]  
Red to red brown loam topsoil overlying loam to clay loam subsoil, with calcrete at very shallow depth. Surfaces are hardsetting, and subsoils are typically dispersive. Profiles often contain abundant hard carbonate rubble. These soils are non arable and are found on low stony rises.

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

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

