STL Salt Lagoon Land System

Low-lying plains with numerous lagoons and some salinized land. The system is bordered by an old beach ridge to the south and east; slopes running down from a plateau area to the north; plains with lagoons to the west; and remnant calcreted dunes in the extreme south-west. The land system is split in the middle by a south-west to north-east running old beach ridge and lunette rise. The system is named after the large lagoon in the north of this land system.

Area: 40 km²

Annual rainfall: 500 - 550 mm average

Geology: Much of this low-lying system is underlain by Tertiary age Hallett Cove Limestone. There are

many lagoons with Holocene age lacustrine marl sediments: and other significant areas of older Pleistocene age lacustrine clayey sediments. Some flats and drainage depression areas of recent alluvia occur where the Bugga Bugga Creek flows into Salt Lagoon. There are some minor lunette areas: and a few remnants of Pleistocene age lowest member (oldest) Bridgewater Formation calcreted calcarenite areas. *Clayey sediments underlie the vast majority of soils*. An area in the north-east of this system consists of Pliocene-Quaternary age colluvial sediments of clay with an ironstone gravel capping. This colluvium is derived from weathered Cambrian age Kanmantoo Group meta-sediments. There are a few

Holocene age small sand deposits have been derived from adjacent sandy surface soils and

dry lagoonal surfaces.

Topography: Low-lying level to gently undulating plains with lagoonal depressions. Salinization has

occurred in small flats, depressions and a drainage line in the north-east of the land system. There are some calcreted remnants on small low rises: and some small areas of low sand dunes. A depression area with calcrete occurs in the south-west of the land system. Slopes are generally around 0-1%. Some very short slopes of 3-5% occur around lagoonal

depressions. The main drainage into the system comes from the north via the Bugga Bugga Creek which has its beginnings just to the west of American River; and there is some minor drainage into the land system from a short drainage line in the extreme north-east of the

system.

Elevation: Typically 10 - 20m. From less than 10 m to 40 m in the extreme north-east

Relief: Less than 10m. Typically 0 - 5m

Major Soil: G3-G4 Sand over sodic clay

Minor Soils: N2 Saline soils

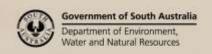
B7-B3 Shallow soil on calcrete

I1-H3 Very thick sands
J2-J1 Ironstone soil

Main Features: Arable, semi-arable and non-arable areas. Topsoils are mostly sandy. Mostly soils with sandy

topsoil over sodic clay subsoil. Saline areas are common. Lagoons, saline flats and depressions, and a few marginally saline areas occur. Sandy topsoils pose a wind erosion risk and are naturally infertile. Drainage is poor due to low relief and relatively impermeable

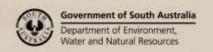
subsoils.





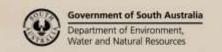
Soil Landscape Unit summary: Salt Lagoon Land System (STL)

SLU	% of area	Main features #
MqA MqB MqE	1.9 0.4 0.7	Semi-arable calcreted depressions, plains and low rises with shallow soils; with some deeper sand over sodic clay subsoils. Main soils: shallow to very shallow sandy topsoil over sandy clay loam or sometimes clayey subsoil on calcrete B7-B3 (Petrocalcic Chromosol-Tenosol) . With 10-30% medium to very thick sandy topsoil over sodic clay G3-G4 (Brown Sodosol).
		MqA – gently undulating plains (Ie). MqB – slopes/low rises (slopes 3%, II-Ie). Mqe – depression with <10% saline seepage (IIIs).
		Summary: the majority of soils are shallow and rocky (calcareted calcarenite), and so have low waterholding capacities. Other soils have low fertility bleached sandy topsoils and sodic clayey subsoils. Waterlogging and saline seepage are issues in the depression area.
MpA MpB	0.3 0.7	Semi-arable calcreted plains and low rises. Main soil: shallow soil on calcrete - shallow sandy topsoil over sandy clay loam subsoil on calcrete B7 (Petrocalcic Chromosol). With 0-10% sand over sodic clay on 'non-calcreted' flats G3-G4 (Brown Sodosol).
		MpA – plain (Ie). MpB – slopes/low rises (slopes 2-3%, II-Ie). Includes 0-15% non-calcreted flats.
		Summary: soils are shallow and rocky (calcreted calcarenite), and so have low waterholding capacities. Waterlogging occurs in some areas.
FGT	3.3	Semi-arable depression with medium thickness to thick sandy topsoil, usually with ironstone gravel, over sodic clay. Plateau outwash area: low-lying area with salinized drainage lines adjacent to slopes running down from plateau surfaces. Main soil: ironstone soil - medium to thick sandy topsoil with ironstone gravel over sodic clay J2-J1 (Ferric Brown Sodosol).
		\mathbf{FGT} – depression with 10-50% salinized drainage areas (4-3*s). 30% of the area is a salinized drainage area.
		Summary: the main issues are reduced fertility due to bleached sandy topsoils and ironstone gravel, saline seepage, waterlogging, and related sodic subsoils.
OZK OZD	0.7 0.5	Semi-arable to non-arable sand deposits. Recent quartz sand deposits, with dunes mostly running NW-SE, with a minor jumbled deposit and two dunes running N-S in the south-west of the system. Main soil: <a href="https://www.very.ncbe.ncbe.ncbe.ncbe.ncbe.ncbe.ncbe.ncbe</td></tr><tr><td></td><td></td><td>OZK – hummocky sand deposits. OZD – low linear and jumbled dunes (<5m).</td></tr><tr><td></td><td></td><td>Summary: infertile sandy soils, with high wind erosion risk and strong water repellence, and relatively low waterholding capacity.</td></tr><tr><td>OXK</td><td>0.5</td><td>Semi-arable to non-arable sand deposits; with some sand over clay areas. Recent quartz sand deposits. Main soils: very thick sands – deep to moderate bleached sand I1-H3 (Podosol-Tenosol). With 10-30% sand over sodic clay - thick to medium thickness sand over sodic clay G3-G4 (Brown Sodosol).</td></tr><tr><td></td><td></td><td>OXK - sand spreads and hummocky sand deposits.</td></tr><tr><td></td><td></td><td>Summary: mostly infertile sandy soils, with high wind erosion risk and strong water repellence, and relatively low waterholding capacity. Other soils have low fertility bleached sandy topsoils and sodic clayey subsoils</td></tr><tr><td>PbA
PbL
PbO
PbU
PbLz</td><td>5.9
0.5
38.4
1.0
0.2</td><td>Mostly arable plains, slopes and depressions with thick, and some medium thickness, sandy topsoil. The broad depression areas have small saline depressions which are mapped-out where possible. Main soils: sand-over-sodic-clay - thick, with medium thickness, sandy topsoil over sodic clay G3-G4 (<i>Brown Sodosol</i>). With 0-5% shallow to very shallow soil on calcrete B7-B3 (<i>Petrocalcic Chromosol-Tenosol</i>). 0-1% small marginally saline to saline depression areas: sand-over-sodic-clay G3-G4 (<i>Brown-</i>Grey <i>Sodosol</i>).
		PbA – plains (Ie). PbL – slopes with <10% saline seepage (slopes 3%, II-Ie, III-IIs).





PNO - depression with 10% saline seepage (IIIs). Includes approx. 1% marginally saline to saline depressions. PNU - depression with marginal salinity (IVs). PNLz - slopes with <10% saline seepage and >5% scalding (slopes 2-3%, IIe, IIIs). This area is 50% scalded: leaving thin loamy topsoil over clay loam with some ironstone nodules on mottled clay. Summary, waterlogging is an issue in many areas, subsoils are sodic. Fertility is reduced due to bleached sandy topsoil; and many areas have raised subsoil salinity levels or saline seepage at the soil surface. PcK	h	1	
PRIT - depression with marginal salinity (IVs). Ph.Lz - slopes with <10% saline seepage and >5% scalding (slopes 2-3%, IIe, IIIs). This area is 50% scalded: leaving thin loamy topsoil over day loam with some ironstone nodules on mottled clay. Summary, waterlogging is an issue in many areas, subsoils are sodic, fertility is reduced due to bleached sandy topsoils, and many areas have raised subsoil salinity levels or saline seepage at the soil surface. PcKI 6.0 Mostly arable plains, slopes and depressions with thick to medium thickness sandy topsoil; and some calcreted areas with shallow soils. PcK 4.6 Main soils: Thick, with some medium thickness sandy topsoil over a sodic clay subsoil G3-G4 (*Brown Sodoso), With 10-30% shallow soil on calcrete - shallow to very shallow soil on calcrete B7-B3 (*PcKx - plain with <10% saline seepage (IIs). PcKx - plain with <10% saline seepage (IIs). PcK - plain with <10% saline seepage (IIs). Summary: the main issues are reduced fertility due to bleached sandy topsoils, some waterlogging, and raised subsoil salinity levels or saline seepage (IIs). PdA - plains/vague' lunette. PdK - plains/vague' lunette. PdK - plains with <10% saline seepage (IIs). Summary: the main issues are reduced fertility due to bleached sandy topsoils, some waterlogging, and wind erosion risk. In addition the deeper sandy soils are infertile, have high wind erosion risk and strong water repellence, and relatively low waterholding capacity. ZB - non-arable saline depressions and drainage areas (VIs). Mostly co			PbO – depression with <10% saline seepage (IIIs). Includes approx. 1% marginally saline to saline
PB.Lz. – slopes with			





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 - gullying r - surface rockiness s - salinity w - waterlogging y - exposure

Detailed soil profile descriptions:

Major Soil:

G3-G4 Sand over sodic clay (*Brown Sodosol*). Thick to medium thickness, some even very thick, sand to loamy sand with a bleached sub-surface layer; over yellow-brown to olive-brown sodic clay with some olive and maybe red mottles. Occasionally ironstone nodules occur in the layer above the clay. Sometimes there is fine carbonate in the lower subsoil. Found on plains, depressions and slopes.

Minor Soils:

- N2 <u>Saline soils</u> (*Grey-Brown Sodosol-Hydrosol*). Sandy topsoil, overlying sodic olive-brown to grey clay with grey mottles, or else overlying marl. The soil is sometimes calcareous throughout and has abundant fine carbonate at depth. Salt Lagoon itself has calcareous sandy to light sandy loam soil with shelly layers. Found in lagoons and saline depressions.
- **B7-B3** Shallow soil on calcrete (*Petrocalcic Chromosol-Tenosol*). Shallow sandy topsoil over yellow-brown sandy clay loam or sometimes sandy loam; on calcrete. Sometimes the layer above the calcrete is mostly calcrete fragments. Occasionally the layer above the calcrete is highly calcareous. Found on low rises, plains, depressions and calcreted lunettes
- **I1-H3** Very thick sands (*Podosol-Tenosol*). Deep to moderate depth neutral to acid loamy sand. This soil includes a bleached sub-surface layer sometimes with some ironstone nodules; overlying a sandy subsoil usually with accumulations of iron and organic compounds. Underlain by clayey substrate or occasionally calcrete. Found on sand spreads, hummocky sand deposits and sandy lunetes.
- **J2-J1** <u>Ironstone soil</u> (*Ferric Brown Sodosol*). Medium thickness to thick, acid to neutral sandy topsoil with a bleached sub-surface layer and ironstone gravel; over orange-brown usually sodic clay with some olive mottles. Found in depression area.

Further information: <u>DEWNR Soil and Land Program</u>

