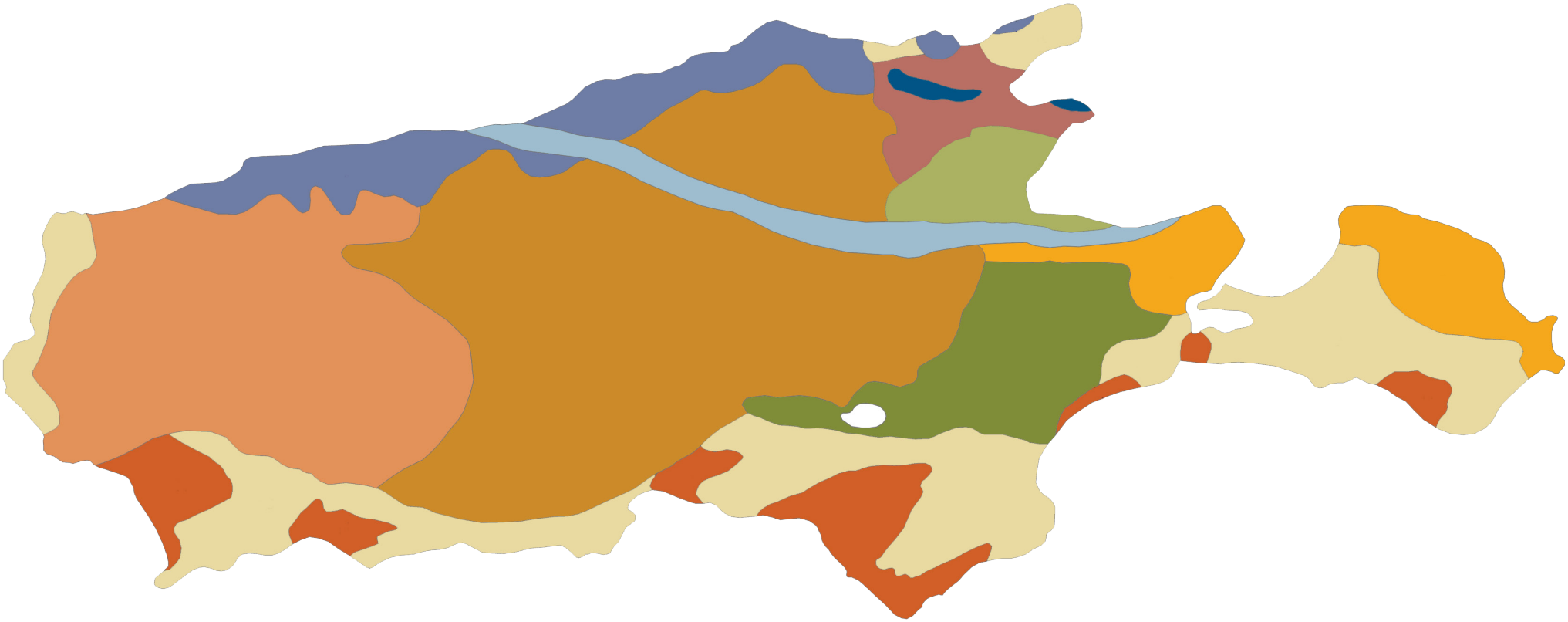
Kangaroo Island land units



KEY

- Seddon Plateau
- Gosse Plateau
- Dudley-Plains Plateau
- Menzies Plains
- Cygnet Plains
- MacGillivray-Haines Plains
- North Coast Hills
- Cygnet-Snelling Fault Scarp
- Wisanger Plateau
- Limestone Plains and Cliffs
- Coastal Dunes

Kangaroo Island soils

Kangaroo Island soils can be divided into nine soil landscape units.

Seddon-Gosse Plateau

This unit, covers about half of the region and has been extensively developed for grazing. The main soils are:

- Sandy loam to loam with ironstone gravel over mottled clay. Surface soil textures tend to be sandy in the Gosse Unit. Upper subsoil clays can be sodic. Mostly found on plateau surfaces and slopes.
- Stony sandy loam to loam over clay. Top soils usually sandy loam including meta-sandstone, quartz or ironstone fragments. Mostly found on lower or steeper slopes.
- Small areas of shallow sand to sandy loam on massive ironstone. Found on a few plateau surfaces and slopes.
- Highly leached sands on flats and in depressions. Contains subsurface layer of humus and iron oxide that can harden into "coffee rock".
- Nearly all top soils and subsoils are acidic (pH$CaCl_2$ 4.5–5.4) to strongly acidic (pH$CaCl_2$ <4.5). Soils are prone to aluminum toxicity and have low natural fertility.

Dudley – Haines Plateau

A complex pattern of soils has developed on remnants of old laterite and bedrock formations. These include:

- Ironstone soils, some with alkaline subsoil. These are acidic texture contrast soils, similar to soils of the Gosse-Seddon Plateau
- Sandy loam to loam over sodic clay. These soils are generally alkaline, have poor natural fertility, and drainage and are similar to soils on the MacGillivray Plains.
- Brown cracking clays form extensive areas on the Haines Plateau, northwest of American River. These often produce a 'gilgai' landscape of undulating small mounds and depressions. Fine carbonate is usually present in the mound soils reaching the surface on occasions.

Menzies Plains

The soils in this gently undulating area developed on deeply weathered glacial clay and sands with some additional ironstone transported from the plateau to the west, limestone and younger windblown material. Subsoils and lower subsoils are typically alkaline.

- Sandy loam to loam over sodic clay containing lime at depths of 30 cm or more
- Brown, grey or red cracking clays formed from weathering of Wisanger Hills basalt. Deep cracking clays typically with a light clay top soil. overlaying a sodic heavy clay. These cracking clays are sometimes associated with 'gilgai' landscapes.

Cygnet Plains

These subcoastal soils are generally similar to those of the MacGillivray plains although topsoil textures are not as sandy. They developed on alluvial material with some contribution from older limestone, clay and ironstone gravels transported from the plateau.

- Sandy loam over sodic clay — poorly drained alkaline soils with tight sodic clays in the subsoil
- Deep loams on the Cygnet River flats. These were originally some of the most fertile on Kangaroo Island and have high organic matter content and good drainage. Extensive cultivation has caused some topsoil loss with subsequent fertility loss.

MacGillivray-Haines Plains

These soils are derived largely from coastal dune calcarenite, limestone, glacial clay and transported ironstone gravel.

- Sand to sandy loam over sodic clay. Medium depth to deep greyish sands to sandy loam over bleached sand to clayey sand, sometimes with ironstone, over mottled yellowish brown sodic clay. The sodic clays disperse when wet, sealing subsoil cracks and causing poor drainage. The soils are generally neutral to acidic at the surface becoming more alkaline in the subsoil, often containing fine carbonate in their deeper layers.
- Bleached siliceous sands. These moderate to deep, acidic sands are frequently non-wetting. Typically occurring on sandy rises and lunettes.
- Minor soils associated with lunettes are shallow, calcareous to non-calcareous sandy loam on calcrete, deep calcareous clay loams and calcareous loams (around the White Lagoon basin) and loamy texture contrast soil with red subsoil.

North Coast Hills and Cygnet Snelling Fault Scarp

Predominantly shallow, stony, acid soils developed on sandstone, shale and siltstone formation on steep to moderate hill slopes.

- Smooth loam over brown clay on weathered rock — stony texture contrast soils with smooth loam surface texture formed on siltstone and shale bedrock layers. These are some of the most fertile soils found on the Island.
- Stony sandy loam to loam over clay on weathered rock — often quite stony, these soils have developed on the sandier bedrock layers.
- Pockets of ironstone soils — found on remnant plateau surfaces.

Wisanger Plateau

The soils developed on this small array of flat-topped hills are unique on Kangaroo Island. They are amongst the most nutrient rich and fertile on the island. Surface soils vary from slightly acid to slightly alkaline, but all soils in this zone become more alkaline with depth.

- Brown cracking clays and loam to clay loam over sodic clay — developed from the weathering of the basalt on the flat tops and lower slopes. The clays have a distinctive shrink-swell capacity, causing large cracks to develop when the soil dries out, which close up again on wetting.
- Friable red clay loams on basalt: well structured, very fertile but stony soils occur on upper slopes and some areas of the flat tops.

The Limestone Plains

These rough, broken coastal to sub-coastal lowlands consist of calcrete-capped dune calcarenite underlain at depth by bedrock. Soils are generally neutral, but sometimes alkaline, low in nutrients and well drained. Main soil types are:

- Shallow sandy loam on calcrete top soils may be calcareous or non-calcareous.
- Shallow sand to sandy loam over light clay on calcrete.
- Sand over sodic clay — often thick loamy sand to sand over mottled clay, usually with abundant fine carbonate at depth. Formed in depressions where calcarenite sands have been washed away.
- Deep shell sand — usually found in depressions.

The Coastal Dunes

Deep lime sands have developed on modern coastal dunes consisting mainly of broken up shells. There is usually some build up of organic matter in the top 30cm, but no differentiated soil profile.

Mooney, T. and Grinter, K. 2000
Kangaroo Island Soil Conservation Board District Plan.