

HLK Hillock Land System

Rises and a low hill covered by carbonate sand deposits. Named after Hillock Point, and situated on the south coast of the foot of Yorke Peninsula.

Area: 113.2 km²

Landscape: The system consists of rises and a low hill. These are mostly bedrock highs which are completely overlain by carbonate sand deposits. Some rises are actual dune cores. Coastal cliffs and slopes up to 50m high form the southern boundary of this system. In recent geological times these rises were covered by carbonate sands. Subsequent leaching lead to the formation of calcreted calcarenite cores. The carbonate sand has been greatly reworked by wind. Most areas have a relatively thick covering of carbonate sand, however, a number of patches have lost much of their sand cover, resulting in calcrete at shallow to very shallow depths. Soil depth can vary drastically over short distances - from very deep to very shallow - due to the mobile nature of the carbonate sand and the presence of the underlying calcreted calcarenite core.

The low jumbled dune patterns formed tend to be a mixture of longitudinal dunes (oriented in the general direction of the prevailing wind) and jumbled transverse dunes (largely oriented perpendicular to the direction of the prevailing wind): more so the latter.

Annual rainfall: 465 – 495 mm average

Main soils: **H1** Carbonate sand (around 62% of area)

Minor soils: **B1** Shallow carbonate sand on calcrete (around 37% of area)

Main features: Soils range from very deep to shallow over calcrete, with textures ranging from loamy sand to loam. The soils are composed almost entirely of finely ground shell fragments. The main issues are the highly infertile nature of carbonate sand, wind erosion, stoniness and soil depth, and some water repellence. High carbonate levels reduce the availability of phosphorus, manganese, zinc and iron. Regular applications of manganese are needed for productive agriculture. Copper is also commonly deficient but can be corrected by occasional applications.

Sandy soils, especially when situated on dunes, need adequate vegetative cover at all times to minimise the risk of wind erosion. Many deep to very deep sands occur, and on dunes these are semi arable to non arable due to infertility and wind erosion risk. A number of patches are too stony and shallow for cropping. There is a slight risk water erosion on some slopes. Minor saline seepage occurs as raised subsoil salinity levels in a few lower lying areas. Water repellence in surface soils is not particularly common, probably due to the majority of soils having been deposited in quite recent times. The majority of this land system is covered by native vegetation, so nature conservation is a very important issue.



Soil Landscape Unit summary: Hillock Land System (HLK)

In this land system report, soil landscape areas with a '1' as the fourth character of the label are deemed to be non arable. This may be due to deep sandy soils, stony soils, or such areas may just be covered with native vegetation.

SLU	% of area	Main features #
YAC1 YAF1 YAI YAL YAj1	6.2 25.1 1.8 0.6 1.1	Land dominated by very deep to moderate depth carbonate sand. Main soils: carbonate sand (soil H1). With minor to common areas of shallow carbonate sand on calcrete, mostly on flats between dunes (soil B1). YAC1 – non arable jumbled low dunes (slopes 0-3.5%, 1e, 5-7a, 1s, 1r, 2-3y): usually the most recently deposited dunes. Mostly with deep to very deep soils. YAF1 – an extensive land unit with mostly non arable gently undulating to undulating rises overlain with 60-90% jumbled low dunes (slopes 0-5%, 1e, 5-4a, 1s, 1-2r, 2-3y). YAI – mostly semi arable gently undulating to undulating rises overlain with 30-60% jumbled low dunes (slopes 0-4%, 1e, 4a, 1s, 1-2r, 2-1y). YAL – mostly semi arable to arable gently undulating raised plains with about 30% jumbled very low dunes (slopes 0-2.5%, 1e, 4-3a, 1s, 1-2r, 2y). YAj1 – non arable exposed undulating rise to low hill overlain with approx. 90% jumbled very low dunes (slopes 3-10%, 1e, 5a, 1s, 1r, 3y): Black Hill.
YEF1 YEI1 YEL YEL1 YEUI	28.9 8.9 14.7 0.5 0.4	Land dominated by deep to shallow carbonate sand. Main soils: moderate depth to deep carbonate sand (soil H1). And shallow carbonate sand on calcrete (soil B1). YEF1 – an extensive land unit with mostly non arable gently undulating to undulating rises overlain with 60-90% jumbled low dunes (slopes 0-6%, 1e, 4-5a, 1s, 1-4r, 2-3y). YEI1 – mostly non arable gently undulating raised plains overlain with 30-60% jumbled low dunes (slopes 0-1.5%, 1e, 4-3a, 1-2s, 2-4r, 2-1y). YEL – mostly semi arable to arable gently undulating raised plains with less than 30% jumbled low dunes (slopes 0-2.5%, 1e, 3-4a, 1-2s, 1-3r, 2-1y). YEL1 – mostly non arable gently undulating raised plains with less than 30% jumbled low dunes (slopes 0-1.5%, 1e, 3-4a, 1s, 2-4r, 2-1y). YEUI – mostly non arable relatively low lying gently undulating plain with less than 30% jumbled low dunes (slopes 0-1.5%, 1e, 3-2a, 2-1s, 2-4r, 1-2y).
YdL YdL1 YdLz YdI1 YdU1 YdUz Ydg1 Ydp1	0.5 4.8 0.2 1.4 0.6 0.1 0.2 1.3	Land with shallow, and some deeper, carbonate sand. Main soils: shallow carbonate sand on calcrete (soil B1). With areas of moderate depth to deep carbonate sand (soil H1). YdL – arable slopes and raised plains (slopes 0-2%, 1-2e, 3-2a, 1s, 3r, 2y). YdL1 – non arable stony gently undulating raised plains, low rises (mostly relict dunes) (slopes 0-2%, 1e, 3a, 1s, 4r, 2-1y). YdLz – mostly non arable coastal rise (slopes 0-2.5%, 1e, 3-4a, 1s, 4-3r, 3y). YdI1 – mostly non arable near coastal rises with 30-60% jumbled low dune rises (slopes 0-3%, 1e, 3-4a, 1s, 4-3r, 3-2y). YdU1 – non arable stony slight depressions or low lying plains (slopes 0-1.5%, 1e, 2a, 2-1s, 4r, 1-2y). YdUz – non arable near coastal slight depressions or low lying plains (slopes 0-1%, 1e, 2-3a, 2-1s, 4r, 2y). Ydg1 – non arable stony depression with some saline seepage (slopes 0-1%, 1e, 2-1a, 3-2s, 4r, 1y). Ydp1 – non arable rises (slopes 1-5%, 2-1e, 3-2a, 1s, 4r, 3-2y).
MaA	0.2	Relict old calcreted very low coastal dunes. Main soils: shallow to very shallow carbonate sand on calcrete (soil B1). With some moderate depth carbonate sand in places (soil H1). MaA – plains (relict very low coastal dunes) (slopes 0-2.5%, 1e, 3-4a, 4-5r, 3-2y).
MbYA MbYB	0.2 0.1	Relict calcreted coastal dunes. Main soils: shallow (soil B1) to moderate depth carbonate sand (soil H1). With deeper carbonate sand on patches of coastal sand dune (soil H1). MbYA – relict low coastal dunes (slopes 0-8%, 1-2e, 4-5a, 4-2r, 3y). MbYB – relict moderate height coastal dunes (slopes 0-10%, 1-2e, 5-4a, 4-2r, 3y).
WGD WGE WGe	0.3 0.6 0.2	Recent coastal sand deposits. Main soils: young carbonate sand (soil H1). With some shallow carbonate sand (soil B1), especially on inland dune slopes.



WGo	0.3	<p>WGD – clifftop mostly moderate height coastal dunes with some bare patches, and an area with sandy coastal slopes and a minor sandy beach area (slopes mostly 0-12%, with coastal slopes up to 20%, 1e, 7-5a, 1-4r, 3y).</p> <p>WGE – clifftop low coastal dunes (slopes 0-8%, 1-2e, 5a, 1-3r, 3y).</p> <p>WGe – mostly bare clifftop low coastal dunes (slopes 0-10%, 7-5a, 1r, 3y).</p> <p>WGo – mostly bare sandy beaches and sandy steep coastal slopes, with some clifftop coastal dunes (slopes 0-80%, 7a, 1r, 3y).</p>
WAB	0.9	Calcarenite cliffs and some steep coastal slopes, often with hard rock reefs at their bases, and sometimes the lower cliff area is also composed of hard rock (cliff slopes mostly >100%, 3y): hard rock is often granite. With some narrow low coastal dunes on some clifftops, and some minor sandy beach areas.

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:

- H1** *Carbonate sand* [Shelly Calcarosol, and a few Shelly Rudosols on coastal dunes].
Loose grey brown loamy sand to light fine sandy loam, composed of finely divided shell fragments, overlying calcreted calcarenite at moderate depth or more. Grey organic stained topsoils overlie light coloured subsoils (very pale brown to pale brown). Very recently deposited variants with very little profile development are found on coastal dunes. Found on jumbled sand dunes, slopes, rises, plains, in some low lying areas, and on coastal dunes.

Minor soils:

- B1** *Shallow carbonate sand on calcrete* [Petrocalcic Shelly Calcarosol, with some Petrocalcic Suprarescent Calcarosols, and a few Shelly Petrocalcic Rudosols on relict coastal dunes].
Loose to powdery, grey brown fine loamy sand to loam, dominantly composed of finely divided shell fragments, and overlying calcreted calcarenite at shallow to very shallow depth. The heavier textures tend to occur on the shallower variants. Variants with very little profile development are found on relict coastal dunes. Many of these soils are too stony and shallow to be cropped. Mostly found on jumbled dune rises, slopes, flats, and relict coastal dunes.

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

