

KHE Kohinoor Escarpment Land System

An escarpment of rocky slopes and gullies. The western part of the Cygnet fault line runs along this escarpment. The system is bordered by a higher level dissected plateau surface to the south and west; by lower-lying dissected plateau and rises to the north; and by lower-lying plains and rises to the east. This system is named after Kohinoor Hill, which is in the east of the system, the slope of which is climbed to reach the main Kangaroo Island plateau surface, when travelling from Kingscote to Parndana.

Area: 74.7 km²

Annual rainfall: 540 – 680 mm average

Geology: The geology along the escarpment slope itself is largely Cambrian age Kanmantoo Group fine to medium grained grey, quartz phyllonite and phyllite. To the south of the escarpment slope, harder, early Cambrian Kanmantoo Group Tapanappa Formation metasandstone occurs. On the north side of the escarpment slope, where the rocks are less metamorphosed than on the main plateau to the south, early Cambrian north coast formations occur, namely Smith Bay Shale (upper sandstone facies, and lower shale facies with siltstone and mudstone), Stokes Bay Sandstone, and a small area of Mt. McDonnell Formation siltstone and mudstone. Minor areas of Pliocene-Quaternary age colluvium with ironstone gravel on deeply weathered clay occur – on some crests and upper slopes. While areas of early Pleistocene age Hindmarsh Clay outwash occur on footslopes below the escarpment. Quaternary alluvium has deposited in creek flats.

Topography: Slopes and gullies. The main slope is the escarpment slope, which begins as the deep valley of the Cygnet River and ends just west of Birchmore Lagoon. This slope rises from the plains and rises below to the main Kangaroo Island plateau surface. There is also a short northward notch of escarpment slope with a deep valley cut back behind this slope; as well as creek gullies cut back behind the main escarpment slope. The escarpment slope is almost 140 m high below the Parndana survey beacon. Narrow creek flats occur; as do more gently sloping footslopes.

Elevation: Lowest elevation is about 35 m above sea level at the base of Kohinoor Hill; while the highest elevation is just under 200 m above sea-level, on the upper escarpment slope just below the Parndana survey beacon.

Relief: Relief is typically from 30 to 90 m

Main Soils:

K4-K2-K3	<u>Stony texture contrast soil on weathered rock</u>
L1	<u>Shallow rocky soil</u>
F2-F1	<u>Loamy soil over sodic clay</u>
J2	<u>Ironstone soil</u>

Main Features: This land system is mostly non-arable. Steep slopes and shallow rocky soils limit land use options. The system is mostly covered in native scrub; however, there are extensive areas of pine plantation, and some areas of cleared land. Arable footslopes occur at the base of the escarpment slope; while some arable crests and upper escarpment slopes occur; and some arable crests and upper escarpment slopes occur.

This land system marks the boundary between vegetation dominated by narrow leaf mallee eucalypt trees on the low lands and rises to the east, and the vegetation dominated by stringybark eucalypt trees on the plateau areas to the west.



Soil Landscape Unit summary: Kohinoor Escarpment Land System (KHE)

SLU	% of area	Main features #
ANY	1.3	<p>Non-arable summit surfaces. Main soils: <u>shallow rocky soil</u> – loamy soils on weathered rock or rock, mostly sandstone or metasandstone L1 (<i>rocky Tenosol-Rudosol</i>). With <u>stony texture contrast soil on weathered rock</u> – stony loamy soil over brown or red clay on weathered rock, mostly sandstone or metasandstone K4-K3 (<i>stony Sodosol-Chromosol</i>).</p> <p>ANY – summit surface (<10% slope, 3e, 1g).</p>
AOA AOC AOD AOm AOq AOY	2.1 9.1 18.2 12.6 0.7 1.7	<p>Non-arable gully slopes and summit surfaces. Main soils: <u>stony texture contrast soil on weathered rock</u> – stony loamy soil over brown or red clay on weathered rock, sandstone, shale/phyllite or metasandstone K4-K2-K3 (<i>stony Sodosol-Chromosol</i>). With <u>shallow rocky soil</u> – loamy soils on weathered rock or rock, especially on ridge slopes L1 (<i>rocky Tenosol-Rudosol</i>); and often with minor to limited areas of deeper <u>loamy soil over sodic clay</u> – on some lower slopes and heads of gullies, especially in deeper gully areas ('AOD' soil landscapes) F2-F1 (<i>Brown Sodosol</i>). Minor deep loamy soils in creek flats M1 (<i>deep Tenosol</i>)</p> <p>AOA – slopes (mostly <10%, relief 10-30m, 3e, 1-2g) AOC – gullies (slopes mostly 10-30%, relief >30m, 5e, 4g) AOD – gullies (slopes 20-100%, relief mostly >30m, 6e, 4g) AOm – gully slopes (slopes: mostly 10-30%, with some creek bank slopes up to 50%; relief around 30m; 5e, 4g) with 0-2% saline seepage (2^os). AOq – gully slopes (slopes mostly 10-30%; relief a 30m; 5e, 4g) with salinised drainage lines (2⁺s). AOY – summit surface (slopes mostly <10%, 3e, 1g)</p>
APC	11.8	<p>Non-arable to semi-arable gullies. Main soils: <u>stony texture contrast soil on weathered rock</u> – powdery, often stony, mostly sandy soils over brown clay, on weathered siltstone or sandstone K4 (<i>stony Chromosol-Sodosol</i>). With deeper <u>loamy soil over sodic clay</u>, with brown clay subsoil, especially found on lower slopes F2-F1 (<i>Brown Sodosol</i>). Minor <u>shallow rocky soil</u> – loamy to sandy soils on weathered rock or rock L1 (<i>rocky Tenosol-Rudosol</i>).</p> <p>APC – gullies (slopes mostly 10-30%, with some creek bank slopes up to 100%, relief >30m, 5e, 4g)</p>
CAH CAI CAZ	0.6 5.7 1.3	<p>Non-arable to semi-arable slopes and summit surfaces. Main soils: <u>stony texture contrast soil on weathered rock</u> – stony loamy soil over brown or red clay on weathered rock, mostly shale/phyllite, sandstone or siltstone – some sandy areas occur especially on 'CAZ' soil landscapes – K2-K4-K3 (<i>stony Sodosol-Chromosol</i>). With some <u>shallow rocky soil</u> – loamy soils on weathered rock or hard rock L1 (<i>rocky Tenosol-Rudosol</i>).</p> <p>CAC – sloping summit surfaces (3-8%, 3e, 1g) CAH – slopes (4-13%, 3-4e) with small gullies (3g) CAI – slopes (10-25%, 4e) with some steep sided gullies (20-100%, 4g) and 0-2% saline seepage (2-3^os) CAZ – summit surfaces, largely sandy (slopes mostly <10%, 3-2e, 1g)</p>
CBB CBC CBD CBH CBM CBN CBZ CBd	0.1 10.4 7.1 3.7 0.7 0.1 1.5 0.4	<p>Arable to non-arable slopes and summit surfaces. Main soils: <u>stony texture contrast soil on weathered rock</u> – often stony loamy soil, over brown or red clay, on weathered rock K4-K3-K2 (<i>stony Sodosol-Chromosol</i>). With <u>ironstone soil</u>, often with quartz fragments J2 (<i>Ferric Brown Sodosol-Chromosol</i>). Minor areas of <u>shallow rocky soil</u> – loamy soils on weathered rock or hard rock L1 (<i>rocky Tenosol-Rudosol</i>). Deeper <u>loamy soil over sodic clay</u>, with brown clay subsoil is usually found in drainage depressions and other depression areas F2-F1 (<i>Brown Sodosol</i>).</p> <p>CBB – slopes (1-3%, 2-1e) CBC – sloping summit surfaces and slopes (3-10%, 3e, 1-2g) CBD – slopes (8-20%, 4-3e, 2-1g) CBH – lower-level slopes with drainage lines (5-10%, 3e, 3g, 2s) CBM – lower-level slopes (3-10%, 3e, 2g) with <10% saline seepage (2-3s)</p>



		<p>CBN – lower-level slopes (8-20%, 4-3e, 1g, 2s) CBZ – summit surface (0-4%, 2-1e) CBd – lower slopes with drainage lines (8-20%, 4e, 3g) and <10% saline seepage (2-3^{os})</p>
FVA FVC FVZ	0.7 3.1 0.9	<p>Arable lower-level slopes and raised plains: with ironstone soils and some soils formed on weathered rock.</p> <p>Main soils: <u>ironstone soil</u>, usually with some quartz fragments J2 (<i>Ferric Brown Chromosol</i>). With some <u>stony texture contrast soil on weathered rock</u> – stony loamy soils over brown clay on weathered rock K4-K2 (<i>stony Sodosol-Chromosol</i>). Deeper <u>loamy soil over sodic clay</u> can also occur, especially in depression areas F2-F1 (<i>Brown Sodosol</i>).</p> <p>FVA – raised plain (0-1.5%, 1e) FVC – slopes (3-10%, 3-2e) FVZ – summit surface (slopes 1-4%, 2e)</p>
FYD	0.2	<p>Non-arable peak with small flat-topped summit surface: with ironstone soils.</p> <p>Main soils: red <u>ironstone soil</u> on colluvial slopes J2 (<i>Ferric Red Sodosol-Chromosol</i>). With brown <u>ironstone soil</u> on small flat-topped peak J2 (<i>Ferric Brown Sodosol-Chromosol</i>).</p> <p>FYD – slopes (20-50%, 5e) with small flat-topped summit surface.</p>
LqB LqG LqH	0.2 2.8 2.6	<p>Mostly arable outwash footslopes.</p> <p>Main soils: <u>loamy soil over sodic clay</u>, sometimes with sandy clay loam surface soil, with brown subsoil, and with some quartz, shale/phyllite, sandstone or ironstone fragments F2-F1 (<i>Brown Sodosol</i>). 10-20% of soils are formed on weathered rock – <u>stony texture contrast soil on weathered rock</u> K4-K2 (<i>stony Sodosol-Chromosol</i>); and minor to limited areas of <u>ironstone soil</u> can occur J2 (<i>Ferric Brown Sodosol-Chromosol</i>). Minor deep loamy soils with a bleached sub-surface layer and with some quartz and ironstone fragments – found at the bottom of some steeper slopes M1 (deep Bleached Tenosol).</p> <p>LqB – outwash footslopes with <10% saline seepage (1.5-3.5%, 2e, 2-3^{os}) LqG – outwash footslopes with drainage lines (1.5-3.5%, 2e, 3g) and <10% saline seepage (2-3^{os}) LqH – outwash footslopes with drainage lines (3-12%, 3e, 3g) and 0-2% saline seepage (2^{os})</p>
LzO	0.5	<p>Semi-arable outwash drainage depression flat.</p> <p>Main soils: deep sandy to loamy soil M1 (deep Tenosol). With <u>loamy soil over sodic clay</u> – loamy to sandy soil over brown or grey sodic clay F2-F1 (<i>Brown Sodosol</i>). Approximately 10-20% of soils are formed on weathered rock, found on lower slopes – <u>stony texture contrast soil on weathered rock</u> K4-K2 (<i>stony Sodosol-Chromosol</i>).</p> <p>LzO – outwash drainage depression flat with <10% saline seepage (3-4s)</p>

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



Detailed soil profile descriptions:**Main Soils:**

- K4-K2-K3** Stony texture contrast soil on weathered rock (*stony Sodosol-Chromosol*). Thin to thick loamy topsoil, or occasionally sandy and powdery, often with a bleached subsurface layer, over brown or sometimes red clay, on weathered rock. The clay is often sodic. Coarse fragments of quartz, sandstone, shale/phyllite, siltstone, and/or metasandstone occur. Ironstone or ferruginized sandstone fragments occur in some soils. Sandy-powdery soils form over siltstone or sometimes sandstone, and often have no coarse fragments. Found on steeper slopes and crests.
- L1** Shallow rocky soil (*rocky Tenosol-Rudosol*). Shallow loamy soils, usually with abundant coarse fragments, often with a bleached layer, over weathered rock or hard rock. Coarse fragments include sandstone, shale/phyllite, quartz, and/or metasandstone. Ironstone or highly ferruginised sandstone fragments can occur. Often the weathered rock layer has some (<50%) clay B-horizon material within it. Crests, ridges and steeper slopes.
- F2-F1** Loamy soil over sodic clay (*Brown Sodosol*). Medium thickness to thick loamy soil, usually with a bleached layer, over brown sodic clay. Quartz fragments often occur; while some soils contain some ironstone. In outwash areas, soils can contain coarse fragments of rock. Outwash footslopes, drainage depressions/flats, heads of gullies, slopes.
- J2** Ironstone soil (*Ferric Sodosol-Chromosol*). Medium thickness to thick loamy soil with ironstone gravel, and often with a bleached layer, over brown or occasionally red clay. The clay is often sodic. Crests and upper slopes associated with the main Kangaroo Island plateau; and raised plains and slopes below the escarpment slope.

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

