

BEA Beachport Land System

- Area:** 147.5 km²
- Landscape:** Coastal dunes, rocky coasts and mixed dunes with calcarenite outcrop with minor saline swamps.
- Annual rainfall:** 680 – 765 mm average
- Geology:** Holocene Saint Kilda Formation including quartz-carbonate dune sand of the Semaphore Sand Member and un-named lagoonal sediments. Pleistocene Bridgewater Formation calcarenite forms part of the inland edge.
- Main soils:** **H1** (36%) Carbonate sand (Shelly-Supravescant Calcarosol-Rudosol)
H2 (35%) Calcareous siliceous sand (sandy Calcarosol-Tenosol)
- Minor soils:** **B3** (8%) Shallow sandy loam on calcrete (Petrocalcic Red Tenosol-Kandosol-Rudosol)
N2 (6%) Saline soil (Salic-Hypersalic Hydrosol)
- Summary:** Calcareous coastal sands predominate. The main limitations associated with such soils are trace element deficiencies related to high pH. High wind erosion risk and extreme exposure to strong winds severely limit the land use opportunities here, as they do also in the Canunda land system. Shallow soils which occupy significant areas, have low moisture holding capacity, rockiness and arability, limitations.

Soil Landscape Unit summary: Beachport Land System (BEA)

SLU	% of area	Component	Main soils	Prop#	Notes
MAB MAC	0.4 0.5	Rise Rise	B3RR B3RR	D D	Calcreted former beach ridges with stony, very shallow red and brown loam, occasionally over red clay, on calcrete. >50% bare calcrete. MAB Gently undulating calcreted former beach ridges with stony, very shallow red and brown loam, occasionally over red clay, on calcrete. >50% bare calcrete. MAC as above, undulating slopes. Main soils: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Rock or exposed calcrete</u> - RR .
MBB	1.7	Rise Swale	B3B7 B3	V L	Mainly sandy red Tenosols/Kandosols on calcreted calcarenite with shallow calcareous sands. Less than 50% bare calcrete MBB Gently undulating rises with shallow reddish sand, often over poorly structured brown clay, on calcreted calcarenite; 10-30% shelly calcareous sand, shallow over calcrete. 10-30% swales with shallow sand on calcreted calcarenite. MBC Undulating rises and swales as above. MBh Gently undulating rises as for MBB; 10-20% swales with shallow sand on calcrete and wet saline sandy soils. Main soils: Rises: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Sand over friable brown clay on calcrete</u> - B7 . Swales: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Wet saline clay loam</u> - N2 .
MBC	1.4	Rise Swale	B3B7 B3	D M	
MBh	1.2	Rise	B3B7	V	
		Swale/flat	B3N2	L	
M-C	1.3	Rise	RRB3	D	Undulating rises, with mostly bare rock or very thin sand on



					calcreted calcarenite; occasionally soils have thin red clay subsoils on calcrete. Main soils: <u>Rock or exposed calcrete</u> – RR and <u>Shallow sandy loam on calcrete</u> - B3 .
MGX	0.4	Plain	B3B2	V	Poorly drained plain with shallow, often calcareous sandy loam on calcrete. 20-30% swamps with wet loam over poorly structured clay, or occasionally alkaline peat or shallow loam on calcrete. Main soils: Plains: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Shallow calcareous loam on calcrete</u> - B2 . Swamps: <u>Wet clay loam</u> - N3 .
		Swamp	N3	C	
MtB	0.4	Sandy rise	H2	V	Mainly Petrocalcic Rudosols with sandy surfaces. MtB Gently undulating sandy rises with deep, mostly calcareous, siliceous sand. 10-20% stony rises with shallow red sand on calcreted calcarenite or bare calcrete. MtBB As above with medium height calcreted dune cores. Main soils: Sandy rises: <u>Deep brown sand</u> - H2 . Stony rises: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Rock or exposed calcrete</u> – RR .
		Stony rise	B3RR	L	
MtBB	2.9	Sandy rise	H2	V	
		Stony rise	B3RR	L	
MUC	4.2	Rise	B3B1	D	Mainly shallow calcareous Rudosols, Calcarosols and Tenosols on calcreted, aeolianite with shallow calcareous Rudosols and dark brown Tenosols. Less than 50% bare calcrete. MUC Undulating rises with shallow, often calcareous, dark brown sandy loam over calcrete; 10-30% each of bare calcrete and soils with red clay subsoils. MUM Undulating rises with very shallow shelly calcareous sand, or siliceous bleached sand on calcreted calcarenite. Deep shelly sands are also common. 20-30% swales with shallow siliceous sand on calcrete, or deep shelly sand; occasionally deep calcareous clay loam on marl. Main soils: Rises: <u>Shallow sandy loam on calcrete</u> - B3 , <u>Shallow sand on calcrete</u> - B8 , <u>Shell sand</u> - H1 and <u>Shallow highly calcareous sandy loam on calcrete</u> – B1 . Swales: <u>Shallow sand on calcrete</u> - B8 and <u>Shell sand</u> - H1 .
MUM	0.6	Rise	B1B8 H1	V	
		Swale	B8H1	C	
MxD	1.0	Rise	B8B1	V	Mainly petrocalcic Calcarosols with over 20% loamy Red Kandosols or Tenosols. Rolling rises with shallow bleached siliceous sand, or shelly calcareous sand on calcreted calcarenite. Main soils: Rises: <u>Shallow sand on calcrete</u> - B8 and <u>Shallow highly calcareous sandy loam on calcrete</u> – B1 . Swales: <u>Shallow calcareous loam on calcrete</u> - B2 .
		Swale	B2	L	
VdC	0.02	Flat	B3N3 H2	D	Sub-coastal lake margin plain with mostly shallow sand over calcrete; in association with wet soils and deep calcareous siliceous sands on rises. 10-30% bare calcrete; 10-30% water. Main soils: <u>Shallow sandy loam on calcrete</u> - B3 , <u>Wet clay loam</u> - N3 and <u>Deep brown sand</u> - H2 .
VfB	1.1	Flat	B3	V	Shallow (<30cm deep) soils on marine limestone or calcrete. VfB Flats and 10-20% stony rises with shallow sand on calcrete; 10-30% bare calcrete. 10-20% dunes with deep calcareous siliceous sands. 10-20% swamps with, often saline, wet sandy loam to loam soils. VfG Lagoon margin flat with shallow sand over calcrete. 20-30% stony rises with shallow sand over calcrete. 10-20% dunes with calcareous siliceous sands. 10-20% swamps
		Stony rise	B3	L	
		Dune	H2	L	
		Swamp	N2N3	L	
VfG	0.8	Flat	B3	E	
		Stony rise	B3	C	
		Dune	H2	L	
		Swamp	N2N3	L	



					with, often saline, wet sandy loam to loam soils. Main soils: Flats: <u>Shallow sandy loam on calcrete</u> - B3 . Stony rises: <u>Shallow sandy loam on calcrete</u> - B3 . Dunes: <u>Deep brown sand</u> - H2 . Swamps: <u>Wet saline clay loam</u> - N2 and <u>Wet clay loam</u> - N3 .
WBA	0.2	Rocky coast	B1B3 H2	D	WBA Steep rocky coast with very shallow, often shelly, calcareous, sand on calcreted calcarenite. Deep calcareous siliceous sands are also common. 10-30% bare calcrete. WBB Coastal cliffs, soils as above. Main soils: <u>Shallow highly calcareous sandy loam on calcrete</u> - B1 , <u>Shallow sandy loam on calcrete</u> - B3 and <u>Deep brown sand</u> - H2 .
WBB	0.3	Cliffs	B1B3 H2	D	
WEa	0.5	Beach	H1H2	D	Majority of land is part of a modern coastal environment over 50% is coastal dunes, beaches & sand spreads. Soils are mostly calcareous siliceous sand. WEa Beach with deep shelly calcareous sand or calcareous siliceous sand. Bare and unstable. WEb Bare and unstable dunes with deep shelly calcareous sand or calcareous siliceous sand; 10-30% shelly sand grading to sandy loam. Stony plains co-dominant with shallow calcareous sand on calcrete; 10-30% deep sands or bare calcrete. WEc Active, bare, high coastal dunes, as above. <10% beaches. WEC High dunes, mostly vegetated and stable, as above. <10% beaches. WED Dunes, mostly vegetated and stable, as above. <10% rocky coast with bare calcrete or shallow calcareous or siliceous sand. <10% beaches. WEe Active, bare, low coastal dunes and sand spreads, as above. WEE Low dunes, mostly vegetated and stable, as above. <10% swales with wet deep sands or occasionally, peat. WEF Stable vegetated high dunes as above on gentle slopes. 20-30% swampy swales with wet deep sands or occasionally, peat. WEG Stable vegetated dunes as above on gentle slopes. 10-20% swampy swales with wet deep sands or occasionally, peat. WEH Stable vegetated low dunes as above on gentle slopes. 20-30% swampy swales with wet deep sands or occasionally, peat. WEI Stable vegetated high dunes as above on gentle slopes. 20-30% swampy flats with saline wet deep sands. WEJ Stable vegetated high dunes as above on gentle slopes; co-dominant with stony plains with shallow siliceous and calcareous shelly sand on calcrete. 20-30% swamps with highly saline wet organic sandy loam over sand or calcrete. WEQ Flats with slightly saline, wet sands and deep calcareous siliceous sands. WER Flats with moderately saline, wet sands and deep calcareous siliceous sands. WET As for WEQ above, with 20-30% vegetation-fixed coastal dunes. WEw Complex of bare, active, beaches and dunes, with soils as above. WEW Complex of vegetation-fixed, beaches and dunes, with soils as above.
WEb	0.1	Dune	H2H1	E	
		Stony plain	B3B1	E	
WEc	18.6	Dune	H1H2	D	
		Beach	H1H2	M	
WEC	17.8	Dune	H1H2	D	
WED	1.4	Dune	H1H2	D	
WEe	1.9	Dune	H1H2	D	
WEE	4.0	Dune	H1H2	D	
		Swale	N3	M	
WEF	0.1	Dune	H1H2	V	
		Swamp	N3	C	
WEG	1.4	Dune	H1H2	V	
		Swamp	N3	L	
WEH	1.3	Low dune	H1H2	V	
		Swampy swale	N3	C	
WEI	12.9	Dune	H1H2	V	
		Flat	N2H2	C	
WEJ	2.4	Dune	H1H2	E	
		Stony plain	B3B1	E	
		Swamp	N2	C	
WEQ	0.3	Flat	N2H2	D	
WER	0.3	Flat	N2H2	D	
WET	0.1	Flat	N2H2	V	
		Dune	H1H2	C	
WEw	1.1	Dune	H1H2	D	
WEW	1.1	Dune	H1H2	D	
WEx	0.7	Dune	H1H2	V	
		Tidal flats	H2N3 B3	L	



					<p>WEx Active, bare, high coastal dunes as above. 10-20% tidal flats with deep, often wet and saline sand; or commonly shallow sand over calcrete. Occasionally shallow shelly sand on calcrete.</p> <p>Main soils:</p> <p>Beaches: <u>Shell sand - H1</u> and <u>Deep brown sand - H2</u>.</p> <p>Dunes: <u>Shell sand - H1</u> and <u>Deep brown sand - H2</u>.</p> <p>Swamps: <u>Wet clay loam - N3</u> and <u>Wet saline clay loam - N2c</u></p> <p>Flats: <u>Wet saline clay loam - N2c</u> and <u>Deep brown sand - H2</u>.</p> <p>Stony plains: <u>Shallow sandy loam on calcrete - B3</u> and <u>Shallow highly calcareous sandy loam on calcrete - B1</u></p> <p>Tidal flats: <u>Deep brown sand - H2</u>, <u>Wet clay loam - N3</u> and <u>Shallow sandy loam on calcrete - B3</u>.</p>
WHE	3.2	Sand spread	H1H2	E	<p>Sand spreads with deep sands; co-dominant with rocky flats. Rocky flats with bare calcrete, thin, shelly or siliceous sand, on calcrete.</p> <p>Main soils:</p> <p>Sand spreads: <u>Shell sand - H1</u> and <u>Deep brown sand - H2</u>.</p> <p>Rocky flats: <u>Rock or exposed calcrete - RR</u>, <u>Shallow highly calcareous sandy loam on calcrete - B1</u> and <u>Shallow sandy loam on calcrete - B3</u>.</p>
		Rocky flat	RRB1 B3	E	
WJI	7.7	Coastal Flat	N2H2	V	<p>Coastal flats with soils which are calcareous in some part of the profile.</p>
		Dune	H1H2	C	
WJQ	0.5	Coastal Flat	N2H2	D	<p>WJI Coastal flats with moderately saline wet sands and deep calcareous siliceous sands; or occasionally, shallow sand on calcrete. 20-30% high dunes with shelly or calcareous siliceous sands.</p> <p>WJQ Coastal flats with slightly to moderately saline wet sands and deep calcareous siliceous sands as above.</p> <p>WJt Coastal flats with moderately saline wet sands and deep calcareous siliceous sands as above. 10-20% dunes as above. <10% swamps with slightly to moderately saline wet sands.</p> <p>Main soils:</p> <p>Coastal flats: <u>Wet saline clay loam - N2c</u> and <u>Deep brown sand - H2</u>.</p> <p>Dunes: <u>Shell sand - H1</u> and <u>Deep brown sand - H2</u>.</p> <p>Swamps: <u>Wet saline clay loam - N2c</u> and <u>Wet clay loam - N3</u>.</p>
WJt	1.2	Coastal Flat	N2H2	V	
		Dune	H1H2	L	
		Swamp	N2N3	M	
WNs	0.1	Flat	H1H2 B3	V	<p>Landscapes dominated by coastal swamps.</p> <p>WNs Marginally saline coastal flats with deep shelly calcareous sand, calcareous siliceous sand, or shallow sand on calcrete. 10-20% swamps with saline, wet, dark, organic sandy loam.</p>
		Swamp	N2	L	
WNt	0.4	Flat	H1H2 B3	E	<p>WNt Marginally saline coastal flats as above. 20-30% bare, unstable dunes, soils as above. 10-20% moderately saline swamps with dark organic sands.</p> <p>Main soils:</p> <p>Coastal flats: <u>Shell sand - H1</u>, <u>Deep brown sand - H2</u> and <u>Shallow sandy loam on calcrete - B3</u>.</p> <p>Swamps: <u>Wet saline clay loam - N2c</u>.</p> <p>Dunes: <u>Shell sand - H1</u> and <u>Deep brown sand - H2</u>.</p>
		Dune	H1H2	C	
		Swamp	N2	L	
WO _r	0.3	Flat	H1H2 B3	V	<p>Coastal flats with mostly deep, shelly calcareous, and calcareous siliceous sand, but often shallow over calcrete. 20-30% swamps with wet saline sandy soils. <10% bare unstable dunes as above; <10% stony rises with shallow calcareous sandy loam on calcrete, or occasionally, bare calcrete.</p> <p>Main soils:</p> <p>Flats: <u>Shell sand - H1</u>, <u>Deep brown sand - H2</u> and <u>Shallow</u></p>
		Swamp	N2	C	
		Dune	H1H2	M	
		Stony rise	B2	M	



					<u>sandy loam on calcrete - B3.</u> Swamps: <u>Wet saline clay loam - N2c.</u> Dunes: <u>Shell sand - H1</u> and <u>Deep brown sand - H2.</u> Stony rises: <u>Shallow calcareous loam on calcrete - B2.</u>
XtC	0.1	Swamp	N1	D	Peat swamps.
Xtd	0.7	Swamp	N1	E	XtC Peat swamps. 10-30% of area is; often wet, non-peaty, dark loam over dark clay. Xtd Peat swamps as above; co-dominant with sandy rises with deep, well to moderately drained, bleached siliceous sand. Main soils: Swamps: <u>Wet clay loam - N3</u> and <u>Peaty soil - N1.</u> Rises: <u>Wet highly leached sand - I2.</u>
		Rise	I2	E	
XuC	0.3	Swamp	N3	D	XuC Swamps with wet deep sand soils. 10-30% peat. Xuf Swamps with wet, non-peaty dark sandy loam soils. 10-30% water filled. 20-30% stony rises with shallow sandy loam, often calcareous, or over thin dark sandy clay loam, on calcrete. Xul Moderately saline swamps with wet, non peaty dark sandy loam soils. 10-30% water filled. 20-30% stony rises with shallow sandy loam, often calcareous, or over thin dark sandy clay loam, on calcrete. Main soils: Swamps: <u>Wet clay loam - N3.</u> Stony rises: <u>Shallow calcareous loam on calcrete - B2,</u> <u>Shallow sandy loam on calcrete - B3</u> and <u>Shallow dark clay loam on limestone - B5.</u>
Xuf	0.2	Swamp	N3	V	
		Stony rise	B2B3 B5	C	
Xul	0.2	Swamp	N3	V	
		Stony rise	B2B3 B5	C	
ZD-	0.3	Salt lake	N2	D	Salt lakes, with bare salt crusts occasionally submerged. Highly saline dark clay loamy surface soils. Main soils: <u>Wet saline clay loam - N2c.</u>
ZF-	0.4	Brackish lake	N2WW	D	Brackish lake, often water filled or with wet saline dark clay loamy surface soils. Main soils: <u>Wet saline clay loam - N2c.</u>

PROPORTION codes assigned to Soil Landscape Unit (SLU) components:

- D Dominant in extent (>90% of SLU)
- V Very extensive in extent (60–90% of SLU)
- E Extensive in extent (30–60% of SLU)
- C Common in extent (20–30% of SLU)
- L Limited in extent (10–20% of SLU)
- M Minor in extent (<10% of SLU)

Detailed soil profile descriptions:

- B1** Shallow highly calcareous sandy loam on calcrete (Supravescent-Shelly Petrocalcic Calcarosol-Rudosol) Shallow, carbonate dominant sandy to loamy soil on calcrete. Carbonate dominates the soil profile as a whole, however, the surface soil may not be carbonate dominant, but needs to contain at least 30% carbonate.
- B2** Shallow calcareous sandy loam on calcrete (Petrocalcic Calcarosol)
Up to 40 cm calcareous loamy sand to sandy loam with variable calcrete rubble overlying calcreted calcarenite - rises.
- B3** Shallow sandy loam on calcrete (Petrocalcic Rudosol)
Medium thickness non calcareous sandy loam, often having a slight clay increase with depth, over calcreted calcarenite shallower than 50 cm - rises.



- B5** Shallow dark clay loam on limestone (Petrocalcic, Black Dermosol)
Black clay loam to light clay over calcreted limestone at shallow depth, grading to highly calcareous clay - flats.
- B7** Shallow sand over sandy clay on calcrete (Petrocalcic, Brown Chromosol)
Medium thickness sand overlying brown friable sandy clay to clay on limestone or calcreted sandy clay within 50 cm - flats.
- B8** Shallow sand on calcrete (Petrocalcic, Bleached-Leptic Tenosol)
Thick bleached sand over calcreted calcarenite within 50 cm - rises.
- H1** Shell sand (Shelly Rudosol)
Very thick shell sand with no profile development other than slight organic darkening at the surface.
- H2** Siliceous sand (Sandy Calcarosol-Tenosol)
Deep to moderate depth calcareous siliceous sand. Often with non-calcareous topsoil; can be non calcareous throughout. Sometimes the subsoil is a light sandy loam.
- I2** Wet highly leached sand (Fragic, Humic, Aquic Podosol)
Grey sand with a thick bleached A2 horizon, overlying a thin to thick layer of coffee rock, grading to pale brown sand sharply overlying a grey, brown and yellow mottled sandy clay loam to light clay.
- N1** Peat (Organosol)
Peaty soil
- N2c** Wet saline clay loam (Dermosolic, Salic Hydrosol)
Medium thickness dark grey to black clay loam to clay grading to a well structured dark grey clay with minor carbonates and a water table within 100 cm.
- N3** Seasonally waterlogged, non to marginally saline equivalents of soils listed above, viz.:
N3d Wet **B5**
N3e Wet **B7**
- RR** Bare rock
- WW** Water

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

