## **BEA** Beachport Land System

**Area:** 147.5 km<sup>2</sup>

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-Supravescent Calcarosol-Rudosol)

**H2** (35%) Calcareous siliceous sand (sandy Calcarosol-Tenosol)

Minor soils: B3 (8%) Shallow sandy loam on calcrete (Petrocalcic Red Tenosol-Kandosol-Rudosol)

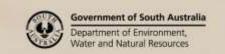
N2 (6%) Saline soil (Salic-Hypersalic Hydrosol)

**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.

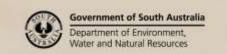
Soil Landscape Unit summary: Beachport Land System (BEA)

SLU	% of area	Component	Main soils	Prop#	Notes
MAB	0.4	Rise	B3RR	D	Calcreted former beach ridges with stony, very shallow red
MAC	0.5	Rise	B3RR	D	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: Shallow sandy loam on calcrete - B3 and Rock or exposed calcrete - RR.
MBB	1.7	Rise	B3B7	٧	Mainly sandy red Tenosols/Kandosols on calcreted
		Swale	В3	L	calcarenite with shallow calcareous sands. Less than
MBC	1.4	Rise	B3B7	D	50% bare calcrete
		Swale	В3	М	MBB Gently undulating rises with shallow reddish sand,
MBh	1.2	Rise	B3B7	V	often over poorly structured brown clay, on calcreted
		Swale/flat	B3N2	L	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: Shallow sandy loam on calcrete - B3 and Sand over friable brown clay on calcrete - B7.  Swales:  Shallow sandy loam on calcrete - B3 and Wet saline clay loam - N2.
M-C	1.3	Rise	RRB3	D	Undulating rises, with mostly bare rock or very thin sand on





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					calcreted calcarenite; occasionally soils have thin red clay
					subsoils on calcrete.
					Main soils: Rock or exposed calcrete – RR and Shallow
					sandy loam on calcrete - B3.
MGX	0.4	Plain	B3B2	V	Poorly drained plain with shallow, often calcareous sandy
		Swamp	N3	С	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: Shallow sandy loam on calcrete - B3 and Shallow
					<u>calcareous loam on calcrete</u> - <b>B2</b> .
MD	0.4	6	110		Swamps: Wet clay loam - N3.
MtB	0.4	Sandy rise	H2	V	Mainly Petrocalcic Rudosols with sandy surfaces.
14.00		Stony rise	B3RR	L	MtB Gently undulating sandy rises with deep, mostly
MtBB	2.9	Sandy rise	H2	٧	calcareous, siliceous sand. 10-20% stony rises with shallow
		Stony rise	B3RR	L	red sand on calcreted calcarenite or bare calcrete.
					MtBB As above with medium height calcreted dune cores.  Main soils:
					Sandy rises: Deep brown sand - H2.
					Stony rises: Shallow sandy loam on calcrete - B3 and Rock or exposed calcrete - RR.
MUC	4.2	Rise	B3B1	D	Mainly shallow calcareous Rudosols, Calcarosols and
MUM	0.6	Rise	B1B8	V	Tenosols on calcreted, aeolianite with shallow calcareous
WICIVI	0.0	KISC	H1	<b>V</b>	Rudosols and dark brown Tenosols. Less than 50% bare
		Swale	B8H1	С	calcrete.
		Swale	DOITI		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: Shallow sandy loam on calcrete - B3, Shallow sand
					on calcrete - <b>B8</b> , Shell sand - <b>H1</b> and Shallow highly
					<u>calcareous sandy loam on calcrete</u> – <b>B1</b> .
					Swales: Shallow sand on calcrete - B8 and Shell sand - H1.
MxD	1.0	Rise	B8B1	V	Mainly petrocalcic Calcarosols with over 20% loamy Red
		Swale	B2	L	Kandosols or Tenosols.
					Rolling rises with shallow bleached siliceous sand, or shelly
					calcareous sand on calcreted calcarenite.
					Main soils:
					Rises: Shallow sand on calcrete - B8 and Shallow highly
					calcareous sandy loam on calcrete – <b>B1</b> .
					Swales: Shallow calcareous loam on calcrete - B2.
VdC	0.02	Flat	B3N3	D	Sub-coastal lake margin plain with mostly shallow sand
			H2		over calcrete; in association with wet soils and deep
					calcareous siliceous sands on rises. 10-30% bare calcrete;
			1		10-30% water.
					Main soils:
					<u>Shallow sandy loam on calcrete</u> - <b>B3</b> , <u>Wet clay loam</u> - <b>N3</b>
V.CD	1 1	EL. I	D.C.	1,,	and Deep brown sand - <b>H2</b> .
VfB	1.1	Flat	B3	V	Shallow (<30cm deep) soils on marine limestone or
		Stony rise	B3	ļ L	calcrete.
		Dune	H2	I L	VfB Flats and 10-20% stony rises with shallow sand on
		Swamp	N2N3	L	calcrete; 10-30% bare calcrete. 10-20% dunes with deep
VfG	0.8	Flat	В3	E	calcareous siliceous sands. 10-20% swamps with, often
		Stony rise	B3	С	saline, wet sandy loam to loam soils.
		Dune	H2	L	VfG Lagoon margin flat with shallow sand over calcrete.
		Swamp	N2N3	L	20-30% stony rises with shallow sand over calcrete. 10-20%
				1	dunes with calcareous siliceous sands. 10-20% swamps

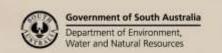




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					with, often saline, wet sandy loam to loam soils.
					Main soils:
					Flats: Shallow sandy loam on calcrete - B3.
					Stony rises: Shallow sandy loam on calcrete - B3.
					Dunes: Deep brown sand - H2.
					Swamps: Wet saline clay loam - N2 and Wet clay loam -
					N3.
WBA	0.2	Rocky coast	B1B3	D	WBA Steep rocky coast with very shallow, often shelly,
		,	H2		calcareous, sand on calcreted calcarenite. Deep
WBB	0.3	Cliffs	B1B3	D	calcareous siliceous sands are also common. 10-30% bare
	0.0	· · · · · ·	H2		calcrete.
					WBB Coastal cliffs, soils as above.
					Main soils: Shallow highly calcareous sandy loam on
					<u>calcrete</u> – <b>B1</b> , <u>Shallow sandy loam on calcrete</u> - <b>B3</b> and
					Deep brown sand - <b>H2</b> .
WEa	0.5	Beach	H1H2	D	Majority of land is part of a modern coastal environment
WEb	0.1	Dune	H2H1	E	over 50% is coastal dunes, beaches & sand spreads. Soils
WED	0.1			E	are mostly calcareous siliceous sand.
*****	10 (	Stony plain	B3B1		· ·
WEc	18.6	Dune	H1H2	D	WEa Beach with deep shelly calcareous sand or
		Beach	H1H2	М	calcareous siliceous sand. Bare and unstable.
WEC	17.8	Dune	H1H2	D	WEb Bare and unstable dunes with deep shelly calcareous
WED	1.4	Dune	H1H2	D	sand or calcareous siliceous sand; 10-30% shelly sand
WEe	1.9	Dune	H1H2	D	grading to sandy loam. Stony plains co-dominant with
WEE	4.0	Dune	H1H2	D	shallow calcareous sand on calcrete; 10-30% deep sands
		Swale	N3	М	or bare calcrete.
WEF	0.1	Dune	H1H2	V	<b>WEc</b> Active, bare, high coastal dunes, as above. <10%
	•••	Swamp	N3	С	beaches.
WEG	1.4	Dune	H1H2	V	<b>WEC</b> High dunes, mostly vegetated and stable, as above.
,,,EG	1.7	Swamp	N3	L	<10% beaches.
WEH	1.3	Low dune	H1H2	V	WED Dunes, mostly vegetated and stable, as above. <10%
WEII	1.3			C	rocky coast with bare calcrete or shallow calcareous or
		Swampy	N3	C	siliceous sand. <10% beaches.
*****	100	swale			WEe Active, bare, low coastal dunes and sand spreads, as
WEI	12.9	Dune	H1H2	٧	above.
		Flat	N2H2	С	<b>WEE</b> Low dunes, mostly vegetated and stable, as above.
WEJ	2.4	Dune	H1H2	Е	<10% swales with wet deep sands or occasionally, peat.
		Stony plain	B3B1	E	WEF Stable vegetated high dunes as above on gentle
		Swamp	N2	С	slopes. 20-30% swampy swales with wet deep sands or
WEQ	0.3	Flat	N2H2	D	occasionally, peat.
WER	0.3	Flat	N2H2	D	WEG Stable vegetated dunes as above on gentle slopes.
WET	0.1	Flat	N2H2	V	10-20% swampy swales with wet deep sands or
		Dune	H1H2	C	occasionally, peat.
WEw	1.1	Dune	H1H2	D	WEH Stable vegetated low dunes as above on gentle
WEW	1.1	Dune	H1H2	D	slopes. 20-30% swampy swales with wet deep sands or
WEX	0.7	Dune	H1H2	V	occasionally, peat.
,,, DV	0.7	Tidal flats	H2N3	L	WEI Stable vegetated high dunes as above on gentle
		naar nais	B3	L	slopes. 20-30% swampy flats with saline wet deep sands.
			ВЗ		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,
			I		with soils as above.



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WHE	3.2	Sand spread	H1H2	Е	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.  Main soils:  Beaches: Shell sand - H1 and Deep brown sand - H2.  Dunes: Shell sand - H1 and Deep brown sand - H2.  Swamps: Wet clay loam - N3 and Wet saline clay loam - N2c  Flats: Wet saline clay loam - N2c and Deep brown sand - H2.  Stony plains: Shallow sandy loam on calcrete - B3 and Shallow highly calcareous sandy loam on calcrete - B1  Tidal flats: Deep brown sand - H2, Wet clay loam - N3 and Shallow sandy loam on calcrete - B3.  Sand spreads with deep sands; co-dominant with rocky flats. Rocky flats with bare calcrete, thin, shelly or siliceous
		Rocky flat	RRB1 B3	E	sand, on calcrete.  Main soils:  Sand spreads: Shell sand - H1 and Deep brown sand - H2.  Rocky flats: Rock or exposed calcrete - RR, Shallow highly calcareous sandy loam on calcrete - B1 and Shallow
					sandy loam on calcrete - <b>B3</b> .
WJI	7.7	Coastal Flat	N2H2	V	Coastal flats with soils which are calcareous in some part of
		Dune	H1H2	С	the profile.
WJQ	0.5	Coastal Flat	N2H2	D	WJI Coastal flats with moderately saline wet sands and
WJt	1.2	Coastal Flat	N2H2	V	deep calcareous siliceous sands; or occasionally, shallow sand on calcrete. 20-30% high dunes with shelly or
		Dune Swamp	H1H2 N2N3	M	calcareous siliceous sands.
		σωαιτιμ	CNIZVI	/VI	WJQ Coastal flats with slightly to moderately saline wet sands and deep calcareous siliceous sands as above. 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. Main soils: Coastal flats: Wet saline clay loam - N2c and Deep brown sand - H2. Dunes: Shell sand - H1 and Deep brown sand - H2. Swamps: Wet saline clay loam - N2c and Wet clay loam - N3.
WNs	0.1	Flat	H1H2 B3	V	Landscapes dominated by coastal swamps.  WNs Marginally saline coastal flats with deep shelly
XVNT4	0.4	Swamp	N2	L	calcareous sand, calcareous siliceous sand, or shallow
WNt	0.4	Flat	H1H2 B3 H1H2	E	sand on calcrete. 10-20% swamps with saline, wet, dark, organic sandy loam.  WNt Marginally saline coastal flats as above. 20-30% bare,
		Dune Swamp	N2	L	unstable dunes, soils as above. 10-20% moderately saline
					swamps with dark organic sands. Main soils:  Coastal flats: Shell sand - H1, Deep brown sand - H2 and Shallow sandy loam on calcrete - B3.  Swamps: Wet saline clay loam - N2c.  Dunes: Shell sand - H1 and Deep brown sand - H2.
WOr	0.3	Flat	H1H2	٧	Coastal flats with mostly deep, shelly calcareous, and
		Swamp	B3	<u> </u>	calcareous siliceous sand, but often shallow over calcrete.
		Swamp Dune	N2 H1H2	С	20-30% swamps with wet saline sandy soils. <10% bare unstable dunes as above; <10% stony rises with shallow
		Stony rise	B2	M	calcareous sandy loam on calcrete, or occasionally, bare calcrete.  Main soils:
				<u> </u>	Flats: Shell sand - H1, Deep brown sand - H2 and Shallow





ViC	0.1	Constant	NI	2	sandy loam on calcrete - B3.  Swamps: Wet saline clay loam - N2c.  Dunes: Shell sand - H1 and Deep brown sand - H2.  Stony rises: Shallow calcareous loam on calcrete - B2.
XtC	0.1	Swamp	N1	D	Peat swamps.
Xtd	0.7	Swamp Rise	N1 I2	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: Wet clay loam - N3 and Peaty soil - N1.  Rises: Wet highly leached sand - 12.
XuC	0.3	Swamp	N3	D	XuC Swamps with wet deep sand soils. 10-30% peat.
Xuf	0.2	Swamp	N3	٧	<b>Xuf</b> Swamps with wet, non-peaty dark sandy loam soils. 10-
		Stony rise	B2B3 B5	С	30% water filled. 20-30% stony rises with shallow sandy loam, often calcareous, or over thin dark sandy clay loam, on
Xul	0.2	Swamp	N3	٧	calcrete.
		Stony rise	B2B3 B5	С	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: Wet clay loam - N3.  Stony rises: Shallow calcareous loam on calcrete - B2, Shallow sandy loam on calcrete - B3 and Shallow dark clay loam on limestone - B5.
ZD-	0.3	Salt lake	N2	D	Salt lakes, with bare salt crusts occasionally submerged. Highly saline dark clay loamy surface soils. Main soils: Wet saline clay loam - N2c.
ZF-	0.4	Brackish lake	N2WW	D	Brackish lake, often water filled or with wet saline dark clay loamy surface soils.  Main soils: Wet saline clay loam - N2c.

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

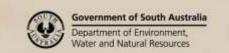
- D Dominant in extent (>90% of SLU)
- V Very extensive in extent (60–90% of SLU)
- E Extensive in extent (30–60% of SLU)
- C Common in extent (20–30% of SLU)
- L Limited in extent (10–20% of SLU)
- M Minor in extent (<10% of SLU)

## Detailed soil profile descriptions:

- 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.
- 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.





- 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.
- 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.
- 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** <u>Siliceous sand (Sandy Calcarosol-Tenosol)</u>

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.

- 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** <u>Wet saline clay loam (Dermosolic, Salic Hydrosol)</u>

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

