PNE Port Neill Land System

Area: 330.1 km^2

Landscape: Very gently undulating sandplain underlain by Tertiary sediments mantled by highly calcareous silty sands (Woorinen Formation). There are minor low parallel siliceous sandhills draped over the main landscape. Basement rock highs protrude to the surface in two isolated areas.

Annual rainfall: 320 – 405 mm average

Main soils:

Wharminda - **G4** (Hypercalcic, Brown Sodosol)
Medium to thick sand with a bleached A2 layer abruptly overlying a hard columnar structured dispersive brown mottled clay, highly calcareous with depth, grading to alluvial or Tertiary sediments.

Wiabuna - **A4a** (Regolithic, Lithocalcic / Supracalcic Calcarosol)
Calcareous sandy loam to sandy clay loam grading to carbonate rubble.

Minor soils:

Lowan (shallow) - **G2** (Bleached, Mesotrophic, Brown Chromosol)
Very thick sand with a bleached A2 layer over a yellow to orange sandy clay loam to sandy clay.

Lowan - **H3** (Basic, Arenic, Bleached-Orthic Tenosol)
Thick bleached sand with a thin organically darkened surface layer, grading to a yellowish sand (often with darker lamellae), continuing below 150 cm.

Heggaton - **G3** (Calcic, Brown Chromosol)
Thick sand to loamy sand with a bleached A2 layer, abruptly overlying a weakly structured brown sandy clay to clay, calcareous with depth, grading to Tertiary sediments.

Skeletal soil - **L1** (Lithic / Petroferric, Leptic Tenosol / Rudosol)
Variable gravelly loamy sand to sandy clay loam over basement rock or massive ironstone at depths usually less than 50 cm.

Red brown earth - **D1** (Hypercalcic, Red Chromosol)
Thin to medium thickness sandy loam over a red well structured clay forming in weathering basement rock with abundant fine carbonate in fissures.

Magnesia soil - **A4b** (Epihypersodic, Regolithic, Supracalcic Calcarosol)
Calcareous sandy loam, grading to a very highly calcareous sandy clay loam with variable rubble, saline throughout.

Semaphore - **H1/H3** (Shelly Rudosol)
Very thick sand comprising mixed shell and quartz grains.

Saline soil - **N2** (Salic / Hypersalic Hydrosol)
Miscellaneous wet saline soil influenced by rising saline groundwater tables.

Summary: Sandy soils predominate in a landscape of very gently undulating sandplains with occasional low parallel sandhills. Sand over clay soils are characteristic. These have low fertility and are prone to wind erosion and water repellence. They also have poorly structured subsoils, which impede water movement and root growth. Calcareous sandy loams are common in association with the sandy soils. These are more fertile and less prone to wind erosion than the sandy soils, but often have limited water storage capacity. On sandhills, sands are deeper, very infertile, and highly susceptible to wind erosion and water repellence.

Soil Landscape Unit summary: 10 Soil Landscape Units (SLUs) mapped in the Port Neill Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
DIB	0.1	Very gentle slopes	Red brown earth / Skeletal	D	Fertile sandy loam with slight erosion potential. Some shallow semi arable soils.
DTC	1.1	Gentle sandy slopes	Heggaton	V	Marginally fertile, wind erosion prone, water repellent sandy soils, with areas of shallow soils and rocky outcrop.
		Rocky slopes	Skeletal	C	
GFB	78.7	Very gentle sandy slopes	Wharminda	V	Mixture of sandy and calcareous sandy loam soils, with variable sandhills which have moderate wind erosion potential. Soils are: Wharminda: Low fertility sandy soil with poorly structured subsoil (waterlogging, poor root growth), moderate wind erosion potential, water repellent. Wiabuna: Moderately fertile calcareous sandy loam with slight wind erosion potential Lowan: Very low fertility, moderate to high wind erosion potential, water repellent. Shallow Lowan: Similar to Lowan, but with shallower sand - better waterholding capacity. Magnesia soil: Moderately to highly saline variant of Wiabuna soil Minor saline seepage in **GFB** and **GGB**. Some boron toxicity in Wharminda and Wiabuna soils.
			Wiabuna	E	
		Very gentle sandy loam slopes	Magnesia soil	M	
GGB	13.4	Very gentle sandy slopes	Wharminda	E	
		Very gentle sandy loam slopes	Wiabuna	C	
			Magnesia soil	M	
		Low sandhills	Shallow Lowan / Lowan	L	
GXB	1.8	Very gentle sandy slopes	Wharminda	V	
		Low sandhills	Shallow Lowan / Lowan	C	
O-C	0.2	Moderate sandhills	Shallow Lowan / Lowan	D	Dunefields where the sandhill coverage is more than 30%. Wind erosion potential is moderately high (**O-C**) to moderate (**OrJ**). Soils as above.
OrJ	1.9	Swales	Wharminda / Wiabuna	E	
		Low sandhills	Shallow Lowan / Lowan	E	
WFD	0.1	Moderate coastal sandhills	Semaphore	D	Very high wind erosion potential and very low fertility - no agricultural use.
ZB-	2.7	Saline flats	Saline soil	D	Too salty for cropping, but suitable for salt tolerant grasses and forage species.
ZC-	<0.1	Highly saline flats	Saline soil	D	No agricultural value.

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

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

Further information: DEWNR Soil and Land Program