

# TUF Tumby Flats Land System

**Area:** 142.3 km<sup>2</sup>

**Landscape:** Gently inclined to flat outwash fans between the eastern edge of the Koppio Hills and the sea. Most of the land is underlain by alluvial sediments (Pooraka Formation), but in places highly calcareous Woorinen Formation sediments protrude through the sedimentary cover. These are probably underlain by Ripon/Bakara Calcrete. Along the coastline are modern dunes (Semaphore Sand), backswamps (Yamba Formation), and calcarenites (cemented dune sands of the Bridgewater Formation). These are covered in places by windblown siliceous sands.

**Annual rainfall:** 325 - 375 mm average

**Main soils:**

Red brown earth (sodic) - D3 (Calcic, Red Sodosol)  
Medium to thick hard loam with a massive sandy clay loam A2 layer, over a weakly prismatic red clay, moderately calcareous with depth, grading to alluvial sediments.

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

Alluvial soil - M4 (Eutrophic, Red Kandosol)  
Medium to thick sandy loam grading to a red sandy clay loam to clay, becoming sandier with depth.

Yamba - N2 (Hypersalic Hydrosol)  
Variable highly saline sand and clay of coastal flats and swamps.

**Minor soils:**

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

Russell - B1 (Supravесcent, Petrocalcic, Lithocalcic Calcarosol)  
Medium thickness highly calcareous loamy sand to sandy loam containing increasing amounts of rubble with depth, over sheet calcrete at less than 50 cm.

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 (rises) - A4b (Regolithic, Lithocalcic / Supracalcic Calcarosol)  
Calcareous sandy loam to sandy clay loam grading to carbonate rubble.

Magnesia soil - A4c (Epihypersodic, Supracalcic, Regolithic Calcarosol)  
Calcareous sandy loam to sandy clay loam, becoming more clayey and rubbly with depth. Saline throughout.

**Summary:** Gently inclined outwash fans dominated by deep loam over red clay soils, and calcareous sandy loams. These soils are deep, moderately to highly fertile and well drained. However, a significant proportion of the land is affected by salinity, and most is slightly to moderately susceptible to both wind and water erosion. The coastal strip includes fragile dunes and saline backswamps of high conservation value.



**Soil Landscape Unit summary:** 14 Soil Landscape Units (SLUs) mapped in the Tumby Flats Land System

SLU	% of area	Component	Main soils	Prop#	Notes
GFA	1.9	Low sandy rises	Wharminda	V	Coastal land where siliceous sands have accumulated on Bridgewater Calcarenites. <u>Wharminda</u> : Low fertility sandy soil with poorly structured subsoil (waterlogging, poor root growth), moderate wind erosion potential, water repellent. <u>Wiabuna</u> : Moderately fertile calcareous sandy loam with slight wind erosion potential.
		Low sandy loam rises	Wiabuna (rises)	E	
JFB	60.7	Very gentle slopes	RBE / Wiabuna / Alluvial soil	D	Fans and flats formed on Pooraka sediments. Water erosion potential nil to moderate, slight wind erosion potential. Sporadic salt affected land throughout (seepage and magnesia), more in <b>JFK</b> and <b>JFT</b> . <u>RBE</u> : Deep, fertile, well drained loam over red clay <u>Wiabuna (flats)</u> : Moderately fertile calcareous sandy loam with slight wind erosion potential. <u>Alluvial soil</u> : Deep and fertile, but prone to salinity.
JFC	5.0	Gentle slopes	RBE / Wiabuna / Alluvial soil	D	
JFJ	0.2	Eroded watercourses	RBE / Wiabuna / Alluvial soil	D	
JFK	9.7	Flats with 2-10% salt affected land	RBE / Wiabuna / Alluvial soil	D	
JFT	0.8	Flats with 10-20% salt affected land	RBE / Wiabuna / Alluvial soil	D	
MdB	2.2	Stony rises	Russell	D	Shallow stony loamy sand on Bridgewater calcarenite. Non arable.
SDB	1.1	Sandy loam rises	Wiabuna (rises)	D	Calcareous sandy loam - outlier of Yaranya System. <u>Wiabuna</u> : Moderately fertile calcareous sandy loam with slight wind erosion potential.
			Magnesia soil	M	
WFE	3.7	Low coastal dunes	Semaphore	D	Coastal landscapes of highly infertile and wind erosion prone dunes, with highly saline backswamps. Non arable and of little grazing value - conservation areas.
WFe	0.7	Low bare coastal dunes	Semaphore	D	
WO-	4.3	Saline back swamp	Yamba	D	
WR-	5.2	Saline back swamp	Yamba	V	
		Low coastal dunes	Semaphore	L	
ZA-	3.9	Saline flats	Saline soil	D	<b>ZA-</b> is non arable, but suitable for salt tolerant pasture and fodder plants.
ZC-	0.6	Highly saline flats	Saline soil	D	<b>ZC-</b> is highly saline and with low productive potential.

# PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

- |   |  |   |                                   |
|---|--|---|-----------------------------------|
| 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](#)

