

NUN Nunyah Land System

(Equivalent to EYB5-Nunyah Land Type of Rangelands)

Area: 1,243.1 km²

Landscape: Gently undulating dunefields of parallel siliceous sands. Ripon / Bakara Calcrete underlies the land and is largely overlain by calcareous silty sands of the Woorinen Formation. Soils formed on these materials are either shallow and stony, or moderately deep highly calcareous sandy loams. Overlying this land surface are the low to moderate dunes of Molineaux Sand. There is one small granite outcrop on a basement high.

Annual rainfall: 275 – 320 mm average

Main soils: Shallow Moornaba - H2a (Calcareous, Arenic, Brown-Orthic Tenosol / Regolithic, Calcic Calcarosol)

Medium thickness brown sand over yellowish sand with fine carbonate and calcrete rubble within 50 cm.

Bookabie - A4a/A4b (Regolithic, Lithocalcic / Hypercalcic Calcarosol)

Calcareous soft sandy loam to sandy clay loam, becoming more clayey and calcareous with depth, over Class III B or C (A4a) or IIIA (A4b), fine to rubbly carbonate in a sandy clay loam to light clay matrix, from about 40 cm.

Magarey - A1a (Supravescent, Hypercalcic / Lithocalcic Calcarosol)

Very highly calcareous (more than 40% CaCO₃) soft sandy loam to light sandy clay loam grading to very highly calcareous light sandy clay loam with variable rubble content.

Chintumba - B1 (Hypervescent, Petrocalcic, Lithocalcic Calcarosol)

Medium thickness very highly calcareous sandy loam to sandy clay loam containing increasing amounts of rubble with depth, over sheet calcrete at less than 50 cm.

Minor soils: Moornaba - H2b/H2c (Calcareous, Arenic, Red-Orthic / Brown-Orthic Tenosol)

Very thick red to brown sand, becoming weakly calcareous and often grading to an orange clayey sand deeper than 50 cm, overlying sheet calcrete (H2b) or fine to rubbly carbonate (H2c).

Sandy rise - A4c (Regolithic, Hypercalcic / Lithocalcic Calcarosol)

Slightly to highly calcareous soft loamy sand to sandy loam becoming more clayey and calcareous with depth over Class III A, B or C carbonate in a sandy loam to light sandy clay loam matrix.

Wookata - A1b (Supravescent, Hypercalcic / Lithocalcic Calcarosol)

Highly calcareous (more than 40% CaCO₃) soft loamy sand to sandy loam grading to very highly calcareous sandy loam with variable rubble content.

Magnesia soil - A1c / A4d (Hypervescent / Epiphyersodic, Regolithic, Hypercalcic Calcarosol)

Very highly calcareous (A1b) to calcareous (A4b) sandy loam to loam becoming more clayey and calcareous at depth with variable rubble, continuing below 120 cm, and saline throughout.

Skeletal soil - L1 (Lithic, Leptic Tenosol / Rudosol)

Variable gravelly loamy sand to sandy clay loam over basement rock at depths usually less than 50 cm.



Summary:

The sandhill-swale complex comprises three main elements. Calcareous sandy loams in swales are the most common soils. They are moderately deep, marginally to moderately fertile, with slight to moderate wind erosion potential. They have elevated subsoil boron and salt levels, and magnesia patches occur sporadically. Other swales are stony, with shallow soils, often semi to non-arable. The sandhills have moderately deep to deep infertile sands, with moderate to high wind erosion potential and some susceptibility to water repellence. There are minor magnesia patches associated with stony soils.

Soil Landscape Unit summary: 19 Soil Landscape Units (SLUs) mapped in the Nunyah Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
A-g	<0.1	Rocky outcrops	Skeletal	D	Shallow stony soil and rock outcrop - non arable.
QAA	0.7	Stony flats Sandy loam flats	Chintumba Bookabie / Magarey	V C	Stony flats and rises formed on hard calcrete which is at or near the surface over most of the area. The soils are shallow with very low water holding capacities, and sufficient surface stone and sheet rock to severely hamper or prevent cultivation. There are limited areas of moderately deep calcareous sandy loams with moderate fertility, slight to moderate wind erosion potential, and elevated subsoil boron and salt. Sandhills are infertile and susceptible to wind erosion and sometimes water repellence.
QBA	0.3	Stony flats Sandy loam flats	Chintumba Wookata	V C	
QHA	2.5	Stony flats	Chintumba	D	
QHB	0.4	Stony rises	Chintumba	D	
QOA	3.8	Stony flats	Chintumba	V	
		Low sandhills	Thin Moornaba	C	
SMB	0.3	Sandy loam rises with minor magnesia	Bookabie	D	Flats and rises formed on highly calcareous Woorinen Formation materials, with underlying calcretes exposed in places. There is slight water erosion potential on rises. Main soils are: <u>Bookabie</u> : Moderate fertility calcareous sandy loam with moderate subsoil boron and salt. Slight wind erosion potential. <u>Magarey</u> : Marginal fertility highly calcareous sandy loam with high subsoil boron and salt. Slight wind erosion potential. <u>Chintumba</u> : Very shallow, restricted waterholding capacity, extensive surface stone, often semi arable. <u>Sandy rise</u> : Sandy soil with moderate wind erosion potential and marginal fertility. <u>Thin Moornaba</u> : Moderately deep, low fertility sand with moderate to high wind erosion potential.
SUA	0.3	Sandy loam flats	Bookabie / Magarey	E	
		Sandy rises	Sandy rise	E	
		Stony flats	Chintumba	L	
SUB	14.4	Sandy loam slopes	Bookabie / Magarey	E	
		Sandy rises	Sandy rise	E	
		Stony slopes	Chintumba	L	
SxB	0.2	Sandy loam slopes	Bookabie / Magarey	V	
		Low sandhills	Thin Moornaba	L	
SzA	0.5	Sandy loam flats with minor magnesia	Bookabie / Magarey	V	
		Stony flats	Chintumba	E	
UHI	4.3	Sandy loam swales	Bookabie / Magarey	E	Sandhill-swale complex where sandhill frequency exceeds 30%. Swales are a mixture of calcareous sandy loams over Woorinen deposits, and shallow stony soils on calcrete, with minor magnesia patches. Main soils are: <u>Bookabie</u> : Moderate fertility calcareous sandy loam with moderate subsoil boron and salt. Slight wind erosion potential. <u>Magarey</u> : Marginal fertility highly calcareous sandy loam with high subsoil boron
		Moderate sandhills	Moornaba	E	
UII	0.3	Stony swales	Chintumba	E	
		Moderate sandhills	Moornaba	E	
		Sandy loam swales	Bookabie / Magarey	L	
UIJ	2.0	Sandy loam swales	Bookabie / Magarey	V	
		Low sandhills	Thin Moornaba	E	



UJH	4.6	Sandy loam swales	Bookabie / Magarey	E	and salt. Slight wind erosion potential. <u>Chintumba</u> : Very shallow, restricted waterholding capacity, extensive surface stone, often semi arable. <u>Moornaba</u> : Deep low fertility sand with moderate to high wind erosion potential. <u>Thin Moornaba</u> : As for Moornaba, but with calcareous materials at less than 50 cm.
		Moderate sandhills	Moornaba	E	
		Stony swales	Chintumba	L	
UJI	5.2	Sandy loam swales	Bookabie / Magarey	V	
		Moderate sandhills	Moornaba	E	
UJJ	59.6	Sandy loam swales	Bookabie / Magarey	E	
		Low sandhills	Thin Moornaba	E	
		Stony swales	Chintumba	L	
UMJ	0.4	Stony swales	Chintumba	E	
		Low sandhills	Moornaba	E	
		Sandy loam swales	Bookabie / Magarey	L	
YPL	0.2	Sandy loam flats	Magarey	D	Marginal fertility highly calcareous sandy loam with high subsoil boron and salt. Slight wind erosion potential.

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)

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

