MIB Minburra Land System

Area: 36.9 km^2

Landscape: Minburra Plain and associated plains with basement rock outliers of the adjacent etch plain in the adjacent Hilpara Land System.

Geology: Quaternary alluvium with minor low outcrops of Saddleworth Formation siltstones, Cradock Quartzite and Appila Tillite.

Topography: Level plains with broad watercourses, flood-over areas and occasional low rises of hard rock or calcareous pediment remnants. The main drainage is the Hilpara Creek which flows from the west through the range, across Minburra Plain, to the north-east. The watercourses are incised in the west, broad braided stream beds in the middle of the land system, and change to eroded and gullied in the north-east.

Elevation: Around 310 m asl on the western side, grading to about 275 m on the eastern edge

Relief: Local relief is mostly less than 5m with occasional rises up to 10 m above the surrounding plain.

Annual rainfall: 235 – 255 mm average

Soils: Calcareous loams to clay loams occur on the current alluvial plains and flood over plains. Thin crusty clay loam over friable red clay soils with soft carbonate and/or gypsum are also common on pediments, low rises and plains. Ironstone gravelly loam over red clay soils also occur, on level to gently sloping plains especially on the eastern side. Moderately shallow calcareous sandy loam grading to clay loam with much soft carbonate/rubble soils occur on low rises with outcropping basement rocks.

Main soils:

Formed on outwash of plains and pediments

A5 Rubbly calcareous loam to clay loam on clay
D4 Clay loam over pedaric red clay
D2 Clay loam over red clay

Minor soils:

Outwash plains and pediments

A4 Deep (rubbly) calcareous sandy loam
C1 Gradational sandy loam
C3 Friable gradational sandy clay loam
C4 Hard gradational clay loam
E2 Red cracking clay
M1 Deep alluvial loam
M3 Deep gravelly sandy loam

Basement rock rises

A2 Shallow calcareous loam
B2 Shallow calcareous loam on calcrete
C2 Gradational sandy loam on rock
D1 Loam over clay on rock
D7 Loam over dispersive clay on rock
L1a Shallow stony loamy sand
L1b Shallow stony loam

Summary: The Minburra Land System consists of the alluvial plain of the Hilpara Creek with calcareous loamy soils and loam over clay soils, with some low rises of basement rock.

Soil Landscape Unit summary: 14 Soil Landscape Units (SLUs) mapped in the Minburra Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
EWG	1.3	Gently undulating rises	L1B2RR	D	Gently undulating rises formed on tillite, siltstone or quartzite. Rocky outcrops are common and ironstone gravels occur in places. 5-10% of land is gullied. Main soils: shallow stony loamy sand - **L1a** and gradational sandy loam on rock - **C2** with rock outcrop - **RR**.
JNA	4.3	Plains	D4D2A5	D	Plains and pediments formed on clayey outwash deposits with mostly clay loamy soils. **JNA** Level plains, 5-10% affected by gullying JNU Level plains, 5-10% scalded. **JNY** Drainage lines with 5-10% scalding. Previously eroded watercourses have largely stabilized. **JNl** Gently sloping pediments, 1-3%slope. Gullying and scalding together affect more than 50% of the land. **JNo** Creek flats, 10-20% affected by gullying; 40-50% scalded. Main soils: clay loam over red clay - **D2**, clay loam over pedaric red clay - **D4** and rubbly calcareous loam on clay - **A5**, with red cracking clay - **E2**.
JNU	37.3	Plains	D4D2A5	D	
JNY	4.8	Drainage lines	D4D2A5	D	
JNl	1.6	Gently sloping pediments	D4D2A5	D	
JNo	8.7	Creek flats	D4D2A5	D	
JZU	1.8	Plains	D4C4	D	Complex of level pediment plains and gently undulating basement rock rises. Up to 10% of land is scalded. Main soils: ***Pediment plains***: clay loam over pedaric red clay - **D4**, and hard gradational clay loam - **C4** ***Rocky rises***: shallow stony loam - **L1b**, loam over clay on rock - **D1** and shallow calcareous loam - **A2**, with loam over dispersive clay on rock - **D7**
		Gently undulating rises	L1D1A2	M	
KFB	3.5	Pediments	A5	D	Pediments and plains formed on clayey outwash deposits. **KFB** Gently undulating pediments, 1-3% slope. **KFU** Plains with 10-50% scalded land and 5-10% gullied. **KFW** Undulating pediments with slopes of 3-10%. 5-10% of land is gullied and 5-10% is scalded. Main soils: rubbly calcareous clay loam on clay - **A5**, with clay loam over pedaric red clay - **D4**.
KFU	3.7	Plains	A5	D	
KFW	6.9	Pediments	A5	D	
KGo	4.3	Creek flats	C3C1	D	Creek flats formed on medium grained alluvium. 10-20% of banks are gullied banks and 5-10% of land affected by scalding. Main soils: friable gradational sandy clay loam - **C3** and gradational sandy loam - **C1**.
KHH	1.8	Undulating pediments	A4D4C1	D	Undulating pediments with slopes of 3-10%, formed on outwash. Gullying affects 5-10% of land. Main soils: deep (rubbly) calcareous sandy loam - **A4**, clay loam over pedaric red clay - **D4** and gradational sandy loam - **C1**.
KQV	2.2	Pediments	A5	V	Complex of pediments and basement rock rises with slopes up to 3%. Up to 10% of pediment land is scalded, and around 5% is gullied. Rises not significantly affected by gullying or scalding. Main soils:

		Low rises	A2	C	***Pediments***: rubbly calcareous loam on clay - **A5**, with clay loam over pedaric red clay - **D4**. ***Rises***: shallow calcareous loam - **A2**, with shallow calcareous loam on calcrete - **B2** and rock outcrop - **RR**.
XKH	17.8	Alluvial plains	M1M3D4	D	Alluvial plains with eroded watercourses. Scalding affects 5-10% of land. Main soils: deep alluvial loam - **M1**, deep gravelly sandy loam - **M3** and clay loam over pedaric red clay - **D4**, with friable gradational sandy clay loam - **C3**.

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)

Detailed soil profile descriptions:

A2 Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous stony loam grading to soft or rubbly carbonate over weathering dolomite or calc-siltstone within 50 cm.

A4 Deep (rubbly) calcareous sandy loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol
Calcareous sandy loam grading to a very highly calcareous sandy clay loam to light clay with variable rubble, continuing below 120 cm.

A5 Rubbly calcareous loam to clay loam on clay (Regolithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous loam to clay loam grading to a very highly calcareous rubbly sandy clay loam to light clay, over a clayey substrate deeper than 60 cm, but within 120 cm.

B2 Shallow calcareous loam on calcrete (Petrocalcic, Calcic / Lithocalcic Calcarosol)
Stony calcareous sandy loam to loam, often with a very highly calcareous more clayey subsoil, over sheet calcrete within 50 cm. This grades to rubbly carbonate over weathering basement rock within 150 cm.

C1 Gradational sandy loam (Hypercalcic, Red Kandosol)
Friable sandy to loamy topsoil grading to massive red-brown alkaline loamy to clay loamy subsoil, highly calcareous with depth, over alluvium.

C2 Gradational sandy loam on rock (Calcic / Hypercalcic Red Dermosol)
Sandy loam grading to a friable red sandy clay loam to clay with soft Class I carbonate within 50 cm, grading to weathering rock within 100 cm.

C3 Friable gradational sandy clay loam (Calcic / Hypercalcic Red Dermosol)
Loam to clay loam grading to a friable red clay with abundant soft Class I carbonate within 50 cm, overlying alluvium within 100 cm.

C4 Hard gradational clay loam (Sodic, Hypercalcic, Red Dermosol)
Hard setting loam to clay loam grading to a coarsely structured dispersive red clay, highly calcareous with depth, over clayey alluvium. Includes eroded former texture contrast soils.

D1 Loam over clay on rock (Hypercalcic / Calcic, Red Chromosol)
Medium thickness hard gravelly loam over a friable and finely structured red clay, calcareous with depth, grading to weathering basement rock within 100 cm.

D2 Clay loam over red clay (Calcic / Hypercalcic, Red Chromosol)
Hard setting clay loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.

D4 Clay loam to loam over red friable clay (Calcic, Pedaric, Red Sodosol)
Thin to medium thickness clay loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.

D7 Loam over dispersive clay on rock (Calcic / Hypercalcic, Red Sodosol)
Medium to thick hard loam sharply overlying a coarsely structured dispersive red clay, calcareous with depth, grading to highly weathered kaolinized siltstone or quartzite.

E2 Red cracking clay (Epicalcareous, Epipedal, Red Vertosol)
Dark strongly structured clay grading to a well structured red calcareous medium to heavy clay continuing below 100 cm. Often containing gypsum segregations in subsoil.

L1a Shallow stony loamy sand (Paralithic, Leptic Tenosol)
Shallow stony loamy sand, often calcareous with depth, over coarse grained rock shallower than 50 cm.

L1b Shallow stony loam (Paralithic, Leptic Tenosol)
Shallow stony loam, often calcareous with depth, over weathering fine grained rock shallower than 50 cm.

M1 Deep alluvial loam (Calcareous, Regolithic, Brown-Orthic Tenosol)
Very thick brown sandy loam to loam, usually calcareous with depth, continuing below 100 cm.

M3 Stony alluvial sandy loam (Basic, Fluvic, Clastic Rudosol OR Basic, Regolithic, Red-Orthic Tenosol)
Thick to very thick sandy loam with more than 50% quartzite stones overlying boulder beds.

RR Rock outcrop.

Further information: DEWNR Soil and Land Program