

# JNB Johnburg Land System

- Area:** 101.0 km<sup>2</sup>
- Landscape:** Pediments and alluvial plains extending north from Johnburg. Much of the land consists of broad sloping pediments on which gullying is extensive. Surface soils are often gravelly, especially on the upper slopes of pediments. Drainage lines run south-eastward on the pediments, turning more southerly on the adjoining Oladdie Plain land system.
- Geology:** Holocene slope deposits and alluvial / fluvial sediments
- Annual rainfall:** 265 – 320 mm average
- Typical soils:**
- Loam to clay loam over red clay subsoils. These soils occur on gently sloping pediment plains and are often stony.
  - Thin loam to clay loam over fine structured friable red clay subsoils. These soils (pedaric Sodosols) are typically found along the foot-slopes of pediment plains and on broad alluvial plains. The surface layers are highly erodible and the soils usually have moderate to severe scalding, and are slightly to moderately saline.
  - Calcareous soils are common on pediments, often with much rubble and stone in subsoils.
  - Alluvial soils include layered loams and clays on extensive, broad alluvial plain and drainage depressions. Dark clays occur in swampy areas.
  - Gypsum mounds occur on the eastern edge of the land system in proximity to swampy areas.
- Main soils:**
- D4** (25%) Loam over pedaric red clay (Pedaric Red Sodosol-Dermosol)
  - A5** (17%) Rubbly calcareous loam on clay (Supracalcic-Lithocalcic Calcarosol on clay)
  - D2** (17%) Loam over red clay (Calcic-Hypercalcic Red Chromosol-Sodosol)
  - C1** (10%) Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)
- Minor soils:**
- D1** (9%) Loam over clay on rock (Shallow Calcic-Hypercalcic Red Chromosol)
  - A3** (4%) Deep moderately calcareous loam (Calcic Calcarosol)
  - A4** (3%) Deep (rubbly) calcareous loam (Hypercalcic-Lithocalcic Calcarosol)
- Summary:** The Johnburg Land System consists of a series of pediments and alluvial plains adjoining the Oladdie Hills Land System. Soils are loamy texture-contrast or gradational-calcareous on upper slopes, typically becoming sodic on lower slopes and plains, with associated scalding and salinity.

## Soil Landscape Unit summary: Johnburg Land System (JNB)

SLU	% of area	Component	Main soils	Prop#	Notes
ACg	4.1	Undulating rises	D1L1	D	Undulating rises with shallow red texture contrast and clay loamy gradational soils formed on limestone. Gullying affects more than 20% of land and scalding affects 5-10%. Relief is less than 30m, slopes are 3-10%. Main soils: <u>Clay loam over pedaric red clay on rock - D1</u> and <u>Shallow stony soils on rock - L1</u> . <u>Rock outcrop - RR</u> is common on steeper landscapes.
AGB	0.4	Rolling rises	D1	D	Rolling rises with shallow non-calcareous soils. Over 50% of



					basement rocks are fine grained (ie give rise to non-sandy surface textures of L, CL, LC) Less than 20% of soils have secondary carbonate accumulations. More than 50% of soils have texture contrast. 10-20% of land is gullied. Relief is less than 30m, slopes are 10-30%. Main soils: <u>Loam over clay on rock - D1</u> and <u>Shallow stony soils on rock - L1</u> .
DNm	1.5	Undulating rises	D2D1	D	Rises with shallow texture contrast soils formed on fine-grained rocks, typically Brachina Shale Formation. The soils have clay loam surface textures. <b>DNm</b> Gently undulating rises. Over 20% is gullied, 5-10% is scalded and subsoils are moderately saline. <b>DNV</b> Gently undulating rises. Scalding occurs on 5-10% of land and subsoils are moderately saline. Slopes: 1-3%, relief: < 30m. Main soils: <u>Loam over red clay - D2</u> and <u>Clay loam over pedaric red clay on rock - D1</u> .
DNV	0.3	Gently undulating rises	D1	D	
EHm	0.9	Undulating rises	L1	D	Undulating rises with shallow calcareous soils on calc-siltstone and limestone such as those of the Tapley Hill Formation, Wonoka Formation and the ABC Range Quartzite of the Wilpena Group. Gullying affects up to 5% of land, scalding occurs on 5-10% and subsoils are moderately saline. Slopes are 3-10%, relief is 9-30m. Main soils: <u>Shallow stony soils on rock - L1</u> .
EVW	0.1	Undulating rises	A2	V	Undulating rises with rock outcrops and shallow calcareous soils formed on fine-grained calcareous rocks. 5-10% of land is gullied and 5-10% is scalded and subsoils are moderately saline. Slopes are 3-10%, relief is 9-30m. Main soils: <u>Calcareous loam on rock - A2</u> , <u>Bare rock - RR</u> .
		Rocky outcrop	RR	C	
JFB	31.5	Gently undulating pediments	D2D4 C1	D	Pediments with mostly red texture contrast soils with clay loam surfaces, calcareous soils occupy more than 20% and other gradational soils occupy more than 10%. <b>JFB</b> Gently undulating pediments Slopes are 1-3%, relief is less than 9m. <b>JFH</b> Undulating pediments with gullying affecting 10-20% of land, scalding affects 0-5%. Slopes: 3-10%, relief: < 9m. Main soils: <u>Loam over red clay - D2</u> , <u>Loam over pedaric red clay - D4</u> and <u>Gradational sandy loam - C1</u> .
JFH	5.4	Undulating pediments	D2D4 C1	D	
JII	17.9	Gently sloping plain	D4D1 A5	D	Gently sloping alluvial plains with red texture contrast and calcareous soils. Gullying affects 5-50% of land, most severe along watercourses. Scalding affects over 50% of land. Subsoils are moderately saline. Slopes: 1-3%, relief: < 9m. Main soils: <u>Loam over pedaric red clay - D4</u> , <u>Loam over clay on rock - D1</u> and <u>Rubblly calcareous loam on clay - A5</u> . Minor soils include <u>Deep moderately calcareous loam - A3</u> and <u>Shallow calcareous loam on calcrete - B2</u> .
JNB	1.3	Gently undulating pediments	D4D2 A5	D	Pediments and plains with non-stony pedaric, texture contrast soils with calcareous subsoils. Surface textures are clay loam most commonly. <b>JNB</b> Gently sloping pediments. <b>JNG</b> Gently sloping pediments; 10-20% of land is gullied. Slopes are 1-3%, relief is less than 9m. <b>JNI</b> Gently sloping pediment plain; gullying affects up to 50% of land, most severe along watercourses. Scalding affects nearly 50% of land. Slopes are 1-3%, relief is less than 9m. <b>JNV</b> Gently sloping pediments. Scalding affects 10-50% of land. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Loam over red clay - D2</u> , <u>Loam over pedaric red clay - D4</u> and <u>Rubblly calcareous loam on clay - A5</u> . Red clay soils ( <b>E2</b> ) occur in minor association.
JNG	1.4	Gently undulating pediments	D4D2 A5	D	
JNI	1.1	Gently undulating pediments	D4D2 A5	D	
JNV	1.5	Gently undulating pediments	D4D2 A5	D	



JYG	0.8	Gently undulating pediments	D4D1 D7	D	Pediments with mostly clay loam surfaced texture contrast soils and more than 10% soils are calcareous throughout. <b>JYG</b> Gently undulating pediments. Gullyng affects 10-20% of land. Semi-arable. Slopes: 3-10%, relief: less than 9m. <b>JYI</b> Gently sloping pediments. Gullyng affects over 20% of land and scalding affects 5-50%. Slopes: 1-3%; relief: < 9m. Main soils: <u>Loam over pedaric red clay - D4</u> and <u>Loam over clay on rock- D1</u> and <u>Loam over poorly structured clay on rock - D7</u> . Significant minor soils include <u>Rubbly calcareous loam on clay - A5</u> and <u>Gradational loam on rock - C2</u> .
JYI	3.8	Pediments	D4D1 D7	D	
JZo	3.5	Creek flat	D4A5	D	Creek flat with rocky outcrops with red texture contrast soils on flats and 20-30% rocky rises with shallow texture contrast soils. Subsoils are moderately saline. Over 20% of the creek banks have unstable gullies and more than 50% of the banks are scalded. The rocky outcrops are not scalded or gullied. Main soils: <b>Creek flats:</b> <u>Loam over pedaric red clay - D4</u> and <u>Rubbly calcareous loam on clay - A5</u> . <b>Rocky rises:</b> bare rock with 10-30% <u>Shallow stony soils on rock - L1</u> .
		Rocky outcrops	RR	C	
KFG	8.4	Gently undulating pediments	A5	D	Gently undulating pediments with calcareous gradational soils and more than 20% red pedaric texture contrast soils. 10-20% of land is gullied, 0-5% is gullied. Slopes are 1-3%, relief is less than 9m. Subsoils are moderately saline. Main soils: <u>Rubbly calcareous loam on clay - A5</u> with over 20% <u>Loam over pedaric red clay - D4</u> .
KGF	1.2	Plains	C3C1	D	Pediments and plains with sandy surface-textured red gradational soils with calcareous subsoils. <b>KGF</b> Plains with 5-10% scalded and 0-5% gullied land. Subsoils are moderately saline. Main soils: <u>Friable gradational sandy clay loam - C3</u> and <u>Gradational sandy loam - C1</u> .
KHF	0.2	Plains	A4D4 C1	D	Pediments formed on outwash with red gradational sandy soils, calcareous at depth. <b>KHF</b> Plains with 10-20% gullied land (now stable). Subsoils are moderately saline.
KHG	3.9	Gently undulating pediments	A4D4 C1	D	<b>KHG</b> Gently undulating pediments. Gullyng affects 5-10% of land. Subsoils are moderately saline. Slopes are 1-3%, relief is less than 9m.
KHJ	1.3	Drainage line	A4D4 C1	D	<b>KHJ</b> Drainage line with more than 20% gullied banks and 0-5% scalded land. Subsoils are moderately saline. Main soils: <u>Deep (rubbly) calcareous sandy loam -A4</u> , <u>Loam over pedaric red clay - D4</u> and <u>Gradational sandy loam - C1</u> .
KKH	3.6	Undulating pediments	A6A5	D	Pediments formed on outwash sediments with mostly gradational calcareous soils (Calcarosols) and more than 10% of associated soils have clayey surfaces. <b>KKH</b> Gently undulating pediment with 10-20% of land affected by gullyng. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Gradational calcareous clay - A6</u> and <u>Rubbly calcareous loam on clay - A5</u> .
KLV	0.6	Pediment	A5	D	Pediments with clay loamy calcareous soils. Subsoils are moderately saline. <b>KLV</b> Gently undulating pediment with 0-5% gullyng and 5-10% scalding. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Rubbly calcareous loam on clay - A5</u> . Minor soils include: <u>Calcareous loam on rock - A2</u> , <u>Gradational red-brown loam over rock-C2</u> and <u>Shallow calcareous loam on concrete - B2</u> .
KPo	2.5	Creek flat	A3A4	D	Creek flat with sandy surface-textured, gradational, calcareous soils. Over 20% is gullied (non-arable) and 5-10% is scalded.



					Main soils: <u>Deep moderately calcareous sandy loam - A3</u> and <u>Deep (rubbly) calcareous sandy loam - A4</u> .
KQI	1.1	Gently undulating pediment	A5	V	Gently undulating pediment and basement-rise complexes with mostly calcareous gradational soils. Over 50% of land on pediments is scalded and 5-10% is gullied. Subsoils have moderate salinity (dry saline land). Rises have few or no scalds and gullies. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Rubbly calcareous loam on clay - A5</u> on pediments and <u>Calcareous loam on rock - A2</u> on rises.
		Shallow rises	A2	C	
XHT	0.8	Drainage line	M1C1 C3	D	Drainage lines with mostly coarse textured soils. More than 20% of banks are eroded. Up to 5% scalding. Main soils: <u>Deep alluvial loam - M1</u> , <u>Gradational sandy loam - C1</u> and <u>Friable gradational sandy clay loam - C3</u> .
XKB	0.9	Alluvial plains	M1M3 D4	D	Alluvial plains with eroded watercourses. Soils are mostly medium textured (silty). Main soils: <u>Deep alluvial loam - M1</u> , <u>Deep gravelly soil - M3</u> and <u>Loam over pedaric red clay - D4</u> .

# 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/L1** Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol) (A2) OR Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol) (L1)

Shallow stony loam, calcareous throughout or with depth, overlying weathering rock shallower than 50 cm.

**A3** Deep moderately calcareous (sandy) loam (Calcic Calcarosol)

Calcareous (sandy) loam topsoil grading into loamy-clay loamy subsoil without a significant CO<sub>3</sub> buildup in the subsoil (<20% CO<sub>3</sub> in subsoil). Pediment type Calcarosols.

**A4** Deep (rubbly) calcareous loam (Hypercalcic-Lithocalcic Calcarosol)

Calcareous sandy-clay loamy topsoil grading into loamy-clay loamy subsoil with a significant CO<sub>3</sub> buildup in the subsoil. Often rubbly. Soil usually >120 cm in depth

**A5** Rubbly calcareous loamy sand on clay (Supracalcic-Lithocalcic Calcarosol on clay)

Calcareous loamy sand topsoil grading into loamy-clay loamy subsoil on a clayey substrate. Usually rubbly. Clayey substrate occurs at >60 cm and <120 cm.

**A6** Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)

Calcareous loams to clay loams grading into brown-red clay. Often rubbly.

**C1** Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)

Friable sandy to loamy topsoil grading into massive red-brown alkaline loamy to clay loamy subsoil.

**C3** Gradational clay loam (Calcic / Hypercalcic Red Dermosol)

Loam to clay loam grading to a friable red clay with soft Class I carbonate within 50 cm, grading to alluvium within 100 cm.

**D1** Loam over red clay on rock (Hypercalcic / Calcic, Red Chromosol / Sodosol)

Medium thickness hard gravelly loam over red clay, friable and finely structured, calcareous with depth, grading to weathering basement rock within 100 cm.

**D2** Hard loam over red clay (Calcic / Hypercalcic, Red Chromosol)

Hard setting sandy loam to clay loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.



- D4** Loam over red friable clay (Calcic, Pedaric, Red Sodosol)  
Thin to medium thickness fine sandy loam to loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.
- D7** Loam over dispersive red clay on rock (Calcic / Hypercalcic, Red Sodosol)  
Medium to thick hard sandy loam to clay loam sharply overlying a coarsely structured dispersive red clay, calcareous with depth, grading to highly weathered kaolinized siltstone.
- L1** Shallow stony loam (Paralithic, Leptic Tenosol)  
Shallow stony loam, often calcareous throughout or with depth, overlying weathering rock shallower than 50 cm.
- M1** Alluvial loam (Orthic Tenosol)  
Very thick loam with variable gritty or more-clayey lenses, formed over recent alluvium.
- M3** Deep gravelly soil (Gravelly Kandosol-Tenosol)  
Deep uniform loamy alluvial soils with at least 50% gravel in the major part of the profile.
- RR** Bare rock

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

