MBR Mount Bryan Land System

Valley flats of the headwaters of Burra Creek

Area: 55.8 km^2

Annual rainfall: 405 – 470 mm average

Geology: Fine grained alluvial sediments (Pooraka Formation) with small amounts of secondary carbonate segregations in the upper metre or two. There are minor basement rock highs protruding through the sedimentary cover, but they are not mapped.

Topography: The Land System represents the broader alluvial plains of the headwaters of Burra Creek. The plains extend from a low watershed 12 km south of Hallett in a southerly direction through Mt. Bryan township to Burra. The System comprises level alluvial plains associated with very gently inclined outwash fans in places. Slopes on the plains are less than 1% and on the fans, 2-3%. Watercourses are moderately well defined and they are generally stable.

Elevation: 570 m at the watershed in the north to 470 m at Burra

Relief: There is a maximum elevation difference of 20 m from watercourse to upper margin of the outwash fans.

Soils: The soils have loamy to clayey surfaces, heavy and often dispersive clayey subsoils, and are deep over alluvium.

Main soils

D3	Hard loam over red dispersive clay – approx. 35%
D2	Hard loam over friable red clay – approx. 30%
C4/E2	Red clay loam to clay – approx. 20%
M2	Gradational red clay loam – approx. 15%

Main features: This land is characterized by deep inherently fertile soils. Poor structure is the main limitation. Most soils have hard setting and sealing surfaces which cause reduced infiltration rates, excessive runoff on slopes, difficulty in working and patchy emergence. Sporadic salinity is apparent, mainly in the northern parts, and acidification is a problem in places, particularly where there have been long term lucerne stands.

Soil Landscape Unit summary: 3 Soil Landscape Units (SLUs) mapped in the Mt. Bryan Land System:

SLU	% of area	Main features #
JAA JAB JAK	12.1 33.9 54.0	Alluvial flats and outwash fans **JAA** Level plains with slopes of less than 1%. **JAB** Very gently inclined fans with slopes of 2-3%. **JAK** Level plains with slopes of less than 1% and sporadic areas affected by salinity. Main soils: hard loam over dispersive red clay - **D3** (E) and hard loam over friable red clay - **D2** (E), with gradational red clay loam - **M2** (L) and red clay loam to clay - **C4/E2** (L). This land is characterized by deep inherently fertile soils. Poor structure is the main limitation. Most soils have hard setting surfaces which tend to seal over, ponding water on the flats, or shedding it on sloping ground. Dispersive clay subsoils in the D3 soils accentuate the poor permeability characteristics. Difficulty in working and patchy emergence are other effects of poor structure. The soils generally have moderate levels of salinity at depth, and surface salinity is apparent in places. Surface soil acidification is affecting some areas, particularly where there have been long term lucerne stands.

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

(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)

Detailed soil profile descriptions:

C4/E2 Red clay loam to clay (Vertic, Red Dermosol OR Red Vertosol)
Medium thickness clay loam to clay grading to a coarsely structured heavy clay with minor soft to nodular carbonate at depth.

D2 Hard loam over friable red clay (Calcic, Red Chromosol)
Medium to thick hard setting massive fine sandy loam to clay loam abruptly overlying a red well structured friable clay with minor soft to nodular carbonate at depth.

D3 Hard loam over dispersive red clay (Calcic, Red Sodosol)
Medium to thick hard setting massive fine sandy loam to clay loam with a pronounced and sometimes bleached subsurface (A2) layer, sharply overlying a red coarse blocky dispersive clay with minor soft to nodular carbonate at depth.

M2 Gradational red clay loam (Calcic, Red Dermosol)
Medium thickness clay loam grading to a well structured light to medium clay, with minor carbonate segregations at depth.

Further information: DEWNR Soil and Land Program