WHP Wild Horse Plains Land System

Plains on the coastal side of the Pt. Wakefield Road between Dublin and Wild Horse Plains

Area: 59.6 km^2

Annual rainfall: 325 – 350 mm average

Geology: The land system is formed on red, brown and grey mottled clayey sediments characterized by friable consistence and lenses of powdery or crystalline gypsum. These sediments were probably laid down in saline or brackish lakes. The sediments were overlain by windblown calcareous materials which have hardened to a sheet calcrete cap. This has now been largely removed, leaving behind a veneer of soft to rubbly carbonates. In places, remnant sheet calcrete persists on low rises. Younger still are windblown sands which sporadically blanket the land surface, usually in linear dunes.

Topography: The Wild Horse Plains Land System is a very gently undulating plain between alluvial plains to the east and coastal flats to the west. The land has an overall westerly gradient of less than 0.2%, but there is some internal relief provided by very low stony rises (remnants of the old calcreted land surface) or by low linear dunes or sand spreads. There is no surface drainage pattern. In places the underlying saline watertable is at the surface in small salinas.

Elevation: 10 - 15 m on the eastern side to 5 m on the western side

Relief: Less than 3 m (low sand and calcrete rises)

Soils: The predominant soils are calcareous loams, with or without rubble in the subsoil. There is a range of minor soils including sandy loam over clay, shallow stony soil, variable depth sand and saline soil.

Main soils

A6	Calcareous loam - extensive (flats)
A5	Rubbly calcareous loam on clay - common (rises and flats)
G1	Dune sand - limited (sand dunes)

Minor soils

D4	Sandy loam over friable red clay – flats
B3	Shallow sandy loam over calcrete - throughout
A4	Rubbly calcareous sandy loam - rises
N2	Swamp soil
B2	Shallow calcareous sandy loam over calcrete - stony flats

Main features: The Wild Horse Plains Land System is a very gently undulating near coastal plain characterized by flats with loamy calcareous soils, low rises with rubbly calcareous soils and low sand dunes and spreads. Saline watertables are near the surface over much of the area with the result that subsurface layers are moderately salty, high in boron and strongly alkaline. Combined with the low rainfall, these conditions restrict cropping options and reduce productive potential. Productivity is further reduced by shallow stony soils and low fertility, erosion prone sands.

Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Wild Horse Plains Land System

SLU	% of area	Main features #
U-D UGQ	0.3 3.2	Parallel sand hills overlying **VIB** flats. **U-D** Isolated single low sandhills. **UGQ** Dune field of 50% low dunes and 50% marginally saline swales. Main soils: dune sand **- G1** (E) on sandhills and calcareous loam - **A6** (C) and rubbly calcareous loam on clay - **A5** (C), both in swales. This land has low productive potential. Low fertility sandy rises with high wind erosion potential alternate with marginally saline and alkaline soils in the swales.
VIB	40.6	Very gently undulating flats with about 20% low stony rises and minor sandy rises (less than 10%), formed over red, grey and brown clayey sediments. Main soils: Flats: Calcareous loam - **A6** (V), rubbly calcareous loam on clay - **A5** (L) and sandy loam over friable red clay - **D4** (L) Stony rises: Rubbly calcareous loam on clay - **A5** (E), shallow sandy loam over calcrete - **B3** (E) and shallow calcareous sandy loam over calcrete - **B2** (L) Sandy rises: Dune sand **- G1** (D) These soils are alkaline and marginally to moderately saline in the subsoil. Cropping options are limited due to these factors and the moderately low rainfall. Induced nutrient deficiencies are likely due to the high alkalinity. Moisture storage capacity is limited on shallow soils (particularly on stony rises) and the sandy rises have very low fertility and are highly susceptible to wind erosion.
VKL	26.3	Very gently undulating plains with 20-30% sand spreads, 10-20% stony rises and 5-10% swampy depressions formed over red, grey and brown clayey sediments. Main soils: Flats: Calcareous loam - **A6** (V), rubbly calcareous loam on clay - **A5** (L) and sandy loam over friable red clay - **D4** (L) Sandy rises: Dune sand **- G1** (D) Stony rises: Rubbly calcareous loam on clay - **A5** (E) and shallow sandy loam over calcrete - **B3** (E), with rubbly calcareous sandy loam - **A4** (L). Swamps: Swamp soil - **N2** (D) This land is marginal for agriculture due to soil salinity, low rainfall and variable (often shallow stony or sandy) soils. The sandy soils are particularly fragile and severe wind erosion has occurred in the past - some dunes have been stripped to their calcrete cores. Apart from the sand rises, the deeper soils tend to be on the flats which have the highest salinity and boron levels (caused by near surface watertables). Cropping options are severely restricted. Strong season breaks may be needed in some areas to flush salts from seedbeds.
VLK	29.6	Very gently undulating plains with 20-30% low linear sand hills and 20-30% stony rises, formed over red, grey and brown clayey sediments. Main soils: Flats: Calcareous loam - **A6** (E), rubbly calcareous loam on clay - **A5** (C) and sandy loam over friable red clay - **D4** (L) Sandy rises: Dune sand **- G1** (D) Stony rises: Rubbly calcareous loam on clay - **A5** (V) and shallow sandy loam over calcrete - **B3** (E) with rubbly calcareous sandy loam - **A4** (L). These soils are alkaline and marginally to moderately saline in the subsoil. Cropping options are limited due to these factors and the moderately low rainfall. Induced nutrient deficiencies are likely due to the high alkalinity. Sandy rises are common. They have very low fertility and are highly susceptible to wind erosion. On the stony rises, the main limitations are limited moisture storage capacity and induced nutrient deficiencies.

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:

A4 Rubbly calcareous sandy loam (Regolithic, Lithocalcic Calcarosol)
20 - 40 cm calcareous sandy loam over Class III C rubble.

A5 Rubbly calcareous loam on clay (Regolithic, Supracalcic / Lithocalcic Calcarosol)
15 - 25 cm calcareous sandy loam to sandy clay loam grading to rubbly Class III B or III C carbonate from 30 cm, becoming less rubbly with depth and merging with substrate clay from 100 cm.

A6 Calcareous loam (Regolithic / Pedal, Hypercalcic Calcarosol)
10 - 20 cm calcareous fine sandy loam to clay loam grading to a very highly calcareous clay loam with a clayey carbonate layer from 30 cm overlying clayey substrate material at 80 cm.

B2 Shallow calcareous sandy loam over calcrete (Petrocalcic, Lithocalcic Calcarosol)
15 cm calcareous sandy loam over rubbly Class III C carbonate on calcrete at about 25 cm.

B3 Shallow sandy loam over calcrete (Petrocalcic, Red Kandosol)
20 - 25 cm sandy loam grading to a thin red sandy clay loam over sheet calcrete at 30 cm.

D4 Sandy loam over friable red clay (Pedaric, Hypercalcic, Red Sodosol)
15 - 25 cm sandy loam abruptly overlying a red friable clay, calcareous from 30 cm, grading to substrate clay at 100 cm.

G1 Dune sand (Supracalcic, Red Kandosol OR Regolithic, Supracalcic Calcarosol)
Variable thickness (depending on erosion history) calcareous or non calcareous loamy sand grading to a reddish clayey sand to sandy clay loam over rubbly or sheet calcrete at depths ranging from 20 to 70 cm.

N2 Swamp soil (Hypersalic Hydrosol)
Variable sandy loam to clay loam, often with a shallow calcrete rubble layer, and a shallow saline watertable.

Further information: DEWNR Soil and Land Program