WBL Woolumbool Land System

Area: 15,122 ha

Annual rainfall: 525 - 575mm average

Geology: The land system is part of an old coastal dune-lagoon complex. The land system is found between the Peacock Range Land System. The bulk of the land system is formed on sediments laid down in lagoons (Padthaway Formation) between the dune systems (Bridgewater Formation). These are limestones with sandy clay and clay lenses. Reworking of the carbonates from the limestones has resulted in a calcrete capping on most of the sediments. More recently, siliceous sands from ther dunes have been redistributed over the landscape by the wind to form low dunes and sand spreads. There is a small area to the SE of the land system with extensive sand spreads (Molineaux Sands).

Topography: The Woolumbool Land System is a flat to very undulating plain between the Peacock Range Land System. There are 3 inter-dune corridors running in a NW-SE direction. There are sporadic sand spreads, rises and low dunes with NW-SE orientation scattered over the plains. Along the western edge of the plains (ie abutting the Peacock Land System Ranges) is a chain of swamps and areas that are more saline and waterlogged than the eastern side of the plains. Groundwater tables are rising through the district and are within one to two metres of the surface over much of the land system.

Elevation: 30 -50 m

Relief: Maximum relief 20 m

Soils:

Sandy soils (dunes, rises and flats)

H3	Bleached siliceous sand
G2	Bleached sand grading to sandy clay loam
G3	Thick sand over clay
G4	Sand over poorly structured clay
I1	Highly leached sand
I2	Wet highly leached sand

Stony soils (rises)

B2	Shallow calcareous loam on calcrete
B3	Shallow sandy loam on calcrete
B4	Shallow red loam on calcrete
B5	Shallow dark clay loam on limestone
B6	Shallow loam over red-brown clay on calcrete
B7	Shallow sand over clay on calcrete
B8	Shallow sand on calcrete
L1	Shallow soil on rock
RR	Limestone outcrop

Other soils

F2	Sandy loam over poorly structured brown or dark clay
M2	Deep friable gradational clay loam
N2	Saline soil
N3	Wet soil (non to moderately saline)

Main features: The Woolumbool Land System is a very gently undulating plain bisected by linear calcarenite ranges. The plains are characterised by sandy soils with clayey subsoils which are usually dispersive when wet. These soils have moderately low fertility and impeded drainage. Drainage is deteriorating as saline water tables rise. Limited areas are affected by salinity (west of the plains). Soils on rising ground are either deep sands with low fertility and prone to water repellence, wind erosion and soil acidity, or the shallow stony soils with limited waterholding capacity and moderately low fertility.

Soil Landscape Unit summary: 48 Soil Landscape Units (SLUs) mapped in the Woolumbool Land System

SLU	% of area	Main features #
MEh	1.05	Gently sloping undulating rises formed on calcreted calcarenite of ancient coastal dunes, partially overlain by Molineaux Sands. There is variable surface stone on the non-sandy slopes rises. There are 10-50% depressions/swales within the ranges that are marginally saline. Main soils: shallow sandy loam on calcrete - **B3** (E), shallow loam over red-brown clay on calcrete - **B6** (L), shallow sand on calcrete - **B8** (L), shallow calcareous loam on calcrete - **B2** (M), bleached siliceous sand - **H3** (M), sand grading to sandy clay loam - **G2** (M) and thick sand over clay - **G3** (M). The shallow soil is semi-arable as these soils are very shallow and/or stony (variable to 50%, usually less than 20%) and have moderately low to low waterholding capacity and fertility. The sands are deep with low fertility, moderate waterholding capacity and rapid drainage. Severe water repellence and soil acidity are limitations for pasture and crop growth and is susceptible to wind erosion.
MHB MHC MHP MHQ MHb MHh MHi	6.11 3.93 3.93 4.78 0.20 0.74 2.16	Rises formed on calcreted calcarenites of ancient coastal dunes, partially overlain by Molineaux Sands. There is variable surface stone on the non-sandy slopes. Generally the sand ridges are discontinuous and mainly are less than 10 m high, with minor isolated rises up to 20 m with slopes up to 5%. There are some depressions and swales within the ridges that vary from non-saline to marginally saline. **MHB** Gently sloping undulating rises **MHC** Undulating rises to low hills **MHP** Gently sloping undulating rises with 0-10% non-saline swampy depressions or swales **MHQ** Undulating rises to low hills with 0-10% non-saline swampy depressions or swales **MHb** Gently sloping undulating rises with less than 10% marginally saline land **MHh** Gently sloping undulating rises with 10-50% marginally saline land **MHi** Undulating rises to low hills with 10-50% marginally saline land Main soils: bleached siliceous sand - **H3** (V) and sand grading to sandy clay loam - **G2** (C). These soils are deep with low fertility, moderate waterholding capacity and rapid drainage. Severe water repellence and soil acidity are limitations for pasture and crop growth and is susceptible to wind erosion. The shallow soils include shallow sandy loam on calcrete - **B3** (M), shallow red loam on limestone - **B4** (M), shallow sand over clay on calcrete - **B7** (M) and shallow calcareous loam on calcrete - **B2** (M). This land is semi-arable as these soils are very shallow and/or stony (variable to 50%, usually less than 20%) and have moderately low to low waterholding capacity and fertility.
MJh	1.22	Gently sloping rises formed on calcreted calcarenites of ancient coastal dunes, partially overlain by Molineaux Sands. There are 10-50% depressions/swales within the ranges that are marginally saline. Main soils: shallow sandy loam on calcrete - **B3** (E), shallow red loam on limestone - **B4** (C), shallow sand over clay on calcrete - **B7** (L) and shallow calcareous loam on calcrete - **B2** (C). This land is semi-arable as these soils are very shallow and/or stony and have moderately low to low waterholding capacity and fertility. The minor deep sandy soils are bleached siliceous sand - **H3** (L), sand grading to sandy clay loam - **G2** (L).

		These soils are deep with low fertility, moderate waterholding capacity and rapid drainage. Severe water repellence and soil acidity are limitations for pasture and crop growth and is susceptible to wind erosion. T he wet swampy soils are wet soil - **N3** (M) and sand over poorly structured clay - **G4** (M) which have imperfect to poor drainage moderate waterholding capacity and moderately low fertility. There will be a slight limitation to root growth however the moderate to moderately high salinity will reduce the productive potential of this land.
NDE NDa NDe NDk	1.87 9.73 0.75 1.22	Flat plains with occasional very low stony or sandy rises and swamps formed on calcreted sediments of the Padthaway formation. Groundwater tables are within two metres of the surface. **NDE** Plains with 0-10% swamps and 0-10% mixed rises **NDa** Level plain with 0-10% swamps and noticeable salinity **NDe** Plains with 0-10% swamps and 0-10% mixed rises and noticeable salinity **NDk** Plains with 10-50% saline swamps with 0-10% sandy rises Main soils on plains: shallow sand over clay on calcrete - **B7** (M), sand over poorly structured clay - **G4** (M), saline soil - **N2** (D), shallow clay loam over brown or dark clay on calcrete - **B9** (), sandy loam over poorly structured brown or dark clay - **F2** () and wet soil - **N3** (). These soils are shallow to moderately deep, have moderately low fertility and moderately low to high waterholding capacity. Drainage is imperfect to poor. There is a slight to moderate limitation for root growth due to the dispersive subsoil clays. Salinity levels vary from nil to moderate to moderately high due to rising saline groundwater tables. The stony soils on the rising ground include shallow sandy loam on calcrete - **B3** (E), shallow loam over red-brown clay on calcrete - **B6** (L) and limestone outcrop - **RR** (). This land is semi-arable as these soils are very shallow and/or stony and have moderately low to low waterholding capacity and fertility. The sandy soils on the rising ground include bleached siliceous sand - **H3** (L), sand grading to sandy clay loam - **G2** (L), thick sand over clay - **G3** (M) and highly leached sand - **I1** (). These soils are deep with low fertility, moderate waterholding capacity and rapid drainage. Moderate water repellence and the susceptibility to wind erosion are limitations.
NKD NKk	0.44 0.26	Flat plains with occasional very low sandy rises and swamps formed on calcreted sediments of the Padthaway formation. Groundwater tables are within two metres of the surface. **NKD** Plains with 0-10% swamps and 0-10% sandy rises **NKk** Plains with 10-50% saline swamps with 0-10% sandy rises Main soils: shallow dark clay loam on limestone - **B5** (C), shallow calcareous loam on calcrete - **B2** (L), wet soil - **N3** (L), deep friable gradational clay loam - **M2** (L), sand over poorly structured clay - **G4** (L), thick sand over clay - **G3** (L) and bleached siliceous sand - **H3** (M). The shallow plain soils are shallow, have high fertility, moderately low waterholding capacity and drainage is imperfect. There may be some interference to tillage due to surface rocks. Subsoil salinity is evident. The swamps are moderately deep, have high fertility, moderate waterholding capacity and poor drainage. Subsoil salinity is evident. The minor sandy rise soils are deep with moderately low fertility, moderate waterholding capacity and moderate drainage. Moderate water repellence, soil acidity and the susceptibility to wind erosion are limitations.
NMA NMD NMF NMP NMf NMk	0.08 3.55 0.77 2.30 0.15 0.16	Flat plains with occasional very low sandy rises and up to 50% swamps formed on calcreted sediments of the Padthaway formation. Groundwater tables are within two metres of the surface. **NMA** Level plain with 0-10% swamps **NMD** Plains with 0-10% swamps and 0-10% sandy rises **NMF** Plains with 10-50% swamps **NMP** Plains with 0-10% swamps and 10-30% sandy rises **NMf** Plains with 10-50% saline swamps **NMk** Plains with 10-50% saline swamps with 0-10% sandy rises Main soils: shallow sand over clay on calcrete - **B7** (C), shallow dark clay loam on limestone - **B5** (C), deep friable gradational clay loam - **M2** (L), sand over poorly structured clay - **G4** (L), saline soil - **N2** (L), wet soil - **N3** (M), thick sand over clay - **G3** (L) and bleached siliceous sand - **H3** (M). These soils are shallow to moderately deep, have moderately low fertility and moderately low waterholding capacity. Drainage is imperfect to poor. There is a moderate limitation for root growth due to the dispersive subsoil clays. Salinity levels vary from nil to moderate to moderately high due to rising saline groundwater tables.

		The minor sandy rise soils are deep with low fertility, moderate waterholding capacity and rapid drainage. Moderate water repellence, soil acidity and the susceptibility to wind erosion are limitations.
NTO	0.45	Flat plain with extensive sandy rises and minor swamps formed on calcreted sediments of the Padthaway formation. Main soils: thick sand over clay - **G3** (E), shallow dark clay loam on limestone - **B5** (L), sand over poorly structured clay - **G4** (M), wet soil - **N3** (M), sand over poorly structured clay - **G4** (M), bleached siliceous sand - **H3** (M), shallow sandy loam on calcrete - **B3** (M) and shallow sand over clay on calcrete - **B7** (M). The plain soils are moderately deep to deep, have moderately low fertility, moderate waterholding capacity and imperfect to poor drainage. There is a slight limitation to root growth due to the dispersive nature of some subsoil clay. There are limited areas of **B5** within the plain. The sandy rises are deep, have moderately low fertility, moderate waterholding capacity and slightly imperfect drainage. The stony rise soils are shallow and/or stony, have moderately low to low waterholding capacity and fertility and are well drained.
NZA NZD NZa NZd NZe NZf NZk	0.31 0.46 5.64 3.35 10.12 0.49 1.13	Flat plains with occasional very low stony and sandy rises and swamps formed on calcreted sediments of the Padthaway formation. Groundwater tables are within two metres of the surface. **NZA** Level plain with 0-10% swamps **NZD** Plains with 10-50% swamps **NZa** Level plain with 0-10% saline swamps **NZd** Plains with 0-10% saline swamps and 0-10% sandy rises **NZe** Plains with 0-10% swamps and 0-10% mixed rises and noticeable salinity **NZf** Plains with 10-50% saline swamps **NZk** Plains with 10-50% saline swamps with 0-10% sandy rises Main soils: sand over poorly structured clay - **G4** (M), thick sand over clay - **G3** (M) shallow dark clay loam on limestone - **B5**, deep friable gradational clay loam - **M2** and saline soil - **N2** (D). These soils are of moderate to shallow depth, moderately low to moderate fertility and moderate to moderately low waterholding capacity. Drainage is imperfect to very poor, and the watertable can be above the surface for up to 3 months. Salinity levels vary from moderate to moderately high due to rising saline groundwater tables. The sandy soils on the rising ground include bleached siliceous sand - **H3** (L), sand grading to sandy clay loam - **G2** (L), thick sand over clay - **G3** (M) These soils are deep with low fertility, moderate waterholding capacity and slightly imperfectly drained. Moderate water repellence and the susceptibility to wind erosion are limitations. The stony soils on the rising ground are shallow sandy loam on calcrete - **B3** (E) This land is semi-arable as these soils are very shallow and/or stony and have moderately low to low waterholding capacity and fertility.
Njv	9.04	Flat plains with 10-19% saline swamps and 10-10% sandy rises formed on calcreted sediments of the Padthaway Formation. Main soils: thick sand over clay - **G3** (E), wet highly leached sand – **I2** (M), wet soil - **N3** (L), deep hard gradational sandy loam - **M4** (M), shallow sand over clay on calcrete - **B7** (M), shallow sand on calcrete - **B8** (L) and shallow clay loam over brown or dark clay on calcrete - **B9** (M). These soils are moderately deep to deep, have moderate to high fertility and waterholding capacity. The drainage is poor to very poor, there is moderate to high salinity and the land is seasonally inundated. There is a slight limitation to root growth due to the dispersive subsoil clay. Sandy rise soils: bleached siliceous sand - **H3** (M), **G3** and **I2**. These soils are deep with low fertility, moderate waterholding capacity and well drained. Severe water repellence and the susceptibility to wind erosion are limitations. Stony rise soils: shallow sandy loam on calcrete - **B3** (M) and shallow loam over red-brown clay on calcrete - **B6** (M). These soils semi-arable as they are very shallow and stony with very low waterholding capacity and moderately low fertility.
NkA Nka	0.83 0.24	Flat plains with occasional swamps formed on calcreted sediments of the Padthaway formation. **NkA** Level plain with 0-10% swamps **Nka** Level plain with 0-10% saline swamps

		Main soils: shallow sand over clay on calcrete - **B7** (E), thick sand over clay - **G3** (C), sand over poorly structured clay - **G4** (C) and wet soil - **N3** (L). These plain and swamp soils are moderate to shallow, have moderate to moderately low fertility and waterholding capacity and imperfect to poor drainage. There is a slight to high limitation to root growth due to the subsoil clays. Salinity varies from nil (**NkA**) to moderate salinity in the swamps (**Nka**). The subsoil clay is strongly alkaline.
Nyk	1.11	Flat plains with 10-50% saline swamps and 0-10% sandy rises formed on calcreted sediments of the Padthaway formation. Main soils: deep friable gradational clay loam - **M2** (E), shallow dark clay loam on limestone - **B5** (C), wet soil - **N3** (L), thick sand over clay - **G3** (L), bleached siliceous sand - **H3** (M) and sand grading to sandy clay loam - **G2** (M). These plain and swamp soils are deep, have high fertility and waterholding capacity and are imperfectly to poorly drained. The minor sandy rises are deep with moderately low fertility, moderate waterholding capacity and slightly imperfectly drained. Moderate water repellence and the susceptibility to wind erosion are limitations.
OFD OFS	2.11 4.72	Rises formed on calcreted calcarenites of ancient coastal dunes, partially overlain by Molineaux Sands. There is variable surface stone on the non-sandy slopes. **OFD** Low dunes with greater than 90% sand dune coverage **OFS** Dunes with 60-90% sand dune coverage Main soils: highly leached sand - **I1** (E), sand grading to sandy clay loam - **G2** (L), thick sand over clay - **G3** (M), shallow sand over clay on calcrete - **B7** (L), shallow sand on calcrete - **B8** (L), shallow sandy loam on calcrete - **B3** (M), wet soil - **N3** (M), and saline soil - **N2** (M). The sandy soils are deep with low fertility, moderate waterholding capacity and rapid drainage. Severe water repellence, soil acidity and the susceptible to wind erosion are limitations. The stony soils are very shallow and/or stony and have moderately low to low waterholding capacity and fertility. The swale soils are deep with moderate fertility, high waterholding capacity and poor drainage. There is a slight limitation to root growth due to the poorly structured subsoil clays. Salinity levels are moderately high to high as the watertable is seasonally near the surface. Productivity potential is reduced on this land.
Xl-	0.28	Fresh water lake
ZD-	3.54	Salt lakes that are seasonally or usually filled formed on calcareous clays and marls. The main soil is saline soil - **N2** (D) which is deep, poor fertility and high waterholding capacity. Salinity levels are very high and the watertable is at the surface for 3-10 months. The swamps are too saline for any production other than opportunistic light grazing, but protection of halophytic vegetation must be considered. There are occasional low lunettes with soils including gradational calcareous clay loam - **A6** (M), shallow calcareous loam on calcrete - **B2** (M) and shallow dark clay loam on limestone - **B5** (M). This soil is very shallow to moderately deep, have moderate fertility and low waterholding capacity. The soils are calcareous throughout and rockiness may be a restriction with up to 50% rock. Salinity may pose problems on really low rises with levels up to moderately high.
ZKv	0.44	Plain complex with 10-50% salt lakes, 10-30% sandy rises and 10-20% stony rises. Main soils: thick sand over clay - **G3** (C), saline soil - **N2** (L), wet soil - **N3** (M) and calcareous clay loam on marl - **A7** (E). These plains and swamps are deep, have moderate fertility, moderate to high waterholding capacity and imperfect to very poorly drained. There is a slight limitation to root growth due to dispersive subsoil clays. Salinity is high due to the water table seasonally above the surface for over 3 months. Salt tolerant species is evident and production from the swamps is only from opportunistic light grazing,
ZQ-	0.28	Marginally saline swamps formed on calcareous clays and marls. Main soils: wet soil - **N3** (E), saline soil - **N2** (E) and calcareous clay loam on marl - **A7** (E). These soils are deep, have moderate fertility, high waterholding capacity, poor to very poor drainage with high to very high salinity. There is a slight limitation to root growth due to the dispersive subsoil clays.

ZS-	0.60	Saline swamps formed on calcareous clays and marls. These are natural features, representing the lowest points in the local landscape. They are seasonally inundated. Vegetation is commonly a reflection of the level of salinity. Cutting grass is common on moderately saline land, tea tree and samphire on highly saline land, while extremely saline land is usually bare. Main soils: saline soil - **N2** (D). These soils are very poorly drained with high to extreme salinity and are seasonally inundated. The swamps are too saline for any production other than opportunistic light grazing, but protection of halophytic vegetation must be considered.
ZnD ZnK Zna	0.44 0.17 0.08	Plains with extensive swamps and minor sandy rises formed on calcreted sediments of the Padthaway formation. These soil landscapes are generally found to the western edge of the plains adjoining the Peacock Land System Ranges. **ZnD** Plains with 10-50% swamps **ZnK** Plains with 10-50% swamps with 0-10% sandy rises **Zna** Level plain with 0-10% swamps and noticeable salinity Main soils: sand over poorly structured clay - **G4** (E) and saline soil - **N2** (E). These plain and swampy soils are deep, have moderately low fertility and moderate waterholding capacity. There is imperfect to poor drainage with high to very high salinity and seasonally inundated. The majority of the area has only salt tolerant species present. The productive potential is very low.
Zpa Zpf Zpk Zpv	0.72 1.30 0.29 6.36	Plains with extensive swamps and up to 20% sandy and stony rises formed on calcreted sediments of the Padthaway formation. These soil landscapes are generally found to the western edge of the plains adjoining the Peacock Land System Ranges. **Zpa** Level plain with 0-10% swamps and noticeable salinity **Zpf** Plains with 10-50% saline swamps **Zpk** Plains with 10-50% saline swamps with 0-10% sandy rises **Zpv** Plains with 10-50% saline swamps and greater than 10% mixed rises Main soils: sand over poorly structured clay - **G4** (E), saline soil - **N2** (C), thick sand over clay - **G3** (M) and deep friable gradational clay loam - **M2** (M). These soils are deep, have moderately low fertility and high waterholding capacity. There is a moderate limitation to root growth due to the dispersive subsoil clay. The drainage is poor to very poor, there is high to very high salinity and the land is seasonally inundated. The majority of the area has only salt tolerant species present. The productive potential is very low. Stony rises soils: shallow sandy loam on calcrete - **B3** (M) and shallow sand over clay on calcrete - **B7** (L). These soils are shallow and stony, are well drained and have moderately low waterholding capacity and fertility. Sandy rise soils: sand grading to sandy clay loam - **G2** (M), bleached siliceous sand - **H3** (M) and **G3**. These soils are deep with moderately low fertility, moderate waterholding capacity and are slightly imperfectly drained. Moderate water repellence and the susceptibility to wind erosion are limitations.
Zr-	0.13	River.

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:

(In alphabetic order)

A6 Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)
Calcareous loams to clay loams grading into brown-red clay. Often rubbly.

A7 Calcareous loam (Calcarosol over Sodosol)
Medium thickness black calcareous loam to clay loam (often shelly), overlying a bleached sand abruptly overlying a grey and brown mottled sandy clay loam to clay within 100 cm.

B2 Shallow calcareous loamy sand on calcrete (Petrocalcic Calcarosol)
Medium thickness calcareous loamy sand with variable rubble overlying calcreted calcarenite within 50 cm.

B3 Loamy sand over sandy clay loam on calcrete (Petrocalcic, Brown Kandosol / Petrocalcic, Leptic Tenosol)
Medium to thick loamy sand with a bleached A2 layer, sometimes with a thin brown friable light sandy clay loam subsoil, over calcreted calcarenite.

B4 Red sandy loam over calcrete (Petrocalcic, Red Dermosol)
Medium thickness red sandy loam grading to friable red clay loam over calcreted calcarenite within 50 cm - rises.

B5 Shallow dark clay loam on limestone (Petrocalcic, Black Dermosol)
Black clay loam to light clay over calcreted limestone at shallow depth, grading to highly calcareous clay - flats.

B6 Shallow sandy loam over red-brown clay on calcrete (Petrocalcic, Red Kandosol)
Medium thickness sandy loam with slight ironstone gravel overlying a weakly structured reddish brown sandy clay on calcarenite within 50 cm - rises.

B7 Sand over friable brown clay on calcrete (Petrocalcic, Brown Chromosol)
Medium thickness sand overlying brownish friable clay on limestone or calcreted sandy clay within 50 cm.

B8 Shallow sand on calcrete (Petrocalcic, Bleached-Leptic Tenosol)
Thick bleached sand over calcreted calcarenite within 50 cm - rises.

F2 Sandy loam over poorly structured brown or dark clay (Brown-Dark Sodosol-Chromosol)
Topsoil <30 cm over a poorly structured subsoil. Loamy, often sandy loam, to clay loamy texture contrast soil with a sodic/dispersive/poorly structured brown clayey subsoil. Often sandy loam, usually with a bleached horizon, and thin topsoil over a poorly structured B.

G2 Sand grading to sandy clay loam (Mesotrophic, Yellow Kandosol)
Grey sand with a thick bleached A2 layer, over a yellow and red friable massive sandy clay loam.

G3 Thick sand over clay (Hypercalcic, Brown Sodosol/ Chromosol)
Thick bleached sand with an organically darkened surface abruptly overlying a massive to coarsely structured brown to reddish yellow sandy clay to clay, calcareous with depth - rises.

G4 Sand over poorly structured clay (Lithocalcic / Calcic, Brown / Grey Sodosol)
Medium to thick sand abruptly overlying a brown and grey mottled columnar sandy clay loam to sandy clay, with rubbly or soft carbonate at depth.

H3 Deep bleached sand (Basic, Arenic, Bleached-Orthic Tenosol)
Grey sand with a thick to very thick bleached A2 layer, over yellow sand continuing below 100 cm.

I1 Highly leached sand (Fragic, Pipey, Aeric Podosol)
Grey sand with a very thick bleached A2 layer, over dark brown and yellow massive soft to semi-hard clayey sand (coffee rock), grading to softer yellow and brown sand to sandy clay loam from about 80 cm.

I2 Wet highly leached sand (Fragic, Humic, Aquic Podosol)
Grey sand with a thick bleached A2 horizon, overlying a thin to thick layer of coffee rock, grading to pale brown sand sharply overlying a grey, brown and yellow mottled sandy clay loam to light clay.

M2 Deep friable gradational clay loam (Red-Brown-Grey- Black Dermosol)
Deep well structured red clay loamy soil.

M4 Deep hard gradational sandy loam (Hard Brown-Dark Kandosol- Dermosol)
Deep dark brown loamy to clay loamy soil grading to clay at depth. Hardsetting surface often with prismatic structures in the subsoil.

N2c Wet saline clay loam (Dermosolic, Salic Hydrosol)
Medium thickness dark grey to black clay loam to clay grading to well-structured dark grey clay with minor carbonates and a water table within 100 cm.

N3 Seasonally waterlogged, non to marginally saline equivalents of soils listed above, viz.:

N3c	Wet **G3**
N3d	Wet **B5**
N3e	Wet **B7**
WW	Water

Sandy soils (dunes, rises and flats)

H3 Bleached siliceous sand (Arenic, Bleached-Orthic Tenosol)
Thick to very thick bleached sand, organically darkened at the surface over yellow sand continuing below 100 cm.

G2 Bleached sand grading to sandy clay loam (Sandy Petrocalcic, Brown Chromosol-Kandosol)
Medium to thick sand with a bleached A2 layer abruptly overlying a brownish friable light sandy clay loam to sandy clay over calcreted calcarenite

G3 Thick sand over clay (Mesotrophic, Mesonatric, Brown Chromosol/Sodosol)
Thick to very thick sand with a pale sand layer directly overlying a brownish clay

G4 Sand over poorly structured clay (Mesonatric, Brown/Grey Sodosol)
Thick organically stained sandy surface overlying a pale sand layer overlying a brown poorly structured clay on limestone or calcrete usually within 100 cm.

I1 Highly leached sand (Fragic, Pipey, Aeric Podosol)
Grey sand with a very thick bleached A2 layer, over dark brown and yellow massive soft to semi-hard clayey sand (coffee rock), grading to softer yellow and brown sand to sandy clay loam from about 80 cm.

I2 Wet highly leached sand (Fragic, Humic, Aquic Podosol)
Grey sand with a thick bleached A2 horizon, overlying a thin to thick layer of coffee rock, grading to pale brown sand sharply overlying a grey, brown and yellow mottled sandy clay loam to light clay.

Stony soils (rises)

B2 Shallow calcareous loam on calcrete (Petrocalcic Calcarosol)
Medium thickness calcareous loam with variable rubble overlying calcreted calcarenite within 50 cm.

B3 Shallow sandy loam on calcrete (Petrocalcic, Orthic Tenosol)
Loamy sand to loam with variable rubble and slight clay increase with depth overlying calcreted calcarenite shallower than 50 cm. Extensive on stony rises.

B4 Red sandy loam over calcrete (Petrocalcic, Red Dermosol)
Medium thickness red sandy loam grading to friable red clay loam over calcreted calcarenite within 50 cm - rises.

B5 Shallow dark clay loam on limestone (Petrocalcic, Black Dermosol)
Black clay loam to light clay over calcreted limestone at shallow depth, grading to highly calcareous clay - flats.

B6 Shallow sandy loam over red-brown clay on calcrete (Petrocalcic, Red Kandosol)
Medium thickness sandy loam with slight ironstone gravel overlying a weakly structured reddish brown sandy clay on calcarenite within 50 cm - rises.

B7 Shallow sand over clay on calcrete (Petrocalcic, Yellow/Brown/Grey Sodosol)
Medium thickness sand overlying poorly structured clay on limestone or calcreted sandy clay within 50 cm.

B8 Shallow sand on calcrete (Bleached-Leptic Tenosol)
Thin to medium organically darkened sand over bleached sand over calcarenite within 50 cm.

B9 Shallow clay loam over brown or dark clay on calcrete

RR Limestone outcrop (Petrocalcic, Leptic Rudosol)
Organically stained sandy to loamy sand surface over a sandy sub-soil with very little development on limestone or calcrete.

Other soils

M2 Deep friable gradational clay loam (Red-Brown-Grey- Black Dermosol)
Deep well structured red clay loamy soil.

M4 Deep hard gradational sandy loam (Hard Brown-Dark Kandosol- Dermosol)
Deep dark brown loamy to clay loamy soil grading to clay at depth. Hardsetting surface often with prismatic structures in the subsoil.

N2 Saline soil (Calcarosolic, Salic Hydrosol)
Grey very highly calcareous loam grading to a pale grey clay loam over a white very highly calcareous silty clay loam by about 30 cm, with a water table within 100 cm.

N3 Wet soil (non to moderately saline) (Sodosolic, Eutrophic Hydrosol)
Organically stained sandy surface over pale brown sand overlying yellowish brown sandy clay on calcrete.

Further information: DEWNR Soil and Land Program