

WRT Wrattonbully Land System

Area: 7,072 ha

Annual rainfall: 600 – 700 mm average

Geology: The land system is formed on Naracoorte Limestone which contains minor marl and dolomite. The system may have been derived from eastern edge of the Naracoorte Range. There are minor ancient coastal dune rises on the Victorian-South Australian border which have become indurated at the surface to form calcrete capping on the underlying calcarenite.

Topography: The Wrattonbully Land System is the southern extension of the Kybybolite Land System situated to the east of the Naracoorte Range. There are undulating plains and rises. Sand plains are found to the southern end of the land system, the stony rises close to the Border.

Elevation: 70 - 110 m

Relief: Maximum relief 10 m

Soils:

Sandy soils (flats and rises)

H3 Bleached siliceous sand

G2 Bleached sand grading to sandy clay loam

G3 Thick sand over clay

G4 Sand over poorly structured clay

G5 Sand over acidic clay

I1 Highly leached sand

I2 Wet highly leached sand

Stony soils (rises and flats)

B2 Shallow calcareous loam on calcrete

B4 Shallow red loam on calcrete

B7 Shallow sand over clay on calcrete

RR Limestone outcrop

Heavy soils

F1 Loam over brown or dark clay

F2 Sandy loam over poorly structured brown or dark clay

E3 Brown-grey cracking clay

M2 Deep friable gradational clay loam

Wet soils

N3 Wet soil (non to moderately saline)

N2 Saline soil

Main features: The Wrattonbully Range Land System comprises predominantly undulating plains which have moderate fertility. Associated sand spreads and rises have moderately low to low fertility; water repellence, soil acidity and wind erosion limitations. The shallow red rises have high fertility and are shallow over calcreted calcarenite. Minor swamps occur which are generally poorly to very poorly drained.



Soil Landscape Unit summary: 18 Soil Landscape Units (SLUs) mapped in the Wrattonbully Land System

SLU	% of area	Main features
HaA	20.99	<p>Gently undulating sandy loam surface plains with some sandy surfaced soils and 0-10% swamps in the low lying areas.</p> <p>Main soils: <u>sandy loam over poorly structured clay</u> - F2, <u>sand over poorly structured clay</u> - G4, <u>thick sand over clay</u> - G3 (E) and <u>friable gradational clay loam</u> - M2.</p> <p>These soils are moderately deep to deep, have moderate fertility and high waterholding capacity. There is a slight limitation to root growth due to the dispersive subsoil clays. The plains are imperfectly drained and the surface soils are acidic. The swamps are poorly drained and seasonally inundated.</p>
HkB	8.24	<p>Undulating plains to low rises comprising of loamy surfaced soils with 10-20% shallow soils.</p> <p>Main soils: <u>sandy loam over poorly structured clay</u> - F2, <u>thick sand over clay</u> - G3 (E), <u>friable gradational clay loam</u> - M2, <u>shallow red loam on limestone</u> - B4 and <u>shallow calcareous loam on limestone</u> - B2.</p> <p>The rising soils are moderately deep, have moderate fertility and high waterholding capacity. The soils are well drained. There is a slight limitation to root growth due to the dispersive subsoil clays. Soil acidity may be a slight limitation.</p> <p>The shallow soils have high fertility and moderately low waterholding capacity. The soils are well drained. There is a slight limitation to root growth due to the dispersive subsoil clays in the slightly deeper texture contrast soils. These soils have high productivity potential for viticulture.</p>
HuB	52.33	<p>Undulating plains to low rises comprising of loamy surfaced soils with 20-30% shallow soils and 0-10% swamps.</p> <p>Main soils: <u>sandy loam over poorly structured clay</u> - F2, <u>thick sand over clay</u> - G3 (E), <u>loam over brown or dark clay</u> - F1, <u>friable gradational clay loam</u> - M2, <u>shallow red loam on limestone</u> - B4, <u>shallow calcareous loam on limestone</u> - B2 and <u>sand over poorly structured clay</u> - G4.</p> <p>The rising soils are moderately deep, have moderate fertility and high waterholding capacity. The soils are well drained. Soil acidity may be a slight limitation. The shallow soils have high fertility and moderately low waterholding capacity. The soils are well drained. There is a slight limitation to root growth due to the dispersive subsoil clays in the slightly deeper texture contrast soils. These soils have high productivity potential for viticulture.</p> <p>The swampy soils are deep and have loamy to clay loamy surface soils, have moderate fertility and high waterholding capacity. Drainage is imperfect to poor. There is a slight limitation to root growth due to the dispersive subsoil clays. These soils are acidic in the surface and subsoil.</p>
HZA	0.45	<p>Level plain with loamy surfaces and less than 10% clay loamy depressions.</p> <p>Main soils: <u>sandy loam over poorly structured clay</u> - F2, <u>loam over brown or dark clay</u> - F1 and <u>friable gradational clay loam</u> - M2.</p> <p>Soils are deep; have moderate to high fertility; high waterholding capacity. Drainage on the plains is imperfect and poor in the depressions. Slight limitation to root growth due to the dispersive subsoil clays on the plains and severe in the depressions. The surface soils on the plains are acidic.</p>
MWB	0.87	<p>Low gently sloping rises with approximately 10 m that is formed on calcreted calcarenites of ancient coastal dunes. There is up to 50% shallow non sandy soils and 50% deep sand.</p> <p>Main soils: <u>shallow red loam on limestone</u> - B4, <u>shallow calcareous loam on limestone</u> - B2, <u>shallow sand over clay on calcrete</u> - B7 (V), <u>limestone outcrop</u> - RR, <u>bleached siliceous sand</u> - H3 (L), <u>thick sand over clay</u> - G3 and <u>bleached sand over clay loam</u> - G2.</p> <p>The shallow soils have high fertility, moderately low to low waterholding capacity and are well drained. The subsoil clay may be a slight limitation to root growth on the texture contrast soils. . The red soils have high productivity potential for viticulture.</p> <p>The sandy rise soils are moderately deep, have moderate to moderately low fertility and moderate to high waterholding capacity. Limitations: water repellence; susceptibility to wind erosion.</p>
NTD	0.56	<p>Deeper sandy surfaces plains with 0-10% swamps and 0-10% sandy rises.</p> <p>Main soils: <u>thick sand over clay</u> - G3 (E), <u>sand over poorly structured clay</u> - G4, <u>bleached siliceous sand</u> - H3 and <u>wet soil</u> - N3 (E).</p> <p>The plains and swamp soils are deep, have moderate fertility and high waterholding capacity. Drainage is imperfect on the plains and poor in the swamps. There is a slight limitation to root growth due to the dispersive subsoil clays in the plains and moderate in the swamps.</p>



		The low sandy rises are deep, have moderately low fertility, moderate waterholding capacity and are well drained. Soil acidity and the susceptibility to wind erosion are limitations.
OFD	2.3	Low sandy dune ranges with greater than 90% sand dune coverage formed on calcreted calcarenite. Main soils: <u>bleached siliceous sand</u> - H3 , <u>highly leached sand</u> - I1 , <u>thick sand over clay</u> - G3 , <u>wet highly leached sand</u> - I2 and <u>sand over acidic clay</u> - G5 . These soils are deep, have low fertility, moderate to moderately low waterholding capacity and rapid drainage. Severe water repellence, soil acidity and the susceptibility to wind and water erosion are limitations.
OQC OQD	0.3 0.4	Sandy dune ranges with greater than 90% sand dune coverage formed on calcreted calcarenite. OQC Dunes with greater than 90% sand dune coverage OQD Low dunes with greater than 90% sand dune coverage Main soils: <u>bleached siliceous sand</u> - H3 and <u>thick sand over clay</u> - G3 . Soils are deep: low to very low fertility; moderate to moderately low waterholding capacity; rapid drainage. Limitations: severe water repellence; soil acidity; susceptibility to wind erosion.
PCB PCb	7.55 3.31	Gently undulating rises with 0-10% swamps and 10-20% sand dunes found to the south of the Land System. PCB Undulating rises with 0-10% swamps PCb Undulating rises with 10-20% sand dunes Main soils: <u>thick sand over clay</u> - G3 , <u>bleached siliceous sand</u> - H3 , <u>sand over poorly structured clay</u> - G4 and <u>wet soil</u> - N3 . These soils are deep, have moderate to low fertility and high to moderately low waterholding capacity. The rises are well drained and the swamps poorly drained. The undulating rises have water repellence, soil acidity and the susceptibility to wind erosion limitations, the sand dunes have severe water repellence, soil acidity and the susceptibility to wind and water limitations. There is a slight limitation to root growth due to dispersive subsoil clays in the swamps.
PRE	0.21	Depression found partially encircled by sand dune ranges. Main soils: <u>sand over poorly structured clay</u> - G4 , <u>sandy loam over poorly structured clay</u> - F2 , and <u>wet soil</u> - N3 . These soils are deep, have moderate fertility and high waterholding capacity. Drainage is imperfect to poor. There is a slight limitation to root growth due to the dispersive subsoil clays.
PYA PYE	0.82 0.17	Gently undulating sand over clay plains with 0-10% swamps and depressions. PYA Gently undulating plain with 0-10% swamps PYE Depression Main soils: <u>sand over poorly structured clay</u> - G4 , <u>sandy loam over poorly structured clay</u> - F2 , <u>thick sand over clay</u> - G3 , <u>bleached sand over clay loam</u> - G2 , <u>brown-grey cracking clay</u> - E3 and <u>wet soil</u> - N3 . Soils are deep, have moderate to moderately low fertility and high waterholding capacity. Drainage is slightly imperfect on the flats and imperfect in the swamps and depressions. There is a moderate limitation to root growth due to the dispersive subsoil clays. Soil acidity is also a limitation.
XXB	0.11	Eroded drainage depression leading to seasonally inundated swamp. Main soils: <u>thick sand over clay</u> - G3 , <u>sandy loam over poorly structured clay</u> - F2 , <u>sand over poorly structured clay</u> - G4 and <u>friable gradational clay loam</u> - M2 . These soils are deep, have moderate fertility and high waterholding capacity. Drainage is imperfect to poor.
Xq-	0.69	Freshwater swamp: at least seasonally inundated and found scattered throughout the land system. Main soils: <u>wet soil</u> - N3 . These soils are deep with moderately low fertility and high waterholding capacity. Drainage is poor to very poor and are seasonally inundated for greater than 3 months.
Xu- XuC	0.36 0.34	Swamps: seasonally waterlogged and non-saline and found scattered throughout the land system. Main soils: <u>wet soil</u> - N3 . These soils are deep, have moderately low fertility and high waterholding capacity. Drainage is poor to very poor. The swamps are seasonally inundated for greater than 3 months. This landscape unit is not suitable for agricultural production only opportunity grazing.



Detailed soil profile descriptions:

(In alphabetic order)

- B2** Shallow calcareous loam on calcrete (Petrocalcic, Supracalcic Calcarosol)
Dark coloured clay loam over a structured dark clay directly overlying calcrete or calcarenite within 30 cm.
- B4** Shallow red loam on calcrete (Haplic, Petrocalcic, Red Dermosol)
Medium thickness red loam to clay loam over a red structured clay directly overlying calcarenite within 50 cm.
- B7** Shallow sand over clay on calcrete (Petrocalcic, Yellow/Brown Chromosol)
Medium thickness sand overlying yellow friable clay on limestone or calcreted sandy clay within 50 cm.
- F1** Loam over brown or dark clay (Melanic, Hypercalcic, Black/Brown Chromosol)
Medium thickness dark brown sandy loam over a thin to medium sand layer over a structured brown to black clay grading to a brown mottled clay with limestone segregations at depth.
- F2** Sandy loam over brown or dark poorly structured clay (Mottled, Mesonatric, Grey/Black Sodosol)
Medium thickness brown sandy loam over a thin to medium thickness pale sand layer over a columnar structured dispersive grey to black clay grading to brown mottled clay with depth.
- 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.
- 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.
- I1** Highly leached sand (Humosesquic Aeric Podosol)
Organically darkened sand to loamy sand grading to greyish sand overlying dark sands with organic-aluminium compounds.
- M2** Deep friable gradational clay loam (Red-Brown-Grey- Black Dermosol)
Deep well structured red clay loamy soil.
- N3** Wet soil (non to moderately saline) (Sodosolic, Eutrophic Hydrosol)
Organically stained sandy surface over a pale brown sand overlying a yellowish brown sandy clay on calcrete.
- WW** Water

(Grouped on landscape position)

Sandy soils (flats and rises)

- 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.



- G5** Sand over acidic clay (Sandy Brown Kurosol)
Sandy texture contrast soil with a friable brown strongly acidic clayey to clay loamy subsoil. Very acidic soil; incipient Bh horizons; moderate depth topsoils. Some with ironstone.
- 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 and flats)

- B2** Shallow calcareous loam on calcrete (Petrocalcic, Supracalcic Calcarosol)
Dark coloured clay loam over a structured dark clay directly overlying calcrete or calcarenite within 30 cm.
- B4** Shallow red loam on calcrete (Haplic, Petrocalcic, Red Dermosol)
Medium thickness red loam to clay loam over a red structured clay directly overlying calcarenite within 50 cm.
- 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.
- RR** Limestone outcrop

Heavy soils

- F1** Loam over brown or dark clay (Melanic, Hypercalcic, Black/Brown Chromosol)
Medium thickness dark brown sandy loam over a thin to medium sand layer over a structured brown to black clay grading to a brown mottled clay with limestone segregations at depth.
- F2** Sandy loam over brown or dark poorly structured clay (Mottled, Mesonatric, Grey/Black Sodosol)
Medium thickness brown sandy loam over a thin to medium thickness pale sand layer over a columnar structured dispersive grey to black clay grading to brown mottled clay with depth.
- E3** Brown or grey cracking clay (Brown-Grey Vertosol)
- M2** Deep friable gradational clay loam (Red-Brown-Grey- Black Dermosol)
Deep well structured red clay loamy soil.

Wet soils

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

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

