

Water repellence

Water repellent (or non-wetting) soils typically display patchy seedling establishment and uneven or poor plant growth

Water repellence is caused by hydrophobic organic materials, mainly waxes, from plant remains within the soil. The waxes coat the soil particles causing water to bead on the surface. This causes uneven wetting of the upper part of the soil profile, with large masses of soil remaining dry. Patchy plant establishment, uneven and poor growth usually result, increasing susceptibility to water erosion, wind erosion and sand blasting of newly emerged plants, while also decreasing water use efficiency and contributing to increased recharge (due to preferential drainage). Water repellence is most common on acid to neutral sands, but calcareous and more loamy soils can also be affected, although not as severely.

Land assessment in southern South Australia

Assessments are made by observing the absorption into a soil sample of either water or 2 M (mol/L) ethanol and classified into three attribute classes: non-repellent, repellent and strongly repellent. Certain soils commonly exhibit strong water repellence, and others are susceptible but the condition is less strongly developed. Regional, subregional and catchment assessments are not intended to show where water repellence is a problem, but where conditions are such that it could be a problem.

Soil properties can vary across the landscape in a subtle or dramatic fashion. [Mapping at a regional scale](#) is not able to display this level of variability, however proportions of each *Water repellence* class (e.g. U1, U2, etc.) have been estimated for each map unit.

Further information can be found in [Assessing Agricultural Land](#) (Maschmedt 2002).



Pink dye applied uniformly at the surface shows uneven wetting patterns in a water repellent sand

Area statistics

Water repellence	2 M Ethanol / water absorbed	Area	Cleared area	Class*
Non-repellent	Water is absorbed in less than 10 seconds	75.53%	74.41%	U1
Repellent	Water takes longer than 10 seconds to be absorbed; ethanol is absorbed in less than 10 seconds	16.57%	18.74%	U2
Strongly repellent	Ethanol takes longer than 10 seconds to be absorbed	6.47%	5.13%	U3
Not applicable		1.43%	1.71%	UX
TOTAL HECTARES		15,765,460	10,439,300	

* The letter 'U' denotes classes that are specific to *Water repellence*

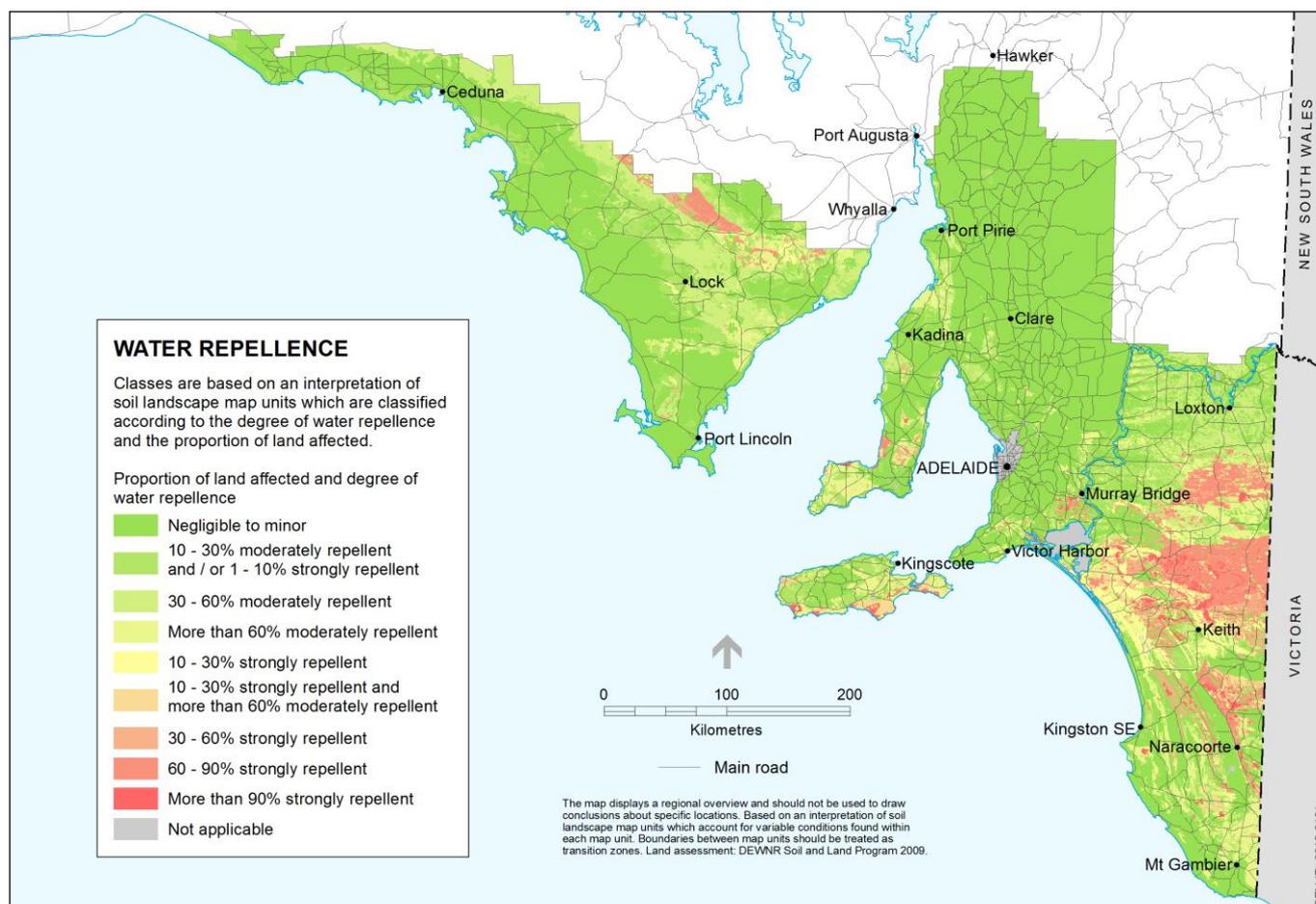


Displaying data in soil maps

Soil and land attribute maps display a simplified version of the underlying data. Mapping classes are based on an interpretation of soil landscape map units. Each map unit is categorised into legend categories according to the proportion of its area at risk, and the degree of water repellence, based on the extent of susceptible soils. Where more than 10% of land is susceptible, there is a further subdivision according to the degree of repellence.



Clay spreading to ameliorate water repellence



Further information

- View data on [NatureMaps](#) (→ Soils)
- Read the [metadata](#) for this layer
- Read more about [soil attribute mapping](#)
- Contact [Mapland](#)

Download from Enviro Data SA:

- [Statewide map](#) and [spatial dataset](#)
- [Assessing Agricultural Lands](#) (Maschmedt 2002)
- Soils of Southern SA book [Part 1](#) and [Part 2](#)



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