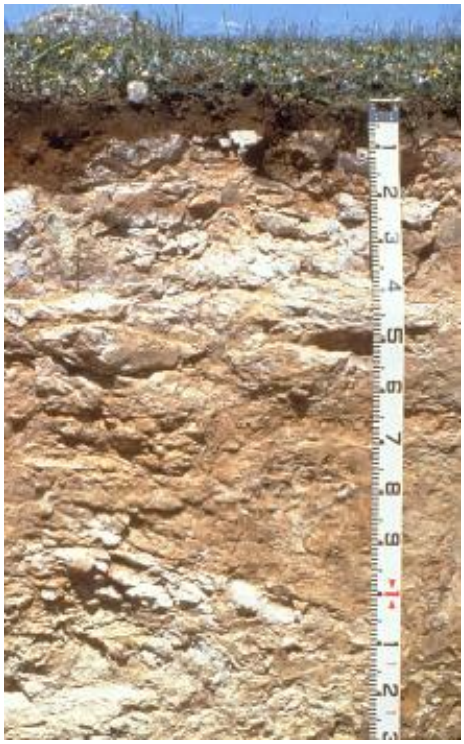
Available waterholding capacity

Plant-available waterholding capacity is a key soil attribute that determines whether rainfall (or irrigation water) will support plant growth



Large fragments of calcrete in this soil profile result in very low waterholding capacity

Available waterholding capacity of the soil profile is the amount of water (expressed as depth in mm) that can be extracted by plants as the soil dries from field capacity to wilting point.

Factors determining *Available waterholding capacity* include:

- Potential rootzone: this is the volume of soil that roots can explore, also referred to as effective soil depth (accounting for physical and chemical barriers to root growth)
- Nature of the soil material: porosity, particle sizes (texture) and the arrangement of particles (structure). For example, as clay content increases, moisture becomes increasingly bound to the soil matrix, which causes wilting point and terminal drought to occur sooner (at higher moisture contents) in clayey soils as they dry out.
- Organic matter content: which acts as a sponge for storing moisture
- Stone (coarse fragment) content: which reduces the potential storage volume for water
- Carbonate levels: which can modify the influence of texture

Land assessment in southern South Australia

Effective soil depth varies between plant species. To provide a standardised approach, *Available waterholding capacity* attribute classes are estimated from soil texture, structure and stone content, considering the total potential rootzone of a wheat plant. Land is classified with respect to waterholding capacity on the basis that, all other things being equal, yield potential will decrease with decreasing *Available waterholding capacity*. Assessments are based on morphological properties not laboratory analyses.

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 *Available waterholding capacity* class (e.g. M1, M2, etc.) have been estimated for each map unit.

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

Area statistics

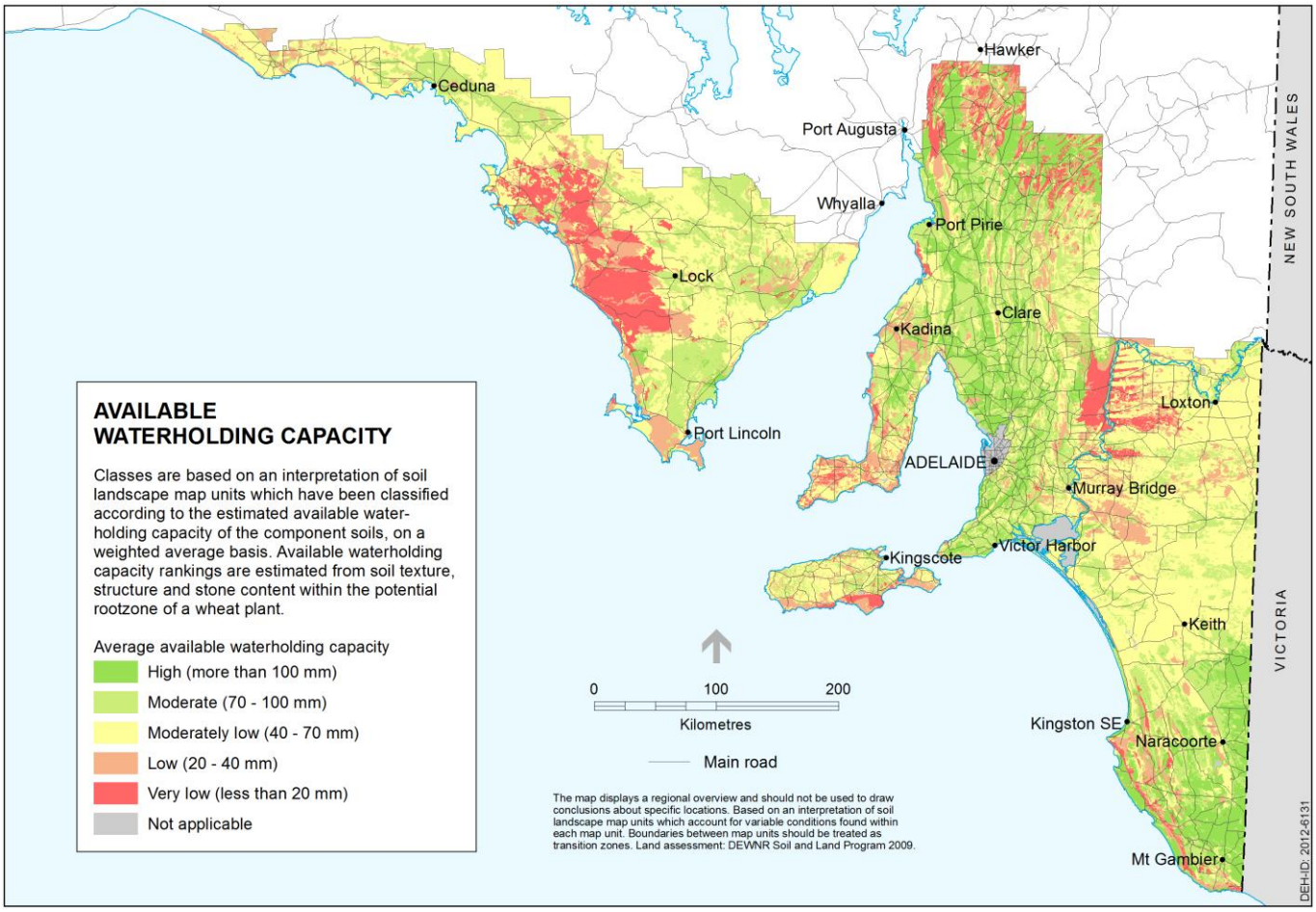
Approximate available waterholding capacity		Area	Cleared land	Class*
High	More than 100 mm	14.50%	16.41%	M1
Moderate	70–100 mm	27.70%	31.51%	M2
Moderately low	40–70 mm	33.51%	34.95%	M3
Low	20–40 mm	14.21%	11.09%	M4
Very low	Less than 20 mm	8.63%	4.32%	M5
Not applicable		1.44%	1.72%	MX
TOTAL HECTARES		15,765,460	10,439,300	

* The letter 'M' denotes classes that are specific to *Available waterholding capacity*

Displaying data in soil maps

Land and soil attribute maps display a simplified version of the underlying data. This is because, at the scale of mapping, a number of landscape elements and a range of *Available waterholding capacity* classes may be captured in each map unit. In this case, the map presents estimates of the average *Available waterholding capacity* of soils within a map unit, calculated on an area-weighted basis.

Total available waterholding capacity is the sum of different storage capacities for all the soil layers in the potential rootzone



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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