Physical condition of surface soil

Surface physical conditions such as hard setting can impede water infiltration and plant establishment and growth

Physical condition of surface soil refers to the degree of resistance offered by the soil to root penetration and seedling emergence, to the free movement of air and water, and to the ease of cultivation and other surface management operations. The most significant *Physical condition of surface soil* limitation in South Australia is the condition known as hard setting. Hard setting soils generally have high proportions of fine sand and silt, and/or sodic clays, and/or little organic matter. Surface seals which develop on hard setting soils have low infiltration rates (leading to surface ponding of water, or excessive runoff/erosion) and they have a narrow moisture range for effective working, which can result in patchy emergence. *Physical condition of surface soil* varies significantly across the landscape and is affected by management practice as well as by inherent properties of the soil.

Land assessment in southern South Australia

The assessment of *Physical condition of surface soil* categorises soils with respect soil texture, pedality (aggregate types), strength, dispersiveness, carbonate type, and implications for seedling emergence, root growth, workability and drainage. It provides an indication where soil structural problems could potentially be significant but does not define specific occurrences of particular conditions.

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 *Physical condition of surface soil* class (e.g. C1, C2, etc.) have been estimated for each map unit.

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

Patchy emergence caused by poorly structured surface soil

Area statistics

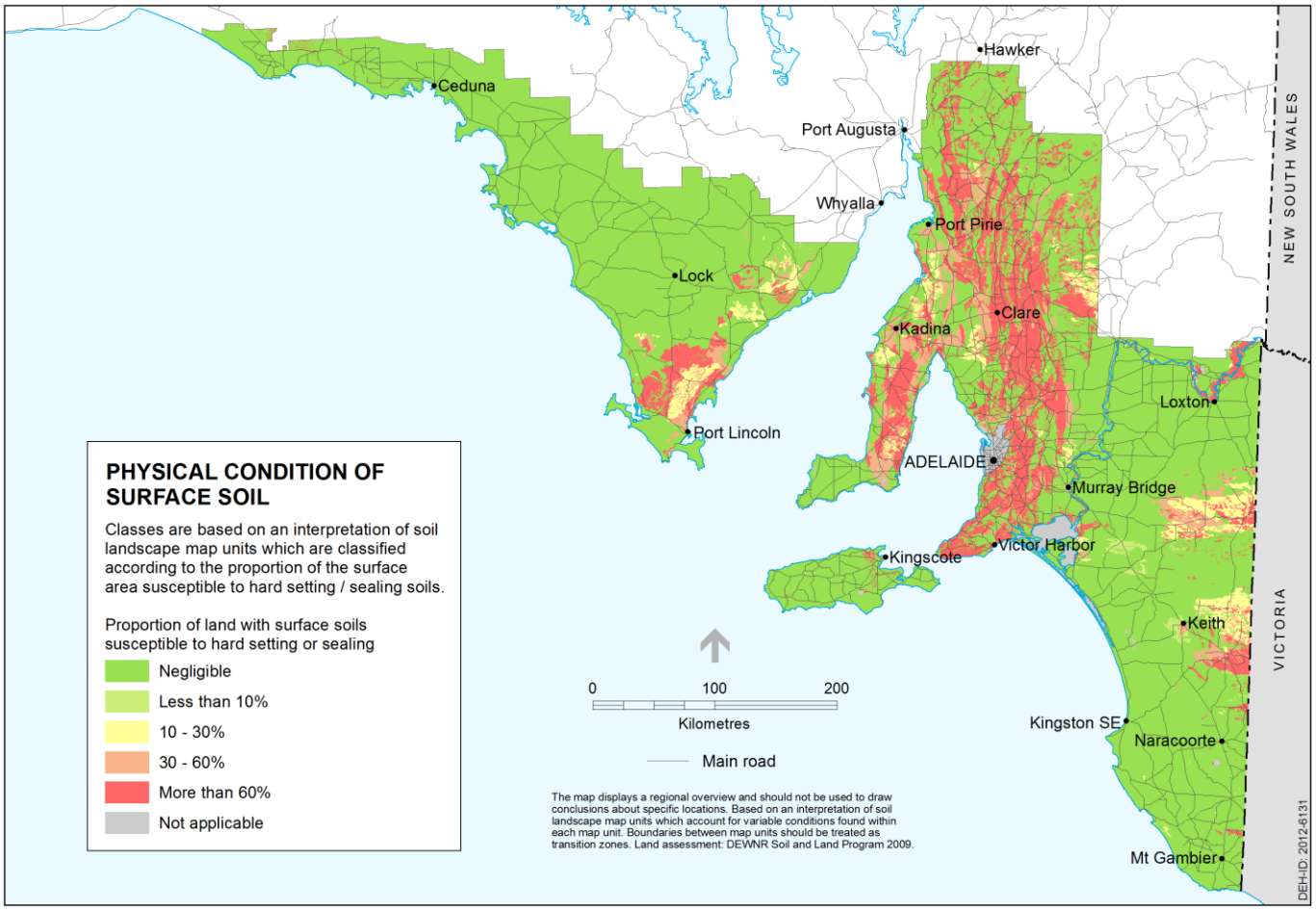
Physical condition of surface soil	Area	Cleared land	Class*
Satisfactory	83.27%	80.38%	C1
Slight limitation (soil prone to hard setting)	15.07%	17.72%	C2
Moderate limitation (soil is dispersive)	0.20%	0.16%	C3
Severe limitation (soil is highly dispersive)	0.00%	0.00%	C4
Not applicable	1.46%	1.74%	CX
TOTAL HECTARES	15,765,460	10,439,300	

* The letter 'C' denotes classes that are specific to *Physical condition of surface soil*

Displaying data in soil maps

Soil and land attribute maps display a simplified version of the underlying data. Mapping classes are based on soil landscape map units, which may have variable surface soil conditions. Map units are categorised into legend categories according to the area proportion of surface soils susceptible to hard setting and/or sealing.

Sample of a hard setting soil with surface sealing



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