

Surface carbonate

Soil carbonates originate as wind-blown materials, coastal shell deposits, sedimentary limestone or calcareous bedrock

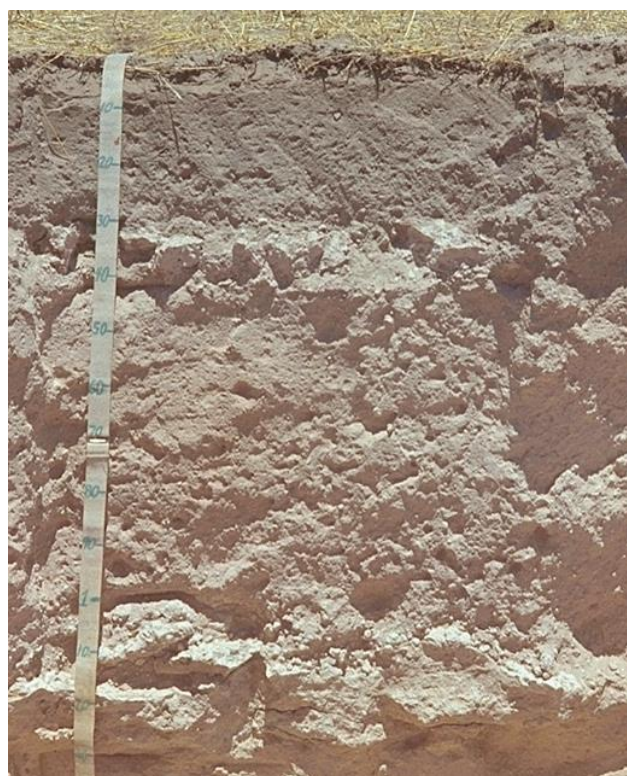
Surface carbonate refers to surface soils containing carbonates of calcium, and to a lesser extent magnesium, which are widespread across South Australia's agricultural districts particularly below 400 mm annual rainfall. Surface carbonates usually occur as finely divided segregations mixed among other sand, silt and clay sized particles in the soil matrix, and sometimes as hard nodules or concretions (commonly called rubble). Fine carbonates reduce the availability of key plant nutrients, restrict the performance of a range of crops and pastures, and retard the degradation of some herbicides. These effects are amplified in very highly calcareous soils (i.e. more than about 10% carbonate).

Land assessment in southern South Australia

The nature and concentration of carbonates are routinely assessed during field mapping work. The presence of carbonates is determined by the strength of any effervescence resulting from the application of 1 M hydrochloric (HCl) acid. Four levels of reaction are then highlighted (nil, slight, moderate, strong), as per the table below. [Subsoil carbonate](#) is discussed in another fact sheet.

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 *Surface carbonate* class (e.g. KA1, KA2, etc.) have been estimated for each map unit.

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



Very highly calcareous sandy loam over rubbly carbonate, containing carbonates right down the profile

Area statistics

Surface soil reaction to 1 M HCl	Area	Cleared area	Class*
No reaction - non calcareous	57.71%	60.01%	KA1
Slight to moderate reaction - slightly to highly calcareous	30.67%	28.77%	KA2
Strong reaction - very highly calcareous	10.20%	9.52%	KA3
Not applicable	1.42%	1.70%	KAX
TOTAL HECTARES	15,765,460	10,439,300	

* The letters 'KA' denotes classes that are specific to *Surface carbonate*

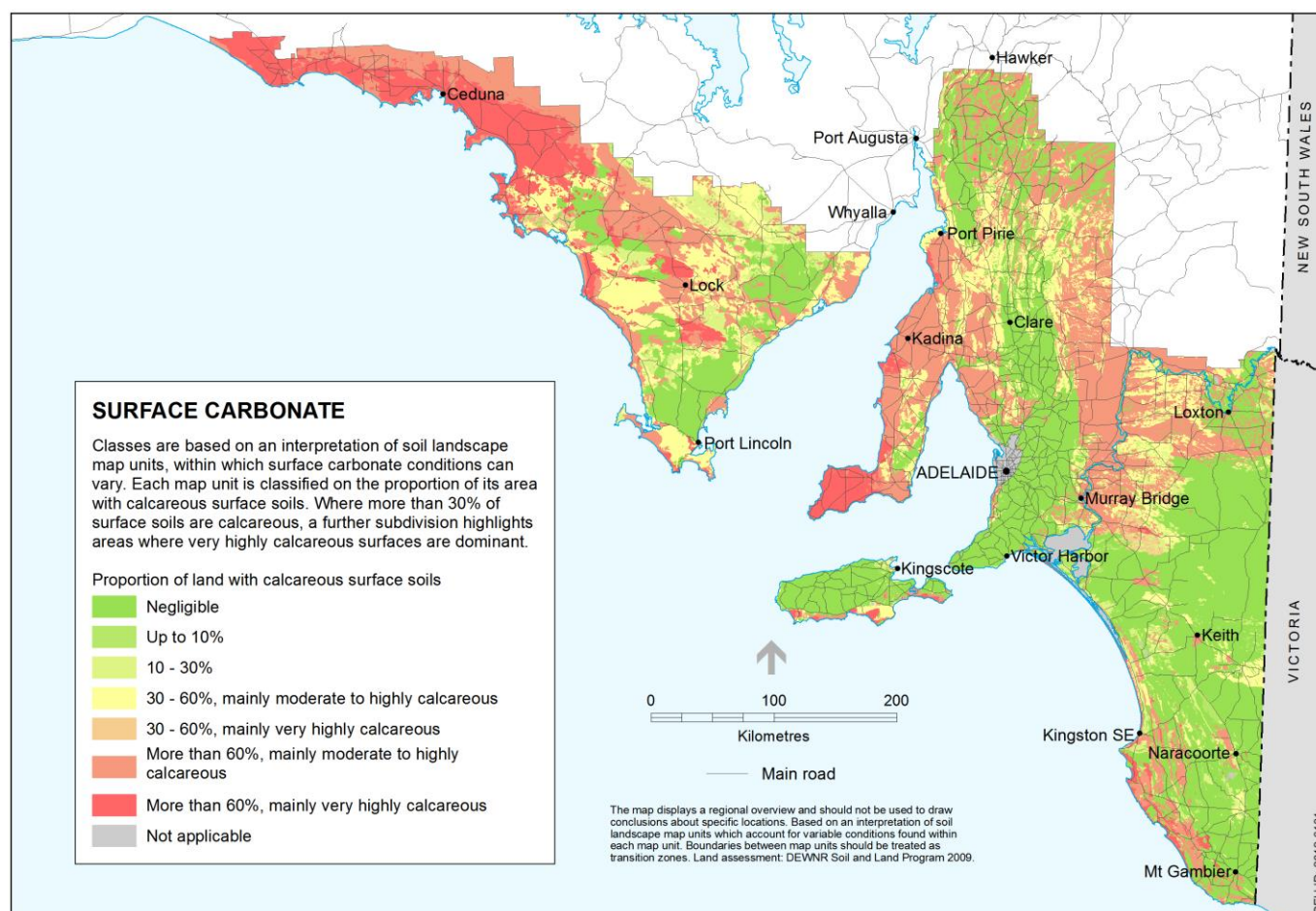


Displaying data in soil maps

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, within which *Surface carbonate* conditions can vary. Each map unit is classified according to the proportion of its area with calcareous surface soils (i.e. fine carbonate in the soil matrix). Where more than 30% of surface soils are calcareous, further subdivisions are made to highlight areas where very highly calcareous surfaces are dominant.



Low fertility is a common issue on highly calcareous soils



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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