

This Information Sheet describes the *typical average properties* of the specified soil. It is essentially a summary of information obtained from one or more profiles of this soil that were examined and described during the Topoclimate survey or previous surveys. It has been prepared in good faith by trained staff within time and budgetary limits. However, no responsibility or liability can be taken for the accuracy of the information and interpretations. Advice should be sought from soil and landuse experts before making landuse decisions on individual farms and paddocks. The characteristics of the soil at a specific location may differ in some details from those described here.
No warranties are expressed or implied unless stated.

Soil name: Makarewa

Overview

Makarewa soils occupy about 38,500 ha on the flood plains of rivers and streams across the Southland region. They are formed in fine alluvium from mixed sources that commonly has some influences of tuffaceous greywacke and basic rocks in western Southland. These soils are deep to moderately deep, poorly drained, and have silty clay textures. They are used for intensive pastoral farming with sheep, dairy and deer, with some cropping. Climate is cool temperate with regular rain and soils rarely dry out.

Physical properties

Makarewa soils have a deep rooting depth and moderately high available soil water, although the rooting depth may be limited by poor aeration during wet periods due to the poor drainage and slow subsoil permeability. Texture is variable, with layered texture profiles common, but there is always at least one horizon with silty clay texture and topsoil clay content is 30-60%. The soils are typically stone free, although the moderately deep phase will have gravel between 45 and 90cm depth.



Makarewa profile

Fertility properties

Topsoil organic matter levels range from 6 to 10%; P-retention values 30-50% and pH values moderate. Cation exchange and base saturation levels are moderate to high throughout the profile, resulting in high availability of cations present. Potassium levels are very low. Reserve phosphorus levels are also low and there are moderate levels of sulphate sulphur in the subsoil. Micro-nutrient levels are generally adequate.

Associated and similar soils

Some soils that commonly occur in association with Makarewa soils are:

- Dacre: poorly drained soil on floodplains of streams and minor drainage channels.
- Hedgehope: moderately well to imperfectly drained soils formed on levees
- Jacobstown: similar profile, but has silty textures
- Lumsden: shallow, poorly drained soil with silty textures
- Pukemutu: poorly drained due to water perching on a fragipan.

Some soils that have similar properties to Makarewa soils are:

- Braxton: occurs on terraces; textures vary from silt loam to silty clay
- McLeish: shallow, poorly drained soil with clayey textures
- Caroline: has a cemented ironpan in the subsoil
- Titipua: has over-thickened slightly peaty topsoils

Sustainable management indicators

Note: the vulnerability ratings given in the table below are generalised and should not be taken as absolutes for this soil type in all situations. The actual risk depends on the environmental and management conditions prevailing at a particular place and time. Specialist advice should be sought before making management decisions that may have environmental impacts. Where vulnerability ratings of Moderate to Very severe are indicated, advice may be sought from Environment Southland or a farm management consultant.

Vulnerability factor	Rating	Vulnerability compared to other Southland soils
Structural compaction	moderate	These soils have a moderate vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the poor drainage.
Nutrient leaching	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the poor drainage, high water holding capacity and slow subsoil permeability.
Topsoil erodibility by water	minimal	Due to the moderate to high clay content, the topsoil erodibility of these soils is minimal. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
Organic matter loss	slight	Vulnerability to long-term decline in soil organic matter levels is partly dependent on soil properties, and highly dependent on management practices (e.g., crop residue management and cultivation practices).
Waterlogging	severe	These soils have a severe vulnerability to waterlogging during wet periods. This rating reflects the poor drainage and slow subsoil permeability.

General landuse versatility ratings

Note: The versatility ratings in the table below are indicative of the major limitations for semi-intensive to intensive land use. These ratings differ from those used in the past in that sustainability factors are incorporated in the classification. Refer to the Topoclimate district soil map or property soil map to determine which of the soil symbols listed below are applicable, then check the versatility ratings for that symbol in the appropriate table.

MkU1 (Makarewa undulating deep)
MkU2 (Makarewa undulating moderately deep)
MkU1vr (Makarewa undulating deep recent variant)

Versatility evaluation for soil MkU1, MkU2, MkU1vr		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Arable	Limited	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain.
Intensive pasture	Moderate	Inadequate aeration during wet periods; vulnerability of topsoil to structural degradation by cultivation and compaction.
Forestry	Limited	Inadequate aeration during wet periods; potential flood risk.

Management practices that may improve soil versatility

- Careful management after heavy rain and wet periods will reduce the impact of short-term waterlogging. Intensive stocking, cultivation and heavy vehicular traffic use should be minimal during these periods.
- Installation and maintenance of subsurface mole and tile drains will reduce the risk of short-term waterlogging.
- If compaction occurs, aeration at the correct depth and moisture condition can be of benefit.