

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: **McNab**

### Overview

McNab soils occupy about 950ha on rolling downlands in the McNab and Kaiwera districts of eastern Southland. They are formed into moderately deep loess overlying highly weathered tuffaceous greywacke bedrock. McNab soils are moderately well to imperfectly drained, with a slightly deep rooting depth, and moderately high plant available water, that is limited by the graveliness and bedrock that commonly occurs within in the lower subsoil. Present use is pastoral grazing with sheep and beef cattle. Climate is cool temperate with regular rainfall throughout the year.

### Physical properties

McNab soils have a slightly deep rooting depth that is restricted by bedrock. Plant available water capacity is moderately high, but the subsoil aeration and permeability may be limited by the weathered bedrock. Texture is silt loam in all horizons, with a topsoil clay content of 30–35%. Soils are slightly gravelly in the upper horizons, grading to extremely gravelly subsoil and bedrock between 45–90cm depth.



*McNab profile*

### Fertility properties

Topsoil organic matter levels are 7–8%; P-retention levels 40–50% and topsoil pH low (low 5s) with subsoil pH values of <5. Cation exchange values are moderate and base saturation low. Available calcium is moderate in the topsoil but low in the subsoil, with magnesium and potassium levels high. Reserve phosphorus levels are low. Micronutrient levels are generally adequate. Pasture may be deficient in cobalt (for sheep) in summer.

### Associated and similar soils

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

- Kaiwera: shallow, well drained strongly leached soil forming into stony stony colluvium or bedrock; has P-retention of >85%
- Otaraia: well drained soil formed in deep loess
- Ferndale: imperfectly drained soil formed in deep loess

Some soils that have similar properties to McNab soils are:

- Craigdale: moderately weathered Brown soil; bedrock is not typically as weathered, and has subsoil pH between 4.8 and 5.5
- Fortification: strongly leached Allophanic soil, with P-retention of >85%
- Waiarikiki: strongly leached Brown soil, with P-retention of >85%; formed in gravelly colluvium
- Pukerau: strongly leached Allophanic soil, with P-retention of >85%; bedrock occurs within 45cm depth

## 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
<b>Structural compaction</b>	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 moderate P-retention, clay and organic matter content.
<b>Nutrient leaching</b>	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the moderately high water-holding capacity and slow permeability.
<b>Topsoil erodibility by water</b>	slight	Due to the moderate clay and organic matter content, topsoil erodibility in these soils is slight. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
<b>Organic matter loss</b>	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).
<b>Waterlogging</b>	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the moderately good drainage, but slow 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.

### McNab rolling moderately deep (MjR2)

Versatility evaluation for soil MjR2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth
Arable	Limited	Rolling slopes
Intensive pasture	Limited	Subsoil acidity
Forestry	Limited	Restricted rooting depth

### McNab undulating moderately deep (MjU2)

Versatility evaluation for soil MjU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth
Arable	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; restricted rooting depth.
Intensive pasture	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; restricted subsoil root penetrability
Forestry	Limited	Restricted rooting depth

### Management practices that may improve soil versatility

- Careful management after heavy rain and wet periods will reduce the impact of structural compaction damage. Intensive stocking, cultivation and heavy vehicular traffic use should be minimised during these periods.
- Management of nutrient applications so as to minimise leaching losses