

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: **Otahu**

### Overview

Otahu soils occupy about 300 ha on fans and terraces on the north flanks of the Takitimu Mountains. They are formed into loess overlying tuffaceous greywacke fan gravels, and moraine gravels from Fiordland. Soils are poorly drained, with moderately deep rooting depth and moderately high plant available water. Present use is pastoral grazing with sheep, deer and cattle. Climate is cold in the winter, with regular rainfall during the year. Soils can be dry in summer.

### Physical properties

Otahu soils have a moderately deep (60–90cm) rooting depth, and moderately high plant available water, that is restricted by the subsoil fragipan. The soils are poorly drained due to the slow subsoil permeability that may significantly limit aeration during wet periods. Textures are silt loams in all horizons. Topsoil clay content is about 20–30%. The soils are typically stone free above 45cm depth, with less than 35% gravels occurring in the subsoil.

### Fertility properties

Topsoil organic matter levels are 10–13%; P-retention 40–70% and pH moderate (high 5s). Cation exchange values are moderate. Base saturation and available calcium values moderate to high in the topsoil, but low in the subsoil. Magnesium, potassium and sodium values are low to very low throughout the soil. Soil reserve phosphorus and sulphur levels are low. Micronutrient levels are generally adequate.

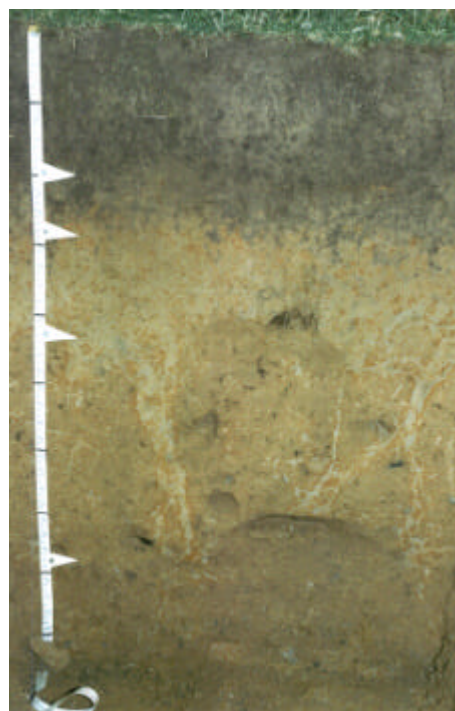
### Associated and similar soils

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

- Excelsior: well drained moderately deep to deep soil formed in loess
- Te Anau: occurs on glacial moraines, and is shallow to moderately deep
- Wairaki: well drained shallow stony soil that occurs on high terraces
- Glenelg: occurs on intermediate terraces from the Takitimu Mountains; a shallow stony soil

Some soils that have similar properties to Otahu soils are:

- Mossburn: occurs on high terraces, fans and colluvial slopes flanking hill country in the Aparima and Oreti river valleys. They are formed into dominantly deep loess, sometimes mixed with colluvium
- Waikoikoi: formed into deep loess extensively across northern Southland to west Otago



*Otahu profile*

## 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 poor drainage, offset by the moderate clay, organic matter and P-retention values.
<b>Nutrient leaching</b>	slight	These soils have a slight vulnerability to leaching to groundwater. This rating reflects the slow permeability, moderately high water-holding capacity and poor drainage.
<b>Topsoil erodibility by water</b>	slight	Due to the moderate clay and organic matter content, topsoil erodibility in these soils is moderate. 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>	severe	These soils have a severe vulnerability to waterlogging during wet periods. This rating reflects the poor drainage and 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.

### OaU1 (Otahu undulating deep)

Versatility evaluation for soil OaU1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Inadequate aeration during wet periods; restricted rooting depth.
Arable	Limited	Inadequate aeration during wet periods; risk of short-term waterlogging after heavy rain
Intensive pasture	Limited	Risk of short-term waterlogging after heavy rain
Forestry	Limited	Inadequate aeration during wet periods; restricted rooting depth

### OaH1 (Otahu hilly deep)

Versatility evaluation for soil OaH1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes.
Forestry	Limited	Inadequate aeration during wet periods; restricted rooting depth

### 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 minimised during these periods.
- Installation of sub-surface tile and mole drains (if practical) will reduce the risk of short-term waterlogging.