

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.

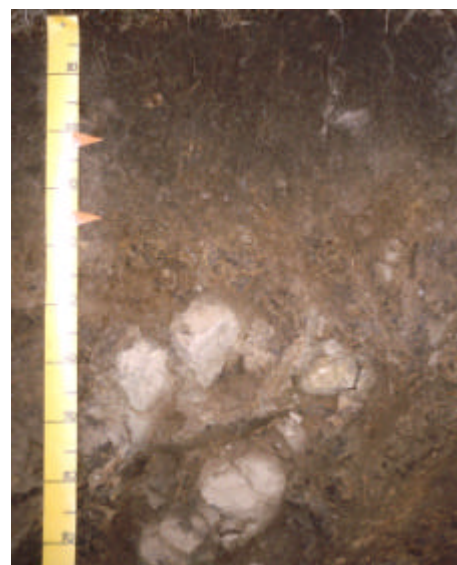
Soil name: **Conical Hill**

Overview

Conical Hill soils occupy about 800ha on hills and downs in the Waipahi district of south Otago. These soils are formed into thin mixed loess and colluvium, overlying basic igneous rock at 40–90cm depth. Conical Hill soils are well drained, with a shallow to slightly deep rooting depth and moderate water holding capacity that is limited by the gravelliness and bedrock that typically occurs within 45cm depth. Present use is pastoral grazing with sheep and beef cattle. Climate is cool temperate with regular rain throughout the year. Shallower soils can be summer dry.

Physical properties

Conical Hill soils have a shallow rooting depth, restricted by the gravelliness and bedrock in the subsoil, and moderate available water. These soils are well drained, with good aeration and permeability throughout the soil. Texture is silt loam in all horizons, but does vary according to the proportion of loess in the soil. Topsoil clay content is about 25–30%. The soils are gravelly throughout, and typically have at least 35% gravel and bedrock within 45cm depth. The moderately deep phases will have bedrock between 45–90cm depth.



Conical Hill profile

Fertility properties

Topsoil organic matter content is about 5–6%, P-retention 40% and pH moderate (high 5s to low 6s). Cation exchange and base saturation values are high. Available calcium values are high, magnesium very high, with potassium values low. Soil reserve phosphorus levels are low. Micronutrient values are generally adequate.

Associated and similar soils

Some soils that commonly occur in association with Conical Hill soils are:

- Arthurton: imperfectly drained Brown soil formed in deep loess
- Clinton: well drained Brown soil formed in deep loess; occurs on gently sloping fans adjacent to Clinton township
- Waikaka: well drained Brown soil formed in deep loess that has Brown-Pallic intergrade properties; occurs in rolling and hilly land grading between the downlands and the hill country

Some soils that have similar properties to Conical Hill soils are:

- Mandeville: shallow soil with tuffaceous greywacke bedrock within 45cm depth
- Kaihiku: shallow soil formed into gravelly tuffaceous greywacke colluvium

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 good drainage, but moderate clay, organic matter and P-retention values.
Nutrient leaching	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the good drainage, with moderate permeability and moderate water holding capacity.
Topsoil erodibility by water	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.
Organic matter loss	moderate	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	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the good drainage and permeability. Hilly phases will have nil vulnerability.

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.

CcR3 (Conical Hill rolling shallow) and CcU3 (Conical Hill undulating shallow)

Versatility evaluation for soil CcR3, CcU3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth; vulnerability to leaching to groundwater
Arable	Limited	Restricted rooting depth; vulnerability to leaching to groundwater; rolling slopes for rolling phase.
Intensive pasture	Limited	Restricted rooting depth; vulnerability to leaching to groundwater; rolling slopes for rolling phase.
Forestry	Unsuitable	Shallow rock depth

CcH3 (Conical Hill hilly shallow) and CcS3 (Conical Hill steep shallow) : unsuitable for non-arable horticulture and arable landuse due to hilly and steep slopes, and for forestry due to shallow rock depth; limited versatility for intensive pasture due to slope and restricted rooting depth.

CcR2 (Conical Hill rolling moderately deep): limited versatility for non-arable horticulture, arable and forestry landuses due to restricted rooting depth, rolling slopes and shallow rock depth (and restricted rooting depth) respectively. Moderate versatility for intensive pasture due to vulnerability to leaching and restricted rooting depth.

CcH2 (Conical Hill hilly moderately deep): unsuitable for non-arable horticulture and arable and limited versatility for intensive pasture due to hilly slopes; limited versatility for forestry due to shallow rock depth and restricted rooting depth.

CcU2 (Conical Hill undulating moderately deep) : limited versatility for non-arable horticulture and forestry due to restricted rooting depth; moderate versatility for arable and intensive pasture landuse due to vulnerability to leaching and restricted rooting depth.

Management practices that may improve soil versatility

- Careful management of fertiliser nutrient applications to avoid runoff and leaching.