

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: **Kaihiku**

### Overview

Kaihiku soils occupy about 11,500 ha on predominantly sunny facing rolling to steep slopes of the Hokonui hills and the Kaiwera district, at altitudes of up to 500m. They are formed in stony colluvium from tuffaceous greywacke, and minor additions of windblown loess. Kaihiku soils are well drained, with a slightly deep rooting depth and moderate water holding capacity, that is limited by gravelliness that occurs throughout the soil. Bedrock commonly occurs in the subsoil, below 45cm depth. They are used for extensive pastoral grazing with sheep and beef cattle. Climate is cool temperate with regular rain, though these soils can dry out in summer because of their shallow depth, good drainage and mainly sunny aspect.



*Kaihiku profile*

### Physical properties

Kaihiku soils have a slightly deep rooting depth and moderate available water that is restricted by the gravelliness of the subsoil. These soils are well drained, with good aeration and moderate permeability throughout the soil. Textures are typically clay loam, with topsoil clay content of 28–35%. The soils are gravelly throughout, and typically have at least 35% gravel within 45cm depth.

### Fertility properties

Topsoil organic matter levels are 7–8%; P-retention under 30%; pH values are moderate and tend to increase down the profile. Cation exchange values are moderate and base saturation high to very high. Calcium, magnesium and potassium levels are high to moderate. Reserve phosphorus and sulphur levels are low and these soils are very responsive to these nutrients. Micronutrient levels are generally adequate for pasture growth but may be deficient in cobalt for sheep, and copper for deer and cattle over summer.

### Associated and similar soils

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

- Waikaka: deep well drained Brown soil formed into loess
- Kaiwera: strongly leached Brown soil, with high P-retention and pH values of <5.5 in the subsoil; occur in moister environments, such as shady slopes and/or higher rainfall
- Stony creek: poorly to imperfectly drained, shallow stony soils occurring on toeslopes

Some soils that have similar properties to Kaihiku soils are:

- Mandeville: also a Melanic soil; occurs where tuffaceous greywacke bedrock is within 45cm depth.
- Josephville: weakly leached Brown soil formed in a mix of stony colluvium and a significant proportion of loess; is gravelly but has <35% gravels within 45cm depth
- Wendon: moderately leached Brown soil formed on greywacke bedrock and colluvium; has acidic subsoils with pH of <5.5
- Kuriwao: moderately leached Brown soil formed in tuffaceous greywacke colluvium; has acidic subsoils with pH of <5.5.

## 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>	slight	These soils have a slight vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the good drainage, moderate clay and organic matter levels.
<b>Nutrient leaching</b>	severe	These soils have a severe vulnerability to leaching to groundwater. This rating reflects the good drainage, moderate permeability, and moderate water holding capacity.
<b>Topsoil erodibility by water</b>	minimal	Due to the clay loam texture, topsoil erodibility in these soils is minimal. Erodibility is highly dependent on management, particularly when there is no vegetation cover.
<b>Organic matter loss</b>	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).
<b>Waterlogging</b>	nil	These soils have a nil vulnerability to waterlogging during wet periods. This rating reflects the good drainage, moderate permeability, and the rolling to steep slopes.

## 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.

### KhH3: (Kaihiku hilly shallow)

Versatility evaluation for soil KhH3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Hilly slopes
Arable	Unsuitable	Hilly slopes
Intensive pasture	Limited	Hilly slopes
Forestry	Limited	Restricted rooting depth

### KhR3: (Kaihiku rolling shallow)

Versatility evaluation for soil KhR3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Restricted rooting depth
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Vulnerability to leaching; restricted rooting depth
Forestry	Limited	Restricted rooting depth

### KhS3: (Kaihiku steep shallow)

Versatility evaluation for soil KhS3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Unsuitable	Steep slopes
Arable	Unsuitable	Steep slopes
Intensive pasture	Limited	Steep slopes
Forestry	Limited	Steep slopes ; Restricted rooting depth

### Management practices that may improve soil versatility

- Management of nutrient applications that minimise leaching losses

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