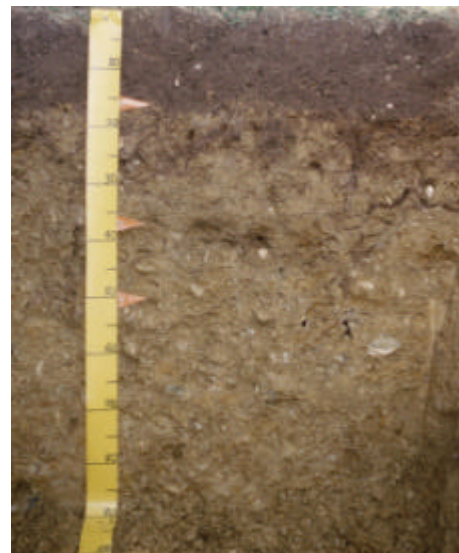


This Information Sheet describes the *typical average properties* of the specified soil. It is essentially a summary of information obtained from one or more profiles of this soil that were examined and described during the Topoclimate survey or previous surveys. It has been prepared in good faith by 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: **Kapuka**

### Overview

Kapuka soils occupy about 3,600 ha on alluvial and old marine terraces in the coastal area of the Southland plain south east of Invercargill. They are formed in shallow to moderately deep loess derived from greywacke that overlies gravel. Kapuka soils are imperfectly drained soils, with moderately deep rooting depth, high available water capacity and silty textures. The soils show strong leaching, with high P-retention and are strongly acidic. The podzol features are likely to be less evident in areas that have significant development inputs. Present use is pastoral grazing with sheep, beef cattle and some dairy. Climate is cool temperate with regular rain throughout the year.



*Kapuka profile*

### Physical properties

Kapuka soils have a moderately deep rooting depth and high plant available water, although the subsoil gravelliness, acidity and aluminium toxicity may be limiting (particularly on less developed sites). Soils are imperfectly drained, with slowly permeable subsoils that may cause short-term waterlogging after heavy rain. Textures are silt loams throughout the profile, with topsoil clay content of 10–22%. Kapuka soils typically have gravels between 45 and 90cm depth. The shallow phase has gravels within 45cm, and will have a slightly deep rooting depth and moderately high plant available water.

### Fertility properties

Topsoil organic matter levels are 12–16%; P-retention 45–90% and pH low to moderate (low–mid 5s). Soil acidity tends to decrease in the subsoil, and be <5.0 in less developed sites. Cation exchange is high and base saturation moderate to low. Available calcium and magnesium levels are moderate in the topsoil but low in lower horizons. Potassium levels are low throughout the profile. Reserves of phosphorus are also low. Micronutrient levels are generally adequate.

### Associated and similar soils

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

- Otanonomo: poorly drained peat soil; formed on raised peat bogs
- Invercargill: poorly drained peat soil; formed on basin peat bogs
- Mokotua: imperfectly drained Brown soil
- Tisbury: occurs on same landforms but are poorly drained

Some soils that have similar properties to Kapuka soils are:

- Ashers: podzolised soil formed into deep loess
- Tiwai: podzolised shallow to moderately deep soil on marine terraces with thin iron pans, and cemented underlying gravels; tend to have dominantly organic enriched Bh horizons, whereas Kapuka tends to have dominantly iron enriched Bs horizons

## 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 imperfect drainage and low clay content, offset by the high organic matter and P-retention.
<b>Nutrient leaching</b>	slight	These soils have a slight to moderate vulnerability to leaching to groundwater depending on soil depth. This rating reflects the imperfect drainage, high water-holding capacity and slow subsoil permeability.
<b>Topsoil erodibility by water</b>	slight	Due to the high 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>	moderate	These soils have a moderate vulnerability to waterlogging during wet periods. This rating reflects the imperfect 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.

### KpU2 (Kapuka undulating moderately deep)

Versatility evaluation for soil KpU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Inadequate aeration during wet periods; restricted rooting depth
Arable	Moderate	Inadequate aeration during wet periods; vulnerability to short-term waterlogging after heavy rain
Intensive pasture	Moderate	Inadequate aeration during wet periods; subsoil acidity
Forestry	Moderate	Restricted rooting depth; vulnerability to sustained waterlogging

### KpU3 (Kapuka undulating shallow)

Versatility evaluation for soil KpU3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Restricted rooting depth
Arable	Moderate	Inadequate aeration during wet periods; restricted rooting depth
Intensive pasture	Moderate	Inadequate aeration during wet periods; subsoil acidity
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 short-term waterlogging. Intensive stocking, cultivation and heavy vehicular traffic should be minimised during these periods.
- Installation of subsurface tiles and open ditches will reduce the risk of short-term waterlogging.

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