

This Technical Data 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. Advise 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: Pourakino

### Overview

Pourakino soils occupy about 4,200 ha on weakly dissected intermediate terraces in the Pourakino Valley and southern Longwoods north-west of Riverton. They are formed into deep wind deposited loess. These soils are well drained, have deep rooting depth, high plant available water and silty textures. They are used for pastoral grazing with sheep, dairy and beef cattle. Climate is cool temperate with relatively high rainfall. Soils rarely dry out.

### Soil classification

#### NZ Soil Classification (NZSC):

Typic Firm Brown; stoneless; silty

#### Previous NZ Genetic Classification:

Moderately to strongly leached yellow-brown loam.

### Classification explanation

The NZSC of the Pourakino soils is consistent with the previous classification. They are borderline between Allophanic Brown soils and Firm Brown soils. Further analysis is required to clarify their NZSC. Pourakino soils are well-drained, have yellow-brown subsoils and rarely suffer from drought. There is a subsoil horizon that is structureless, with slightly firm or greater soil strength that may limit root penetration, and has slow permeability that may cause waterlogging during wet periods. The soils have P-retention of 70–85%, are typically stone free and have silt loam textures to 90cm depth.

### Soil phases and variants

Identified units in the Pourakino soils are:

- Pouakino undulating deep (PoU1): has no gravel within 90cm depth; occurs on slopes of 0–7°
- Pourakino rolling deep (PoR1): has no gravel within 90cm depth; occurs on slopes of 7–15°

The soil properties described in this Technical Data Sheet are based on the most common phase, Pourakino undulating deep (PoU1). Values for other phases and variants can be taken as being similar. Where they differ significantly they are recorded with a separate versatility rating, e.g., Pourakino rolling deep (PoR1).

### Associated soils

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

- Mokotua: occurs on the same landforms, but has imperfect drainage (tending to poor); has a structured subsoil to 90cm.
- Fairfax: occurs on the flanks of the Longwood Range; is well to imperfectly drained, with silty clay textures
- Te Waewae: occurs on coastal marine terraces flanking the Longwood Range, between Riverton and Clifden; is well to imperfectly drained and has P-retention of 50–70%

## Similar soils

Some soils that have similar properties to Pourakino soils are:

- Waikiwi: have brighter colours and lower P-retention values (40–70%); have a similar soil profile and occur on high terraces across the Southland Plain.
- Edendale: have brighter colours and lower P-retention values (55–75%); have a similar soil profile and occur on intermediate terraces in the lower Mataura, Oreti and Aparima River valleys
- Waimatuku: have brighter colours and lower P-retention values (40–60%), and occur on the high terraces of the Southland Plain west of the Waimatuku stream. They have a distinct subsoil fragipan
- Papatotara: Allophanic soil with a P-retention of >85%; occurs on terraces in the lower Waiau Valley

## Typical profile features

The following is a 'generic' or composite profile description representing the most common combination of characteristics for this soil type. The actual profiles for which descriptions and data are available are listed at the end of this Technical Data Sheet.

Pourakino profile	Horizon	Depth (cm)	Description
	Ap	0–21	Dark brown silt loam; weak soil strength; strongly developed very fine to medium polyhedral structure; abundant roots
	Ap/Bw	21–32	Dull yellowish brown silt loam; many worm casts; weak soil strength; moderately developed very fine to medium polyhedral structure; abundant roots
	Bw	32–47	Dull yellowish brown silt loam; few worm casts; weak soil strength; moderately developed very fine to medium polyhedral structure; many roots
	BC(g)	47–90+	Dull yellowish brown silt loam; common bright brown and common greyish olive mottles; very few worm casts; slightly firm soil strength; massive structure; few roots

## Key profile features

Pourakino topsoils are about 21cm deep and have a strongly developed structure. Subsoil structure is moderately developed and becomes more compact and structureless below 50cm depth. The moderate weathering of the soils is reflected in the dull yellowish brown colour, which is distinctly paler than similar soils.

## Typical physical properties

Note: values in *Italics* are estimates

Horizon	Depth (cm)	Bulk density	Permeability	Texture	Gravel content
Ap	0–21	Moderate	<i>Moderate</i>	Silt loam	Gravel free
Ap/Bw	21–32	Moderate – High	<i>Moderate</i>	Silt loam	Gravel free
Bw	32–47	Moderate – High	<i>Moderate</i>	Silt loam	Gravel free
BC(g)	47–90+	Moderate – High	<i>Slow</i>	Silt loam	Gravel free

**Profile drainage:** Moderately well  
**Plant readily available water:** *High*  
**Potential rooting depth:** Deep  
**Rooting restriction:** No major restriction

## Key physical properties

Pourakino soils have a deep rooting depth and high plant available water, meaning there is no significant physical barrier to root growth. The soils are well drained but the compact subsoil is slowly permeable, and may cause short-term waterlogging after heavy rainfall. Texture is silt loam in all horizons, with topsoil clay content of 20–30%. Pourakino soils are typically stone free.

## Typical chemical properties

Horizon	Depth (cm)	pH	P retention	CEC	BS	Ca	Mg	K	Na
Ap	0–21	Moderate	High	Moderate	Low	Low	Low	Very low	Low
Ap/Bw	21–32	Moderate	High	Moderate	Very low	Low	Very low	Very low	Low
Bw	32–47	Moderate	High	Low	Very low	Very low	Very low	Very low	Low
BC(g)	47–90+	Moderate	High	Low	Very low	Very low	Very low	Very low	Low

## Key chemical properties

Topsoil organic matter content is about 6–9%, P-retention 70–85% and pH moderate (mid 5s). Cation exchange is moderate and base saturation low. Available calcium, magnesium and potassium levels are low, as are soil reserve phosphorus levels. Micro nutrient levels are generally adequate.

## Vulnerability to environmental degradation

**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>	minimal	These soils have a minimal vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the good drainage and high P-retention.
<b>Nutrient leaching</b>	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the good drainage offset by the high water-holding capacity and slow subsoil permeability.
<b>Topsoil erodibility by water</b>	slight	Due to the moderate to high clay and organic matter, 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>	minimal	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 good drainage, but slowly permeable subsoil.

## General landuse versatility ratings for Pourakino soils

**Note:** The versatility ratings in the table below are indicative of the major limitations for semi-intensive to intensive landuse. 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.

### PoU1 (Pourokino undulating deep)

Versatility evaluation for soil PoU1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Risk of short-term waterlogging after heavy rain
Arable	Moderate	Risk of short-term waterlogging after heavy rain
Intensive pasture	Moderate	Vulnerability to leaching to groundwater; risk of short-term waterlogging.
Forestry	High	Few limitations.

**PoR1 (Pourokino rolling deep)**

Versatility evaluation for soil PoR1		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Risk of short-term waterlogging after heavy rain; rolling slopes
Arable	Limited	Rolling slopes
Intensive pasture	Moderate	Vulnerability to leaching to groundwater; risk of short-term waterlogging.
Forestry	High	Few limitations.

**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 and maintenance of subsurface mole and tile drains will reduce the risk of short-term waterlogging.

**Soil profiles available for Pourakino soils**

Soil symbol	Profile ID	Topoclimate map sheet	Profile description available	Physical data available	Chemical data available	Profile photo available
PoU1	IT13	8	✓	✓	✓	✓

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