

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: **Waiau**

Overview

Waiau soils occupy about 7,200 ha on the slowly accumulating flood plains and low terraces of the Waiau and Aparima river valleys. They are formed into gravelly alluvium derived from the Fiordland, Takitimu, and Livingstone Mountains. Waiau soils are shallow (<45cm to gravel) and free-draining and are still occasionally flooded. They are moderately fertile, with silty to sandy texture, but the rooting depth and water capacity is limited by the gravel. Present use is pastoral farming with sheep and beef cattle. Climate is cool temperate with regular rain though more inland soils can be seasonally dry.

Physical properties

Waiau soils have a moderate to slightly deep rooting depth, depending on the gravelliness of the subsoil. Plant available water will vary from moderate to low depending on the amount of gravel present. The soils are well drained (sometimes excessively) and aerated. Textures are usually silt loams to sandy loams in the topsoil, grading to sand in deeper horizons, with topsoil clay content of 20–28%. Topsoils often are slightly to moderately gravelly, and moderately to extremely gravelly below.



Waiau profile

Fertility properties

Topsoil organic matter content is 8–13%, P-retention 40–70% and pH moderate (high 5s). Cation exchange levels are moderate, but low in the subsoil, with base saturation levels similar. Reserve calcium levels are high, magnesium levels moderate and potassium levels low. Soil reserve phosphate and sulphur levels are low. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Tuatapere: moderately deep to deep well drained soil; slightly older soil with more profile development
- Manapouri: moderately deep to deep poorly drained soil

Some soils that have similar properties to Waiau soils are:

- Upukerora: occurs on the active floodplain
- Glenelg: moderately to strongly leached Brown soil that occurs on intermediate to high terraces
- Monowai: strongly leached Brown soil that occurs on intermediate to high terraces
- Riversdale: formed in mixed greywacke and schist gravels of the Matura and Oreti rivers

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, with moderate clay and P-retention levels.
Nutrient leaching	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the good drainage, moderate–low water holding capacity, and rapid permeability.
Topsoil erodibility by water	slight	Due to the moderate clay and organic matter levels, 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	nil	These soils have a nil vulnerability to waterlogging during wet periods. This rating reflects the good drainage and rapid 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.

WaU3 (Waiau undulating shallow)

Versatility evaluation for soil WaU3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Vulnerability to leaching to groundwater; restricted rooting depth.
Arable	Limited	Vulnerability to leaching to groundwater
Intensive pasture	Limited	Vulnerability to leaching to groundwater
Forestry	Limited	Potential flood risk; restricted rooting depth.

Management practices that may improve soil versatility

- Management of nutrient applications so as to minimise leaching losses
- Long-term cultivation should be carefully managed to minimise structural degradation
- Organic matter levels should be carefully maintained and enhanced