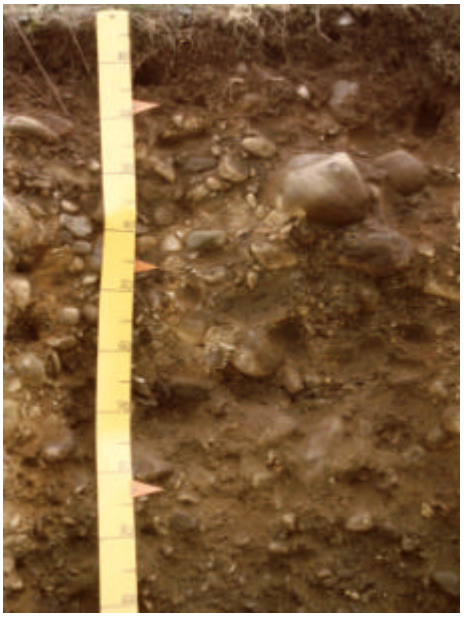
Soil name: Glenelg

Overview

Glenelg soils occupy about 14,800 ha on the intermediate terraces of the Waiau and Aparima rivers. They are formed into gravelly alluvium from the tuffaceous greywacke and basic volcanic rocks of the Takitimu mountains. Glenelg soils are well drained, with silt loam topsoil texture. The soils are stony in both the topsoil and subsoil, which limits the rooting depth and water holding capacity. They are used mainly for sheep and beef grazing. Glenelg soils can be seasonally dry, particularly in inland areas.



Glenelg profile

Physical properties

Rooting depth in Glenelg soils is restricted to varying degrees, depending on the gravel content and depth to the cemented pan in the subsoil. Plant available water varies from moderate to low depending on the quantity of gravel present. Textures are loamy silts and silt loams grading to sandy loams and sand. Topsoil clay content is 15–25%. Gravel occurs throughout the profile, with gravel content often above 70% in the subsoil.

Fertility properties

Topsoil organic matter levels are 10–16%; P-retention values 50–75% and pH values moderate. Cation exchange vales are high in the topsoil but decrease down the profile with base saturation values low. Available calcium, magnesium and potassium are low, as is reserve phosphorus and sulphur. Micro-nutrient levels are generally adequate.

Associated and similar soils

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

- Braxton: has poor drainage
- Drummond: deeper soil with with gravel between 45 and 90cm
- Papatotara: similar land surface in the lower Waiau valley, but have gravel between 45 and 90cm depth; have higher P-retention (80%+) than the Drummond soils

Some soils that have similar properties to Glenelg soils are:

- Monowai: formed on glacial outwash terraces; more strongly leached, with P-retention consistently above 85%
- Oreti: formed on intermediate greywacke and schist terraces of the Oreti and Mataura 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	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, high organic matter and P-retention in the topsoil.
Nutrient leaching	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating is indicated by the low water holding capacity and rapid permeability of the soil.
Topsoil erodibility by water	minimal	Due to the high organic matter level, the topsoil erodibility of these soils is minimal. 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.

GlU3 (Glenelg undulating shallow)
GlU3vi (Glenelg undulating shallow imperfectly drained variant)

Versatility evaluation for soil GlU3, GlU3vi		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Limited	shallow soils restricting root penetration
Arable	Limited	shallow soil restricting root penetration; stones
Intensive pasture	Moderate	Shallow soil
Forestry	Limited	Shallow soil restricting root penetration