

## Soil name: **Lintley**

### Overview

Lintley soils occupy about 2700 ha in northern Southland on fans adjacent to the Lintley range between Balfour and Jollies Pass. They are formed into alluvial fan gravels mixed with a thin mantle of loess derived from greywacke. Lintley soils are shallow (<45 cm to gravel) and free draining. 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 grazing with sheep deer and beef cattle with some cropping. Climate is cold in the winter with warm summers, when soils can seasonally dry out.

### Physical properties

Lintley soils have a slightly deep rooting depth and moderate plant available water, restricted by the subsoil gravelliness. The soils have good aeration and permeability through the profile, and may be excessively so in the stony soils of the shallow phase. Texture is silt loam in all horizons, but becomes sandy in extremely gravelly horizons. Topsoil clay content is 25–30%. The gravelliness of the subsoil can vary, and the rooting depth and water-holding capacity will improve in the less gravelly soils. Typically there is at least 35% gravel within 45cm depth.



*Lintley profile*

### Fertility properties

Topsoil organic matter levels are 6–7% and P-retention values 25–35%. pH values are moderate (5.8–6.1) in all horizons. Cation exchange and base saturation values are moderate. Available calcium and magnesium levels are moderate with potassium values low. Micronutrient levels are generally adequate, although molybdenum responses in legumes and boron responses in brassicas can be expected.

### Associated and similar soils

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

- Longridge: poorly drained equivalent of the Lintley soil
- Waikoikoi: deep soils formed in loess; poorly drained soil with a fragipan
- Mossburn: deep to moderately deep soil formed in mixed loess and fan alluvium; poorly drained soil with a fragipan
- Crookston: well drained, deep to moderately deep soil formed in loess overlying fan or terrace gravels

Some soils that have similar properties to Lintley soils are:

- Gore: shallow soil formed on low river terraces
- Berwen: a Pallic soil formed on shallow fan alluvium from schist
- Dome: shallow recent soil, forming on the floodplain on fans from greywacke

## 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 good drainage, moderate clay, and organic matter levels.
<b>Nutrient leaching</b>	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the good drainage, moderate water holding capacity and rapid permeability.
<b>Topsoil erodibility by water</b>	minimal	Due to the moderate clay and organic matter levels, 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, and 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.

### LiU3 (Lintley undulating shallow)

### LiR3 (Lintley rolling shallow)

Versatility evaluation for soil LiU3, LiR3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Vulnerability to leaching to groundwater; restricted rooting depth
Arable	Limited	Vulnerability to leaching to groundwater; restricted rooting depth.
Intensive pasture	Limited	Vulnerability to leaching to groundwater; restricted rooting depth.
Forestry	Limited	Restricted rooting depth

**LiU3vi (Lintley undulating shallow imperfectly drained variant):** as above, but main limitation for all landuses is restricted rooting depth.

### LiU2 (Lintley undulating moderately deep)

Versatility evaluation for soil LiU2		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Moderate	Vulnerability to leaching to groundwater; restricted rooting depth
Arable	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; vulnerability to leaching to groundwater
Intensive pasture	Moderate	Vulnerability to topsoil structural degradation by cultivation and compaction; vulnerability to leaching to groundwater
Forestry	Moderate	Restricted rooting depth

### Management practices that may improve soil versatility

- Management of nutrient applications so as to minimise leaching losses