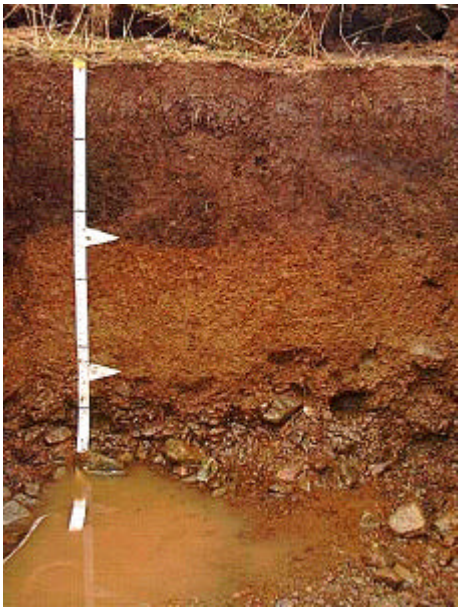
Soil name: McKerchar

Overview

McKerchar soils occupy about 100 ha on floodplains of streams from the Takitimu Mountains, mainly between the Blackmount and The Key areas. These soils also occur on areas outside the Topoclimate survey. They are formed into shallow fine alluvium over gravels that are derived from tuffaceous greywacke and basic volcanic rocks. Soils are shallow, with clayey textures, and poorly drained due to a high water-table. Present use is pastoral grazing with sheep and beef cattle. Climate is temperate with regular rainfall throughout the year. Soils are rarely dry.



McKerchar profile

Physical properties

McKerchar soils have a slightly deep rooting depth (45–60cm) with moderate plant available water. The soils are poorly drained, with moderate to slow permeability, and a high water table that is likely to cause significant aeration limitations during wet periods. Textures are silty clay with topsoil clay content about 35–45%. Soils have gravel in all horizons, and are very gravelly within 45cm depth.

Fertility properties

Topsoil organic matter content is about 15–20%; P-retention >80% and pH moderate (mid 5s). Cation exchange is very high and base saturation very low. Available calcium, magnesium and potassium values are all low. Soil reserve phosphorus levels are low. Micronutrient levels are generally adequate.

Associated and similar soils

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

- Waiau: well drained shallow soil on the floodplain and low terraces, with gravels within 45cm depth
- Tuatapere: well drained moderately deep to deep soil on the floodplain with gravels below 45cm
- Upukerora: soils of the active floodplain and riverbed; dominantly well drained and stony.

Some soils that have similar properties to McKerchar soils are:

- McLeish: occurs on low terraces of the Aparima River in the Drummond district; is slowly to non-accumulating, and subsoils show structural development
- Lumsden: occurs on floodplains of major streams and rivers in northern and central Southland and in west Otago; has silty textures
- Otepuni: forming predominantly into quartz gravels on stream floodplains of the Southland Plain

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 poor drainage, but strongly offset by the high clay, organic matter, and P-retention values.
Nutrient leaching	moderate	These soils have a moderate vulnerability to leaching to groundwater. This rating reflects the poor drainage and slow perneability, but moderate water-holding capacity.
Topsoil erodibility by water	minimal	Due to the high clay and organic matter content, topsoil erodibility in 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	severe	These soils have a severe vulnerability to waterlogging during wet periods. This rating reflects the poorly drained nature of the soil.

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.

McU3 (McKerchar undulating shallow)

Versatility evaluation for soil McU3		
Landuse	**Versatility rating**	**Main limitation**
Non-arable horticulture	Limited	Inadequate aeration for sustained periods; restricted rooting depth.
Arable	Limited	Inadequate aeration for sustained periods; risk of short-term waterlogging after heavy rain
Intensive pasture	Limited	Risk of short-term waterlogging after heavy rain
Forestry	Limited	Inadequate aeration for sustained periods; restricted rooting depth.

Management practices that may improve soil versatility

- Careful management after heavy rain and wet periods will reduced the impact of short-term waterlogging. Intensive stocking, cultivation and heavy vehicular traffic use should be minimised during these periods.
- Installation of drainage systems to lower the watertable