Soil name: Tailings

Overview

Tailings occupy about 3,500 ha on river flats and terraces that have been mined by dredging and sluicing in various districts of Southland. They are dominantly formed into disturbed alluvial gravels, with some areas of fine alluvium from sluicings. Soils have a wide range of properties with no site being typical. They are variable soils, but are generally shallow, well to imperfectly drained, and suficiently stable to have topsoil development. Present use is pastoral farming with sheep, dairy, beef cattle and deer grazing. Climate is temperate with regular rain. More inland shallow soils can be seasonally dry.

Tailings profile

Physical properties

Considerable variation in physical properties occurs, with values dependent on mining treatment and the time elapsed since mining. The following values are indicative, with variations expected in some situations. Soils have a slightly deep rooting depth with moderate plant available water. Topsoils are well aerated, with moderate permeability. Textures are loamy sands with occasional silt loams, and topsoil clay content is generally low (5–25%). Gravel occurs in varying amounts in all horizons, with lenses of fine material common, particularly where forming into sluicings.

Fertility properties

As for the pysical features of this soil, considerable variation in properties can occur. Indicative values are given. Topsoil organic matter levels are about 4–5%. P-retention 10–15% and pH moderate (high 5s). Cation exchange is moderate to low with base saturation high. Available calcium and magnesium levels are moderate to high with potassium values low. Reserve phosphorus values are low. Micro nurtient values are generally adequate.

Associated and similar soils

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

- Fleming: deep, poorly drained soil due to water perching on a fragipan
- Jacobstown: moderately deep to deep, poorly drained soil due to a high groundwater table; has no fragipan

Some soils that have similar properties to Tailings soils are:

- Riversdale: shallow floodplain soil with little profile development

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	severe	These soils have a severe vulnerability to structural degradation by long-term cultivation, or compaction by heavy stocking and vehicles. This rating reflects the good drainage, offset by the low organic matter and clay content and P-retention.
Nutrient leaching	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the well-drained nature, moderate permeability and water holding capacity.
Topsoil erodibility by water	moderate	Due to the low clay and organic matter levels, topsoil erodibility in these soils is moderate. 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	slight	These soils have a slight vulnerability to waterlogging during wet periods. This rating reflects the well-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.

UTaU3 (Tailings undulating shallow)

Versatility evaluation for soil UTaU3		
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	Restricted rooting depth.

Management practices that may improve soil versatility

- Management of nutrient applications so as to minimise leaching losses
- Organic matter levels should be carefully maintained and enhanced

Long-term intensive cultivation should be carefully managed to minimise structural degradation