

This Technical Data 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. Advise 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: Dome

Overview

Dome soils occupy about 300 ha on the floodplain of fans between Lintley and Jollies Pass in northern Southland. They are formed in gravelly alluvium derived from greywacke rocks. Dome soils are shallow (<45cm to gravel) and free draining soils that are occasionally flooded. They are moderately fertile, with silty to sandy texture, but the rooting depth and water capacity is limited by the gravel. They are used for pastoral farming with sheep and beef cattle. Climate is cold in the winter with warm summers. Soils can be seasonally dry in the summer.

Soil classification

NZ Soil Classification (NZSC): Typic Fluvisol Recent; angular-stony, hard sandstone, silty.
Previous NZ Genetic Classification: Recent soil

Classification explanation

The NZSC of Dome soils is consistent with previous classifications. The soils are formed in fluvial sediments dominated by greywacke gravels, that have the characteristic angular shape of fan gravels. Dome soils are well drained, with good topsoil development but no B horizon has developed in the subsoil. Gravel occurs at between 0 and 45cm depth, with silty textures above the gravel.

Soil phases and variants

Identified units in the Dome soils are:

- Dome undulating shallow (DoU3): has gravel above 45cm depth; occurs on slopes of 0–7°

The soil properties described in this Technical Data Sheet are based on the most common phase, DoU3 (Dome undulating shallow). Values for other phases and variants can be taken as being similar. Where they differ significantly they are recorded with a separate versatility rating.

Associated soils

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

- Longridge: poorly drained, shallow fan soil with high ground water.
- Hokonui: poorly drained, deep to moderately deep soil with clayey textures
- Arthurton: imperfectly drained, deep to moderately deep soil

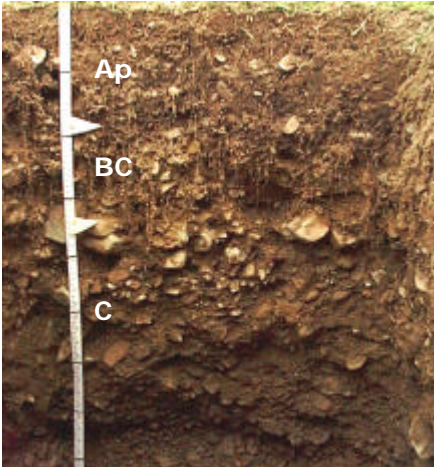
Similar soils

Some soils that have similar properties to Dome soils are:

- Lintley: on more stable areas of fans from greywacke. A Brown soil that shows greater profile development, with B horizon development
- Berwen: on more stable areas of fans developed from schist; a Pallic soil that shows greater profile development, with B horizon development
- Riversdale: Recent soil equivalent on floodplains of rivers and streams

Typical profile features

The following is a 'generic' or composite profile description representing the most common combination of characteristics for this soil type. The actual profiles for which descriptions and data are available are listed at the end of this Technical Data Sheet.

Dome profile	Horizon	Depth (cm)	Description
	Ap	0–19	Brownish black very gravelly silt loam; weak soil strength; moderately developed extremely fine to fine polyhedral structure; gravels slightly weathered and subangular; abundant roots
	BC	19–35	Dull yellowish brown extremely gravelly sand; single grain; gravels fresh and subangular; abundant roots
	C	35–90+	Dull yellowish brown extremely gravelly sand; single grain; gravels fresh and subangular; few roots
	C	35–90+	Dull yellowish brown extremely gravelly sand; single grain; gravels fresh and subangular; few roots

Key profile features

Dome soils have a topsoil 15–25cm deep, with moderately developed structure. Subsoil development is weak, with little structural development. Pasture roots extend to about 50cm with very few at lower depths, depending on the amount of gravel.

Typical physical properties

Note: values in *Italics* are estimates

Horizon	Depth (cm)	Bulk density	Permeability	Texture	Gravel content
Ap	0–19	Moderate	Rapid	Silt loam	Very gravelly
BC	19–35	—	Rapid	Sand	Extremely gravelly
C	35–90	—	Rapid	Sand	Extremely gravelly

Profile drainage: Well
Plant readily available water: *Low*
Potential rooting depth: Very shallow
Rooting restriction: Extremely gravelly subsoil

Key physical properties

Dome soils have a very shallow rooting depth, and low available water, that is severely restricted by the extremely gravelly subsoil. The soils are well drained, with good aeration and rapid permeability in the subsoil. Textures are usually silt loams to sandy loams in the topsoil, grading to sand in deeper horizons, with topsoil clay content of about 25%. Gravel occurs extensively in all horizons.

Typical chemical properties

Horizon	Depth (cm)	pH	P retention	CEC	BS	Ca	Mg	K	Na
Ap	0–19	Moderate	Moderate	Moderate	High	High	Low	Low	Low
BC	19–35	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Very low	Low
C	35–90	Moderate	Moderate	Moderate	Low	Low	Very low	Very low	Very low

Key chemical properties

Topsoil organic matter levels are 6–7%; P-retention 30–40% and pH moderate (high5s). Lower horizon pH and P-retention values are similar. Cation exchange and base saturation values are moderate. Available magnesium and potassium values are low as are soil reserves of phosphorus and sulphur. Micro nutrient levels are generally adequate although boron responses in brassicas and molybdenum responses in legumes can be expected.

Vulnerability to environmental degradation

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 moderate clay and low P-retention in the topsoil that results in low structural stability.
Nutrient leaching	very severe	These soils have a very severe vulnerability to leaching to groundwater. This rating reflects the rapid permeability and low water holding capacity.
Topsoil erodibility by water	slight	Due to the moderate clay and organic matter levels the topsoil erodibility of 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 for Dome soils

Note: The versatility ratings in the table below are indicative of the major limitations for semi-intensive to intensive landuse. 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.

DoU3 (Dome undulating shallow)

Versatility evaluation for soil DoU3		
Landuse	Versatility rating	Main limitation
Non-arable horticulture	Limited	Vulnerability to leaching to ground water; restricted rooting depth
Arable	Limited	vulnerability to leaching to ground water; topsoil stoniness
Intensive pasture	Limited	Vulnerability to leaching to ground water; restricted rooting depth
Forestry	Limited	Subsoil stoniness; restricted rooting depth

Management practices that may improve soil versatility

- Management of nutrient applications so as to minimise leaching losses, i.e., avoiding very high rates of fertiliser application in a single treatment and not applying very soluble fertilisers when the soil is saturated.

Soil profiles available for Dome soils

Soil symbol	Profile ID	Topoclimate map sheet	Profile description available	Physical data available	Chemical data available	Profile photo available
DoU3	FT3	15	✓	✓		✓
DoU3	FT4	15	✓		✓	

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