

This Information 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. Advice 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: **Northope**

### Overview

Northope soils occupy about 1,600 ha on the flood plains and low terraces of the Oreti River south of Benmore. They are formed in dominantly deep fine alluvium, with gravel occurring below 45cm in some places. Northope soils have heavy silt loam texture and imperfect drainage, causing limited seasonal wetness. Northope soils are suitable for a wide range of farming activities and receive regular summer rainfall.

### Physical properties

Northope soils have no rooting barrier, but have high bulk density that limits the degree of subsoil root growth. Aeration is limited for parts of the year. Textures are generally heavy silt loam to silty clay, with clay content of 30–40% in the topsoil. They are dominantly gravel free, although moderately deep soils do have gravelly layers below 45cm depth.



*Northope profile*

### Fertility properties

Topsoil organic matter levels are 4–6%; P-retention values mostly under 30%; pH values are moderate and tend to increase down the profile. Cation exchange values are moderate and base saturation values high, as are calcium values, reflecting the influence of limestone outcrops upstream of these soils. Reserves of phosphorus, potassium, sulphur and nitrogen are low, with good pasture and crop responses to these nutrients. Micro-nutrient levels are generally adequate.

### Associated and similar soils

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

- Riversdale: well drained, shallow soils with gravel at less than 45cm depth
- Mataura: found on the active, accumulating floodplain. Classified as Recent soils with no B horizon development in the subsoil
- Makarewa: poorly drained
- Caroline: poorly drained, with an iron pan

Some soils that have similar properties to Northope soils are:

- Winton: well drained equivalent of the Northope soil
- Ardlussa: well drained, and textures are generally not heavy silt loams. Classified as Brown soils with P-retention of greater than 30%

## 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>        | 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 imperfect drainage and low P-retention.       |
| <b>Nutrient leaching</b>            | Moderate | These soils have a moderate vulnerability to leaching to groundwater. The vulnerability will vary, depending on the amount of gravel in the subsoil, which determines the subsoil water holding capacity.        |
| <b>Topsoil erodibility by water</b> | Slight   | Due to the heavy silt loam texture, the topsoil erodibility of these soils is slight. Erodibility is highly dependent on management, particularly when there is no vegetation cover.                             |
| <b>Organic matter loss</b>          | Slight   | 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>                 | Moderate | These soils have a moderate vulnerability to waterlogging during wet periods. This rating reflects the imperfect drainage and undulating slopes.   |

## 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.

### NhU1 (Northhope undulating deep)

### NhU2 (Northhope undulating moderately deep)

| Versatility evaluation for soil NhU1 and NhU2 |                    |   |
|---|--------------------|---|
| Landuse                                       | Versatility rating | Main limitation   |
| Non-arable horticulture                       | Moderate           | Inadequate aeration for sustained periods; restricted subsoil root penetrability                    |
| Arable  | Moderate           | Aeration in winter/early spring and structural vulnerability to compaction with continuous cropping |
| Intensive pasture                             | Moderate           | Aeration in winter/early spring and structural vulnerability to compaction with continuous cropping |
| Forestry                                      | Limited            | Flooding for long term crops  |

### Management practices that may improve soil versatility

- Flood protection
- Installation of artificial drainage to remove excess water during wet periods.
- Careful management of stocking and minimal cultivation when soils are wet.