Manaaki Whenua
Landcare Research

S O I L R E P O R T

Tasman District Council

Mandamus_53a.1

Report generated: 11-Feb-2022 from https://smap.landcareresearch.co.nz

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks. S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.
Capture of the base soil information in this region was funded by MWLR and Tasman District Council .

Soil Classification

Soil Classification:
Typic Orthic Brown Soils (BOT)

Family Name:
Mandamus (Mand)

Sibling Name:
Mandamus_53a.1 (Mand_53a.1)

Soil profile material
Rounded stony soil

Depth class (diggability)
Very shallow (0 cm)

Profile texture
loam

Origin
Alluvium

Stones/rocks
hard sandstone rock

Soil material
hard sandstone rock

Previous soilname: Ranzau very stony

Soil Sibling Concept

This soil belongs to the Brown soil order of the New Zealand soil classification. Brown Soils have a brown or yellow-brown subsoil below a dark grey-brown topsoil. The brown colour is caused by thin coatings of iron oxides weathered from the parent material. It is formed in alluvial sand silt or gravel deposited by running water, from hard sandstone parent material.

The topsoil typically has loam texture and is very stony. The subsoil has dominantly loam textures, with a very gravelly layer from less than 45 cm mineral soil depth to more than 100 cm. The plant rooting depth is 59 - 61 (cm), due to an extremely gravelly horizon with extremely low water storage capacity.

Generally the soil is well drained with very low vulnerability of water logging in non-irrigated conditions, and has low soil water holding capacity. Inherently these soils have a moderate structural vulnerability and a very high N leaching potential, which should be accounted for when making land management decisions.

Allan Hewitt ©

Orthic Brown

About this publication

- This information sheet describes the *typical average properties* of the specified soil.
- For further information on individual soils, contact Landcare Research New Zealand Ltd: www.landcareresearch.co.nz
- Advice should be sought from soil and land use experts before making decisions on individual farms and paddocks.
- The information has been derived from numerous sources. It may not be complete, correct or up to date.
- This information sheet is licensed by Landcare Research on an "as is" and "as available" basis and without any warranty of any kind, either express or implied.
- Landcare Research shall not be liable on any legal basis (including without limitation negligence) and expressly excludes all liability for loss or damage howsoever and whenever caused to a user of this factsheet.

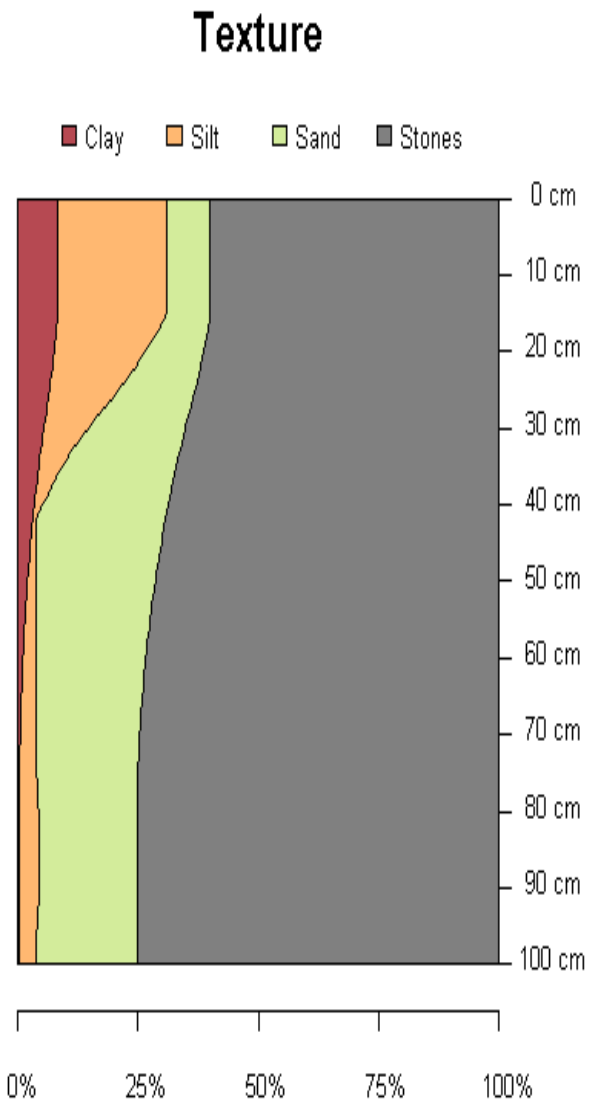
Mandamus_53a.1 (Ranzau very stony)

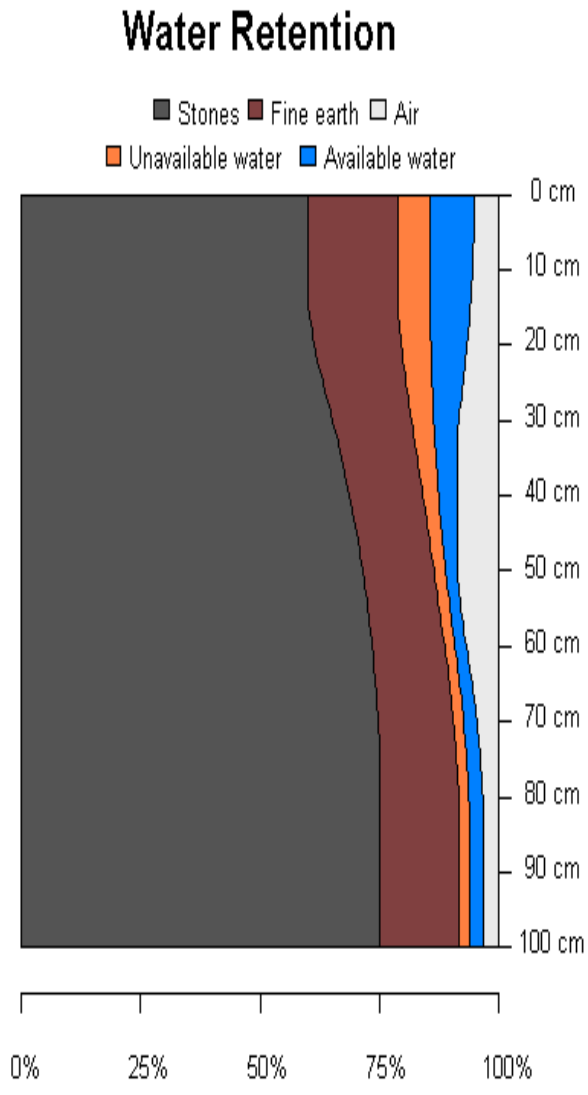
Soil horizons

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*	Permeability
Very Stony Loamy Compact	26 - 28 cm	59 - 61 %	20 - 22 %	20 - 25 %	moderate
Very Stony Loamy Compact	32 - 34 cm	69 - 70 %	8 - 12 %	80 - 90 %	moderately slow
Extremely Stony Sandy	35 - 36 cm	74 - 76 %	1 - 2 %	80 - 90 %	rapid
Extremely Stony Sandy	4 - 5 cm	74 - 76 %	1 - 2 %	80 - 90 %	rapid

* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)





The values for the graphs above have been generated from horizon and pedotransfer data. These values have then been splined to create continuous estimates of soil water holding capacity and particle size distribution the soil profile. These curves express the particle size distribution and water retention of the soil however there may be barriers to rooting depth that are not necessarily represented in these properties directly. It is advisable to check the potential rooting depth and rooting barrier fields in the soil physical properties section on page three of this factsheet.

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Soil physical properties

Depth class (diggability)
Very shallow (0 cm)

Potential rooting depth
59 - 61 (cm)

Rooting barrier
Extremely gravelly

Depth to hard rock
No hard rock within 1 m

Depth to soft rock
No soft rock within 1 m

Depth to stony layer class
Shallow

Texture profile
Loam

Topsoil stoniness
Very stony

Topsoil clay range
20 - 22 %

Drainage class
Well drained

Permeability profile
Moderate over rapid

Depth to slowly permeable horizon
No slowly permeable horizon

Permeability of slowest horizon
Moderate (4 - 72 mm/h)

Aeration in root zone
Unlimited

Profile available water

(0 - 30cm or root barrier)	(0 - 60cm or root barrier)	(0 - 100cm or root barrier)
Moderate (31 mm)	Low (49 mm)	Low (49 mm)

Dry bulk density

topsoil	subsoil
1.09 g/cm³	1.53 g/cm³

Soil chemical properties

Topsoil P retention
Medium (36%)

Soil management factors

Vulnerability classes relate to soil properties only and do not take into account climate or management

Soil structure integrity

Structural vulnerability
Moderate (0.55)

Pugging vulnerability
not available yet

Contaminant management

N leaching vulnerability
Very high

P leaching vulnerability
not available yet

Dairy effluent (FDE) risk category
C if slope > 7 deg otherwise D

Water management

Water logging vulnerability
Very low

Drought vulnerability - if not irrigated
High

Bypass flow
Medium

Hydrological soil group
B

Relative Runoff Potential

Slope	0-3°	4-7°	8-15°	16-25°	>25°
Risk	VL	L	VL	VL	L

SINDI - Soil quality Indicators

SINDI - Soil Quality Indicators

A suite of soil quality indicators is available from http://sindi.landcareresearch.co.nz/

- Compare your soil with information from our soils databases.
- Assess the intrinsic resources and biological, chemical and physical quality of your soil
- See how your soil measures up against current understanding of optimal values.
- Learn about the effect each indicator has on soil quality and some general management practices that could be implemented to improve soil quality.

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Soil information for OVERSEER

The following information can be entered in the OVERSEER® Nutrient Budget model. This information is derived from the S-map soil properties which are matched to the most appropriate OVERSEER categories. Please read the notes below for further information.

Soil description page

1. Select **Link to S-map**
2. Under S-map sibling data enter the S-map name/ref: **Mand_53a.1**

Considerations when using Smap soil properties in OVERSEER

- The soil water values are estimated using a regression model based on soil order, parent rock, soil functional horizon information (stone content, soil density class), as well as texture (field estimates of sand, silt and clay percentages). The model is based on laboratory - measured water content data held in the National Soils Database and other Manaaki Whenua datasets. Most of this data comes from soils under long-term pasture and may vary from land under arable use, irrigation, etc.

- Each value is an estimate of the water content of the whole soil within the target depth range or to the depth of the root barrier (if this occurs above the base of the target depth). Where soil layers contain stones, the soil water content has been decreased according to the stone content.

- S-map only contains information on soils to a depth of 100 cm. The soil water estimates in the > 60 cm depth category assume that the bottom functional horizon that extends to 100 cm, continues down to a depth of 150cm. Where it is known by the user that there is an impermeable layer or non-fractured bedrock between 100 and 150 cm, this depth should be entered into OVERSEER. Where there is a change in the soil profile characteristics below 100 cm, the user should be aware that the values provided on this factsheet for the > 60 cm depth category will not reflect this change. For example, the presence of gravels at 120 cm would usually result in lower soil water estimates in the > 60 cm depth category. Note though that this assumption only impacts on a cropping block, as OVERSEER uses soil data from just the top 60 cm in pastoral blocks.

- OVERSEER requires the soil water values to be non-zero integers (even though zero is a valid value below a root barrier), and the wilting point value must be less than the field capacity value which must be less than the saturation value. The S-map water content estimates supplied by the S-map web service have been rounded to integers and may be assigned minimal values to meet these OVERSEER requirements. These modifications will result in a slightly less accurate estimate of Available Water to 60 cm (labelled PAW in OVERSEER) than that provided on the first page of this factsheet, but this is not expected to lead to any significant difference in outputs from OVERSEER .