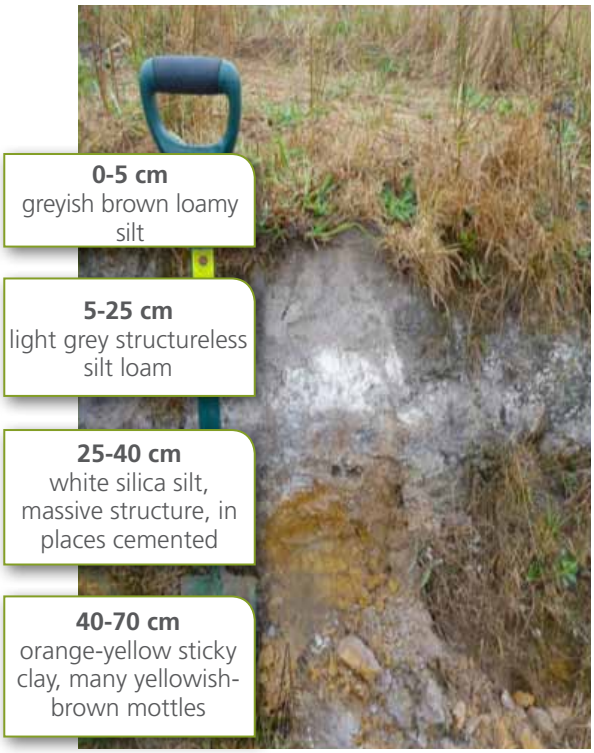
Very old podzol soils

Soil types in this group

- Kaikino sand - KK
- Kara clay - KRe
- Kara peaty silt loam - KRy
- Kara sandy loam - KRa, KRap^
- Kara silt loam - KR, KRp^
- Parahaki fine sandy loam and silt loam - PR, PRp^
- Ohia sand - OE
- Ohia peaty sand - OEy
- Omaiko gravelly silt loam - OV, OVH*, OVp^
- One Tree Point peaty sand - OT
- Parakao fine sandy loam - PL
- Te Hapua fine sandy loam - TX, TXp^
- Te Kopuru sand - TEK
- Te Kopuru sand wet phase - TEKm
- Te Kopuru peaty sand - TEKy
- Tinopai sandy loam and sandy clay - TP
- Wharekohe fine sandy loam - WKf, WKfp
- Wharekohe fine sandy loam ash variant - WKl, WKlp^
- Wharekohe sandy loam - WKa, WKaH, WKap^
- Wharekohe silt loam - WK, WKH*, WKp^
- Wharekohe silt loam with brown subsoil - WKr



Wharekohe silt loam (WK, WKH) soil profile

This fact sheet uses NZ Soil Bureau map series soil type names and abbreviations.

*The H denotes the hill variant of this soil type, which occurs on slopes over 20° and has a shallower profile.

^The p denotes the pan variant of this soil type.

Features of very old podzol soils

- These soils can be found throughout Northland and are regionally known as gumland soils or pipe clay
- Podzols formed on a wide variety of parent materials, including sands, sedimentary mud and sandstones, and volcanics
- Podzols developed under the acidic litter from kauri forests over a very long time
- Water draining through a deep litter of acidic kauri leaves and bark creates a mild acid which leaches nutrients and finer clay fractions from the soil
- Pale, fine-textured silica sand and silt, from which iron and aluminium have been leached, are left behind to form a dense layer or pan beneath the pipe clay
- Clay leached downwards makes a column-like subsoil below the pan
- Despite their limitations, these soils have been restored to productive use under well managed pasture

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Structure and drainage management

Issues	Management tips
Typically, podzols have very poor structure and can vary in form seasonally, from wet to set concrete	Careful winter grazing management can minimise pugging and compaction and protect soil structure
Subsoils are often structurally weak	Maintaining good pasture covers helps build soil organic matter and improve soil structure
Topsoils are generally thin and easily lost during cultivation	Careful management is needed when cropping and regrassing to protect soil structure and productivity
In some places, the silica pan layer can be well over 1m thick and vary widely at a paddock scale, making drainage and fencing difficult	Timing of tasks such as fencing and earthworks can be critical. There is often a small window between fluid and rock hard soil
	Seek advice on appropriate drainage options

Erosion control

Erosion risks	Soil type	Specific problems	Possible solutions
Gully erosion (severe)	All very old podzolised soil types	These soils lack structure Column-like subsoils beneath the pan are highly erodible	Early control of gully erosion is essential Plant willows in a zigzag pattern along gullies for stabilisation Stock exclusion will allow soil conservation plantings to establish Reducing the water's speed and energy by installing control structures in channels may also help

Wharekohe silt loam (WK, WKH) gumland

Nutrient management

Soil type	Nutrient status	Management strategies
All very old podzolised soil types	Soils tend to be acidic	Regular applications of lime are essential to achieve optimum pH levels
All very old podzolised soil types	Due to extreme stage of soil development, all nutrients have been leached from podzols; however, whatever nutrients are applied will not be fixed by clay and therefore are readily available to plants As stocking rates increase, nutrient and trace element deficiencies can affect plant and/or animal growth rates	A 'little and often' fertiliser regime will boost production and help avoid leaching losses Seek advice from your fertiliser consultant and vet

Drainage classes

Soil symbol	Full name	Drainage class
KAIKINO SUITE Basement rock: sand		
KK	Kaikino sand	1⇌0 - Poorly to very poorly drained
KOHUMARU SUITE Basement rock: alluvium from dolerite and andesite volcanoes		
PL	Parakao fine sandy loam	1⇌0 - Poorly to very poorly drained
MAUNGAREI SUITE Basement rock: dacite, phyolite and granodiorite		
PR, PRp	Parahaki fine sandy loam and silt loam	1⇌0 - Poorly to very poorly drained
OMAIKO SUITE Basement rock: greywacke, argillite and quartzite		
OV, OVH, OVp	Omaiko gravelly silt loam	3⇌2 OV Moderately to imperfectly drained 1⇌0 OVH, OVp - Poorly to very poorly drained
OMU SUITE Basement rock: mudstone, claystone, shale		
WK, WKH, WKp	Wharekohe silt loam	1⇌0 - Poorly to very poorly drained
WKr	Wharekohe silt loam with brown subsoil	1⇌0 - Poorly to very poorly drained
PINAKI SUITE Basement rock: sand and sand terraces		
OE	Ohia sand	5 - Very well drained
TX, TXp	Te Hapua fine sandy loam	2⇌1 TX Imperfectly to poorly drained 1⇌0 TXp Poorly to very poorly drained
OEy	Ohia peaty sand	1⇌0 - Poorly to very poorly drained
TEK	Te Kopuru sand	1⇌0 - Poorly to very poorly drained
TEKm	Te Kopuru sand wet phase	1⇌0 - Poorly to very poorly drained
TEKy	Te Kopuru peaty sand	1⇌0 - Poorly to very poorly drained
PUHOI SUITE Basement rock: banded sandstone		
WKf, WKfp	Wharekohe fine sandy loam	1⇌0 - Poorly to very poorly drained
RUAKAKA SUITE Basement rock: sand terraces; groundwater podzol		
OT	One Tree Point peaty sand	4⇌1 - Well to poorly drained
TE KIE SUITE Basement rock: shattered breccia and tuffs		
TP	Tinopai sandy loam and sandy clay	1⇌0 - Poorly to very poorly drained
WAIOTIRA SUITE Basement rock: sandsone		
WKa, WKaH, WKap	Wharekohe sandy loam	1⇌0 - Poorly to very poorly drained
WAITEMATA SUITE Basement rock: rhyolite ash and alluvium		
WKl, WKlp	Wharekohe fine sandy loam ash variant	1⇌0 - Poorly to very poorly drained
WHAREORA SUITE Basement rock: terrace alluvium		
KR, KRp	Kara silt loam	2 KR - Imperfectly drained 1⇌0 KRp - Poorly to very poorly drained
KRa, KRap	Kara sandy loam	1⇌0 - Poorly to very poorly drained
KRy	Kara peaty silt loam	1⇌0 - Poorly to very poorly drained
KRe	Kara clay	1⇌0 - Poorly to very poorly drained

Te Kopuru sand (TEK) soil profile

Northland soil factsheet series

- Northland's climate, topography, historic vegetation and mixed geology have combined to form a complex pattern of soils across the region. There are over 320 soil types in Northland. Other regions in New Zealand average only 20 soil types per region.
- The information in this fact sheet is based on a 1:50,000 mapping scale. Therefore, it is not specific to individual farms or properties. However, it may help you to understand general features and management options for recent alluvial soils.
- Knowing your soils' capabilities and limitations is the key to sustainable production in Northland. Northland Regional Council (NRC) land management advisors are available to work with landowners to provide free soil conservation advice, plans and maps specific to your property.
- Regular soil tests are recommended. If you are concerned about your soil structure or health, the Visual Soil Assessment test could be useful. Contact the land management advisors at Northland Regional Council for more information.
- Further background information about the processes that have formed these soils can be found here: **www.nrc.govt.nz/soilfactsheets**

Contact a land management advisor on
0800 002 004 or visit **www.nrc.govt.nz/land**

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