

Appendix L:

Landcare Research Soil Investigation



Manaaki Whenua Landcare Research

54 Gerald Street

PO Box 69040

LINCOLN 7608

Evaluation of the soils mapped at 144 Ripponvale Road

The characteristics of the soils mapped at 144 Ripponvale Road have been summarized from the publicly available New Zealand digital soil map and database SmapOnline, <https://smap.landcareresearch.co.nz/>.

These soil characteristics were compared to those criteria considered necessary for soils to be classified as 'high-class' soils.

High class soils are versatile soils capable of growing a wide range of crops. They are generally deep (>100cm), have silt loam or sandy loam fine earth textures, have potential rooting depths of >100cm, contain no root barriers, are either stone free or contain very few stones, are well or moderately well drained, have unlimited root zone aeration, moderate or rapid profile permeability, high profile available water, and are on flat to undulating slopes (<7°).

The area under consideration at 144 Ripponvale Road is bounded by the red lines on Fig 1. The soil family and siblings mapped in the area of interest are Clare (Clare_1a.1), Ranfurly (Ranf_4a.1), Waenga (Waen_5a1), Ripponvale (Ripp_2a1), and Molyneux (Moly_10a). The key characteristics of these soils are tabulated in Table 1.

On Table 1 the key criteria on which the soils fail are indicated in red. Pink distinguishes criteria that have marginal values as some of the classes used are very broad. For example, top soil stoniness, the moderately stony class ranges from >5<35%. Most of the mapped soils are at the top end of the moderately stony range, with 25 to 35% stones in the top 0-20cm.

None of the 5 soils mapped in this area meet the criteria required to be classified as high class.

All soils fail on the 'soil depth' and 'depth to stony layer' criteria. The Clare_1a.1, Ranf_4a.1, Waen_5a1, Ripp_2a1, and Moly_10a siblings also fail on the 'profile available water in the 0-100cm' criteria; the Clare_1a.1 and Ranf_4a.1 siblings also fail on the 'potential rooting depth', root barrier within 100cm', 'depth to slowly permeable horizon' and 'permeability of the slowest horizon' criteria; The Clare_1a.1, and Moly_10a siblings also fail on the slope criteria, and the Clare_1a sibling also fails on the 'root zone aeration' criteria.

A soil from the Otago region that is classified as a high-class soil (Clutha deep silt loam) is included on Table 1 for comparison.

Although some of the soils within the block are currently growing specialty high value crops (pip and/or stone fruit, grapes etc.) they are not suitable for intensive arable cropping due to the combinations of

soil depth, potential rooting depth, topsoil stoniness, profile available water and depth to a stony layer criteria and therefore fail to be classified as high class soils.



Ian H Lynn

Ian Lynn

Senior Scientist / Capability Leader

Manaaki Whenua – Landcare Research

T +64 3 321 9725 | M +64 27 471 4323

www.landcareresearch.co.nz

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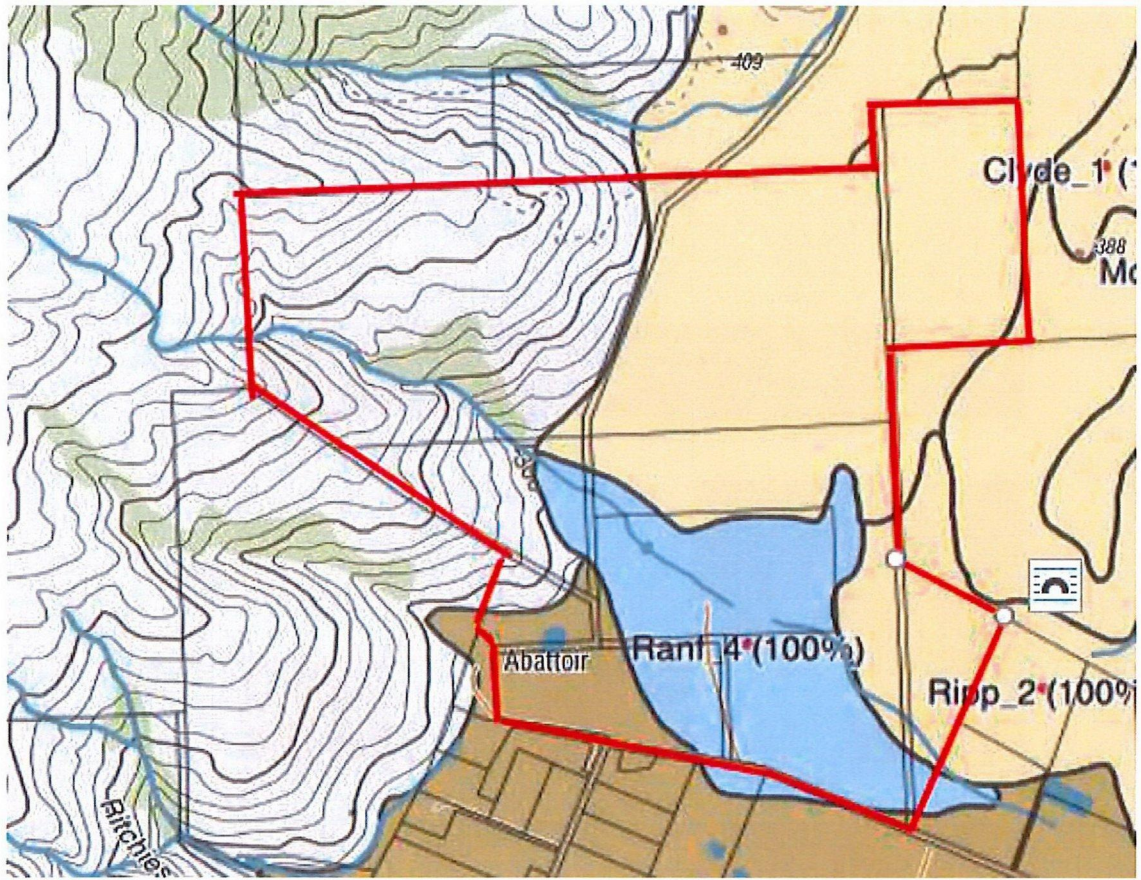


Figure 1. The area of interest indicated by the red boundary overlain on Smap.

