

Appendix N – Productivity Assessment



PRDUCTIVITY ASSESSMENT 2025 OHAUPO ROAD, TE AWAMUTU

Background

This productivity assessment is solely a desktop assessment based on the Soil and Land Use capability Assessment carried out by Dr Reece Hill and supporting information from the Waikato Region Land Use Capability Extended Legend, NZ Soil Bureau reports and the authors own experience working in the Waikato Region. The author has not carried out a site visit nor viewed the property in any capacity. Area calculations used in the assessment are derived from manually transposing LUC polygons from Dr Hills report into a GIS and as such may vary from the original mapped areas.

Soils

The soils mapped on the property include:

Ohaupo silt loam – A well-drained soil formed on Mairoa ash.

Mangapiko silt loam – A poorly drained alluvial soil that is wet for a significant part of the year and suffers from high water tables and flooding.

Rotokauri clay loam – A heavy textured, imperfectly to poorly drained soil formed on colluvium from Hamilton ash that suffers from high water tables.

Land Use Capability System Overview

LUC classifications categorize land into eight classes according to its long-term capability to sustain one or more productive uses.

- Classes 1-4 have arable potential with limitations to this land use moving from class one being the most versatile, multi-use land with minimal physical limitations for arable use and increasing to severe limitations under class four land. These classes are also suitable to viticulture, berry production, pastoralism, tree crops and production forestry.
- Classes 5-7 are suitable for pastoral farming and production forestry.
- Class 8 land has no productive use and is rather managed for catchment protection and conservation purposes.

On the following page is a table describing each of the LUC units mapped on the property by Dr Reece Hill. Included in the table are the area each unit covers, its land use suitability and stock carrying capacity.

Land Use Capability Unit Descriptions

Resource information	Luc unit	Total area (ha)	Parent material	Dominant soil type	Slope (degree)	Land Cover	Erosion degree & severity		Landuse suitability	Stock carrying capacity (su/ha)	Management options
							Actual	Potential			
2e 3 Undulating to rolling slopes on moderately fertile yellow-brown loams with a slight erosion hazard when cultivated.		7.78	Early Holocene and late Pleistocene airfall tephra over Hamilton ash on pumiceous alluvium.	Ohaupo silt loam	4-15°	Pasture	Unknown	Slight sheet and rill when cultivated	Intensive grazing. Intensive cropping. Production forestry.	Average: 15 Top: 22 Potential: 24	Contour cultivation and minimum tillage practices recommended.
2w 3 Low river terraces and plains with gleyed soils which have a continuing slight wetness limitation after drainage.		0.35	Alluvium	Rotokauri clay loam	0-7°	Pasture	Unknown	Nil	Intensive grazing. Intensive cropping. Production forestry.	Average: 18 Top: 25 Potential: 30	Stopbanks and drainage required in some places
3e 1 Rolling slopes on yellow-brown loams with a slight to moderate erosion hazard when cultivated.		7.0	Early Holocene and late Pleistocene tephra over alluvium. Ignimbrite, sandstone, siltstone, and limestone.	Ohaupo silt loam	8-15°	Pasture	Unknown	Slight to moderate sheet and rill when cultivated	Intensive grazing. Cropping. Production forestry.	Average: 14 Top: 18 Potential: 22	Contour cultivation and minimum tillage practices required.
3e 2 Rolling slopes on yellow-brown granular loams and claysand red-brown loams with a slight to moderate erosion hazard when cultivated. with a slight to moderate erosion hazard when cultivated.		0.01	Hamilton ash over basalt	Rotokauri clay loam	8-15°	Pasture	Unknown	Slight to moderate sheet and rill when cultivated.	Intensive grazing. cropping. Production forestry.	Average: 16 Top: 20 Potential: 22	Contour cultivation and minimum tillage practices required.
3w 1 Narrow river terraces with a moderately high water table and subject to runoff from adjacent hills.		2.76	Recent alluvium and peat	Mangapiko silt loam	0-3°	Pasture	Unknown	Moderate streambank	Intensive grazing Cropping	Average: 12 Top: 16 Potential: 20	Stopbanks, drainage and stream bank protection necessary.
4e 1 Strong rolling slopes on yellow-brown loams with a moderate to severe erosion hazard when cultivated.		1.25	Early Holocene and late Pleistocene airfall tephra over terrace alluvium, lahar, ignimbrite, tertiary lithologies and greywacke.	Ohaupo silt loam	8-20°	Pasture	Unknown	Moderate to severe sheet and rill when cultivated	Intensive grazing, Occasional cropping, Production forestry.	Average: 13 Top: 18 Potential: 20	Contour cultivation and minimum tillage practices essential.
6e 1 Moderately steep to strongly rolling slopes on yellow-brown loams over various lithologies.		0.77	Early Holocene and late Pleistocene airfall tephra over terrace alluvium ignimbrite, andesite, siltstone, sandstone, mudstone and greywacke.	Ohaupo silt loam	16-25°	Pasture Trees	Unknown	Slight sheet and soil slip	Intensive grazing, Production forestry.	Average: 13 Top: 18 Potential: 21	

PRODUCTIVITY POTENTIAL

There is approximately 20ha of productive land on the property, which is comprised of LUC class 2, 3, 4 and 6 land. Though each of these LUC classes is suitable for grazing the small area of the property means that a traditional pastoral system such as dairying or beef farming would not be financially viable. Its size however does not exclude a potentially viable horticulture operation.

Of the LUC classes mapped on the property classes 2 and 3 making up almost 18ha or 90% of the area. The Land Use Capability Handbook (Lynn et al 2009) describes LUC Class 2 land as having only slight physical limitations to arable use that are readily controlled by management and soil conservation practices. With the land being suitable for many cultivated crops, vineyards, berry fields, pasture, tree crops or production forestry. And Class 3 land has having moderate limitations to arable use that restrict the choice of crops and the intensity of cultivation and/or make special soil conservation practices necessary.

Of the soils identified on the property Ohaupo silt loam has the greatest productivity potential. It is a free draining ash-based soil with an erosion limitation when cultivated on sloping land. It is suitable for both perennial crops (including tree crops) and annual cropping. The Mangapiko and Rotokauri soils both have limitations due to wetness from high water tables and runoff from surrounding hills as well as potential flooding for Mangapiko soil. As such, these areas of the property are suited to annual crops such as maize which can be sown and harvested through the drier months of the year.

As shown in the LUC table the 2e 3 unit covers nearly 8ha of the property while the 3e 1 unit covers 7ha. Both of these units include Ohaupo soil so have the potential for both annual and perennial crops. The soils and slopes on these units are well able to support crops such as kiwifruit and tree crops with erosion under cropping, climate and water supply being greater considerations. There is also a small area (0.35ha) of LUC unit 2w 3. It includes a slight wetness limitation due to the Rotokauri soil but is still suitable for intensive cropping. The remaining areas with cropping potential include units, 4e 1, 3w 1 and 3e 2. Unit 4e 1 covers 1.25ha and includes Ohaupo soil but due to its increased slope and subsequent erosion potential is limited to only occasional cropping. LUC unit 3w 1 covers 2.76ha and includes Mangapiko soil while 3e 2 covers 0.01ha and includes Rotokauri soil. Both of these areas have production potential limited by soil wetness and as already discussed are only suited to annual cropping.

CONCLUSION

Approximately 15ha of the property at 2025 Ohaupo Road has horticultural potential with soils and slopes able to support both perennial cropping and tree crops and annual cropping. With another approximately 3ha being suitable for intensive cropping and annual cropping.

REFERENCE

Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF 2009. NZ Land Use Capability Survey Handbook – a New Zealand handbook for the classification of land 3rd Edition. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science.