

Appendix E – Land Use Capability Assessment



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Soil and Land Use Capability classification assessment

2025 Ohaupo Road, Te Awamutu 3800.

Date: 22/04/2025.

Attention: Te Awamutu Developments Ltd.

Re: Soil and LUC classification assessment - 2025 Ohaupo Road, Te Awamutu 3800.

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1. Introduction

A soil and Land Use Capability (LUC) classification assessment of 2025 Ohaupo Road, Te Awamutu 3800 (Lot 1 DPS 36696 and Part Lot 1 DP 35654), totalling 25.8 ha (Figure 1) was undertaken in order to comply with rules of the Waipa District Plan, in relation to the protection of high class soils and the National Policy Statement for Highly Productive Land (NPS-HPL).

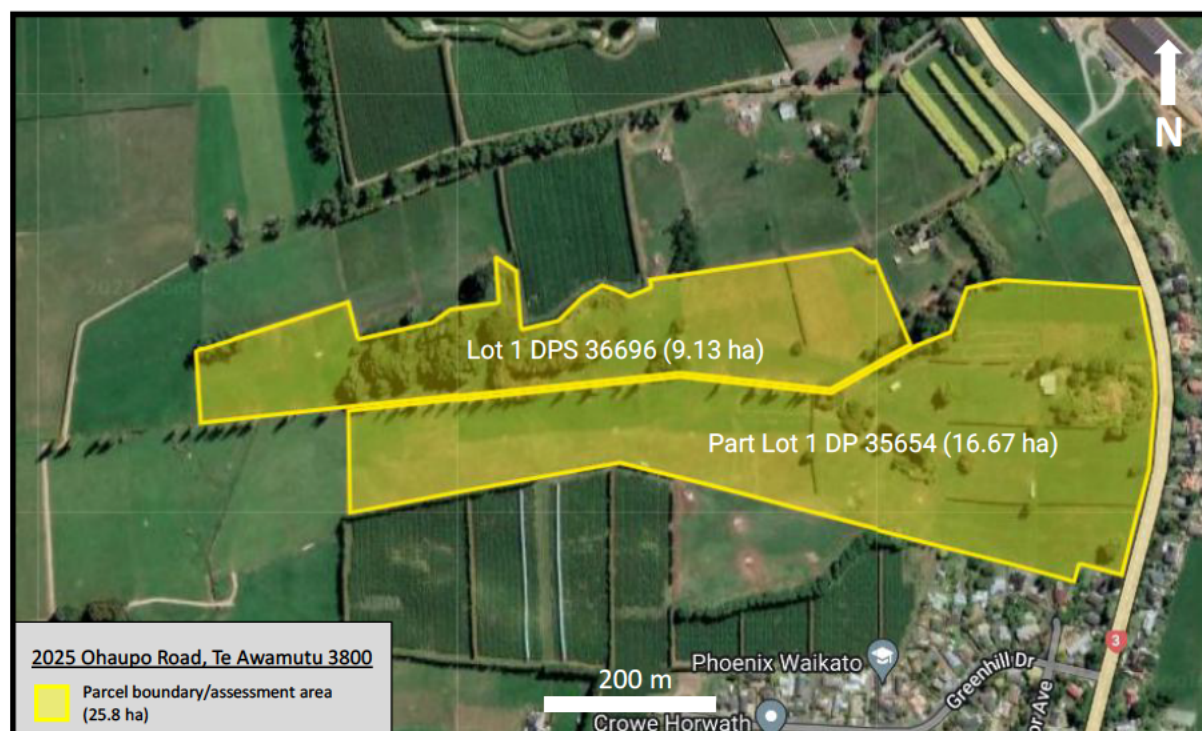


Figure 1. Assessment area, 2025 Ohaupo Road, Te Awamutu 3800.

The NPS-HPL assessment in this report is report is prepared based on Chris Bishop’s announcement confirming the government’s intention to remove LUC Class 3 land from the NPS-HPL¹, which at the time of writing this report that had not occurred.

Additionally, the report acknowledges Decision No. [2024] NZEnvC 83² but an on-site assessment be preferred, then this report provides that assessment.

2. LUC background

LUC classification is the common method for assessing land in New Zealand; it uses the Land Use Capability System, which is part of the New Zealand Land Resource Inventory (NZLRI) as produced by the Water and Soil Division of the Ministry of Works, for the National Water and Soil Conservation Organization during the 1970s. In 2009 the 3rd Edition of the LUC

¹ <https://community.scoop.co.nz/2025/03/speech-to-the-property-council-residential-development-summit/>;
<https://www.survusrural.co.nz/2025/04/07/nps-hpl-update/>;
<https://www.beehive.govt.nz/release/government-support-greenfield-housing>.

² <https://www.environmentcourt.govt.nz/assets/Documents/Publications/2024-NZEnvC-083-Blue-Glass-Limited-v-Dunedin-City-Council.pdf>

Survey Handbook³ was published and has been used for this assessment. The LUC uses a systematic arrangement of different kinds of land according to those properties that determine its capacity for permanent sustained production, where the word “capability” is used in the sense of “suitability for productive use” after taking into account the physical limitations the land may have.

The LUC classification is specifically designed to provide an index of versatility. There are eight land use capability classes (**Figure 2**) arranged in order of increasing degree of limitation or hazard to use; and a decreasing order of use, from Class 1 to 8.

↓ Increasing limitations to use ↓	LUC Class	Arable cropping suitability†	Pastoral grazing suitability	Production forestry suitability	General suitability	↓ Decreasing versatility of use ↓
	1	High ↓ Low	High ↓ Low	High ↓ Low	Multiple use land	
	2					
	3					
	4					
	5	Unsuitable	Low ↓ Unsuitable	Low ↓ Unsuitable	Pastoral or forestry land	
	6					
	7					
	8					
		Unsuitable	Unsuitable	Conservation land		

Figure 2. Increasing limitations to use and decreasing versatility of use from LUC Class 1-8.

Within each LUC Class the land is assigned a subclass according to the kind of limitation (e = Erodibility, w = Wetness, s = Soil limitations within the rooting zone, c = Climate). At the most detailed level LUC groups together those inventory units which respond similarly to the same management and which are suitable for the same kinds of crops, pasture, or forest species with the same potential yield and which require the application of the same conservation measures.

The LUC worksheets were compiled from all relevant databases of land resource documents available at the time, consequently some sheets suffered from a lack of information that only detailed soil and geological surveys could have provided. Therefore, there are **scale limitations**, which need to be considered, especially when interpretation is required at the individual property scale.

The LUC units displayed on the 1970s worksheets remain reasonably robust but are subject to change. For example, the second edition (1993) Northland region worksheets were mapped at the more detailed scale of 1:50 000, replacing the earlier first edition 1:63,360 maps. In the first edition, 69 LUC units were defined compared with 91 LUC units in the second edition - about 60 of the first edition classification units changed.

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

The average area for a map unit is 125 ha, however, at the 1:50 000 scale of mapping it is theoretically possible to delineate an unhooked inventory map unit (no vinculum) area of 60 ha (60 ha = 600 m by 1000 m) provided the geology, soil, vegetation, erosion and slope are uniform.

The **purpose of this background information** is to illustrate and emphasise that the NZLRI information provides excellent physical base data for planners (a planning tool) but is not fit for purpose as a plan (map) unless undertaken at the correct scale. This assessment fulfils that purpose.

3. Modified soil and non-productive land

For an accurate assessment of LUC classification for a property, the assessment should be based on the current condition of the area (i.e. mapped in current state). This is important because some land management practices (e.g. the placement of tracks, excavation of drains, and general earthworks) result in irreversible changes to the soil (i.e. changes other than those that can be remediated by management practices and return the soil to its intrinsic state). These areas are referred to as non-productive land. Examples of non-productive land include native vegetation, wetlands and riparian areas, tracks, buildings and curtilage.

Non-productive land can include areas where the soil has been modified by truncation, placement of fill or extensive mixing. Where these areas do not resemble a functioning soil, the areas are not considered productive land (i.e. they are non-productive land). Where these areas do resemble a functioning soil (such as the reinstatement of a soil profile following gravel extraction) the land can be assigned a LUC classification.

For this assessment the productive area of the site (to which the LUC classification can be applied) is the assessment area excluding the non-productive land area.

4. Waipa District Plan definition of high class soil

‘High class soils’ means those soils of Land Use Capability classes 1 and 2 (excluding Peat Soils), and soils of Land Use Capability classes 3e1 and 3e5 classified as Allophanic Soils using the New Zealand Soil Classification.

5. National Policy Statement for Highly Productive Land (NPS-HPL)

The National Policy Statement for Highly Productive Land (NPS-HPL)⁴ came into force on the 17th October 2022 (clause 1.2(1)). An amended version of the NPS-HPL was released in August 2024.⁵

The NPS-HPL requires Councils to identify and map highly productive land in its region. Until the mapping is operative the NPS-HPL must be applied to land that is identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory and zoned general rural or rural production (Clause 3.5(7)).

⁴ MfE. 2022. National Policy Statement for Highly Productive Land 2022. September 2022.

⁵ MfE. 2024. National Policy Statement for Highly Productive Land 2022 - Amended August 2024.

In March 2025, Chris Bishop confirmed the government’s intention to remove LUC Class 3 land from the NPS-HPL⁶.

6. Soils according to S-Map

S-Map soil map information is sourced from S-Map Online⁷. S-Map uses Soil Siblings to differentiate different soils at the most detailed level. S-Map Soil Order, soil sibling and soil drainage distributions for the assessment area are shown in **Figure 3**.

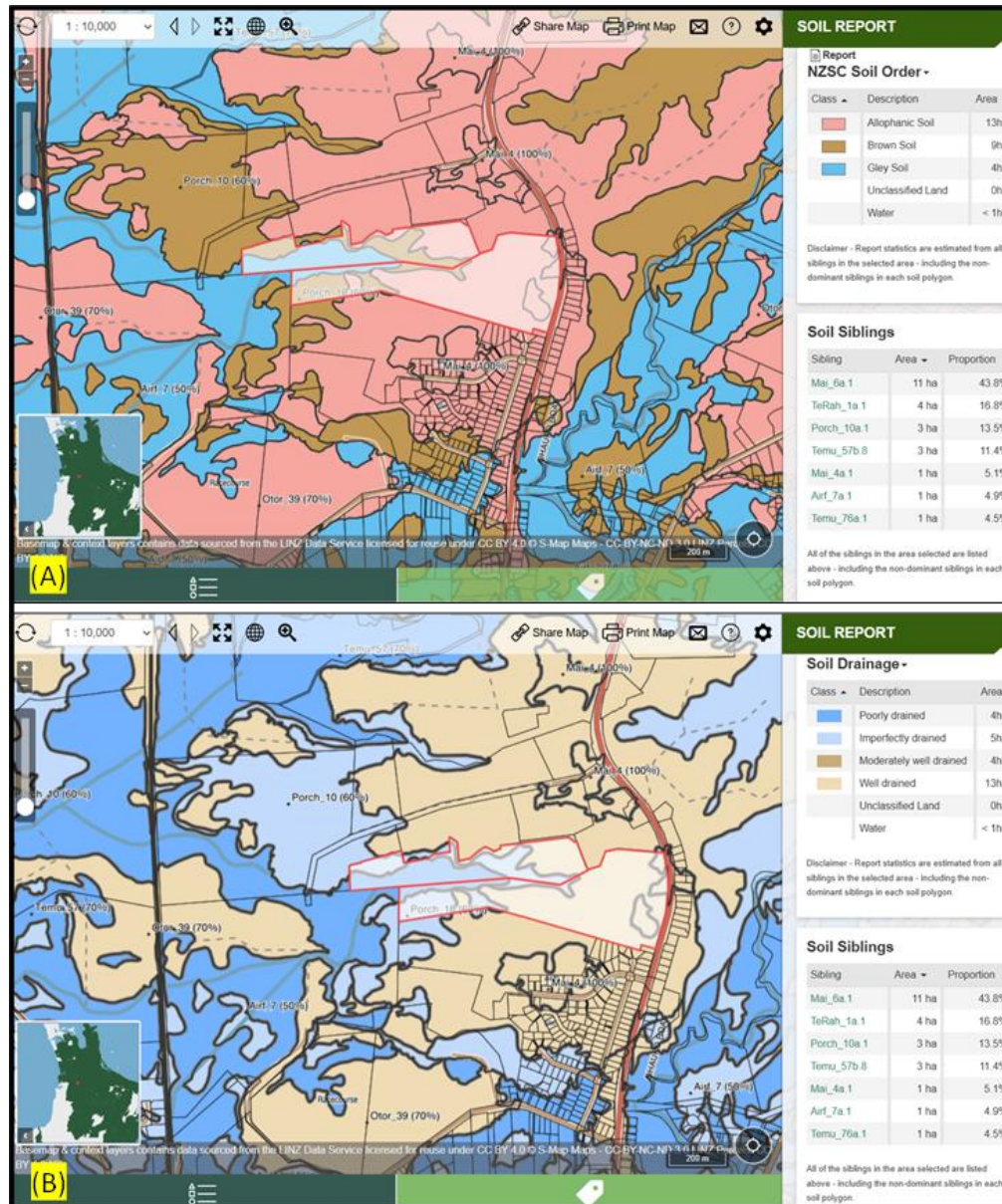


Figure 3. A) S-Map soil (Soil Order and soil sibling) distributions; and B) S-Map soil drainage characteristics for the assessment area, 2025 Ohaupo Road, Ohaupo.

⁶ <https://community.scoop.co.nz/2025/03/speech-to-the-property-council-residential-development-summit/>;
<https://www.survusrural.co.nz/2025/04/07/nps-hpl-update/>;
<https://www.beehive.govt.nz/release/government-support-greenfield-housing>.

⁷ <https://smap.landcareresearch.co.nz/>

S-Map Online identified the soils in the assessment areas as Allophanic Soils (13 ha), Brown Soils (9 ha) and Gley Soils (4 ha) (**Figure 3A**). Based on S-Map Online map information, well drained soils occupy 13 ha, moderately well drained soils 4 ha, imperfectly drained soils 5 ha, and poorly drained soils 4 ha (**Figure 3B**).

Table 1 provides a summary of the S-Map soil sibling characteristics, including S-Map Family, Soil Sibling, correlating Soil Series (if available), New Zealand Soil Classification (NZSC) Soil Order, depth class, profile texture, drainage class, and area proportions, for the assessment area. Further details for soil siblings is provided in S-Map Online factsheets sourced from the S-Map Online website⁸.

Table 1. S-Map soil sibling characteristics for the assessment area, 2025 Ohaupo Road, Ohaupo.

S-Map Family	S-Map Sibling	Correlated Soil Series	NZSC (Soil Order)	Soil depth	Texture profile	Soil drainage	Proportion (%)
Mairoa	Mairoa_6a.1	Ohaupo	Allophanic (LOT)	Deep (> 1m)	Clay	Well drained	43.8
TeRahu	TeRahu_1a.1	Ohaupo	Brown (BOT)	Deep (> 1m)	Clay	Moderately well drained	16.8
Porchester	Porchester_10a.1	Rotokauri	Brown (BOM)	Deep (> 1m)	Clay	Imperfectly drained	13.5
Temuka	Temuka_57b.8	Mangapiko	Gley (GOT)	Deep (> 1m)	Clay	Poorly drained	11.4
Mairoa	Mairoa_6a.1	Te Rauamo	Allophanic (LOT)	Deep (> 1m)	Clay	Well drained	5.1
Airfield	Airfield_7a.1	Whatawhata	Brown (BOM)	Deep (> 1m)	Clay	Imperfectly drained	4.9
Temuka	Temuka_76a.1	Rotokauri	Gley (GOT)	Deep (> 1m)	Clay	Poorly drained	4.5

The S-Map soil map information provides a more spatially detailed representation of the soils in the assessment area than the NZLRI 1:50,000 soil map information. However, because of the absence of land characteristics information (e.g. slope) for the soil map units, there is currently no direct correlation with LUC units. Some, but not all, of the S-Map soil map units correlate to Soil Series identified by the NZLRI map information. In this report the DSIR's soil nomenclature (e.g. soil type and series names) is retained in preference to the S-Map soil sibling nomenclature to allow for direct correlation of the soils with the LUC units provided by the NZLRI map information and associated NZLRI Extended Legends.

7. Soils, LUC classification, Waipa District Plan defined high class soil and NPS-HPL highly productive land according to NZLRI information (1:50,000 scale)

The distribution of soils and LUC units according to NZLRI information is shown in **Figure 4** (a larger map is provided in **Appendix 1**).

⁸ <https://smap.landcareresearch.co.nz/maps-and-tools/app/>

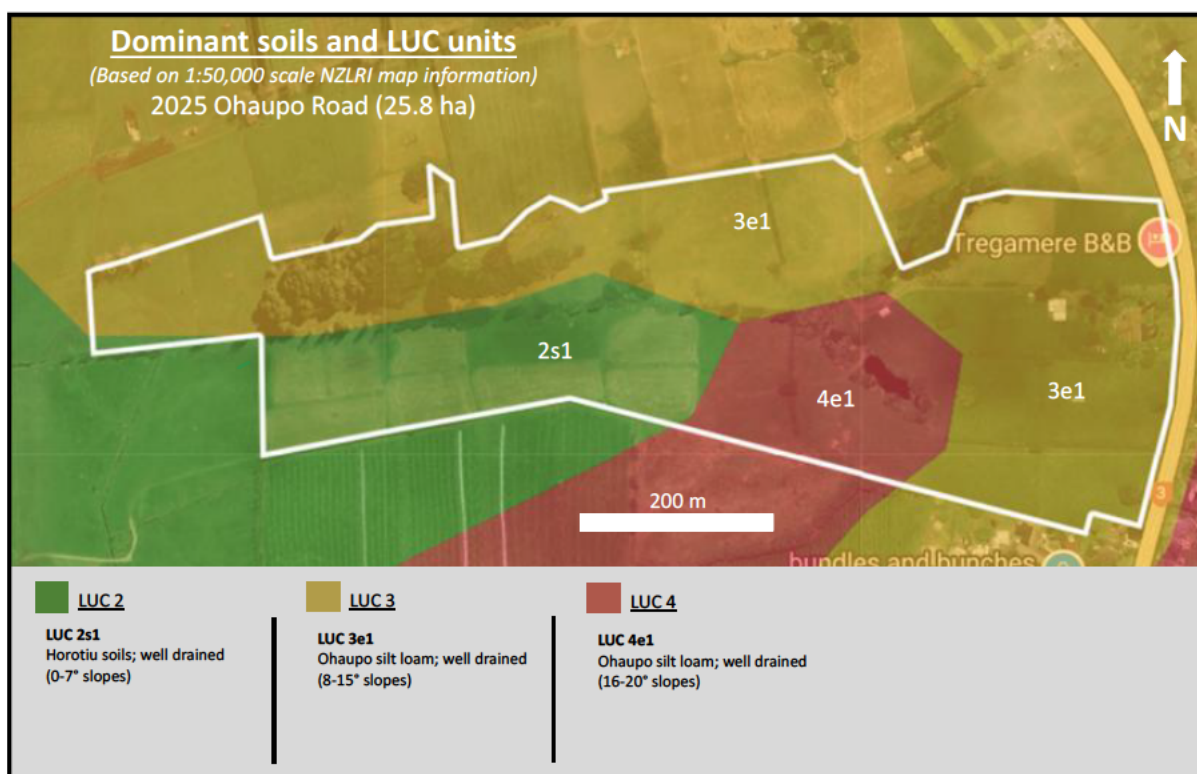


Figure 4. The distribution of soils and LUC units according to (1:50,000 scale) NZLRI information for the assessment area, 2025 Ohaupo Road.

A summary of the soils and LUC units identified for the assessment area is provided in **Table 2**.

Table 2. Soils and LUC units identified for the assessment area, 2025 Ohaupo Road.

Soil type	Parent material	Slope class	Soil drainage	LUC Unit	Area (ha and %)
Horotiu soils	Hinuera Formation alluvium	A+B (0-7°)	Well drained	2s1	5.7 (22%)
Ohaupo silt loam	Younger ashes over 'Hamilton ashes'	C (8-15°)	Well drained	3e1	16.4 (64%)
Ohaupo silt loam	Younger ashes over 'Hamilton ashes'	D (16-20°)	Well drained	4e1	3.7 (14%)

Based on the available NZLRI map information⁹ the soils for the assessment area are Horotiu sandy loam or silt loam (Horotiu soils) on flat to undulating slopes with a LUC classification of 2s1, Ohaupo silt loam on rolling slopes with a LUC classification of LUC 3e1, and Ohaupo silt loam on strongly rolling slopes with a LUC classification of LUC 4e1.

Applying the high class soil definition in the Waipa District Plan, LUC 2s1 and 3e1 are high class soil and LUC 4e1 is not high class soil. The total estimated area of high class soil in the assessment area is 22.1 ha (86%).

⁹ <https://lris.scinfo.org.nz/layer/48076-nzlri-land-use-capability-2021/>; <https://lris.scinfo.org.nz/layer/48136-fsl-north-island-all-attributes/>

Applying the NPS-HPL with LUC class 3 land excluded (LUC 1 and 2 only), 2s1 is highly productive land and LUC 3e1 and 4e1 are not highly productive land. The total estimated area of highly productive land in the assessment area is 5.7 (22%).

8. On-site (property scale) soil and LUC classification assessment

Landsystems undertook an on-site property scale field soil and LUC assessment of 2025 Ohaupo Road, Te Awamutu 3800 (25.8 ha) according to standard methods (Milne et al., 1993¹⁰ and Lynn et al., 2009¹¹). The assessment was undertaken on the 20th October 2022.

Observations of slope angle, topography and soil parent material were made over the relevant area. Soil augering up to 100 cm depth was used to assess soil properties such as soil horizons, drainage, plant root depths, texture, structure, and colour. This information was used to determine soil type and soil boundaries, from which the necessary LUC classification was assigned. All soils were assessed in current condition and areas with modified soils were identified and mapped.

9. Soil and LUC classification

A summary of the on-site mapped soils and LUC units for the assessment area is provided in Table 3.

Table 3. Soils and LUC units identified for the assessment area, 2025 Ohaupo Road.

Soil type	Parent material	Slope class	Soil drainage	LUC Unit	Area (ha)
Ohaupo silt loam	Younger ashes over 'Hamilton ashes'	A+B (0-7°)	Well drained	2e3	6.8
Rotokauri clay loam	Mixed ash colluvium	A+B (0-7°)	Imperfectly drained	2w3	0.3
Ohaupo silt loam	Younger ashes over 'Hamilton ashes'	C (8-15°)	Well drained	3e1	7.5
Rotokauri clay loam	Mixed ash colluvium	C (8-15°)	Imperfectly drained	3e2	0.1
Mangapiko silt loam	Mixed ash alluvium	A (0-3°)	Very poor to poorly drained	3w1	3.1
Ohaupo silt loam	Younger ashes over 'Hamilton ashes'	D (16-20°)	Moderately well drained	4e1	1.4
Ohaupo silt loam	Younger ashes over 'Hamilton ashes'	E+F (21-35°)	Well drained	6e1	0.6
Non-productive land (NPL)	Disturbed soil/fill, riparian areas, mature native vegetation, buildings and curtilage, tracks, excavated drains and spoil.			NPL	6.0

The on-site mapped distribution of soils and LUC units is shown in Figure 5 (a larger map is provided in Appendix 1).

¹⁰ Milne JDG, Clayden B, Singleton P.L, Wilson AD. 1995. Soil Description Handbook. Lincoln, New Zealand, Manaaki Whenua Press. 157p.

¹¹ Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF. 2009. Land Use Capability survey handbook – a New Zealand handbook for the classification of land. AgResearch Hamilton; Manaaki Whenua Lincoln; GNS Science Lower Hutt, New Zealand.

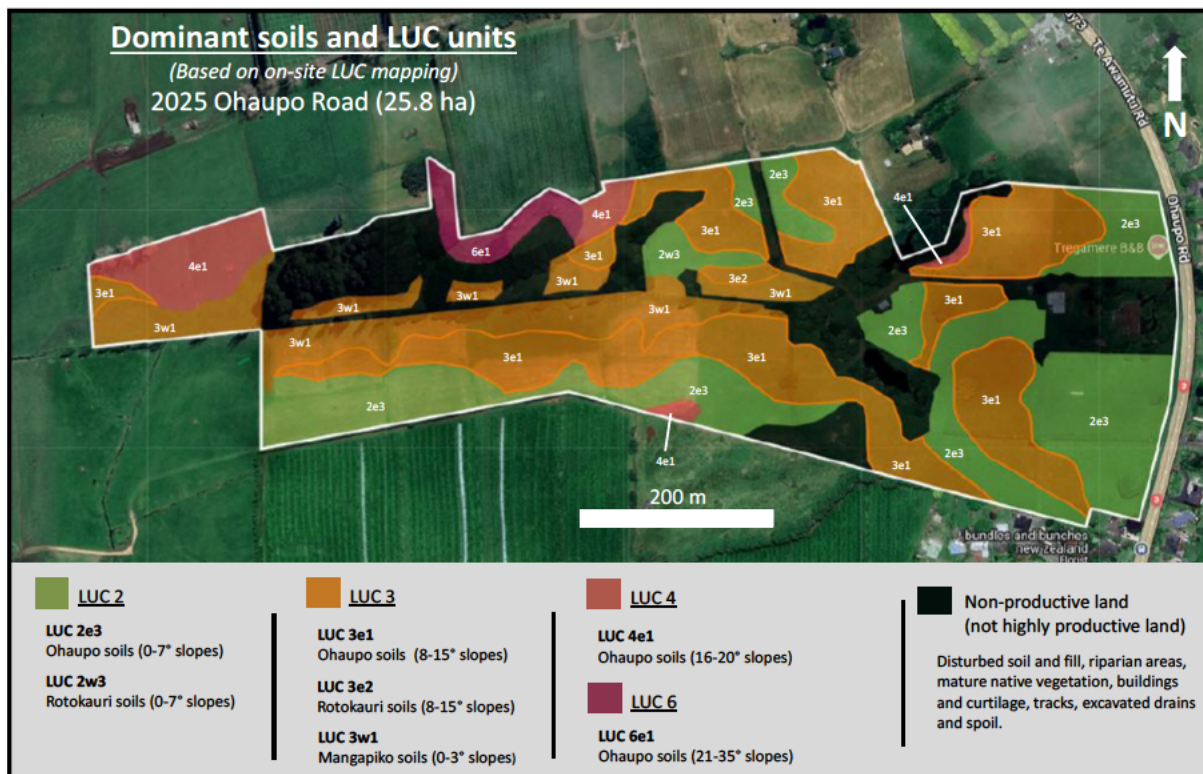


Figure 5. The distribution of soils and LUC units identified for the assessment area, 2025 Ohaupo Road.

On-site mapping identified well drained and moderately well drained Ohaupo silt loam as the dominant soil (16.3 ha) in the assessment area. LUC classifications differed due to slope from LUC 2e3 on flat to undulating slopes, 3e1 on rolling slopes, and 4e1 on strongly rolling slopes and 6e1 on steep land.

Several smaller areas of LUC 2e3 are surrounded by steeper rolling topography and could be considered gentler sloping sub-dominant topography within a greater LUC 3e1 unit with dominant rolling topography (i.e. LUC 3e1 with C+B slope class).

Poorly to very poorly drained Mangapiko silt loam on flat to gently undulating slopes (LUC 3w1) occupied 3.1 ha. Imperfectly drained Rotokauri clay loam occupied 0.4 ha. Rotokauri clay loam on flat to undulating slopes was classified as LUC 2w3, and LUC 3e2 on rolling slopes.

The balance of the assessment area (6.0 ha) was classed as non-productive land.

10. Waipa District Plan defined high class soil

The distribution of Waipa District Plan defined high class soil based on on-site mapped LUC map units is shown in **Figure 6** (a larger map is provided in **Appendix 1**).

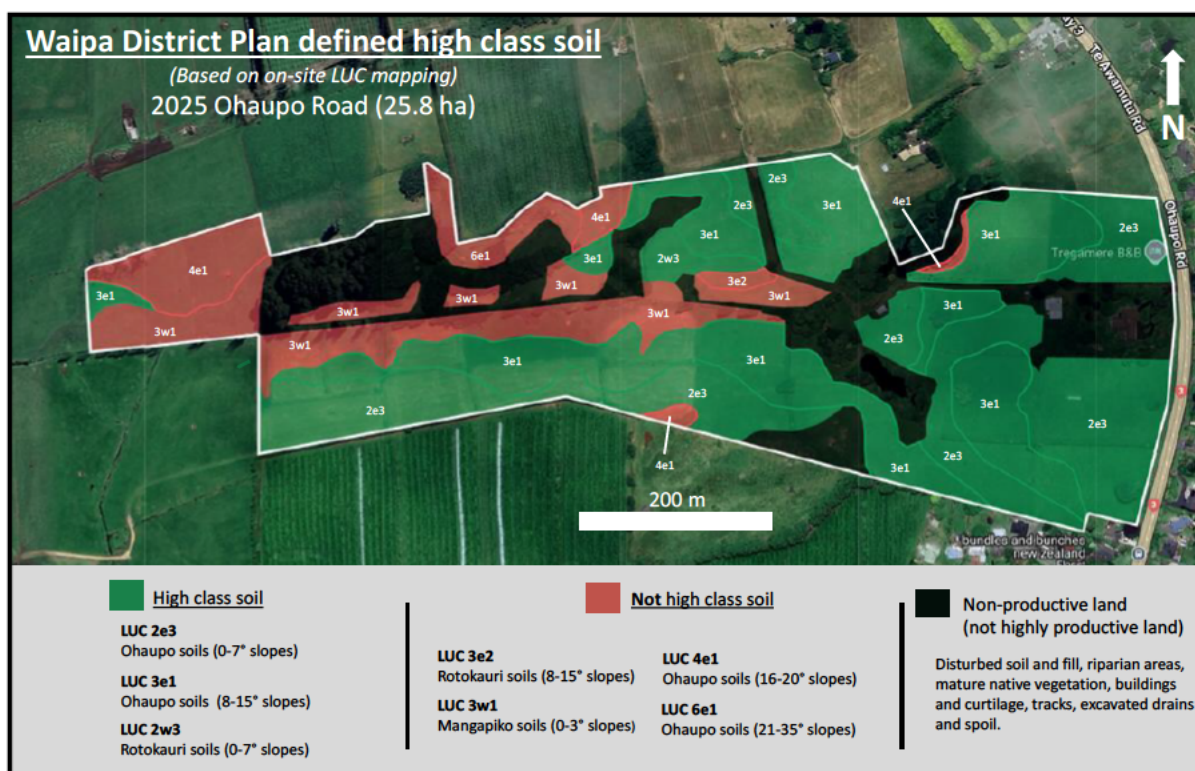


Figure 6. Distribution of Waipa District Plan defined high class soil based on on-site mapped LUC map units for the assessment area, 2025 Ohaupo Road.

Area estimates of Waipa District Plan defined high class soil based on the on-site mapped LUC units are provided for the assessment area in **Table 4**.

Table 4. The area estimates of on-site mapped LUC map units and Waipa District Plan defined high class soil for the assessment area, 2025 Ohaupo Road.

LUC Unit	NZSC Soil Order	Waipa high class soil (HCS)	Area (ha) ¹	Area (%) ²
High class soil				
2e3	Allophanic	HCS	6.8	26%
2w3	Gley	HCS	0.3	1%
3e1	Allophanic	HCS	7.5	29%
Total			14.6	56%
Not high class soil				
3e2	Granular	Not HCS	0.1	<1%
3w1	Gley	Not HCS	3.1	12%
4e1	Allophanic	Not HCS	1.4	6%
6e1	Allophanic	Not HCS	0.6	2%
NPL ³	Not applicable	Not HCS	6.0	23%
Total			18.7	44%

¹ Rounded to 1 decimal place; ² rounded to whole number; ³ non-productive land.

Based on the on-site LUC mapping, the total area of high class soil in the assessment area is 14.6 ha (56%), and the balance of the area (18.7 ha – 44%) is not classified as high class soil.

11. NPS-HPL highly productive land

The distribution of NPS-HPL highly productive land based on on-site mapped LUC map units and classified using LUC Class 1 and 2 land only is shown in Figure 7 (a larger map is provided in Appendix 1).

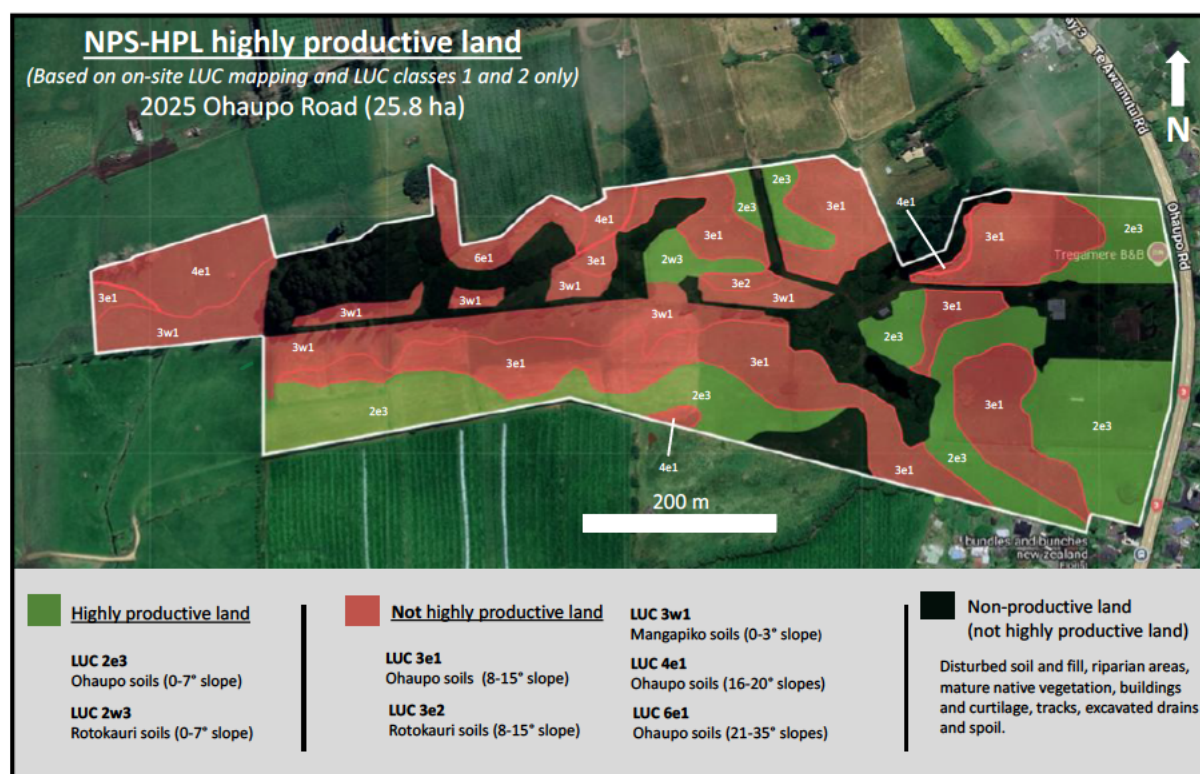


Figure 7. Distribution of NPS-HPL highly productive land based on on-site mapped LUC map units and classified using LUC Class 1 and 2 land only for the assessment area, 2025 Ohaupo Road.

Area estimates of NPS-HPL highly productive land (using LUC 1 and 2 only) based on the on-site mapped LUC units are provided for the assessment area in Table 5.

Table 5. The area estimates of on-site mapped LUC map units and NPS-HPL highly productive land (using LUC 1 and 2 only) for the assessment area, 2025 Ohaupo Road.

LUC Unit	NZSC Soil Order	NPS-HPL highly productive land (HPL) (LUC 1&2 only)	Area (ha) ¹	Area (%) ²
NPS-HPL highly productive land				
2e3	Allophanic	HPL	6.8	26%
2w3	Gley	HPL	0.3	1%
Total			7.1	27%
Not NPS-HPL highly productive land				
3e1	Allophanic	Not HPL	7.5	29%
3e2	Granular	Not HPL	0.1	<1%
3w1	Gley	Not HPL	3.1	12%
4e1	Allophanic	Not HPL	1.4	6%
6e1	Allophanic	Not HPL	0.6	2%
NPL ³	Not applicable	Not HPL	6.0	24%
Total			18.7	73%

¹ Rounded to 1 decimal place; ² rounded to whole number; ³ non-productive land.

Based on the on-site LUC mapping, the total area of NPS-HPL highly productive land (using LUC 1 and 2 only) in the assessment area is 7.1 ha (27%), and the greater balance of the area (18.7 ha – 73%) is not classified as highly productive land.

12. Summary

The property at 2025 Ohaupo Road, Te Awamutu, comprises 25.8 ha and was assessed using NZLRI, S-Map, and a detailed on-site soil and Land Use Capability (LUC) assessment conducted in October 2022.

Based on the NZLRI map information, LUC class 2 land occupies 5.7 ha, or 22% of the assessment area. LUC class 3 land occupies 16.4 ha (64%), and LUC class 4 land 3.7 ha (14%).

Based on the on-site mapping, the assessment area is predominantly Ohaupo silt loam (Allophanic soils), with minor areas of Mangapiko silt loam (Gley soils) and Rotokauri clay loam (Brown soils). Soils range from well drained to poorly drained.

The property includes a mix of LUC classes:

- LUC class 2 (2e3 and 2w3): 7.1 ha
- LUC class 3 (3e1, 3e2, 3w1): 10.7 ha
- LUC classes 4 and 6 (4e1, 6e1): 2.0 ha
- Non-productive land: 6.0 ha

Based on on-site LUC mapping, 14.6 ha (56%) of the assessment area is classified as high class soil (LUC 2e3, 2w3, and 3e1), consistent with the Waipa District Plan definition.

Applying the NPS-HPL definition (excluding LUC Class 3 as per government intent), only 7.1 ha (27%) qualifies as highly productive land (LUC 2e3 and 2w3).

A total of 6.0 ha (23%) is classified as non-productive land due to earthworks, buildings, infrastructure, or natural features such as riparian margins.

Appendix 1: Enlarged map images

