

BEFORE THE HEARING COMMISSIONERS  
WHANGAREI DISTRICT COUNCIL

IN THE MATTER OF                      the Resource Management Act 1991 (**the Act**)

AND

IN THE MATTER                      Vaco Investments (Waipu Project) Ltd –  
Subdivision, land use and discharge consents – 47  
Millbrook Road, Waipu, Pt Lot 1 DP 44163 NA  
26A/257

BY    Vaco Investments Ltd

Applicant

TO    Whangarei District Council

Territorial Authority

---

STATEMENT OF EVIDENCE OF IAN HANMORE

ON BEHALF OF VACO INVESTMENTS LTD

(Highly productive soil)

4 April 2024

---

## INTRODUCTION

### Qualifications and experience

1. My name is Ian Hanmore. I am the Director of Hanmore Land Management Limited, a company specialising in land management and environmental consultancy. I provide services to a range of private clients, planners, Regional and District Councils, and Māori Trusts throughout New Zealand, with a particular focus on the Waikato, Auckland, and Northland regions.
2. I hold a Master of Applied Science majoring in Natural Resource Management from Massey University, I am an approved competent mapper for the National Environmental Standards for Plantation Forestry Erosion Susceptible Classification with MPI, I have an Advanced Nutrient Management Certificate from Massey University and am a member of the New Zealand Association of Resource Managers, the New Zealand Institute of Primary Industry Management and the New Zealand Society of Soil Science.
3. I have been a consultant in the above capacity for 17 years and have worked extensively throughout Northland. As part of my work I carry out soil and land use capability (LUC) mapping. This work involves detailed soil and LUC surveys to map soils suitable for horticultural and specific horticultural crops, to identify prime, elite, high class and highly versatile soils in regard to subdivisions and land use consents, assisting farmers matching their production policy to their land resource, identifying land use development opportunities and enterprise diversification.
4. I confirm that the evidence I present is within my area of expertise and I am not aware of any material facts which might alter or detract from the opinions I express. I have read and agree to comply with the Code of Conduct for expert witnesses as set out in the Environment Court Consolidated Practice Note 2014. The opinions expressed in this evidence are based on my qualifications and experience and are within my area of expertise. If I rely on the evidence or opinions of another, my evidence will acknowledge that position.

## Purpose and scope of evidence

5. This statement of evidence relates to the proposed Waipu Gateway site (referred to as “the site”) at 47 Millbrook Road which covers approximately 6ha of the larger 31.8ha legal title (“the wider site”).
6. My statement relies on a site visit in which I completed soil and LUC mapping of the area.
7. My evidence will address the following:
  - a. The LUC system:
  - b. The NZLRI classification of the site:
  - c. Soil types identified at the site:
  - d. The LUC reclassification required as a result of the site mapping:
  - e. The highly versatile soil classification:
  - f. The Highly Productive Land (HPL) classification.

## SUMMARY

8. . The proposed Waipu Gateway site located at 47 Millbrook Road includes three soil types, Waipu clay, Waipu peaty clay and Ruakaka peaty silt loam.
9. The three soils at the site are very poorly to poorly drained.
10. The poor drainage and clay and peat texture of the soils present a moderate to severe limitation to arable use.
11. The LUC classifications at the site have been mapped as 3w 2, 3w 4, 4w 1 and 4w 1+3w 2 not 2w 2 as mapped by the NZLRI.
12. Based on the Northland Regional Policy Statement (**NRPS**) definition of highly versatile soil, the soils at the site are not classified as highly versatile.
13. Based on the interim definition of Highly Productive Land (**HPL**) as set out in the National Policy Statement for Highly Productive Land (**NPS-HPL**), 4.08ha or 68.9% of the site is classified as HPL.

## THE LAND USE CAPABILITY SYSTEM

14. The LUC system has been used in New Zealand since 1952 and helps achieve sustainable land development and management at farm, catchment, district, regional and nation scales <sup>1</sup>. The system uses physical information recorded in a land resource inventory (LRI) that includes soil type, parent material, landform and slope angle, erosion type and severity and vegetation cover to classify the land into one of eight LUC classes. This information is supplemented with information on climate, flooding risk, erosion history and the effects of past management practices <sup>2</sup>.
15. LUC classes 1 to 4 are suitable for arable use, classes 5 to 7 for pastoral farming and forestry, while class 8 has no productive use and is considered suitable for conservation purposes only.
16. The eight broad classes are further broken into sub-classes based on one of four major limitations: erodibility - e, wetness - w, soil - s and climate – c. Subclass is then separated into LUC units which groups together areas with similar LRIs, which require similar management and have similar land use potential.
17. The four arable classes of land are described as follows. Class 1 land is classified as the most versatile multi-use land with minimal limitations to arable use that is highly suitable for cultivation and can support many different crop types. Class 2 land is classified as very good land with only slight physical limitations to arable use that can readily be controlled by management and soil conservation practices and suitable for many cultivated crops. Class 3 land has moderate limitations to arable use which restrict the choice of crops that can be grown and the intensity of cultivation while Class 4 land has severe physical limitations to arable use that substantially reduce the range of crops that can be grown and make intensive soil conservation and management necessary with only occasional cropping possible.

<sup>1, 2</sup> 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.

## THE NEW ZEALAND LAND RESOURCE INVENTORY

18. LUC information for New Zealand that is available online through Landcare Research (and similar) and in use by Regional and District authorities is sourced from the New Zealand Land Resource Inventory (NZLRI). This database is based on an LUC assessment of the whole of New Zealand and has been carried out at a scale of 1:50,000. At this scale the smallest area of interest is 10ha.<sup>3</sup> and is intended for regional scale use, it is not meant to be used at a farm scale.
19. The 3rd Edition of The Land Use Capability Survey Handbook cautions against enlarging LUC data beyond the scale at which it was gathered as it can produce unreliable and misleading results. It recommends that farm mapping should be carried out at a scale of between 1:5,000 and 1:15,000 which equates to a smallest area of interest of between 0.1 and 1ha, respectively.
20. The NZLRI has mapped the site as LUC unit 2w 2 and having Waipu clay and Waipu peaty silt loam and peaty clay soils. The wider legal title also includes LUC unit 4w 1 with Whakapara silt loam and clay loam soil.
21. LUC unit 2w 2 is found on alluvial and estuarine plains and low terraces and is described as, flat to gently undulating areas within alluvial plains, valley plains and low terraces with fertile, gley soils formed on estuarine and alluvial deposits. This unit includes a number of gleyed soils from the Kaipara suite and all of the soils from the Waipu suite<sup>4</sup>.

## SOIL TYPES MAPPED AT THE SITE

22. A site visit was carried out on the 24<sup>th</sup> of May 2023 to map the soils and LUC units present. Three soil types were identified at the site, Waipu clay and Waipu peaty silt loam and Ruakaka peaty silt loam over sand (see the soil map in Figure 1 below).

<sup>3</sup> 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.

<sup>4</sup> Harmsworth, G.R. 1996. Land Use Capability classification of the Northland region. A report to accompany the second edition (1:50,000) NZLRI worksheets. Landcare Research Science Series 9. Lincoln, Manaaki Whenua Press. Page 110

23. Waipu clay soil is a fertile, heavy clay soil formed on terrace alluvium from sedimentary rocks that typically has no natural drainage <sup>5</sup>. Being gleyed it is saturated for a significant period of the year with artificial drainage needed to reduce waterlogging. The clay content of the soil makes it vulnerable to compaction when wet. Agricultural activities such as stock trampling, repeated heavy machinery movement and soil cultivation can cause compaction and a loss of soil structure. The wetness limitation associated with this soil results in a slight to severe limitation to arable use through to precluding any arable potential.
24. The Waipu clay soil profile observed and described during the site visit had gleying to within 150mm of the soil surface, a grey topsoil and a watertable at 220mm as well as surface ground water ponding.
25. Waipu peaty silt loam is a gleyed, fertile soil formed on terrace alluvium from sedimentary rocks and organic matter <sup>6</sup>. It has slightly better natural drainage than Waipu clay being very poorly drained <sup>7</sup>. Increased levels of organic matter improve the texture of the topsoil, but subsoil still experiences periods of prolonged wetness through the year. This soil is also vulnerable to compaction when wet. The wetness limitation associated with this soil results in a slight to severe limitation to arable use through to precluding any arable potential.
26. At the time of the site visit the Waipu peaty silt loam soil had greying within 160mm of the soil surface and a watertable at a depth of 520mm. No surface water was present on this soil.
27. Ruakaka silt loam has formed on peat and sand and is very poorly drained. It is high in organic matter and has a very low natural pH. This soil is vulnerable to oxidation of organic matter and shrinkage through over cultivation <sup>7</sup>. The wetness limitation associated with this soil presents a moderate to severe limitation to arable use through to precluding any arable potential.

<sup>5</sup> NRC Soil factsheet 1.2 Terrace soils,

<https://www.nrc.govt.nz/media/nizd4v1/soilfactsheet12finalweb.pdf>

<sup>6,7</sup>NRC Soil factsheet 9.1 Organic peat/sand soils,

<https://www.nrc.govt.nz/media/nizd4v1/soilfactsheet91finalweb.pdf>

28. At the time of the site visit the Ruakaka soil surface was wet but with no visible surface ponding. The soil profile watertable was at approximately 600mm depth.



Figure 1. Soil map of the site.

### SITE LUC RECLASSIFICATION

29. The NZLRI has mapped the site as LUC unit 2w 2. Based on the site investigation this area has been reclassified as LUC units 3w 2, 3w 4, 4w 1 and 4w 1+3w 2 (see Figure 2 below).
30. The 3<sup>rd</sup> edition of the LUC Survey Handbook (2009) describes LUC class 2 land as only having slight physical limitations to arable use that can readily be controlled by management and soil conservation practices and is suitable for many cultivated crops. The wetness limitation at the site presents more than a slight limitation to arable use across the whole site by restricting the timing and methods of cultivation that can be used and the type of crops that can be grown. Combined with clay and peat textured soils the limitations across the site vary from moderate to severe.
31. The wetness limitation to arable use on the area of Waipu clay soil has been classified as severe due to the low-lying nature of the area, poor to very poor soil drainage and high watertables. The clay soil texture adds further

challenges for arable use due to its vulnerability to compaction. These characteristics leave only a short crop growing season by restricting the timing of soil cultivation, crop sowing and harvest to the drier months from spring to autumn. They also restrict the crop choice to those suited to a short growing season. As such this area has been classified as LUC unit 4w 1 which has potential land use options listed as intensive grazing, root and green fodder crops and limited forestry<sup>8</sup>.

32. The limitations to arable use on areas of Waipu peaty silt loam and Ruakaka peaty silt loam have been classified as moderate. Watertables on these soils were at 500-600mm and were significantly lower than those on the Waipu clay soil. Wetness is still the major limiting factor on these soils by restricting the length of the growing season and the choice of crops that can be grow. Peat soils present additional challenges for arable use including low pH and the requirement for careful watertable and cultivation management to maintain their productivity. As such Waipu peaty clay has been classified as LUC unit 3w 2 while the area of Ruakaka soil has been classified as 3w 4. These units have potential land use options listed as intensive grazing, root and green fodder crops, cereals, horticulture, limited forestry and in the case of unit 3w 2, vegetable production<sup>9</sup>.
33. An area at the site has been given a combination LUC classification of 4w 1+3w 2. This classification reflects the combination of the Waipu clay and Waipu peaty silt loam soils in that area. The soils do not follow an easily definable boundary and as such, cannot be delineated at the scale of mapping used in the report for the site. The 4w 1 classification is the dominant unit on this area and follows the larger area of Waipu clay soil. The 3w 2 classification follows the smaller areas of Waipu peaty silt loam soil on this area

<sup>8</sup> Harmsworth, G.R. 1996. Land Use Capability classification of the Northland region. A report to accompany the second edition (1:50,000) NZLRI worksheets. Landcare Research Science Series 9. Lincoln, Manaaki Whenua Press. Page 151

<sup>9</sup> Harmsworth, G.R. 1996. Land Use Capability classification of the Northland region. A report to accompany the second edition (1:50,000) NZLRI worksheets. Landcare Research Science Series 9. Lincoln, Manaaki Whenua Press. Pages 122, 124





Figure 2. LUC classifications at the site.

### VERSATILE SOILS CLASSIFICATION

34. Section 5.1.1 Policy – Planned and coordinated development, point (f) of the NRPS seeks to protect highly versatile soil in the primary production zone. It defines highly versatile soil as those in LUC units: 1c 1, 2e 1, 2w 1, 2w 2, 2s 1, 3e 1, 3e 5, 3s 1, 3s 2 and 3s 4<sup>10</sup>.
35. The NZLRI has classified the site and the wider legal title area as mostly LUC unit 2w 2. As such, it would come under the highly versatile soils classification. Due to detailed on site mapping the site has been reclassified with LUC units 3w 2, 3w 4 and 4w 1, none of which are listed as highly versatile soils. The site therefore does not come under this classification.

<sup>10</sup> Northland Regional Policy Statement, Section 5.1.1, page 89, <https://www.nrc.govt.nz/media/clxj0ndy/regionalpolicystatementfornorthlandmay2016updatedmay2018.pdf>

## HIGHLY PRODUCTIVE LAND AT THE SITE

36. The NPS-HPL came into effect in 18th October 2022. This policy seeks to protect highly productive land for use in land-based primary production, both now and for future generations. The policy statement defines highly productive land as land that has been mapped in accordance with clause 3.4 of the NPS-HPL and is included in an operative regional policy statement as required by clause 3.5. There is an interim regime for identifying highly productive land prior to a regional policy statement containing maps of highly productive land in the region is operative. Under clause 3.5(7) of the NPS-HPL, highly productive land in the interim period includes land that is: (i) zoned general rural or rural production; and (ii) LUC 1, 2, or 3 land; but is not: (i) identified for future urban development; or (ii) subject to a Council initiated, or an adopted, notified plan change to rezone it from general rural or rural production to urban or rural lifestyle.

The following definition of LUC 1, 2, or 3 land is taken from section 1.3, page 4 of the NPS-HPL:

*LUC 1, 2, or 3 land means land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping that uses the Land Use Capability classification<sup>11</sup>.*

37. Based on the interim definition for HPL in paragraph 32 the areas of LUC units 3w 2 and 3w 4 will come under the HPL classification. These units make up 4.08ha or 68.9% of the site and are shown in the map below.

<sup>11</sup> National Policy Statement for Highly Productive Land 2022.

<https://environment.govt.nz/publications/national-policy-statement-for-highly-productive-land/>



Figure 3. Highly productive land classifications at the site

## OVERALL CONCLUSIONS

38. The site has poorly to very poorly drained soils and soil textures that result in limitations to arable use.
39. The LUC classification 2w 2 mapped by the NZLRI is incorrect with the site reclassified as LUC units 3w 2, 2w 4, 4w 1 and 4w 1+3w 2.
40. The LUC classifications of the site show a moderate to severe wetness limitation to arable use.
41. There are no highly versatile soils at the site.
42. 4.08ha or 68.9% of the site is classified as HPL.

Ian Hanmore

25 March 2024