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Land Use Capability Report

Prepared for Charles Otway

Kerikeri

Report prepared by Bob Cathcart
29 January 2023

Proposed Land Use of Part of Lot 2, DP462527 Kerikeri

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Proposed land use of part of Lot 2, DP462527, Kerikeri

This proposal relates to land surrounding Redwoods Garden Centre and Café and involves an area of approximately 7,200m^2, comprising a 4,800m^2 hard-surfaced site, an established garden centre and café, veterinary services, the associated roading and carparking sealed areas and a 1300m^2 area of lawn fronting Springbank Road/SH10. The balance of Lot 2 462527 comprises more hard surfaces, buildings a shade house and approximately 3200m2 of mown lawn. All these are established uses as of January 2023.

I. HIGHLY PRODUCTIVE LAND

This whole section is recorded as Class 2s1 on the 1:50,000 scale New Zealand Land Resource Inventory Land Use Capability database(1). (See explanation of Land Use Capability Classification that follows).

The soil type on this land is Kerikeri friable clay, a moderately to strongly leached Brown Loam of the Kiripaka Suite (2), which has developed over a long period of time on Horeke basalt lava flows. This 'LUC Unit' classification groups what in this locality is a strongly weathered soil with concentrations of iron and aluminium, along with clay, in the subsoil, with much 'younger, less weathered and leached Kiripaka, Ohaeawai Red Loams and Papakauri and Maunu soils on recent lava flows and scoria cones respectively elsewhere in the Whangarei and Mid North districts. The latter, younger, soils have a much stronger topsoil structure, a silt loam texture, are more free draining, and are much more productive and versatile than Kerikeri soils.

Unlike the younger basaltic soils, Kerikeri friable clay is not a highly versatile soil. Deep-rooted orchard crops, like avocado, do not thrive on these Kerikeri soils, kiwifruit can be affected by seasonal wetness within the rooting zone and while shallow rooted citrus crops thrive under irrigation, strong winds have been known to uproot trees when the soil becomes waterlogged during short duration, high intensity rainfall events.

High concentrations of iron and aluminium, in the subsoil not only 'fix' phosphorus, limiting plant growth, but are toxic to root growth, severely limiting the range of plants which may be grown. A review of the LUC Assessments in Tai Tokerau, following the assessment standards set out in the Land Use Capability Handbook(3), 3rd Edition, would reassess Kerikeri friable clay soils as Class 3s2, the very best areas as a new Class 2s unit, but not Classes 1s1, 2s1 and 3s1, units reserved for Kiripaka, Ohaeawai, Papakauri and Maunu soils on equivalent slopes. Regardless, of whether Class 2 or Class 3, <u>significant</u> areas of Kerikeri friable clay soils should be regarded as 'Highly Productive Land', provided they are within a community irrigation scheme area, which this property is, the lots are of sufficient size to enable commercial use for horticulture and that the use does not in conflict with existing adjoining land uses. That is, its use for primary production does not create unmanageable reverse sensitivity issues.

II. EXISTING LAND USES

Since the original Land Use Capability Surveys were conducted in the late 1970s, the digital database has been established and Harmsworth[4] published an extended legend in 1996, there have been some significant changes in land use in this area. Redwoods Garden Centre and cafe and adjoining commercial uses, including a veterinary clinic and human health services, have been established along the frontage with SH10/Springbank Road. Land behind and around these uses has been covered with hardfill, sealed roads and buildings, some associated with the Garden Centre.

Within the last year or so, all soil has been excavated from the road-frontage land immediately south of Redwoods Café and Garden Centre and the area hard-filled with crushed rock. Of the total 2.1942 ha of Lot 2 DP 462527, only 3230m^2 northeast of the 'shade house', behind the garden centre, and the 1300m^2 front lawn on the roadside in the northeast corner, still have topsoil intact, that is 20.6% (14.6% and 6% respectively) of the total area of Lot2. This residual land, if the area was mapped at a detailed scale, would be assessed as Class 2s1 (or Class 3s2 as discussed above). The land use changes from rural to non-rural on the majority of the Lot, 80% of the total area, are irreversible – the soil has been removed and is no longer assessable under the LUC system or available for food or fibre production.

III. POTENTIAL PRIMARY INDUSTRY USES

The two small, separated, patches of land on which the topsoil remains intact are surrounded by houses and adjoin non-rural uses. Each is too small to be of commercial value for arable, horticulture or pastoral uses and, perhaps more significantly, any orcharding or gardening uses would be at risk from reverse sensitivity concerns. There is already conflict over the use of 'hi-cane' spray to stimulate even bud break in kiwifruit orchards in the Kerikeri area. The district does not enjoy winter chills/frosts followed by spring conditions which stimulate sudden and even bud break and flowering in the crop, so unless artificially stimulated, there is uneven maturing of the crop.

The need for and the use of this chemical, or a replacement, and of pesticides generally is expected to increase as changing climatic conditions lead to warmer temperatures, more variable rainfall and new pests and fungus diseases. This will increase the needs for clear separation between horticultural and urban land uses.

While there are kiwifruit orchards to the east and south-east of the subject land, these orchards are separated from the subject land by a 80 to 150metre-wide strip of separately owned residential and commercial properties, shelterbelts and tall woodlots, creating an effective buffer between orcharding practices and urban uses. The land to the immediate north of the subject land is in residential and large residential lots (mown lawns between houses), that is, there are no adjoining orchards, horticultural or primary production uses of land to which residual areas of intact soil can be attached and managed for primary production.

The best these small residual patches of soil within the subject land could support is home vegetable gardens, certainly not commercial primary industry uses. Even if an orchard was

established on the small patch of grassland north of the shade house, after providing for setback from the boundaries to enable machine access around the trees/crop, there is less than 3000m^{2}of productive land involved, surrounded by urban uses. Such a small patch, with all the difficulties of working with a large number of neighbours, would not attract investment in horticulture, and is too small for livestock farming or forestry.

IV. APPROPRIATE USES AND AVOIDING INAPPROPRIATE USES

(*With reference to Section 3.10 of the National Policy Statement for Highly Productive Land 2022, Exemption for Highly Productive land subject to permanent or long-term constraints.*)

As explained, there is very little (actually or potentially) highly productive soil remaining on the subject land, most (>80%) being removed and replaced with hard fill, paved surfaces and buildings. There is no longer topsoil, the productive component of the land, on all but 20% of Lot 2. The subsoil which exists beneath the hard fill, pavement and buildings, contains high levels of iron and aluminium, overlying accumulated clay, and cannot be effectively rehabilitated and restored to a productive state, either in the short or long term. That is, most of this land is no longer LUC Class 2; it has no value for soil-dependent primary production.

The remaining, approximately 20% of the whole of Lot 2 on which the topsoil is intact is in two sections, one (6% of the total area of Lot 2) alongside SH10 is in lawn, as is a larger section (14% of Lot 2) jutting out amongst large-section residential, dental surgery and commercial properties to the northeast of the 'shadehouse'. The use of this land for primary production is severely limited by the size of the two residual lots (1300 and 3200m^2 respectively), and the close proximity of commercial and residential land uses. It is surrounded by non-primary production uses, which impinge on its ability to be used for primary production.

Another consideration is whether non-primary production (non-soil-based) land uses of land within Lot 2, whether they be residential, commercial or industrial, in any way inhibit or detrimentally affect food or fibre production on adjoining land.

The frontage of Lot 2 onto SH10/Springbank Road is approx. 220 metres long, the middle 90 metres of which is car parking. The highway and berms are 20 metres wide and there is a tall shelterbelt on the other side of the highway and orchards beyond. Shelterbelts and existing commercial and residential development on land southeast of Lot 2 effectively separates the subject land from kiwifruit orchards, and a road/ROW on the northwest boundary separates the land from neighbouring uses on that side. Existing uses behind Lot 2 include residential, lifestyle development and plantations. That is, existing uses surrounding Lot 2 buffer any primary production/horticulture from activities on Lot 2. That is, there are no reverse sensitivity issues created by land uses on Lot 2 that affect actual or potential primary production on highly productive land beyond its boundaries.

To respond to the various clauses of Section 3.10:

a. Most of the subject land is no longer Highly Productive Land, it is no longer Class 2, the soil has been removed and the productivity of the land lost. It is impracticable to restore the characteristics of the soil which previously made it productive, in either the

short or long term. Only 4500m^2 of Class 2 land remains in Lot 2, 1300 and 3400m^2 sections.

b. (i) Even if this remaining 20% of the subject land on which the topsoil is intact (approx. 4500m^2 in two sections) is converted to non-food and/or fibre production uses, these residual areas are so small that their changed uses would not have a significant impact on primary production in the Kerikeri area or on the industry support services.

(ii) In-filling of this already fragmented multi-use parcel of land will help reduce the need to sever sections off productive land elsewhere within the Kerikeri district.

(iii) Linked to (ii) above, concentration of development within this existing and well buffered parcel of land, reduces the risk of reverse sensitivity issues being created if new developments are sited within or in close proximity to operating orchards, vegetable gardens, livestock farms or forests elsewhere around Kerikeri.

V. SUMMARY

1. While the land subject of this proposal was originally assessed as Class 2s1, and therefore affected by the NPS on Highly Productive Land, land use changes in the meantime have occupied some 80% of the total area, rendering that proportion no longer available for primary production – the soil has been removed, paved over or built on.

2. Use of the remaining two small pockets of land for horticulture, pastoral or forestry uses is compromised by surrounding land uses, residential and urban uses along boundaries, which would create reverse sensitivity concerns and severely restrict land use options. Protecting these two small residual blocks for primary production cannot be justified, their size and the fact they are surrounded by conflicting land uses mean their value for food production cannot be realised.

3. As these two small patches are surrounded by commercial uses and the whole of Lot 2 is buffered from productive orchards, changing the land use of these residual sections from mown lawn to urban/commercial uses would not impact on primary production on surrounding orchards – the change in land use would not effectively increase reverse sensitivity issues.

4. If the residual blocks of land had been larger and particularly if they boundary on or could be managed in association with neighbouring orchards , protection of this land for primary production/food production would have been important, particularly as the land is within the Kerikeri Irrigation Scheme area. The residual pieces of undeveloped land are, however, surrounded by non-rural land uses.

VI. REFERENCES

1. NZLRI (New Zealand Land Resource Inventory), Landcare Research - Manaaki Whenua, Lincoln, New Zealand [https://lris.scinfo. org.nz/layer/76-nzlri-land-use-capability/]

2. Sutherland, C.F., Cox, J.E., Taylor N.H., Wright, A.C.S. 1981: Soil map of Maungaturoto-Kaipara, (sheets Q08/O09,North Island, New Zealand. N.Z. Soil Bureau Map 189.

3. 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. 163.

4. 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, Lincoln, Manaaki Whenua Press, 269p.

VII. APPENDICES

Appendix A – Land Use Capability

Appendix B - CV of report author, Bob Cathcart

1.1 Introducing LUC

Land Use Capability, as described in the 3rd Edition of the Land Use Capability Survey Handbook(2), is an 8-Class method of ranking New Zealand land according to its capability for sustained primary production. The system uses four arable classes, Classes 1 to 4, with Class 1 being the most versatile and potentially productive land, and Class 4 suited to much fewer crops or horticultural uses, only marginally suited to arable use. Classes 5, 6 and 7 are not suited to arable uses but are suited to pastoral farming, some tree crops, and to forestry. Class 8 land, by definition, has no productive value, being too steep, stony wet or erosion-prone, but may have important watershed protection or biodiversity values.

The eight LUC classes are subdivided according to their dominant limitations, whether that be '**e**' (erosion), '**w**' (wetness), '**s**' (a soil limitation such as stoniness or a particular characteristic of the soil) and '**c**' (climate).

The most detailed level of LUC assessment is LUC Unit. This level identifies land types that have the same potential level of production and other attributes, require the same forms of management, etc. While an attempt was made initially, to place the LUC Units within a region in some order of productivity, that is Class 4e1 has the potential to produce more primary products than Class 4e3, and so on, this has proven impractical, and even more so to attempt nationally. Unfortunately, LUC unit numbers in one class do not necessarily match Unit numbers in another class, that is, Class 2e1 does not lead on to Class 3e1 and then 4e1 as the land becomes steeper. It is, therefore, very important to read the Unit descriptions and take note of the LUC succession shown in extended legends as LUC 'sub-suites'.

Land Use Capability for the whole of New Zealand has been assessed and is published at a 1:50,000 scale on the New Zealand Land Resource Inventory(3), a digital database maintained by Manaaki Whenua Landcare Research. It is this database that is being used to delineate areas of 'highly productive land', land that is either LUC Classes 1, 2 or 3, or can be upgraded to these classes by application of known technology and management practices, irrigation within areas serviced by community irrigation schemes, for example.

1.2 New Land Use Capability Units

More detailed mapping at a river catchment, farm, orchard and peri-urban scale (1:500 to 1:10,000) has identified land types which could not be separated at the NZLRI 1:50,000 scale. Since the publication of the LUC Handbook 3rd Edition in 2009, 40 new North Auckland Peninsula LUC Units have been identified and described by Bob Cathcart, the author of this report, and several by Ian Hanmore of Hanmore Land

Management, after the publication of 'Land Use Capability Classification of the Northland Region', an extended legend by Harmsworth[4].

2.0 QUALIFICATIONS OF THE LAND USE CAPABILITY DATABASE

2.1 Scale:- As is explained in the LUC Handbook, and in soil type survey handbooks and on soil maps, the maps should not be enlarged beyond the scale at which they were mapped, that is, a map recorded in the field at 1:50,000 should not be enlarged to, for example, 1:10,000. Parcels of land, polygons or mapping units of less than 60 hectares are not separately defined on 1:50,000 maps. Rural reconnaissance maps should not be used to definitively assess the soil type, geology or whatever data, on 800m^2 urban sections.

2.2 Ground-Truthing and Corrections:- The NZLRI database was developed by transferring available data to a digital format and quickly undertaking field surveys to acquire data, all to produce the first and to date, only complete coverage of digital land resource data across New Zealand. It is acknowledged that drafting mistakes have occurred and some assessments of land use capability were, perhaps, not correct or were made without adequate local knowledge of, for example, frequency and severity of flooding, records of summer droughts, and an understanding of the nature of some land in all seasons.

The NZLRI database is a very valuable tool at a national and regional level, but it is very important to seek local advice and interpretation of the digital data when using it at a property or even District level. In many cases, that local advice may only need to be to help interpret the data at a more detailed scale. Many of these limitations, omissions and corrections will be overcome as the NZLRI database is updated and as S-Map, a Landcare Research soils database system, is extended across the whole country.

2.3 Knowledge and Understanding of the User:- With NZLRI data, or any digital database, so readily available, there will always be risks when accessed and the data used by untrained operators. The issues raised above encompass some of those risks.

APPENDIX B - CV of Report Author

BOB (Robert) CATHCART

Bob has worked for over 55 years in land and water resource management in New Zealand 49 of those in Northland; 43 with the Northland Regional Council and its predecessor, the Northland Catchment Commission, almost six years as Chief Soil Conservator and Resources Manager with the North Canterbury Catchment Board and over seven years with AgFirst Northland. He has an extensive knowledge and understanding of Northland soils and was involved in the original mapping of land resource inventory and land use capability data across the region.

He has worked with farmers, horticulturalists and foresters across Northland, advising on sustainable land use options, developing soil conservation farm plans and implementing erosion control measures. Where requested, this work has included accurately mapping soil types, advising on land use options, land drainage and flood risk reduction. Bob can produce a detailed soil and land use capability map of your property on which you can plan future development. Bob is recognised as 'Suitably Competent Mappers' under the National Environmental Standards for Plantation Forestry.

Bob is a Registered Primary Industry Management Consultant and has held positions on various primary industry professional organisations. He wishes to see his knowledge of land in Northland used to improve farm, forest and orchard profitability and develop the regional economy by implementing more economically, socially and environmentally sustainable land use systems.

QUALIFICATIONS & AFFILIATIONS

- Graduated B. Agr. Sc. Massey University 1965.
- Certificate in Soil Conservation, Lincoln College and Soil Conservation and Rivers Control Council, 1965.
- Diploma of Business Studies, Massey University 1993.
- Fellow of the NZ Institute of Primary Industry Management and a Registered Primary Industry Management Consultant
- Honorary Member of the NZ Association of Resource Management.
- Member of the NZ Society of Soil Science
- 'Suitably Competent Mappers' under the National Environmental Standards for Plantation Forestry

RELEVANT EXPERIENCE

Bob has:

- A thorough knowledge of Northland natural resources (geology, soils, vegetation and other land resources), farming, forestry and horticultural systems and the people involved in primary industry.

RELEVANT EXPERIENCE cont.

- An extensive network of private and public sector, and professional contacts throughout Northland.
- Conducted field surveys and prepared detailed land resource inventory maps (geology, soils, slope, erosion forms and severity, vegetation/land use, and land use capability) to assist landowners/managers to optimise production while limiting any environmental effects.
- Been a member of an AgFirst Northland team which undertook whole farm reviews of nine Maori Trust sheep and beef stations and Landcorp Blocks due for transfer under Treaty Settlements from the north side of the Hokianga Harbour to Parengarenga.
- Completed a detailed natural resource mapping survey of some 5,500 hectares of Ngati Hine Forestry Trust land extending from near Ngawha to Pipiwai and assisted the Trust with its long-term land use planning. Currently assisting other Tai Tokerau Trusts with similar land use decisions.
- Assisted the Northland Agricultural Forum and Horticulture NZ to develop a Northland Horticulture Development Strategy
- Worked in multi-disciplinary teams and on committees throughout his career and private life, including Whangarei Rugby Referees Association, Rotary at Club and District level, and professional organisations.

WORK EXPERIENCE

- November 2014 appointed 'Environmental Representative' for Beef and Lamb NZ and a member of the Northern North Island Farmer Council and a member of the B&LNZ Environmental Reference Group.
- January 2014, joined AgFirst Northland as a consultant.
- Land Operations Manager to the Council in 1992 as a consequence of further restructuring. Various other positions, changed titles until retired from Northland Regional Council in December 2013.
- November 1989, appointed Manager Natural Resources to the new Northland Regional Council. Acting CEO for 6 months between permanent appointments.
- May 1988 appointed General Manager of the Northland Regional Council.
- 3 April, 1988, swearing in of councillors on the first directly elected regional council outside the urban areas of Auckland and Wellington.
- November 1984 appointed Chief Executive Officer to the Northland Catchment Commission. In April 1985, presented a proposal for the establishment of a Northland Regional Council, and was involved over the next 3 years in explaining the proposal, and promoting it through the Local Government Commission.
- As a result of restructuring, was appointed Manager Resource Management as well as Chief Soil Conservator in 1982.
- Surveyed and reported to the Board on the delivery of water and soil management functions to the Chatham Islands.
- Undertook reviews of all the Board's plans and policies relating to land and water management and produced catchment water allocation and management plans including the Rakaia, Waimakariri, Ashley, Hurunui and Waiau Rivers and Central Plains groundwater.
- May 1979 appointed Chief Soil Conservator to the North Canterbury Catchment Board, based in Christchurch.
- Developed and published guidelines for development in coastal areas, on floodplains and erosion-prone land.
- Appointed Senior Soil Conservator and Water and Soil Planning Officer to the Northland Catchment Commission in 1976. Pursued changes to District Schemes, via the Planning Tribunal as required, particularly in the Bay of Islands, Hikurangi and Whangarei City areas. Developed the "Urban Land Use Capability" system of assessing and mapping the limitations (and advantages) of land for urban use.
- In 1966 undertook the initial benefit/cost analysis for the Hikurangi Swamp Major Scheme and was responsible for planning and supervising all the land reinstatement on completion of construction work.
- 1965-67 - Land Inventory and Land Use Capability Surveys of the then Northland Catchment Area (Whangarei and Kaipara Districts and southern edge of Far North District) and Kawakawa River catchment, including field surveys, drafting plans and writing reports. This work was purchased by MWD and became the First Edition of the Land Use Capability Worksheets (NZLRI).
- 1965 to 1979 - all aspects of land management and soil conservation work with Northland Catchment Commission.
- Commenced work with the Northland Catchment Commission as an Assistant Soil Conservator on 5th January 1965.
- Completed a B. Agr. Sc. at Massey University majoring in soils, soil and water management and farm management.

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