

Leading a smarter, sustainable, high performing primary sector

Prepared for Joe and Kate Carr

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PROPERTY OF JOE AND KATE CARR LOT 2, DP 336924 OKAIHAU

1. OVERVIEW

LOT 2 DP 336924 is a 9.6hectare property on the northern side of Horeke Road, on the very edge of the Okaihau Plateau and immediately adjoining Okaihau village. Residential development extends right to the eastern boundary of the property and small lifestyle and commercial blocks surround it to the south and west. St Catherine's Anglican Church and cemetery are sited on the road frontage of the property adjacent to the residential area.

The property has flat to gently sloping land along Horeke Road, in pasture and cut for bailage, merging into gently rolling land in pasture before dropping away sharply into steep hill country. The steep country is partly in pasture, some reverting to and parts being planted to native bush. There is an approximately 1ha patch of broadleaf bush, mainly on this property, adjoining the Church and the 'town', as well as two Radiata pine shelterbelts.

2. PHYSICAL STRUCTURE

The Okaihau Plateau was formed by basaltic lava flows from a large volcano or volcanoes in the vicinity of the Okaihau Golf Course. These very fluid flows covered a large area of central Northland, in this area creating a hard cap over softer sedimentary rocks (sandstone, mudstone, shale and limestone) rocks of the Northland Allochthon. Streams have cut down through the basalt, forming waterfalls protected by the hard rock. Slowly, the waterfalls work headwards through the basalt and the soft rock erodes way under the edges of the harder volcanic rock to form a plateau. This explains the large basalt boulders scattered around sandstone and mudstone land below and some distance from the current edges of the plateau, left behind as the edges of the plateau retreated over millennia.

The landforms on this property comprise:

- a flat to gently sloping top of the basalt lava flow alongside Horeke Road;
- gently undulating land with a cap of basalt and scattered basalt boulders towards the edge of the plateau
- strongly rolling to steep land on sandstone with bands of mudstone and large scattered basalt boulders that have dropped off the plateau
- 3. SOIL TYPES (as mapped and named by DSIR Soil Bureau)⁽¹⁾
 - 1. **Waiotu friable clay** The soil type on the flat top along the road frontage, a strip about 100metres wide at the western end, narrowing to 30metres or so around the church, cemetery and bush area, is Waiotu friable clay. This is a moderately to

strongly leached Brown Loam with a topsoil about 30cm deep over a dense clay subsoil. While suited to arable field crops like vegetables and maize, the dense clay subsoil impedes penetration of plant roots and causes seasonal wetness, so reducing its suitability for deeper tree and vine crops.

Waterlogged soils lack oxygen and plant roots die from anoxia, a lack of oxygen, that is, they drown. Waterlogging also increases the risk of plants being affected by bacterial and fungal diseases. Subsoil drainage is ineffective on this soil type.

On the other hand, the free-draining topsoil dries out during summer so carefully managed irrigation would be essential for horticulture or vegetable and arable cropping. There are very limited groundwater resources in this area due to the fine-textured, non-porous nature of the sedimentary rocks beneath the lava flow.

- 2. Waiotu friable clay Hill Soil This soil is shallower than the Waiotu soil on the flat tops, even though it is on gentle slopes in some places. It becomes increasingly more bouldery the steeper the land gets as it goes over the lip of the plateau. This thinner soil is more drought-prone and, because it is bouldery, is less suited to arable or market garden field crops, and to orchard or vine crops. Hay or silage can be harvested where surface boulders have been removed but the shallow soils produce little surplus grass over summer.
- 3. Waiotu friable clay -Whirinaki clay loam complex This is primarily a Yellow Brown Earth soil formed on a complex of sandstone and mudstone under broadleaf-podocarp-kauri forest **but** with scattered basalt boulders and small patches of Waiotu friable clay hill soil on parts of the plateau that have slid down the hillside. In places it is steep but becomes an easier but more broken (hummocky) surface towards the northern boundary of the property. This land is too steep or too broken to be cultivated and easier slopes have heavy clay soils and are strewn with very large boulders. This land type is not suited to pastoral farming or horticulture on this property but could be used for production forestry or managed totara forest.

4. LAND USE CAPABILITY

The nzlri-luc database⁽²⁾ records almost 28% of the property as Class 2s1 (nz2s-16) and having Waiotu friable clay and Ruatangata friable clay soils. A little over 30% is shown as Class 6e4 (nz6e-49) and having Waiotu friable clay Hill Soil and the remaining approximately one third is shown as Class 6e12, yellow clay soils formed on a sandstone and mudstone complex but littered with large basalt boulders. This data is similar to the DSIR Soil Map⁽¹⁾ of the area. It shows a small strip of Waiotu soils alongside Horeke Road, a wider strip through the middle of the property, around and over the edge of the plateau, with Waiotu friable clay hill soils only, and the lower slopes of the plateau edge with a complex of Waiotu friable clay hill soil and Whirinaki clay.

A walk-over survey of the property, taking note of and confirming soil types by digging and exposing soil profiles, assessing slope and land use capability according to the 3rd Edition

New Zealand Land Use Capability Survey Handbook,⁽³⁾ as required by the National Policy Statement for Highly Productive Land,⁽⁴⁾ confirms, generally, the distribution of soils shown on the DSIR Soil Bureau maps and the nzlri-luc database but challenges the nzlri-luc database polygon (land use capability unit) boundaries, the soil types recorded for some of those LUC Units and the LUC assessments recorded on the nzlri-luc database.

(The nzlri-luc database records a mix of Waiotu and more strongly leached Ruatangata soils in the polygon along Horeke Road because it extends across a large polygon towards the Okaihau Golf Course. The re-assessment records the Horeke Road-side of 1.15ha (12% of the whole property) as flat to easy Waiotu soils as Class 3s2, which recognises that it is not actually or potentially as productive as Class2s1 or as versatile as Class 3s1, which has younger, more fertile and more free-draining volcanic soils.

The gently rolling land to the north of this is assessed Class 4s2 (almost 3.0ha, 31%), which recognises that while this soil is erodible when under cultivation, its major limitations are its thin topsoil and rocks/boulders. <u>Note</u> that the land use capability units named in this report are those described in Harmsworth's Extended Legend for the Northland Region,⁽⁵⁾ published to accompany the 2nd Edition of the Ministry of Works and Development Land Use Capability Worksheets, the predecessor to the nzlri-luc digital database.



Carr Property, LOT 2 DP336924 Okaihau

The 2.5ha (26%) of steeper and bouldery slopes along and below the edge of the plateau are Class 6e4, strongly rolling to steep Waiotu soils, blending into Class 6e12 (2.0ha, 21%) along the northern boundary where there are hummocky Whirinaki soils but with scattered basalt boulders. Almost 1.0ha (10%) of the property is in native bush.

Not only do the soil types on the nzlri-luc database differ from the Soil Bureau maps, the polygon boundaries on the nzlri-luc are diagrammatic, rather than actual landform boundaries, bearing little resemblance to what is visible in the field. While the LUC assessments are consistent with similar land in the Mid-North, they are inconsistent with assessments made by personnel much more experienced with land use, versatility and productivity in the lower half of Northland. In short, some Mid-North assessments have overestimated the potential productivity and versatility of the land. Recent dry and drought years and, at the other extreme, very wet years which caused vines to die in some kiwifruit orchards have confirmed the extent of these over-assessments.

5. IS THIS HIGHLY PRODUCTIVE LAND?

Under the National Policy Statement for Highly Productive Land (NPS-HPL), confirmed by the Courts and by an amendment to the Policy Statement in August 2024,⁽⁴⁾ if it is shown as LUC Class 1, 2 or 3 on the New Zealand Land Resource Inventory – Land Use Capability Database it is legally HPL and will remain so until the relevant regional council defines what it believes to be 'highly productive land' within its region in terms of the NPS and more accurately identifies its extent on an appropriately scaled map. Therefore, 28% of this 9.5ha property is legally highly productive land, while in reality, only 1.15ha or 12% is marginally suited to field crops and to a limited range of shallow-rooted orchard crops, provided water is available for irrigation. The rest of the property is not highly productive land, nor does the 1.15ha adjoin any other highly productive land so could not be joined to and managed as part of a larger, for example, neighbouring market garden.

As well:

- i. 1.15ha is too small to attract interest in leasing by commercial growers or horticulturists. It is more likely to be used to grow vegetables and fruit as home gardens on residential or small lifestyle sections than as commercial gardens or orchards.
- ii. Only about 1.1ha of this flat to easy land would be available for cropping as an old road formation, where soil has been removed and heavy rock laid as a foundation, runs diagonally across it. The 7 to 10metre-wide rock foundation is imbedded in the compacted subsoil and while topsoil has been spread across it and grassed, it shows up clearly in a drought year and would be impractical to cultivate.
- iii. The owner and contractors working for him have already encountered reverse sensitivity issues relating to pastoral farming with a neighbour complaining about farm machinery making baleage after dark. More intensive land uses would create even greater concerns with neighbours as cultivation, inter-row weed control, spraying and harvesting are activities that must be undertaken when the

weather is right, which is often early morning, rarely between 9.00am and 5.00pm on week-days. Reverse sensitivity is a very real problem for the wider horticulture industry and particularly on small areas like this adjoining residential areas.

iv. It is understood that there are inadequate groundwater resources in this locality and without irrigation, crops could not be sustained in some seasons, so under these limitations, orcharding and market gardening would not be economically viable.

Clause 3.10 of the National Policy Statement for Highly Productive Land enables the Council to grant exemptions the general requirement to protect such land for intensive primary production. These are where:

3.101aThere are permanent or long-term constraints on the land that
mean the use of the highly productive land for land-based primary
production is not economically viable for at least 30 years; and

As noted in this report but not recognised by the nzlri-luc LUC assessment of this land, there is a much lesser area of Class 2 land than the database shows, arable or orchard use of this easy land would require irrigation and there is an inadequate groundwater resource, and most of the rest of the easy land has shallow soils and is too bouldery for intensive land use. It is impractical to remove the boulders. There currently no plans to store water to support irrigation in this area.

1b (i) Avoids any significant loss of productive land in the district; and

As noted, in reality, there is only 1.15ha of actually 'highly productive land', Class 3s2, or Class 2s1 on the nzlri-luc database, on this 9.6ha property but, due to an old road formation crossing diagonally through this section of the property, there is only 1.0ha available for cultivation.

As noted, the nzlri-luc database records 28% of the 9.6ha property, 2.68ha, as Class 2s1. According to Harmsworth, there are 7575ha of Class 2s1 land in Northland, and based on my own knowledge, at least 50% is in Far North District, that is, approximately 3790ha. That would mean that the Class 2s1 land on this property is 0.035% of the Northland total area of Class2s1 or 0.07 % of the Far North District total. If it is Class 3s2, as proposed, it represents 0.02% of the regional total of 11,648ha, or 0.04% of the Far North District Class3s2 total. That is, not using the little over 1ha of truly highly productive land on this property for intensive primary production would have an insignificant effect on either District or Regional potential or actual production.

If the cultivable area of Class 3s2 is only 1.00ha, as proposed, the effect would be even less; it would represent less than 0.02% of the total area of that unit within the Far North District. Whichever LUC assessment is used, the loss of this land to intensive primary production would be insignificant.

(ii) avoids the fragmentation of large and geographically cohesive areas of highly productive land; and

The whole property is less than the minimum 10ha area that can be separately identified at the 1:50,000 scale of the database. The nzlri-luc database shows 28% of the property as Class 2s1. The property is bounded on one side by Horeke Road, with residences immediately opposite. There is a bush-filled valley and houses to the west and a residence on the western end of the northern boundary. Houses in the village of Okaihau are on the eastern end of the property. That is, the property is isolated from other similar land by residences, the road and by bush – it is not part of, does not adjoin, a 'large and cohesive area of highly productive land'.

 (iii) Avoids, if possible or otherwise mitigates, any reverse sensitivity effects on surrounding land-based primary production from the subdivision, use or development: and

There have already been complaints from neighbouring residences Over farm machinery working 'afterhours', making bailage, a necessary activity on soils prone to drying out in summer, and the other side of the property borders on residences within Okaihau village. A bush-filled valley west of the property extends right to Horeke Road, creating a visual and sound-deadening boundary between this property and commercial farms further west. That is, rather than creating a reverse sensitivity problem, subdivision for residential and lifestyle block/larger section use of this property would be effectively buffered from potentially more productive land further west along Horeke Road. The bush is an effective buffer between town and country.

(c) The environmental, social and economic benefits of the subdivision, use

or development outweigh the long-term environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values. As noted, the true area of highly productive land, as currently legally defined, on this property is about 1.0ha. While Class 3 in terms of the 3rd Edition of the Land Use Capability Survey Handbook, it is not highly versatile land, only marginally suited to arable farming and even more limited for orcharding. It is more suited to pastoral farming than arable or horticultural uses and Northland is not short of similar land. Given its proximity to the town and neighbouring dwelling, even standard pastural farming practices, like hay-making or weaning beef calves, would attract complaints from neighbours.

Far North District and the Northland Region, have lost much more productive pastoral land to forestry, both for production and for carbon sequestration, in the last few years than has been lost to urban sprawl. These losses have had a greater impact on the social and economic wellbeing of the region and its residents than the conversion of this property to residential and lifestyle uses is likely to have.

In order to satisfy a territorial authority as required by Clause 1a, above, an applicant must demonstrate that the permanent or long-term constraints on economic viability cannot be addressed through any reasonably practicable options that would retain the productive capacity of the highly productive land, by adopting options such as (without limitations:

Alternate forms of land-based primary production:

As noted, the current pastoral farming practices are generating complaints from near neighbours. The land area is too small to be suited for commercial vegetable growing and is too far removed from population centres and markets for, for example, strawberries.

Improved or alternative land management or production strategies:

Again, the area of HPL is too small to support a more intensive pastoral farming system and, as noted, practices of saving any excess stock feed for use in other parts of the year have not proven popular with neighbours. Planting the Class2s1 (or 3s2) land in pine forest is an alternative land use but that would quickly shade out neighbouring dwellings to the south and west.

Water efficiency or storage:

Given the contour of the land, there are no groundwater or potential surface water catchments which could be used to capture and store water for irrigation. The property is on top of the ridge.

Reallocation or transfer of water or nutrient allocations:

Because there is no water available for irrigation in the near vicinity, there are no resource allocations available for sharing or transferring.

Boundary adjustments (including amalgamation) and/or leasing:

The property is physically separated from land suited to arable or horticultural use and is too small for a commercial operator to consider leasing.

6. RURAL PRODUCTION ZONE

The Far North District Council is currently reviewing or is proposing a 'Rural Production Zone'. The objective is to protect land suited to rural production, by far the largest industry in the District, from being taken out of production and to protect industries involved in processing rural products and the workforce dependent on these industries being detrimentally affected by the loss of 'raw materials' from actually or potentially productive land.

The arguments of scale, size of property and versatility of land use described above, in respect of this property and the National Policy Statement for Highly Productive Land hold true for the Council's proposed Rural Production Zone. Both policies have the same objectives.

The Council also has a responsibility to ensure land is available for housing its residents and so must balance these various policies. As explained, this land on the outskirts of a growing rural village, very close to both primary and secondary schools and local commercial services, is already being pressured by urban encroachment on its boundaries. Immediately to the west, however, a bush-filled valley physically separates and buffers rural land use form urban land. Whereas Councils will, in many cases, face difficulties in buffering rural land from urban land, the Far North District Council has, in this case, a natural boundary and buffer, immediately to the west of the property.

7. SUMMARY

- Legally, 28% of LOT 2, DP 336924 is Highly Productive Land under the National Policy Statement for Highly Productive Land because it is shown as Class 1, 2 or 3, in this case Class 2s1, on the New Zealand Land Resource Inventory – Land Use Capability digital database.
- 2) A field survey, following the procedures set out in the New Zealand Land Use Capability Survey Handbook, 2009, published after the base data for the nzlri-luc database was compiled and which sets new standards for Land Use Capability assessment, shows the database to be inaccurate in definition of land type

boundaries, inaccurately records soil types when compared with DSIR Soil Bureau Soil Maps of the same scale, and, arguably, over estimates the potential productivity and versatility of the small area of cultivatable land on the property. A reassessment shows that rather than 28% of the property being Class 2s1, about 11% is Class 3s2, and even that is affected by an old road formation running diagonally across it. That is, in reality, there is less highly productive land on this property and, what there is, is not as versatile or potentially as productive as the nzlri-luc digital database depicts.

- 3) The original field surveys were published and the digital nzlri-luc database records data at a scale of 1:50,000. The minimum area separately mapped at that scale is 10 hectares. Digitising the boundaries of the resource inventory polygons has also reduced the accuracy of the boundaries. That is, the database is only indicative and should not be used when dealing with properties of less than 10ha in area and certainly not when dealing only with parts of a 9.6ha LOT.
- 4) The 1.0 hectare of land that has an easy contour and soils suitable for some arable, but limited orchard uses, is on the edge of Okaihau village, is surrounded by dwellings and its pastoral farming practices have already attracted reverse sensitivity issues. Any intensification of land use would attract even greater opposition.
- 5) The 1.0 ha of 'good land' is too small to support a viable commercial orchard or to be used for, for example, market gardening. Arable farming, particularly market gardening requires large enough properties or contiguous areas of activity to enable growers to practice cropping rotations, essential to protect soil structure and productivity and to avoid soil-borne diseases.
- 6) The report outlines arguments why the use of this land for housing or small lifestyle blocks would not result in a significant area or proportion of similar such land within Far North District or the Northland Region being lost for primary production. That is, the report responds to each of the tests the Council must apply when considering and application for an exemption under Clause 3.10 of the National Policy Statement for Highly Productive Land.
- 7) The same arguments hold true in relation to the Council's Proposed Rural Production Zone.

8. REFERENCES

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- 4) https://environment.govt.nz/publications/national-policy-statement-for-highlyproductive-land/
- 5) 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, 269p.



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