

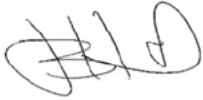




Independent
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Te Kowhai East LP (Private Plan Change) NPS-HPL Assessment

Prepared for
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DOCUMENT QUALITY ASSURANCE

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1.0 EXECUTIVE SUMMARY

Te Kowhai East LP (TKE) are working towards a Private Plan Change (PPC Site) to the Waikato District Plan (WDP) for an industrial re-zone near Te Rapa, north Hamilton. This involves eleven parcels of land located between Te Kowhai Road, Koura Drive, State Highway 1c and Mathers/Onion Road within the Waikato District. TKE is seeking to rezone approximately 192.0 hectares (ha) from Rural Zone to General Industrial Zone (GIZ).

AgFirst Waikato (2016) Ltd has been engaged to provide a productivity assessment of the PPC Site against the National Policy Statement – Highly Productive Land (NPS-HPL). This relates to an assessment on whether it is considered the PPC Site meets the circumstances in which urban rezoning may be undertaken as set out in Clause 3.6 of the NPS-HPL.

The PPC Site is currently utilised as a dairy farm, a drystock farm, an arable operation and a number of small lifestyle blocks. An economic analysis for the PPC Site has been undertaken using industry values and figures against the specific property liabilities, which show that the only economically viable operation is the dairy farm. When looking at the entirety of the PPC Site, the overall net profit is estimated to be a deficit, indicating the long-term viability for some of these operations is marginal.

There are significant constraints that have been identified within the PPC Site, including:

- Surrounding land uses to the north, south and east is zoned residential and industrial zone.
- Soil conditions
 - Very poorly drained, causing reduced yields and carrying capacity
 - Land unsuitable for alternative higher value land-based primary production
- Limited expansion or improvement options
 - Due to regulations restricting intensification into various land uses
 - Due to physical boundaries and amalgamation opportunities

AgFirst has undertaken a comparative agricultural productive assessment against alternative rural options in the locality. Alternative areas identified are the rural zoned land to the west of the Burbush future urban area and the land to the southwest of the Horotiu general industrial zone. While there is no argument that the land within the PPC Site is HPL, given the constraints identified above, AgFirst is of the opinion that the expansion of this area will have a lesser impact on the district with regards to having a lower productive capacity. Furthermore, conversion of the PPC Site into industrial zone would not cause any fragmentation or further disruption of additional highly productive land.

Therefore, AgFirst considers that the re-zoning of the PPC Site meets the requirements of Clause 3.6(1)(b) and 3.6(2)(c) of the NPS-HPL insofar as there are no other reasonably practicable and feasible options which are better suited in terms of impacts on productive land for providing additional industrial development capacity for Hamilton north.

2.0 BACKGROUND

Te Kowhai East LP (**TKE**) are working towards a Private Plan Change (**PPC Site**) to the Waikato District Plan (**WDP**) for an industrial re-zone near Te Rapa, north Hamilton. This involves eleven parcels of land located between Te Kowhai Road, Koura Drive, State Highway 1c and Mathers/Onion Road within the Waikato District. TKE is seeking to rezone approximately 192.0 hectares (**ha**) from Rural Zone to General Industrial Zone (GIZ). Presented in Figure 1 is the outline of the Site in relation to other land use zoning at the northeastern end of Hamilton.

The area and properties that are assessed are legally described in Table 1. Adjoining the PPC Site to the east is industrial zone and State highway 1C and to the south is a residential zone, which is within the Hamilton City boundary. Land to the west is zoned rural, being a mix of dairy, arable and lifestyle blocks and to the north is industrial zoning, are within the Waikato District boundary. The block is currently utilised as pastoral grazing, arable maize and lifestyle.

AgFirst has been engaged to provide a productivity assessment of PPC against the National Policy Statement – Highly Productive Land (**NPS-HPL**). This relates to an assessment on whether it is considered the PPC meets the circumstances in which urban rezoning of HPL may be undertaken as set out in Section 3.6 of the NPS-HPL. AgFirst is a suitably qualified agribusiness consultancy that has a wealth of experience in assessments relating to productive capacity, primary production and soil versatility. Our assessment should be read in conjunction with other assessments which accompany the plan change request, including the planning and economic analyses.

In order to meet the requirements of the NPS-HPL, AgFirst has assessed alternative options for expansion of other existing industrial areas in Northeast Hamilton to meet growth requirements. AgFirst has also assessed the costs of allowing the proposed urban rezoning from Rural to GIZ in terms of the loss of HPL for land-based primary production. These assessments are relevant to consideration of PPC under Clause 3.6(1)(b) and (c) and 3.6(2)(b) and (c) of the NPS-HPL. This includes the suitability for industrial expansion with regards to the loss of soils and HPL that has a relatively lower productive capacity than the Site.

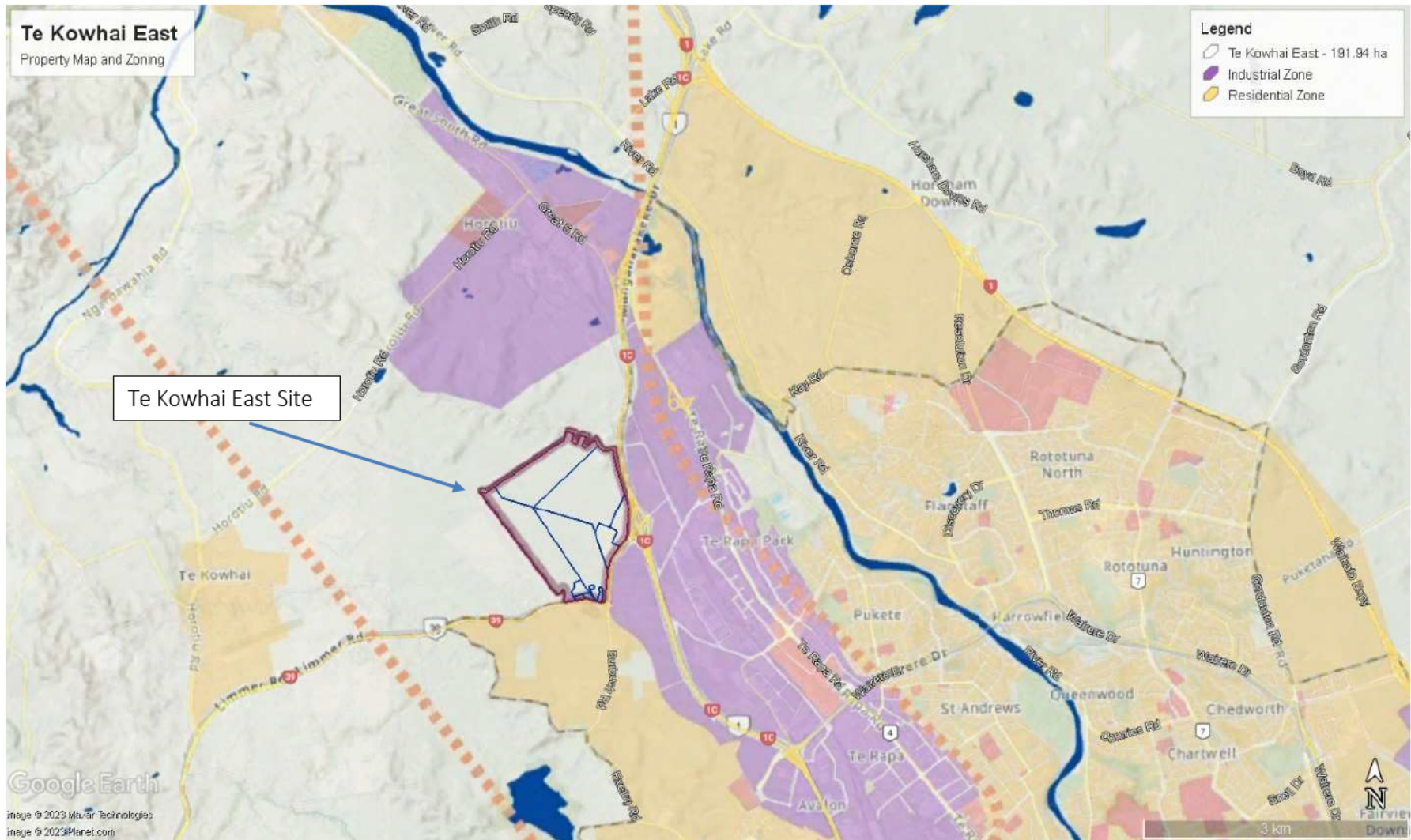


Figure 1: Proposed Plan Change Site

3.0 PROPERTY SUMMARY AND EXISTING LAND USE

The Site identified in Figure 1 consists of nine separate titles, ranging from small residential and lifestyle blocks that are less than 0.5 ha, to the largest title that is 91.22 ha. These are summarised in Table 1 with their associated land use and presented in Figure 2.

Table 1: Property details and current land use

Lot ID	Title Number	Current Zoning	Land Use	LUC (NZLRI)	Area (ha)
1	SA68D/127	Rural	Lifestyle	Unproductive	0.69
2	SA54B/393	Rural	Lifestyle	Unproductive	0.32
3	SA68D/125	Rural	Lifestyle	Unproductive	0.65
4	SA68D/124	Rural	Lifestyle	Unproductive	0.54
5	831323	Rural	Lifestyle	Unproductive	2.30
6	929707	Rural	Drystock	2w 2	36.25
7	831324	Rural	Dairy	2w 2 & 4e 2	46.04
8&9	831325	Rural	Dairy	2w 2 & 4e 2	91.22
10&11	1109516	Rural	Arable - maize	2w 2	14.00
TOTAL					192.01 ha

3.1 Current Land Use

The lifestyle blocks are unproductive, as are considered to have modified or anthropic soils. Anthropic soils, or human-made soils, are soils that have been significantly modified or created by human activities. It is important to note that some of the lifestyle blocks have considerable residential housing improvements established on these sites making it less likely to be used in the long-term for land-based primary production. Non-reversible fragmentation also restricts the use of these to be used at any reasonable scale.

The dairy farm has a combined parcel area of approximately 137.3 ha. This was historically two smaller dairy operations but is now combined and run from one dairy shed off Mathers Road.

There is a drystock block which occasionally grows maize that is 36.3 ha and an arable maize block that has a combined area of 14.0 ha, located to the east of the Site adjacent to the Waikato expressway.

Overall, there is approximately 192.0 ha of land included in the assessment, with approximately 187.5 ha that is currently being used for land-based primary production.



Figure 2: Site layout and properties boundaries

3.2 Production and Financial

The following financial review has been based on typical gross margins for dairy, drystock and arable farms to demonstrate the economic situation for the various production types on the Site. The full analysis is included in Appendix A.

3.2.1 Dairy

The key parameters from the recent financial survey AgFirst released in August 2023 is presented in Table 2 below. Based on the previous four years data and the 2023/2024 budget, the average cash operating surplus is \$475,526, which is \$3,592 per ha. Note this does not include depreciation or interest repayments for debt servicing. The current outlook for dairy is expected to be lower than the previous 4 years, with a lower dairy payout and higher farm working expenses. A key aspect of this outlook, although not assessed, is the escalating interest rates, which have more than doubled in the past two years. The total effective area of the combined dairy farm is estimated as being 127 ha.

Table 2: Dairy farm financial information

Year ended 30 June	2019/20	2020/21	2021/22	2022/23	2023/24 Budget
Effective area (ha)	131	132	133	133	133
Cows wintered (head)	373	379	378	378	378
Stocking rate (cows/ha)	2.8	2.9	2.8	2.8	2.8
Total milksolids (kg)	135,024	143,543	137,801	137,800	137,800
Net cash income (\$)	1,002,591	1,233,643	1,334,043	1,230,468	1,064,918
Farm working expenses (\$)	575,022	618,515	732,603	790,625	771,270
Cash operating surplus	427,569	615,128	601,440	439,843	293,648

3.2.2 Drystock

The following financial analysis is for the drystock operation at the Site. To understand the economic viability of the property with regards to land-based primary production, the Beef and Lamb New Zealand (B+LNZ) data for Northern North Island Class 5 finishing farm, the forecast farm profit before tax is estimated as being \$868 per ha¹. The full analysis is included in Appendix A. Note that this economic figure is based on a North Island intensive finishing operation with a scale of 255 ha. Based on the entire Site being used as a grazing block, this will provide an estimated income from the land of \$30,388 before tax and property liabilities. Due to the inefficient scale of this block, compared to a full-scale intensive operation, the likely income is likely to be much lower than presented.

- The Class 5 North Island Finishing Operation from B+LNZ data has been used for the income for this small-scale livestock operation.
- Total current farm profit before tax per ha using the B+LNZ data is estimated at \$868/ha.
- The estimated effective area is 35 ha.

3.2.3 Arable - Maize

The arable areas of the site grows maize silage over spring and summer, with annual ryegrass grown over autumn and winter. Table 3 and 4 presents the gross margins for these operations.

- Based on the Pioneer information, north island annual ryegrass silage average yield of 4 t/ha and sold standing price of 22 cents per kgDM, the gross margin is estimated to be \$480 per ha.

¹ <https://beeflambnz.com/data-tools/sheep-beef-farm-survey>

- Based on the Pioneer information, north island annual maize silage average yield of 18 tDM/ha and sold standing price of 28 cents per kgDM, the gross margin is estimated to be \$1,747 per ha.
- Therefore, the combined arable gross margin for the maize and annual pasture silage is \$2,227 per ha.
- The estimated total farm profit from the 14 ha arable operation is \$31,180.

Table 3: Annual ryegrass silage gross margin

GROSS MARGIN 2022-23									
Example: North Island Winter Annual Ryegrass									
Annual Ryegrass Silage - Sold standing									
Harvest Year:	Harvest Year:	2023			Area:	14 ha			
Date prepared:	Date prepared:	7-Dec-22							
INCOME per hectare									
Product				Yield	Unit	Cost/Unit	Income/ha	Sub-total	Total
Silage				4.0	tDM/ha	\$220	\$880		
								\$880	\$880
EXPENSES per hectare									
Category	Date	Operation	Product	Rate	Unit	Cost/Unit	Cost/ha	Sub-total	Total
Seed		Seed	Annual ryegrass				\$120		
Fertiliser		Urea		100	kg	\$1.3	\$130		
								\$400	
									\$400
GROSS MARGIN per hectare									\$480
COST OF PRODUCTION per tonne DM of silage									\$100

Table 4: Maize silage gross margin

GROSS MARGIN 2022-23									
Example: North Island Maize Silage									
Maize - Silage - Sold standing									
	Harvest Year:	2023			Area:	14 ha			
	Date prepared:	14-Feb-24							
INCOME per hectare									
Product				Yield	Unit	Cost/Unit	Income/ha	Sub-total	Total
Silage				18.0	tDM/ha	\$280	\$5,040		
								\$5,040	\$5,040
EXPENSES per hectare									
Category	Date	Operation	Product	Rate	Unit	Cost/Unit	Cost/ha	Sub-total	Total
Seed		Seed	Maize seed	1.30	bags	\$442	\$575		
			Poncho			\$123	\$160		
			FAR levy	\$1.00	per 10,000 seeds	\$8.00	\$10.40	\$745	
Establishment		Herbicide	Glyphosate 360	3.0	L	\$15	\$45		
		Herbicide	Pulse	0.1	L	\$37	\$3.70		
		Herbicide applic	Sprayer (contractor)	1	x	\$50	\$50		
		Cultivation	Contractor			\$430	\$430		
		Planting	Maize planter (contractor)	1	x	\$220	\$220		
								\$749	
Herbicide	Pre-em	Herbicide	Roustabout	3.0	L	\$15	\$45		
	Pre-em	Herbicide	Atrazine 500	3.0	L	\$12	\$36		
	V3	Herbicide	Primera	0.2	L	\$177	\$35		
	V3	Herbicide	Latro	80	g	\$0.89	\$71		
		Herbicide applic	Sprayer (contractor)	2	x	\$50	\$100		
								\$288	
Fertiliser		Soil test	Nutrient test*	1	x	\$10	\$10		
		Soil test	Mineral-N (Deep N)*	1	x	\$9	\$9		
		Fertiliser	Lime (cart & spread)	1250	kg	\$0.10	\$125		
	Base	Fertiliser	Muriate of Potash	500	kg	\$1.09	\$545		
	Planting	Fertiliser	DAP (18:20)	250	kg	\$1.43	\$358		
	V4	Fertiliser	Urea	250	kg	\$1.24	\$310		
	Base	Fertiliser applic	Contractor (cart and spread)	1	x	\$45	\$45		
	V4	Fertiliser applic	Contractor (sidedress)	1	x	\$110	\$110		
*One test per 5 ha								\$1,512	
									\$3,293
GROSS MARGIN per hectare									\$1,747
COST OF PRODUCTION per tonne DM of silage									\$183

* Depending on diesel prices, an additional fuel surcharge may apply to contracting rates.

3.3 Site Economic Analysis and Viability

The total income from the PPC Site based on the various operations is \$2,696 per ha which has been presented in Table 5 below. This is expressed as earnings before interest, taxes, depreciation, and amortisation (EBITDA) across the entire 192.01 ha site. To ensure that this is economically viable, the total gross margin would need to cover the rates and service at a minimum the interest only component of the property.

Included in Table 5 is the property/operations liabilities, which includes the Waikato District Council (WDC) and Waikato Regional Council (WRC) rates and interest for the land asset.

- Property information for rates and land valuation have been used as total annual liabilities for each of the properties.
- Total current revenue using industry values.
- Land has been valued based on the WDC rates for land value only – not including improvements.
- A long-term (30 year) average interest rate of 7% has been used².
- A nominal 40% debt loading has been assumed (60% equity), which is a typical level for farm lending.

Table 5: Total Site economic analysis

Te Kowhai East Site	EBITDA/Gross Margins		Property liabilities	Net profit	Net profit/ha
Operation	Total GM \$	GM/ha \$	Total \$	Total \$	\$ /ha
Dairy Income					
127.0 ha Effective Dairy Farm	\$456,131	\$3,323	\$305,155	\$150,976	+\$1,100
Drystock Income					
35.0 ha Effective Drystock Farm	\$31,474	\$838	\$86,423	-\$56,035	-\$1,546
Cropping income					
14.0 ha Annual Ryegrass	\$6,720	\$480	\$41,477	-\$10,297	-\$735
14.0 ha Maize Silage	\$24,460	\$1,747			
Lifestyle properties					
4.5 ha for total five properties	-	-	\$87,284	-\$87,284	-\$19,396
Total PPC Site 192.01 ha	\$517,700	\$2,696	\$520,339	-\$2,639	-\$14

As presented in the Table above, on an individual basis, the only economically viable rural operation for the Site is the dairy farm. The cumulative income is \$517,700 for all operations, with a total Site annualised liability of \$520,339. This provides a net loss of \$2,639 across the PPC Site.

² Exchange rates and Wholesale interest rates - Reserve Bank of New Zealand - Te Pūtea Matua (rbnz.govt.nz) 1993-2023 years with a 2.2% bank margin applied to the 90 bank bill monthly average yield

4.0 REGULATORY FRAMEWORK

4.1 Waikato District Plan

The property falls into the Waikato District and is subject to the WDP. As such, the WDP protects against the removal of high-class soils that can be used for primary production³. Under the WDC plan, High class soils are defined as “soils of land use capability classes I and II (excluding peat soils), and soils of land use capability class IIIe1 and IIIe5 classified as allophanic soils using the New Zealand soil classification”.

4.2 Waikato Regional Policy Statement

The relevant objective and policy from the RPS are:

“LF-O5 – High class soils

The value of high class soils for primary production is recognised and high class soils are protected from inappropriate subdivision, use or development.”

“LF-P11 – High class soils

Avoid a decline in the availability of high class soils for primary production due to inappropriate subdivision, use or development.”

The objective and policy place an emphasis on protecting high class soils from ‘inappropriate subdivision, use or development’. We note that the rezoning that is sought under PPC effectively acts as an expansion of an existing industrial area. The appropriateness of the proposal is addressed in the plan change request.

The RPS includes the following definitions⁴:

High class soils *“those soils in Land Use Capability Classes I and II (excluding peat soils) and soils in Land Use Capability Class IIIe1 and IIIe5, classified as Allophanic Soils, using the New Zealand Soil Classification.”*

Primary production: *“means the commercial production of raw material and basic foods, and which relies on the productive capacity of soil or water resources of the region. This includes the cultivation of land, animal husbandry/farming, horticulture, aquaculture, fishing, forestry, or viticulture. It does not include hobby farms, rural residential blocks, or land used for mineral extraction.”*

³ WDP Policy - Protect the rural soil resource (4.3.1.4)

⁴ <https://eplan.waikatoregion.govt.nz/eplan/#Rules/0/916/1/0/0>

4.3 National Policy Statement

In September 2022, the Ministry for the Environment (MfE) and the Ministry for Primary Industries (MPI) released the NPS-HPL. The single objective of the NPS-HPL is *“Highly productive land is protected for use in land-based primary production, both now and for future generations.”*

Land-based primary production means *“production, from agricultural, pastoral, horticultural, or forestry activities, that is reliant on the soil resource of the land”*.

Productive capacity, in relation to land, means *“the ability of the land to support land-based primary production over the long term, based on an assessment of:*

- a. physical characteristics (such as soil type, properties, and versatility); and*
- b. legal constraints (such as consent notices, local authority covenants, and easements); and*
- c. the size and shape of existing and proposed land parcels”*.

Land which is zoned rural and which is Land Use Capability Class (LUC) 1, 2 and 3 must be treated as HPL under Clause 3.5(7) of the NPS-HPL prior to regional mapping of HPL being undertaken, unless the land was identified for future urban development or was subject to a Council initiated or adopted plan change at the commencement date of the NPS-HPL. Those exclusions do not apply for the PPC site.

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”*.

Policy 5 of the NPS-HPL has relevance and reads: *“The urban rezoning of highly productive land is avoided, except as provided in this National Policy Statement”*. Clause 3.6 is the relevant clause as it provides Tier 1 and 2 territorial authorities may allow urban rezoning of highly productive land in accordance with the matters contained within it.

In summary the NPS-HPL aligns with the WDP and the Waikato Regional Policy Statement, where it identifies LUC Class 1, 2 and 3 (as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping that uses the Land Use Capability classification) as being the most versatile land, with the fewest limitations on its use, and therefore highly productive land.

As noted above Clause 3.6 sets out the circumstances in which urban rezoning may be undertaken and is detailed below:

3.6 Restricting urban rezoning of highly productive land

- 1) Tier 1 and 2 territorial authorities may allow urban rezoning of highly productive land only if:*
 - a) the urban rezoning is required to provide sufficient development capacity to meet demand for housing or business land to give effect to the National Policy Statement on Urban Development 2020; and*
 - b) there are no other reasonably practicable and feasible options for providing at least sufficient development capacity within the same locality and market while achieving a well-functioning urban environment; and*
 - c) the environmental, social, cultural and economic benefits of rezoning 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.

- 2) *In order to meet the requirements of subclause (1)(b), the territorial authority must consider a range of reasonably practicable options for providing the required development capacity, including:*
 - a) greater intensification in existing urban areas; and*
 - b) rezoning of land that is not highly productive land as urban; and*
 - c) rezoning different highly productive land that has a relatively lower productive capacity.*
- 3) *In subclause (1)(b), development capacity is within the same locality and market if it:*
 - a) is in or close to a location where a demand for additional development capacity has been identified through a Housing and Business Assessment (or some equivalent document) in accordance with the National Policy Statement on Urban Development 2020; and*
 - b) is for a market for the types of dwelling or business land that is in demand (as determined by a Housing and Business Assessment in accordance with the National Policy Statement on Urban Development 2020).*

AgFirst will address (in part) Clause 3.6(1)(b), 3.6(2)(b) and 3.6(2)(c) in this report by assessing the productive capacity of the PPC Site and comparing this with additional localities surrounding around northern Hamilton and in particular, Te Rapa, that would be deemed to be 'other reasonably practicable and feasible options'. AgFirst will also address (in part) Clause 3.6(1)(c) in relation to the costs of allowing the proposed urban rezoning of the PPC Site from Rural to GIZ in terms of the loss of HPL for land-based primary production.

5.0 LAND AND SOIL ASSESSMENT

Determining the presence of high-quality soils and HPL, as defined under the LUC classification, requires consideration of a range of characteristics, in accordance with the methods described in the third edition of the LUC Survey Handbook to assess the suitability of the land for primary production. These include such characteristics as erosion, susceptibility to flooding, wetness, land aspect and topography. Therefore, this assessment has taken the following steps to identify soils present within the Site:

- Desktop assessment of LUC from the NZLRI portal
- Contours derived from the Waikato Regional Council (WRC) LIDAR database
- Landcare Research S-Map online, New Zealand Soils Classification (NZSC) and NZLRI national soil database

In addition to classifying the soils, AgFirst has assessed the productive use of the subject land, taking into account a range of characteristics of the proposed plan change area, which are relevant to the productive potential including:

- Soil characteristics
- Drainage
- Potential for sensitivity constraints from surrounding development and land use
- Economic limitations arising from small, fragmented portions of land and its productive potential

This Section presents the results and outcomes from the soil and LUC assessment based on information obtained on site and using the available New Zealand soils resources and database.

5.1 Land Use Capability Classification

The LUC classification system has been used in New Zealand to help achieve sustainable land development and management on farms. The purpose of the LUC classification is to assess the suitability of the land for primary production. Determining the presence of HPL as defined under the LUC classification requires consideration of a range of characteristics. The LUC classification categorises land areas or polygons into classes, subclasses, and units according to the land's capability to sustain productive use. The LUC is based on an assessment of the physical factors (rock type, soil, slope, present type and severity of erosion, and vegetation), climate, the effects of past land use, and the potential for erosion. This is summarised in Figure 3 below.

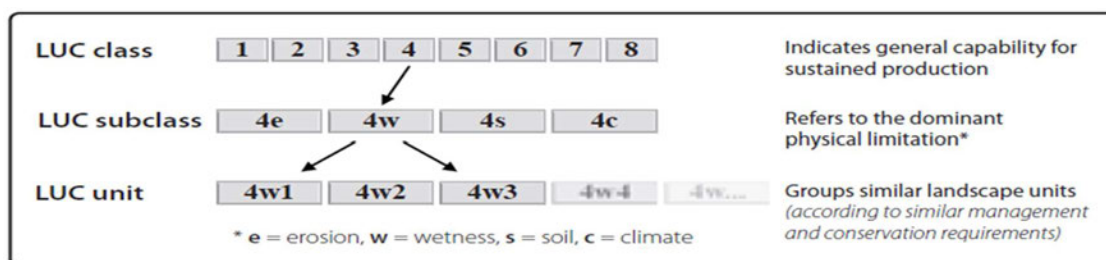


Figure 3: Components of the land use capability classification⁵

⁵ Lynn, I.H, Manderson, A.K, Page, M.J, Harmsworth, G.R, Eyles, G.O, Douglas, G.B, Mackay, A.D, Newsome, P.J.F. (2009). Land Use Capability Survey Handbook – a New Zealand handbook for the classification of land 3rd ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, New Zealand. GNS Science.

AgFirst has reviewed the NZLRI national database of physical land resource information for the Site. This database is based on a regional scale LUC rating of the ability of each polygon to sustain agricultural production. These have been produced at a 1:63,000 scale for the Waikato and are suitable for guidance, but are not specifically designed to be interpreted at a farm or paddock scale.

The soils mapped at the property are classified under the NZLRI as LUC 1s1, LUC 2s1, LUC 2w2 and LUC 4e3. 179.8 ha of the Site is classified as HPL (LUC 1, 2 or 3). The remainder of the Site (12.2 ha) is classed as LUC 4. The NZLRI LUC classifications for this area are presented in Table 6 and presented in Figure 4.

Table 6: Land Use Capability Classification for the Site

LUC Class	Slope Class	Colour on Map	Area	NPS-HPL
LUC 1s1	Flat to gently undulating (A)	Green	0.4 ha	HPL
LUC 2w2	Flat to gently undulating (A)	Yellow	179.1 ha	HPL
LUC 2s1	Flat to gently undulating (A)	Yellow	0.3 ha	HPL
LUC 4e2	Rolling (C) to Strongly rolling (D)	Light blue	12.2 ha	Not HPL
Total			192.0 ha	

Most of the Site is classified under the NZLRI database as LUC 2. This indicates that the soils are in the of high-class category and highly versatile, with these classifications being suitable for most productive agricultural systems. The NZLRI classifies these soils as an LUC 2w2 - a mellow mesic organic soil. Mesic soils are defined as occurring in very wet sites (or in sites that have been artificially drained) in which the peat materials are moderately decomposed⁶. This is supported by the S-Map soil classification and extensive artificial drainage observed during the site visit. The limitation to these soils is the wetness and underlying very poor drainage. It was noted that there was waterlogging to excessive wetness after drainage, consistent with the description for an LUC 2 or LUC 3 classification. The LUC handbook describes the wetness limitations for the various LUC subclasses as presented in Table 7⁷:

Table 7: LUC Handbook drainage characteristics

LUC subclass	Description	Days of continuous inundation
1w	Not applicable	
2w	Inundation lasting 1–2 days, not more frequently than once in 2 years. Yield of sensitive crops is affected but survival is not.	1
3w	Inundation lasting 1–2 days on average once per year; or lasting 2-3 days once every 2 years. Some crops do not survive. Others have reduced yield.	1-2
4w	Inundation lasting 2–4 days on average once per year. Cropping of annual ground crops is marginal, tree crop yields are reduced.	2-4

Therefore, with the very poor drainage and wetness limitations of much of the PPC Site, the distribution of soils suitable for versatile agricultural land use is reduced. As detailed, the maps produced within the NZLRI have been produced at a 1:63,000 scale are not specifically designed to be interpreted at a farm or paddock scale.

⁶ Milne et al., 1995, Soil Description Handbook - Revised Edition, Landcare Research

⁷ LUC Handbook, 34d edition - Table 14 – The relationship between LUC classes with a 'w' limitation



Figure 4: NZLRI Land Use Capability Classification Map for the Site

5.2 Manaaki Whenua – Landcare Research S-Map and OurEnvironment Database

To further understand the soils present across the property with regards to productive capacity, AgFirst has reviewed the Manaaki Whenua – Landcare Research S-Map and OurEnvironment database. While not sufficient to reclassify the soils as per the NPS-HPL, these maps, also designed for use at a 1:50,000 scale, has a finer resolution achieved by incorporating the best available spatial information from soil surveys or new mapping, and has a much wider range of soil properties⁸.

The distribution of the soils as mapped by S-Maps is presented in Figure 5 and Figure 6. The S-Maps closely align with what was evident when visiting the Site, in particular the large area of very poorly drained organic soils across the majority of the PPC Site. While these soils are still likely to be considered HPL, the significant wetness limitations will impact the versatility and productive capacity of these areas.

These soils are formed in layers of completely to moderately decomposed peat with minor additions of silty volcanic ash, on clayey alluvium. The soil is poorly drained but artificial drainage means that many are now moderately well drained. Maintenance of the drainage system is important to prevent flooding. Suited to pastoral farming, but not suitable for horticultural crops susceptible low pH (acid) or wet soil conditions⁹.

Essentially, more intensive and higher land uses (such as arable, horticulture and commercial vegetable operations) require free draining (or soils without rooting barriers) and relatively flat soils. The greater the wetness limitation, the more impact on yield and crop survival.

Given the wet early spring conditions, and recent rainfall events leading up to the site visit, some of the soils were at field capacity, as on the day of the visit some water logging was seen in areas of the PPC Site. This provided supporting evidence of the drainage capacity of the soils. The areas of waterlogging were located throughout the Site, while the rolling and strongly rolling land to the north was dry underfoot, confirming the S-Map database drainage classification.

In addition to the soil maps, the slope map provided by Manaaki Whenua Landcare Research – OurEnvironment portrays the slope within the PPC Site. This is presented in Figure 7, with the majority of the slopes being flat to gently undulating, with some undulating areas.

⁸ [S-map Online FAQ](#) | [S-Map Online](#) | [Manaaki Whenua - Landcare Research](#)

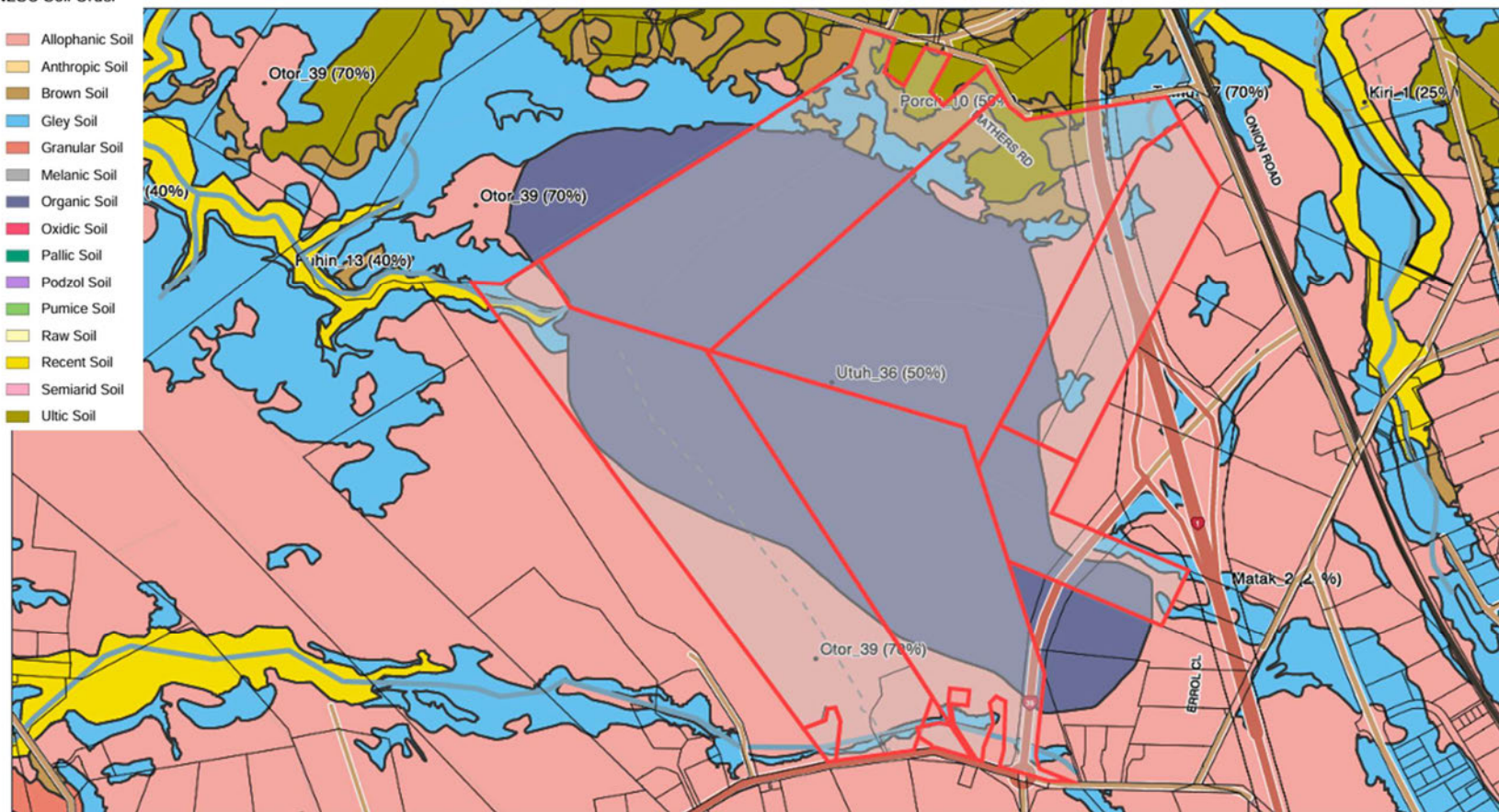
⁹ www.nzsoils.org.nz

Legend

NZSC Soil Order

- Allophanic Soil
- Anthropogenic Soil
- Brown Soil
- Gley Soil
- Granular Soil
- Melanic Soil
- Organic Soil
- Oxidic Soil
- Pallic Soil
- Podzol Soil
- Pumice Soil
- Raw Soil
- Recent Soil
- Semiarid Soil
- Ultic Soil

Soil Classification - Te Kowhai East



S-MAPONLINE



Manaaki Whenua
Landcare Research

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Scale: 1:10,000



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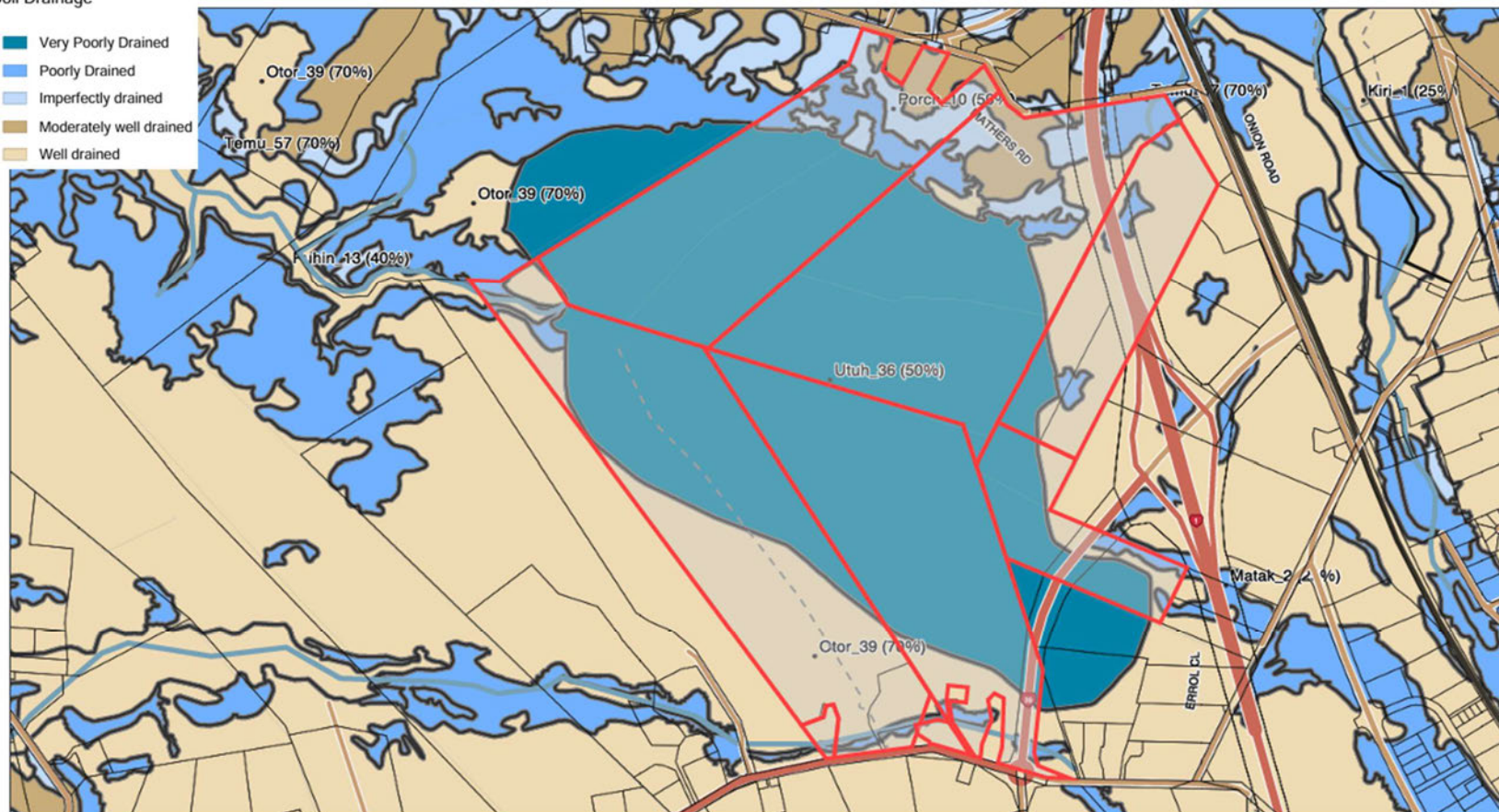
Figure 5: Soil classification representation of the PPC Site

Legend

Soil Drainage

- Very Poorly Drained
- Poorly Drained
- Imperfectly drained
- Moderately well drained
- Well drained

Soil Drainage - Te Kowhai East



S-MAPONLINE



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Figure 6: Soil drainage representation of the PPC Site

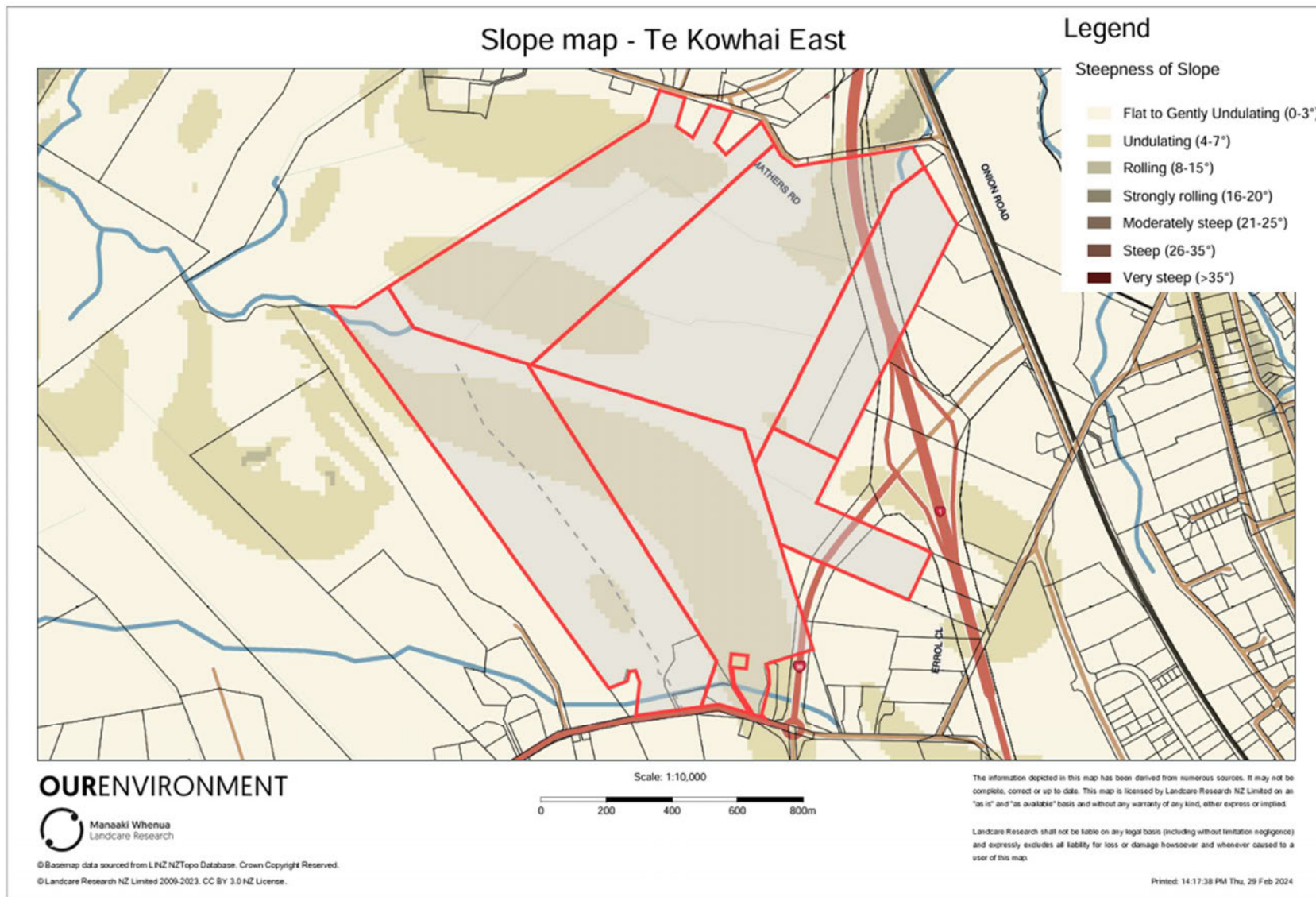


Figure 7: Slope map of the PPC Site

6.0 LAND USE POTENTIAL

As discussed in Section 3, the PPC Site is currently used for a mix of land-based primary production, being:

- Drystock (36.3 ha)
- Dairy farm (137.3 ha)
- Arable (14.0 ha)

While located within the rural zone, the lifestyle properties (approximately 4.5 ha) are not land-based primary production and would not be suitable for any productive use beyond a small number of beef cattle or sheep grazing.

The drystock farm is too small to be considered an economic unit, considering the average class 5 finishing farm within the Waikato is approximately 255 ha. There are limited amalgamation opportunities for this operation, being surrounded by a dairy farm and arable cropping. While it would be feasible to convert from these alternative operations into a drystock block, drystock is not the highest and best use of the other blocks. The economic analysis shows that this operation is unlikely to be profitable, with a deficit estimated as being \$56,035 for the operation. While maize is occasionally grown within the block, due to the very poor draining soils, this would not be sustainable as a permanent arable cropping farm and would work best as rotational cropping or pasture renewal.

The dairy farm is the only economically viable operation within the PPC Site, with an estimated annual profit of \$150,000 for the 137.3 ha property (approximately 127 ha effective). This farm would be considered a challenging farm during the winter and following any drainage event, with the underlying soils being very poorly drained. While dairy farming is the most profitable land-based primary production within the PPC Site, there are no opportunities to amalgamate this operation to adjoining farms due to land use change restrictions¹⁰.

The arable operation consists of approximately 14 ha along the eastern boundary of the PPC Site. This area roughly coincides with a band of allophanic free draining soils, which is more suited and sustainable for continued arable use. The drystock land could be amalgamated with this area, it is unlikely this would be sustainable on a long-term basis, due to the soil limitations. Based on typical yields and expenses from the Pioneer gross margin analysis, the combined income is \$31,180 from the 14 ha block. However, once fixed costs including rates and a nominal interest only debt servicing are accounted for, the net profit is a deficit of \$10,297. This is largely attributed to the very high land value, that has been influenced by consumptive and speculative drivers.

On the whole, AgFirst considers that the current land uses are likely to be the highest and best with regards to land-based primary production on the short to medium term. Taking a longer-term outlook (30+ years), it is unlikely that the beef property will be used as a commercial farming operation, due to escalating farm working expenses and fixed costs. Continued losses or a near breakeven at a farm level EFS (Economic Farm Surplus) will not be economically sustainable, with the land likely being purchased and used as a hobby farm. This block has a land only valuation of \$74,759 per ha, which is more expensive than the adjacent dairy farm. As a comparison, a typical drystock farm with easy contour would be valued at \$15,000 - \$30,000 per ha.

¹⁰ Proposed Waikato Region Plan Change 1 (PPC1) – non-complying activity to convert land into dairy 21 | Page

The key limitations for land-based primary production and versatility on the Site are:

- Very poor draining soils across the majority of the PPC Site
- Sloping land to the north
- Inability to achieve scale for the drystock operation
- Limited optimal land available that is suitable for arable
- Neighbouring land to the east zoned industrial within Hamilton City Council
- Neighbouring land to the south zoned future urban within Hamilton City Council
- Non-reversible land fragmentation to the south

The soil types across the majority of the PPC Site do not lend themselves to any horticultural or commercial vegetable production land uses. As discussed, the wetness limitations will impact crop yield and crop survival, with pugging vulnerability for heavier stock classes. Therefore, this area will be limited in land use versatility, with production types only suited to the existing pastoral grazing systems in addition to the small areas for arable.

There are higher returns for some of the alternative pastoral grazing operations, including dairy heifer grazing, a dairy support runoff, or amalgamating with the existing dairy operation. However, all of these options are considered intensification, based on the Proposed Waikato Region Plan Change (PPC1) and subpart 2 of the National Environmental Standards for Freshwater (NES-FW) released in 2020. The NES-FW legislation is nationwide and requires a land use change discretionary activity consent when converting land into dairy or dairy support, pending the baseline land use at the time of the reference period. For consent to be granted, the enterprise must demonstrate that the proposed land use does not have any more impact on the catchment than during the baseline year. For this Site, that baseline is a relatively a lowly stocked beef operation, therefore of relatively low environmental impact (nutrient losses) to the receiving environment and catchment, and success of this type of consent is considered to be low. Therefore, it is unlikely that there will be alternative land uses for the PPC Site.

While the majority of the Site is considered HPL, which identifies it as being versatile for a range of productive uses, AgFirst does not consider that horticulture is a reasonably practicable option for the Site. The very poorly drained soils will likely have an impact with some crops not surviving, while others will have reduced yields.

With rapidly rising input costs, the returns for marginal farming operations will be reduced, and consideration will need to be given regarding the optimum land use for the PPC Site.

7.0 ASSESSMENT FOR DEVELOPMENT CAPACITY IN THE LOCALITY

This section provides an analysis of potential expansion of alternative areas within Northwest Hamilton (Te Rapa) locality. This in response to clause 3.6(1)(b) of the NPS-HPL which requires consideration of other practicable and feasible options for providing the required development capacity.

With regards to LUC classes within the district, there is an estimated 152,344 ha of HPL within the Waikato district¹¹, which is 34% of the total area. The LUC breakdown for the district is presented in Figure 8. This represents a significant proportion of the district, which inherently surrounds much of Hamilton. This makes any development, land use change or rezoning a challenge, where consideration of the NPS-HPL will be required. Therefore, it is important to balance out the demand and need for urban rezoning and selection of appropriate areas that will have less impact and preferably consists of areas with lower productive capacity or constraints for future land-based primary production.

Land Use Capability

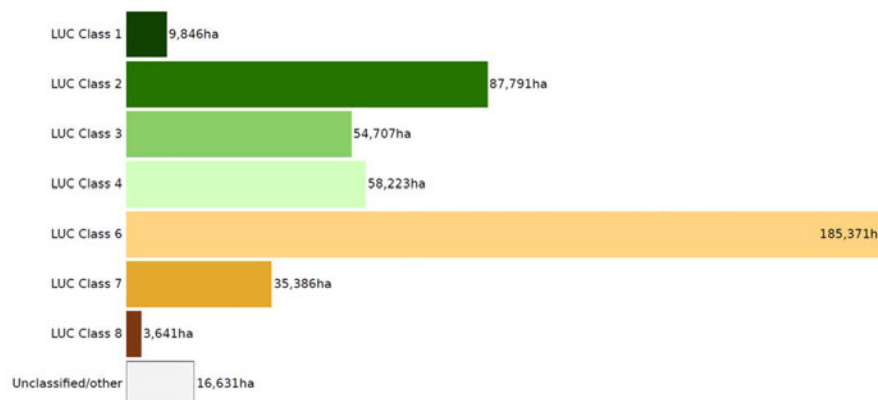


Figure 8: Summary of Land Use Classification within the Waikato District

The Te Kowhai East Growth Cell – Implications of the National Policy Statement for Highly Productive Land Report, prepared by The Environmental Lawyers identifies reasonably practicable and feasible options within the same locality for industrial development. Specifically, paragraph 5.13 (c).

“The requirement to consider options for rezoning land that has a relatively lower productive capacity recognises that there are urban environments (such as the north-western part of Hamilton) that are essentially surrounded by LUC Class 1, 2 or 3 land. In this circumstance, the NPS-HPL requires that rezoning be directed to the lower class land as a priority, unless that is not a feasible option or would result in a poorly functioning urban environment. As noted, TKE’s proposal already avoids LUC Class 1 land. The LUC Maps show that the closest LUC Class 3 land to the sites is further west (along Woolrich Road) and to the east, along the Waikato River. Based on the LUC Maps, these areas do not appear to provide the same accessibility, ease of development and scale as the sites. We therefore anticipate it is possible to argue that there are no “relevant and reasonably feasible” options for rezoning land with a relatively lower productive capacity within the same locality and market, that would also achieve a well-functioning urban environment.”

¹¹ Manaaki Whenua – Landcare Research. Our Environment, Territorial Authorities, Waikato District LUC map. Page 23

To independently assess against 3.6 pf the NPS-HPL, AgFirst has looked at the versatility of the land immediately surrounding the PPC Site that would meet the well-functioning urban environment. Land further to the west is a mixture of well drained (Typic Orthic Allophanic) and poorly drained (Typic Orthic Gley) soils. While the Gley soils are not particularly versatile, they have better drainage characteristics than that of the peat soils that dominate the PPC Site. This is identified within the WDC, whereby peat soils are not classified as high-class soils. The rural zoned land to the north has been identified as being too far away, or not in the same locality and market, to meet the north Hamilton demand.

The focus areas for comparison are presented in Figure 9, which are reasonably practicable and feasible options for providing development capacity within the same locality and market are:

- Land to the west of Burbush
- Land to the Southwest of Horotiu

This comparative assessment has taken into account a range of characteristics, which are relevant to the relative productive potential including:

- Size of growth cell and expansion opportunity
- Current and surrounding land use
- NZLRI LUC classification, soil characteristics and drainage
- Slope characteristics
- Environmental constraints and risk
- Economic limitations arising from small, fragmented portions of land and its productive potential

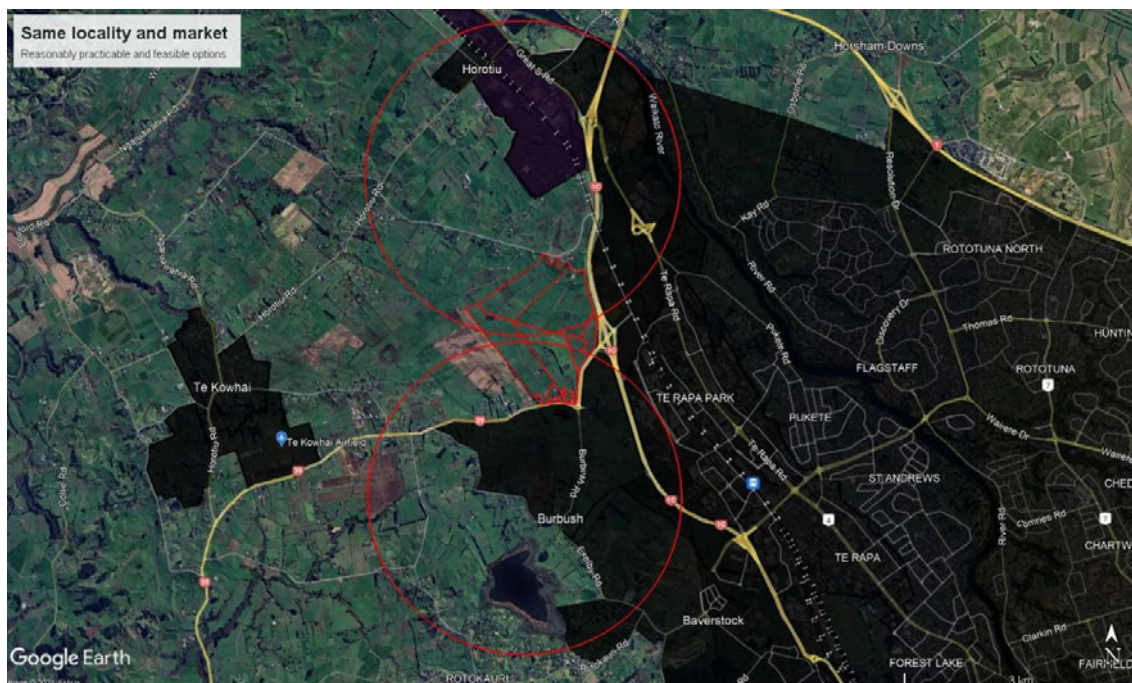


Figure 9: Same locality and market

7.1 Land to the west of Burbush

The land surrounding Burbush and Baverstock areas have been zoned future urban under the Hamilton City Council. Therefore, to meet the future demand, the area immediately to the west of this locality has been assessed to compare against the productive capacity with the PPC Site.

Within the proximity of the Burbush urban area, there is a large contiguous area that is approximately 250 ha of LUC 1s1. This is likely a Horotiu silt loam, which is a Typic Orthic Allophanic Soil. These soils are formed in layers of alluvium. Sand or gravelly sand can occur below 60 cm from the surface. The soil is well drained with moderate permeability and suited to pastoral farming, horticulture, cropping and forestry¹². Other soils that are surrounding the Burbush locality are LUC 4 immediately to the west, and a peat lake with associated very poorly drained peat soils, with an LUC 2 classification. The LUC map for this locality is presented in Figure 10.

When reviewing the S-map soil classification and drainage for this area (Figures 11 and 12), while the majority of the surrounding rural zoned land is a mix of poorly drained Gley soils and very poorly drained Organic peat soils there is still a considerable amount of well drained (Allophanic) and moderately well drained (Granular) soils, which have a much higher productive capacity. The Manaaki Whenua Landcare Research OurEnvironment slope map show that the majority of the surrounding area is flat to gently undulating (Figure 13)

An expansion of this area would likely impact and cause fragmentation of the LUC 1s1 soils, AgFirst considers that the PPC Site would meet the subclause 3.6(2)(c), whereby the PPC Site has a relatively lower productive capacity. There is also a large commercial vegetable production operation between Limmer Road and Duck Road. This would be considered as being one off the highest and best land uses for this region, whereby the highly versatile Horotiu silt loam soils are demonstrating their versatility for land-based primary production.

¹² [SoilsOfNZ By NZ Classification.pdf \(nzsoils.org.nz\)](#)

Expansion opportunity	Unlimited Limmer Rd
Constraints	Limited expansion further south towards peat lake
Current land use	Future urban
Surrounding land use	Rural Zone – Dairy farming, commercial vegetable production, pastoral grazing, dairy support, arable cropping and rural lifestyle.
NZLRI LUC classification	LUC 1, LUC 2 and LUC 4
Soil characteristics	Majority of surrounding area has a mixture of drainage classes, with very poorly drained adjacent to Lake Rotokauri, poorly drained gley soils in the low lying basin to the north and moderately well to well drained soils adjacent to the future urban zone and along Te Kowhai and Limmer Road.
Environmental constraints	The Peat lake of Rotokauri.
Economic limitations	None
Land use potential	Potential for pastoral grazing, arable, horticultural, berry or commercial vegetable operations with established high value crops already in this area
Comparison to PPC Site	The soils and land in this area are overall of a higher quality, with areas suited to highly versatile systems, i.e. the commercial vegetable production farms along Limmer Road. Therefore, AgFirst considers this area has a higher productive capacity when compared to the PPC Site, which is dominated by very poorly drained soils. Expansion into this area would have a greater impact on fragmentation of large geographically cohesive areas.

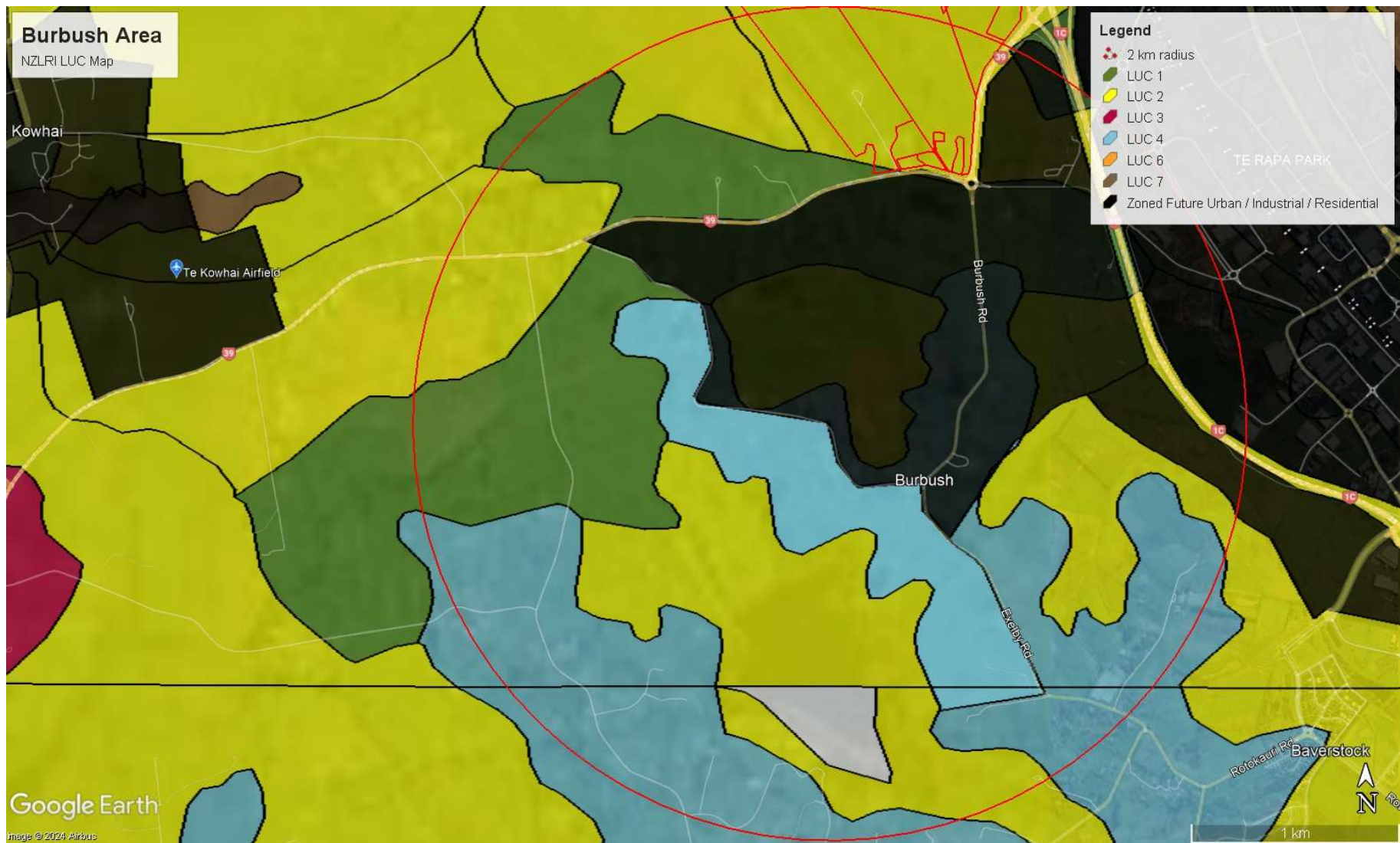


Figure 10: NZLRI LUC classification of land surrounding the Burbush future urban area

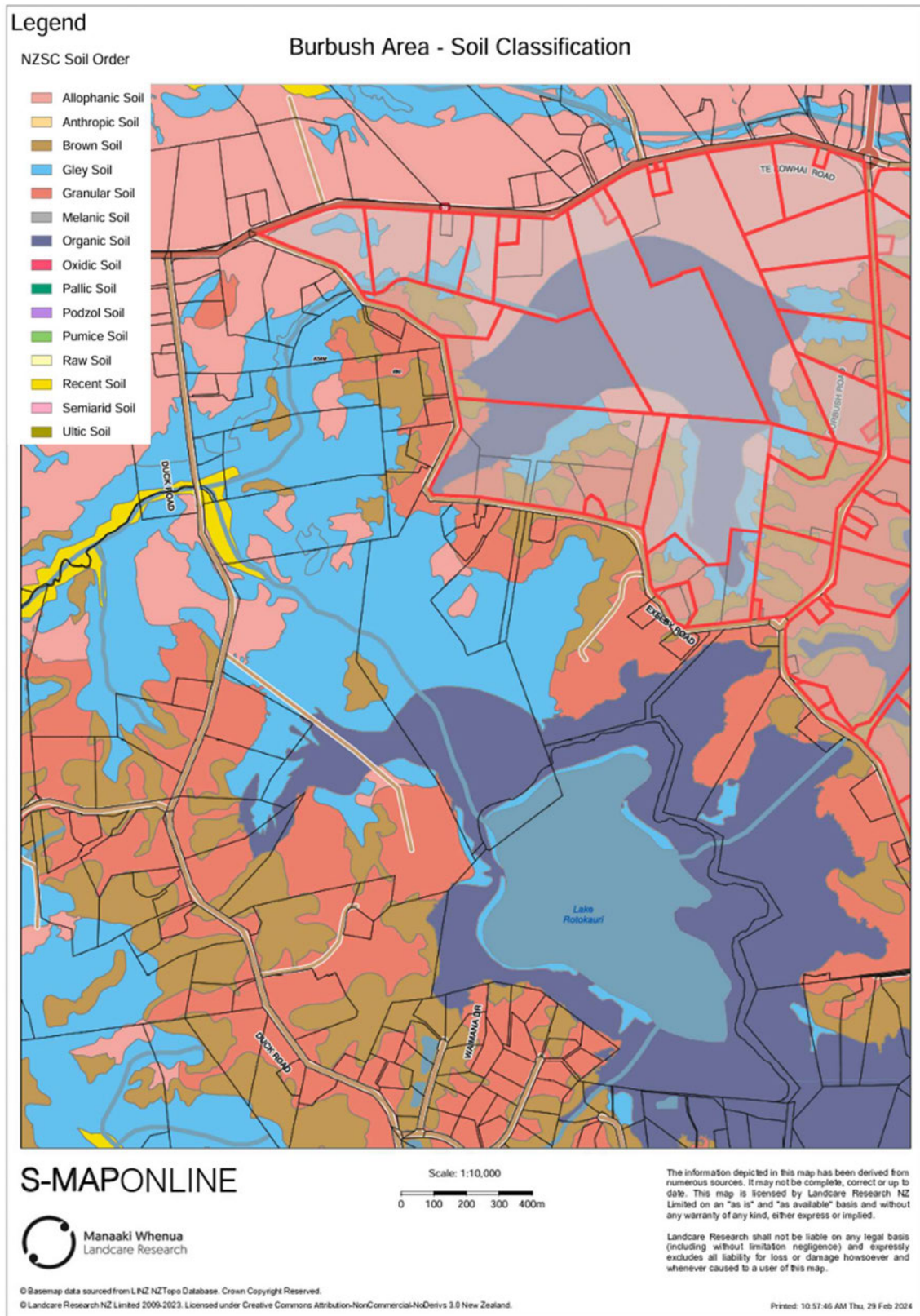


Figure 11: S-Map soil classification of land surrounding the Burbush future urban area

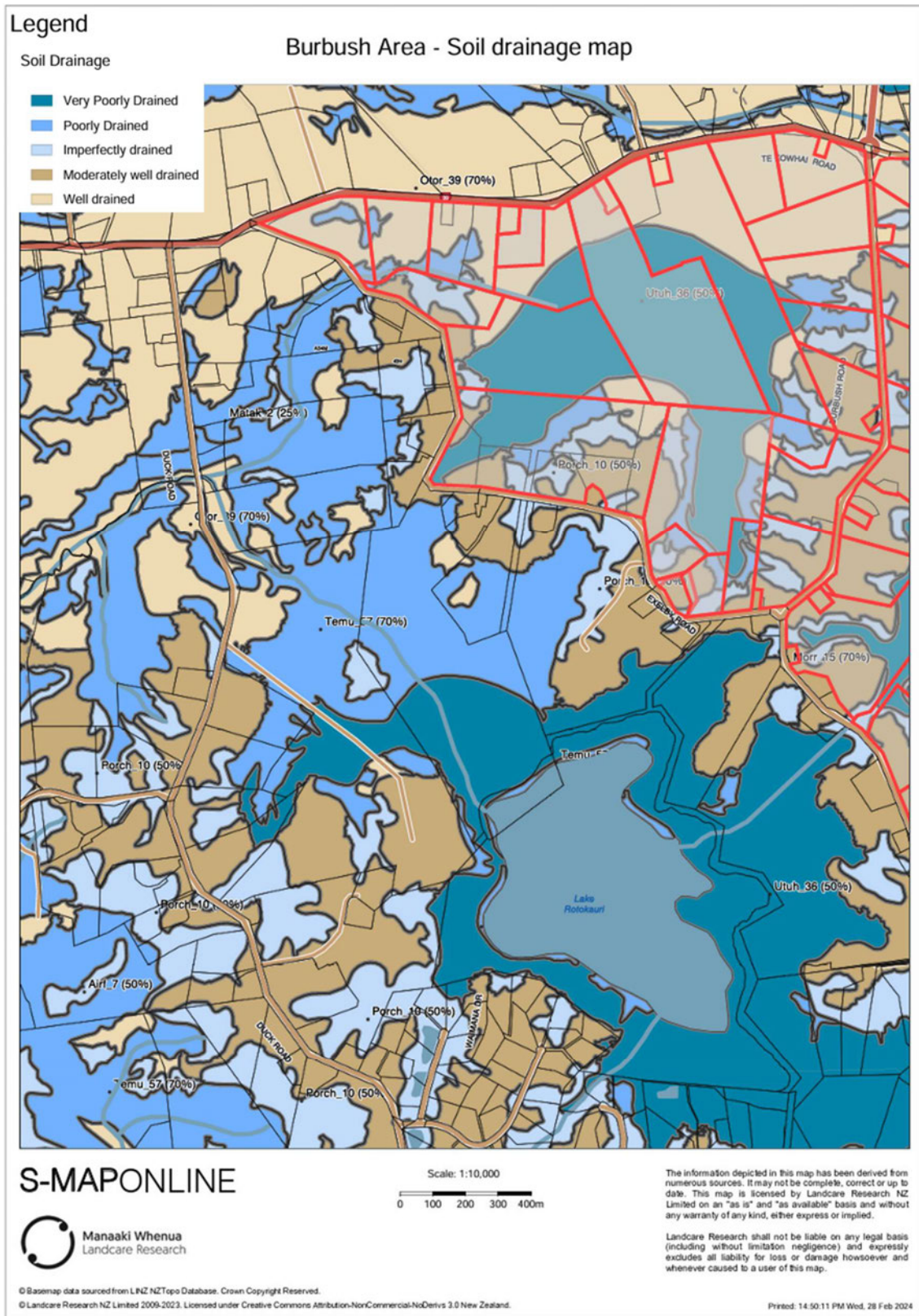


Figure 12: S-Map drainage representation of land surrounding the Burbush future urban area

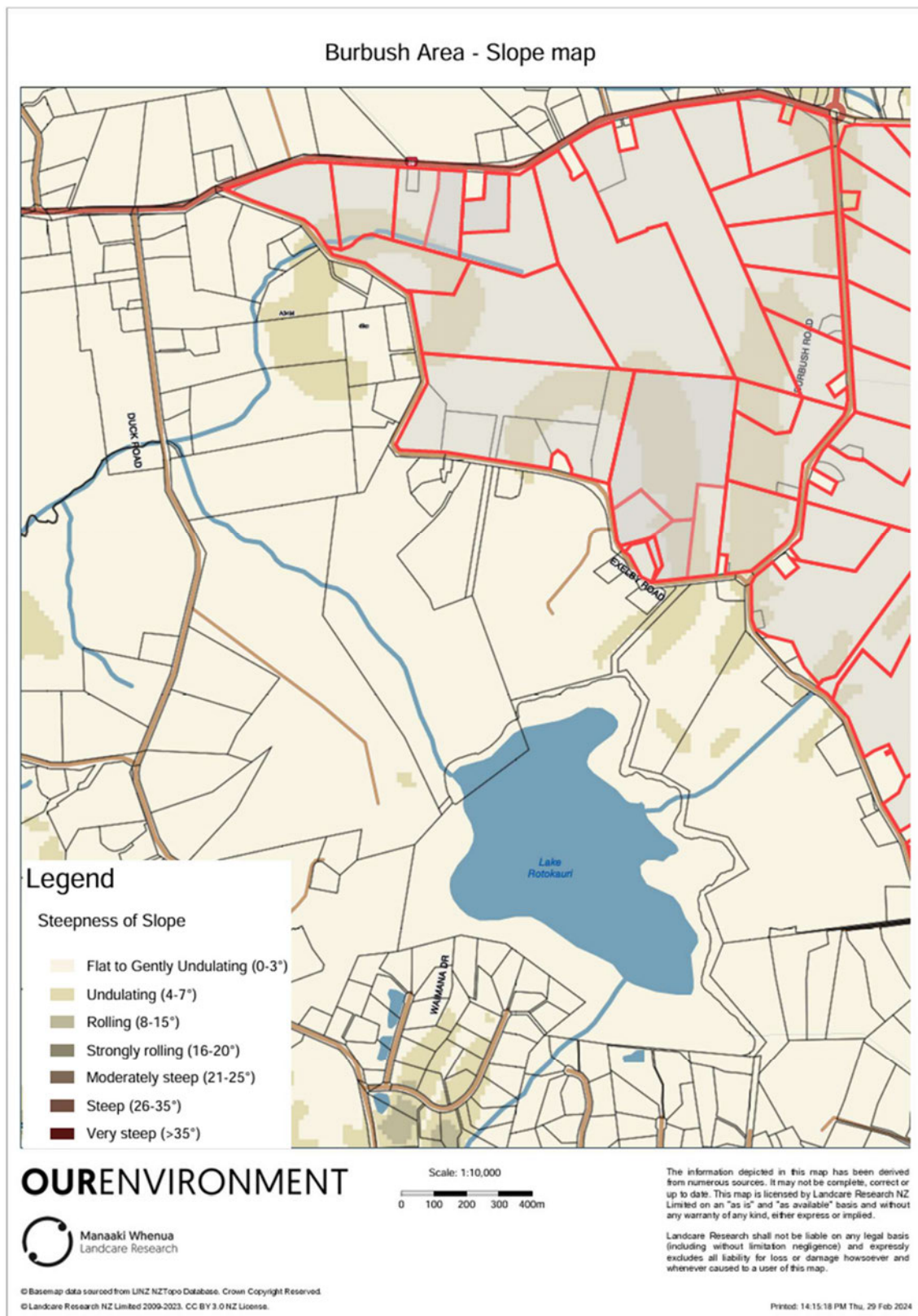


Figure 13: Slope map of land surrounding the Burbush future urban area

7.2 Land to the southwest of Horotiu

Land around Horotiu has been zoned General Industrial Zone under the WDC. Therefore, to meet the future demand, the area immediately to the southwest of this locality has been assessed to compare against the productive capacity with the PPC Site.

The majority of the land to the southwest of the Horotiu industrial zone is used for dairying. There is a 72 ha dairy farm located immediately to the south, which has an underpass through Onion Rd. To the west there is a large 176 ha intensive dairy farm with a herd home that also has an underpass through Onion Road that connects to an additional two titles. Further to the west there is another dairy farm across multiple titles extending to the Onion Road and Horotiu Road intersection. There is a ribbon of lifestyle properties along Ridge Park Drive, which is the only form of fragmentation and non-productive land uses in this vicinity.

The majority of the land immediately adjacent to the Horotiu industrial zone is LUC 2s1, which are free draining Typic Orthic Allophanic and Recent soils. The other key LUC class for the area is LUC 4e2. The LUC map is presented in Figure 14.

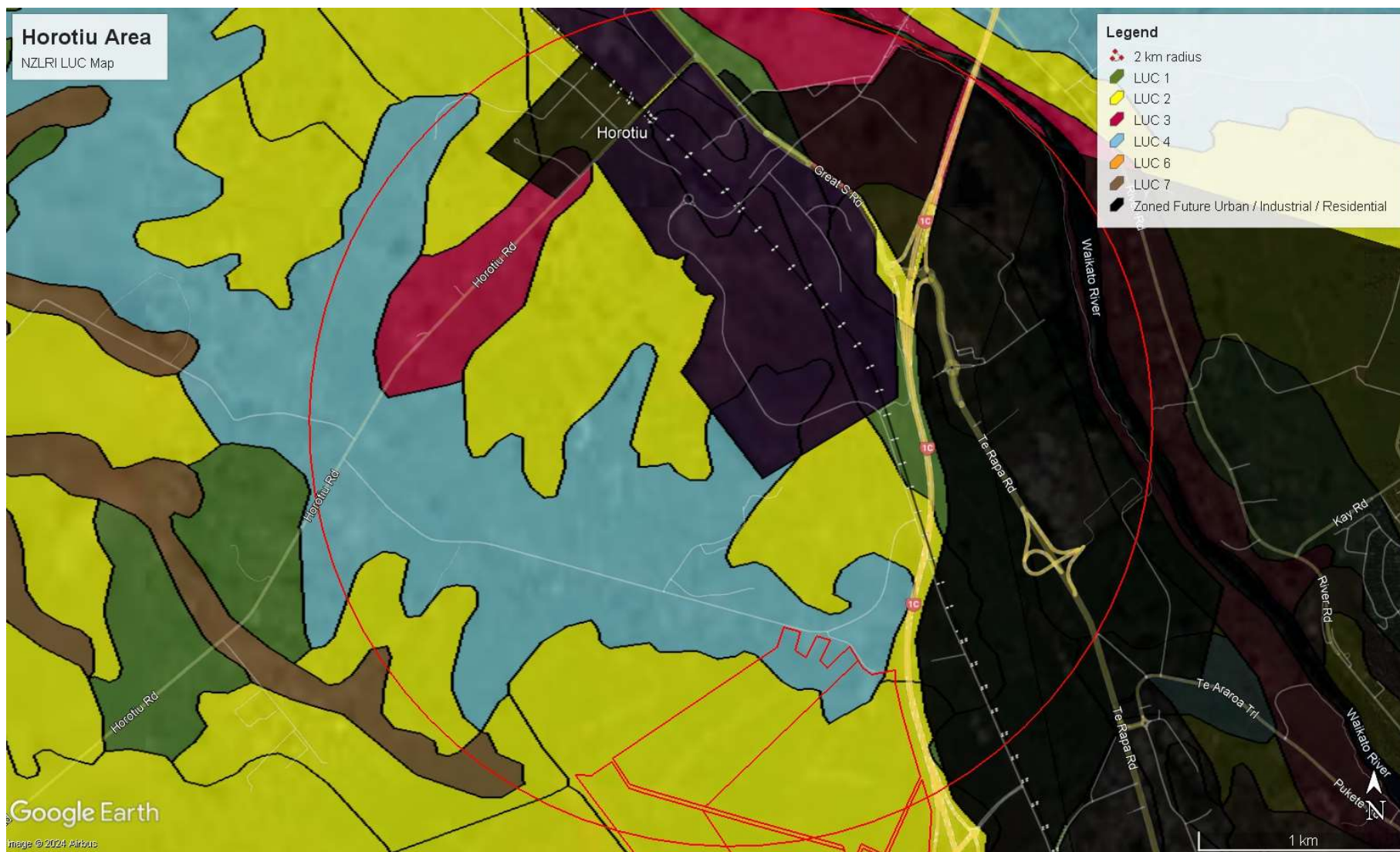
When reviewing the S-map soil classification, the dominant soils within the area are depicted as Typic Yellow Ultic and Typic Orthic Gley soils (Figure 15). These soils have contrasting characteristics, with the Ultic soil being moderately well drained and a low vulnerability of waterlogging, whereas the Gley soil is poorly drained and high vulnerability of waterlogging¹³. When reviewing the overall drainage for this wider area (Figure 16), the majority (70%) of the rural zoned land is a mix of imperfectly drained, moderately well drained and well drained, with approximately 30% being poorly and very poorly drained soils. Depending on other characteristics, such as slope, these soils with better drainage have a high productive potential compared to very poorly and poorly drained soils.

The NZLRI indicates that the LUC 4e soils, which make up a large proportion of the wider area, have a slope class of C+D, being rolling to strongly rolling. When reviewing the Manaaki Whenua Landcare Research OurEnvironment slope map, the majority of this area is defined as being flat to gently undulating, with the only steeper areas surrounding the waterways (Figure 17).

Based on the information available, the soils in this vicinity have better drainage characteristics, and the majority of the areas have a similar flat contour, while being in a similar to higher land use (all dairy farms) compared to those within the PPC Site (mix of dairy, arable and drystock). Therefore, an expansion of this area would likely impact and cause fragmentation of land with a higher productive capacity. AgFirst considers that the PPC Site would meet the subclause 3.6(2)(c), whereby the PPC Site has a relatively lower productive capacity.

¹³ [Maps | S-Map Online | Manaaki Whenua - Landcare Research](#)

Expansion opportunity	Unlimited
Constraints	None
Current land use	General Industrial Zone
Surrounding land use	Rural Zone – Dairy farming, rural lifestyle.
NZLRI LUC classification	LUC 2, LUC 3 and LUC 4
Soil characteristics	Majority of surrounding area has a drainage class of imperfectly drained, moderately well drained and well drained.
Environmental constraints	Waterways
Economic limitations	None
Land use potential	Potential for dairy, pastoral grazing and arable
Comparison to PPC Site	The soils and land in this area are overall of a higher quality with larger commercial farming systems in operation. The farms are not constrained by regulations, with the ability for them to continue as economic dairy farms. Therefore, AgFirst considers this area has a higher productive capacity when compared to the PPC Site, which is dominated by very poorly drained soils and a drystock business that is constrained by size and regulations. Expansion into this area would have a greater impact on fragmentation of large geographically cohesive areas.



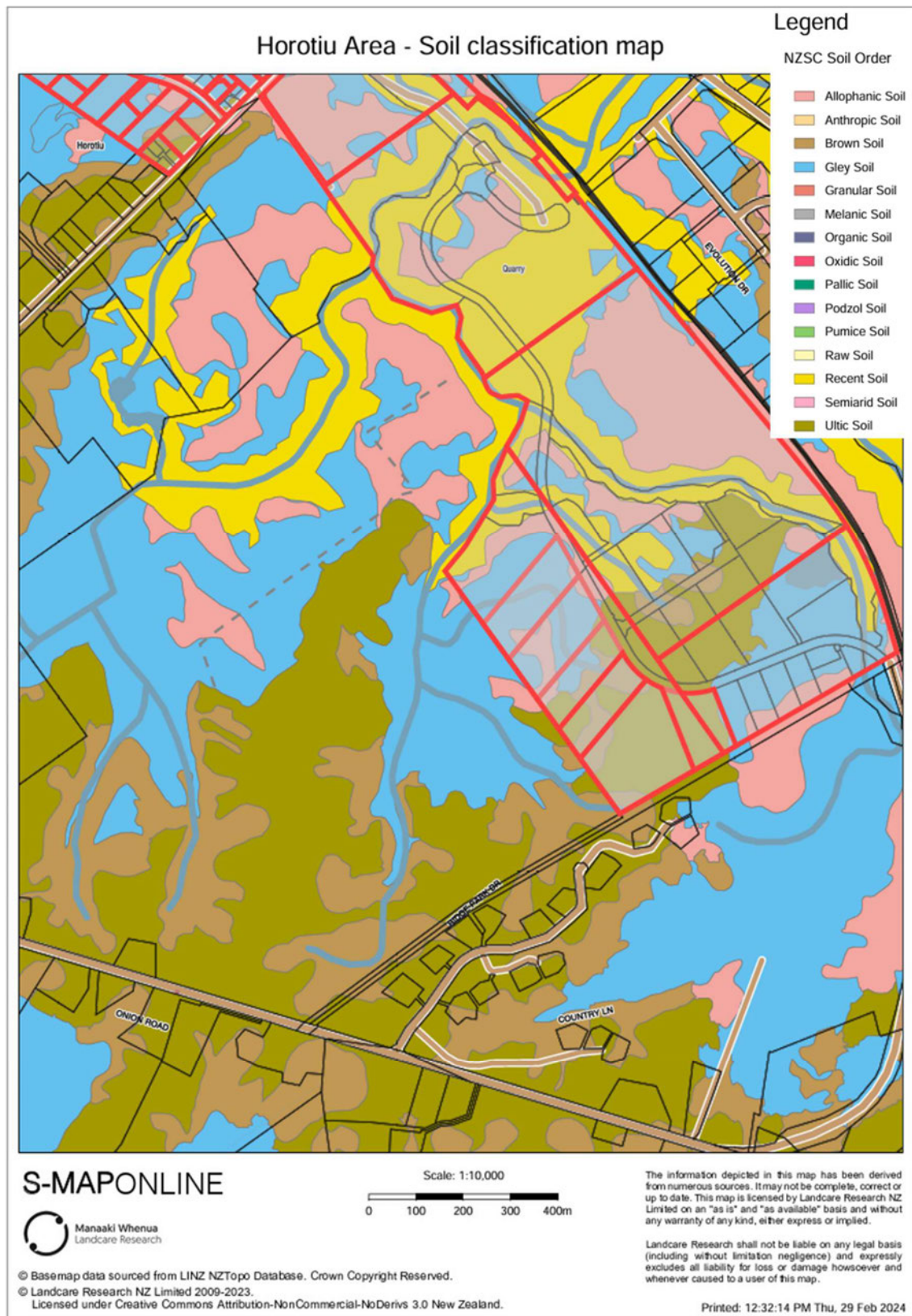


Figure 15: S-Map soil classification of land surrounding the Horotiu industrial zone

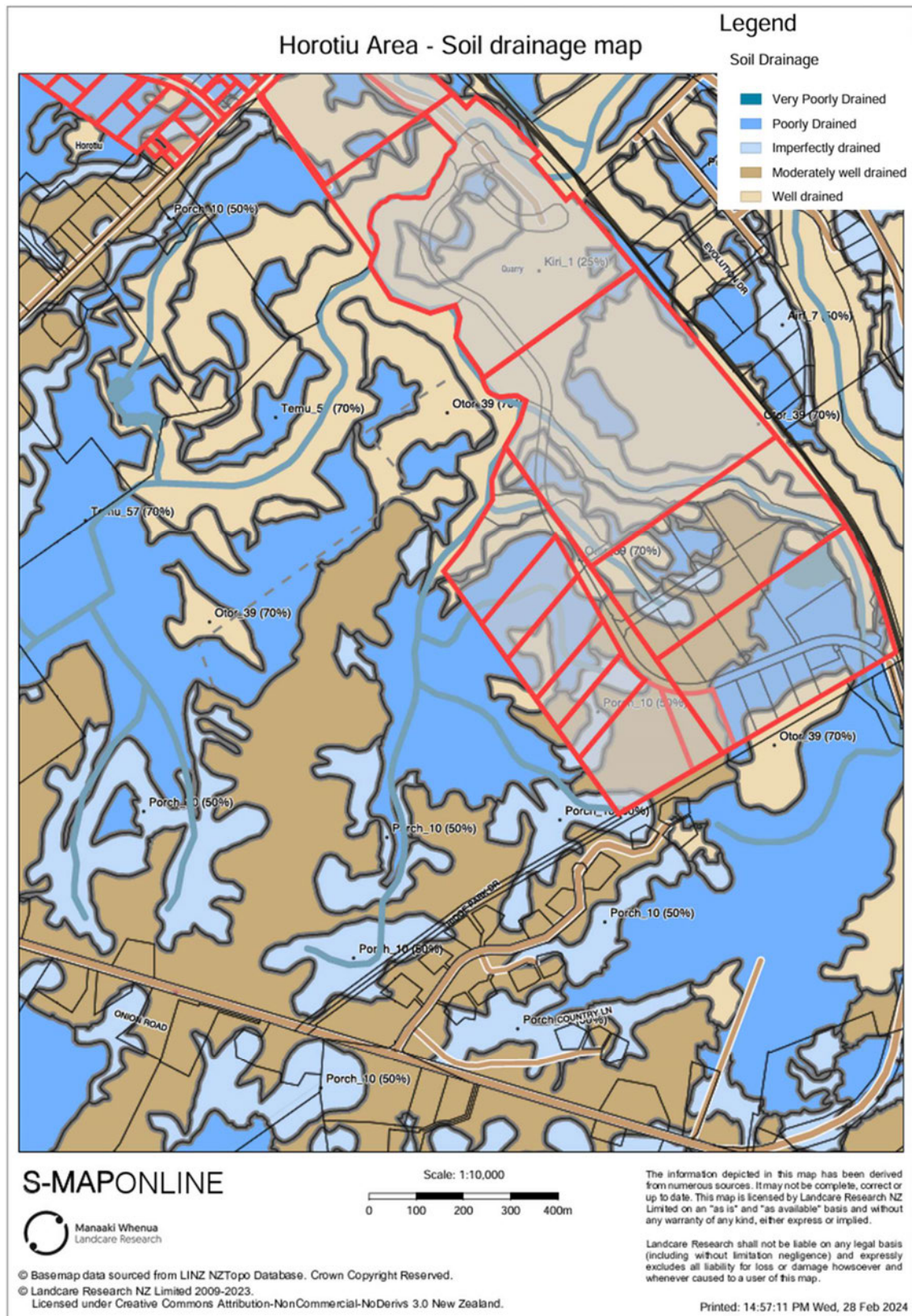


Figure 16: S-Map drainage representation of land surrounding the Horotiu industrial zone

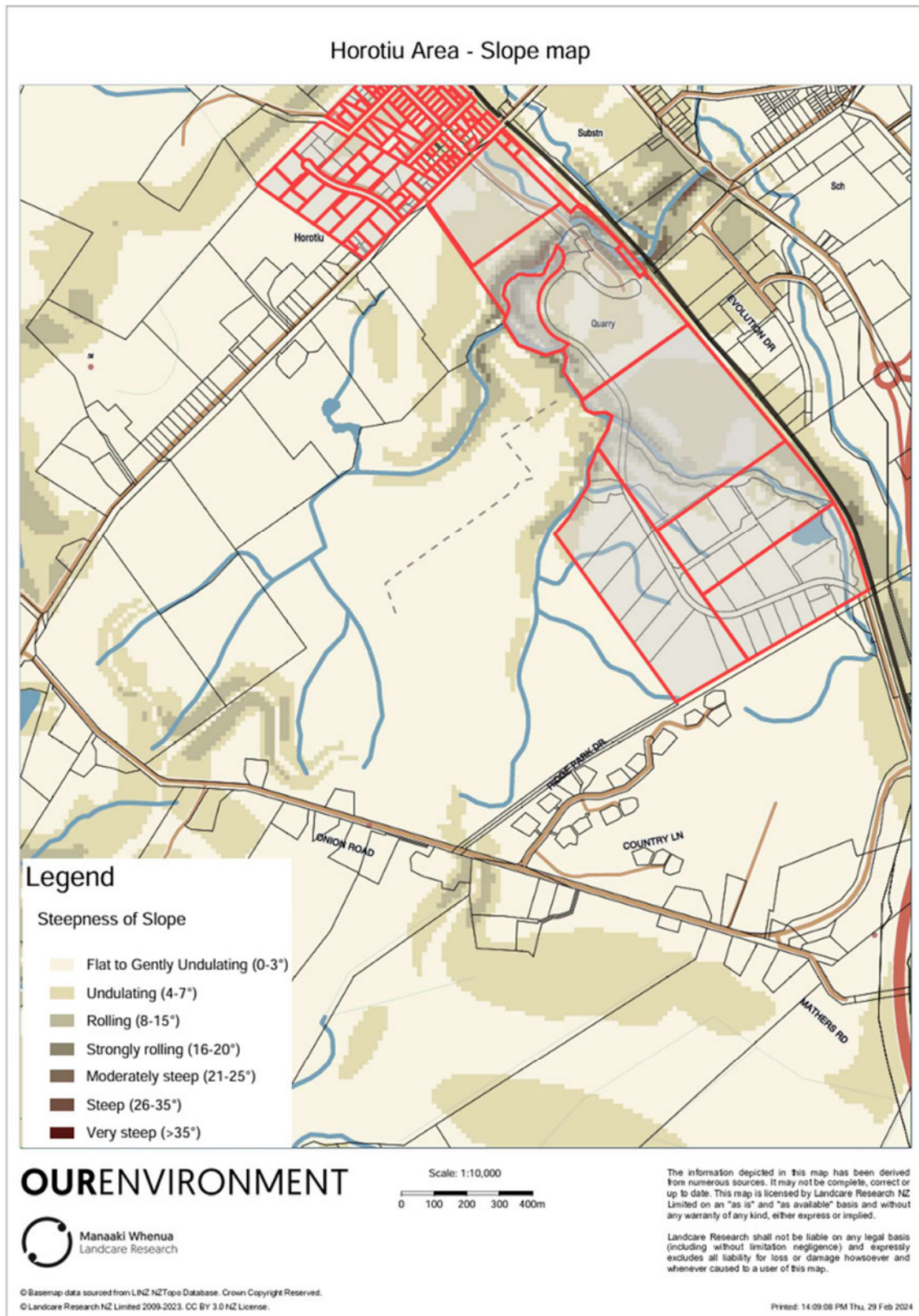


Figure 17: Slope map of land surrounding the Horotiu industrial zone

8.0 SUMMARY

Overall, while the PPC Site contains approximately 179.8 ha that is identified as HPL under the NPS-HPL (mostly LUC 2), intensive agricultural operations are restricted or constrained due to:

- Surrounding land uses to the north, south and east is zoned residential and industrial zone.
- Soil conditions
 - Very poorly drained, causing reduced yields and carrying capacity
 - Land unsuitable for alternative higher value land-based primary production
- Limited expansion or improvement options
 - Due to regulations restricting intensification into various land uses
 - Due to physical boundaries and amalgamation opportunities

With rapidly rising input costs, the returns for marginal production and yields will be reduced, and consideration will need to be given regarding the optimum land use for the Site. When discussing the long-term productivity of the site, the current system may not be economically viable beyond 30 years. This is evidenced by the PPC Site economic analysis and viability, with only the dairy farming business being profitable.

Under the Waikato District Plan and Regional Policy Statement, the majority of the soils (peat soils) across the Site are not considered of high-class and are exempt from assessment for subdivision or developments.

AgFirst has undertaken a comparative agricultural productive assessment against alternative rural options in the locality. Alternative areas identified are the rural zoned land to the west of the Burbush future urban area and the land to the southwest of the Horotiu general industrial zone. While there is no argument that the land within the PPC Site is HPL, given the constraints identified above, AgFirst is of the opinion that the expansion of this area will have a lessor impact on the district with regards to having a lower productive capacity. Furthermore, conversion of the PPC Site into industrial zone would not cause any fragmentation or further disruption of additional highly productive land.

Therefore, AgFirst considers that the re-zoning of the PPC Site meets the requirements of Clause 3.6(1)(b) and 3.6(2)(c) of the NPS-HPL insofar as there are no other reasonably practicable and feasible options which are better suited in terms of impacts on productive land for providing additional industrial development capacity for Hamilton north.

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