APPENDIX L

Agri Intel Agricultural Productivity Assessment

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Agricultural Productivity Assessment

Sullivans Block
668 Robinsons Road, Rolleston

Prepared for Winstone Aggregates

May 2024

Contents

1. Executive Summary

Winstone Aggregates, a division of Fletcher Concrete and Infrastructure Limited, the applicants, are seeking approval for resource consent to extend an existing quarry site to their 4.17 ha site (Sullivans Block) on Lot 2 DP 80577 situated at 668 Robinsons Road, Rolleston. The applicant currently owns and manages the land, which is unused and has been grazing horses since 2020. The applicant has been the owner of this land since 2020.

The subject area is within a Rural Zone and according to Manaaaki Whenua, possesses a Land Use Capability (LUC) of 3s-33. This categorisation places it under high productivity according to the criteria provided by the National Policy Statement for Highly Productive Land (NPS-HPL). For a territorial authority to allow highly productive land to be subdivided, used, or developed for activities not otherwise enabled under clauses 3.7, 3.8, or 3.9, it must be satisfied that the exemptions in 3.10 of the NPS-HPL apply.

This report was prepared by Charlotte Senior, an Agriculture Consultant who has prepared several productivity assessments in the Selwyn District. This Agricultural Productivity report includes evidence on relevant matters in the NPS-HPL. This report assesses both the current and potential productive capability of the land, considering relevant NPS-HPL factors from a productivity perspective, in accordance with clause 3.10 of the NPS-HPL and the accompanying Guide to Implementation (March 2023). The assessment draws on on-site observations, an examination of historic satellite imagery and notable features in Canterbury Maps, reports prepared by Pattle Delamore Partners, and our understanding of the agricultural productivity and landscapes prevalent in the surrounding region.

In my view, the three tests of Clause 3.10(1) on the NPS-HPL are satisfied by this proposal:

- Various constraints affect the land's agricultural productivity, including unsuitable soil characteristics, lack of irrigation and water access, high establishment and operational costs, and infrastructure deficiencies. The block of land would have to be incorporated into a bigger growing operation to achieve sufficient scale to enable the landowner to maximise productivity. However, extensive fragmentation within the local area, characterised by rural lifestyle-sized lots and an existing quarry, precludes options for land consolidation.
- The property is not currently operating at its maximum agricultural productivity and faces challenges in supporting an efficient and productive drystock grazing operation, relative to a similar large-scale farming operation. While there are some reasonably practicable options for improved land management, such as addressing existing infrastructure and soil fertility deficiencies, the lack of irrigation and the significant existing fragmentation result in permanent and long-term constraints on the land that means the use of the highly productive land for land-based primary production is not able to be economically viable. This supports Clause 3.10 (1a).
- As a standalone unit, the site cannot generate enough income to cover interest, taxes, and a return for management. Consequently, this site is unable to be commercially viable, both now and for the next 30 years. This supports Clause 3.10 (1a).
- This proposal will not contribute significantly to any additional fragmentation of land-based primary production on HPL, as this land is not being subdivided into smaller lots and the surrounding landscape is highly fragmented. The neighbouring existing quarrying activity means this proposal is unlikely to result in further reverse sensitivity concerns on surrounding land-based primary production. This supports Clause 3.10 (1b).

- The combined net environmental, social, cultural, and economic effects of the proposal outweigh the costs associated with the loss of HPL. The benefits provide a more valuable and sustainable alternative to land-based primary production. This supports Clause 3.10 (1c).
- The proposal is likely to result in only a temporary loss in agricultural productivity, as the applicant has plans to rehabilitate the land to a similar state, as supported by the sites Soil Management Plan and a Post-Quarry Rehabilitation Plan, prepared by Pattle Delamore Partners. This aligns with the Policy 3.9(2g) NPS-HPL where the use of HPL is appropriate, *as it is a small-scale and temporary land-use activity that has no impact on the productive capacity of the land.* However, even if the land was unable to be returned to the same LUC post rehabilitation, I would hold my view that the lack of irrigation and the highly fragmented landscape means the use of the highly productive land for land-based primary production is not able to be economically viable for the next 30 years.

It is my conclusion that the proposal to redevelop this 4.17 ha site for quarrying meets all the subclauses of 3.10 test and this site of HPL can be subdivided, used, or developed for activities not otherwise enabled under clauses 3.7, 3.8, or 3.9 of the NPS-HPL.

2. Site Description

The site (Sullivans Block) is 4.17 ha on Lot 2 DP 80577 situated at 668 Robinsons Road, Rolleston, as shown in **Appendix 1**. This includes a narrow "panhandle" accessway from Robinson Road to the proposed quarry site.

The subject area is within the General Rural Zone of the Partially Operative Selwyn District Plan – Appeals Version (POSDP) which is past the point of challenge in respect of this site. As the site possesses a Land Use Capability (LUC) of 3s-33 (land is identified as LUC3 according to the Manaaaki Whenua (Landcare Research), **Appendix 3** and 4**)** and is zoned General Rural under the POSDP, it currently constitutes highly productive land under the transitional provisions of the NPS-HPL. There are no wells for water abstraction on the property. There are two water observation (water quality) testing sites on the property, however, this is not used or consented to for water take.

There is a well (M36/7411) about 65m from the boundary (at the closest point) on Lot 1 DP 25127. According to Canterbury Maps, this is 42m deep and was drilled in 2003 for domestic and stockwater use. Prior to Winstone Aggregates purchasing the subject site (Lot 2 DP 80577) in 2020, Lot 1 DP 25127 was under the same ownership as Lot 2 DP 80577.

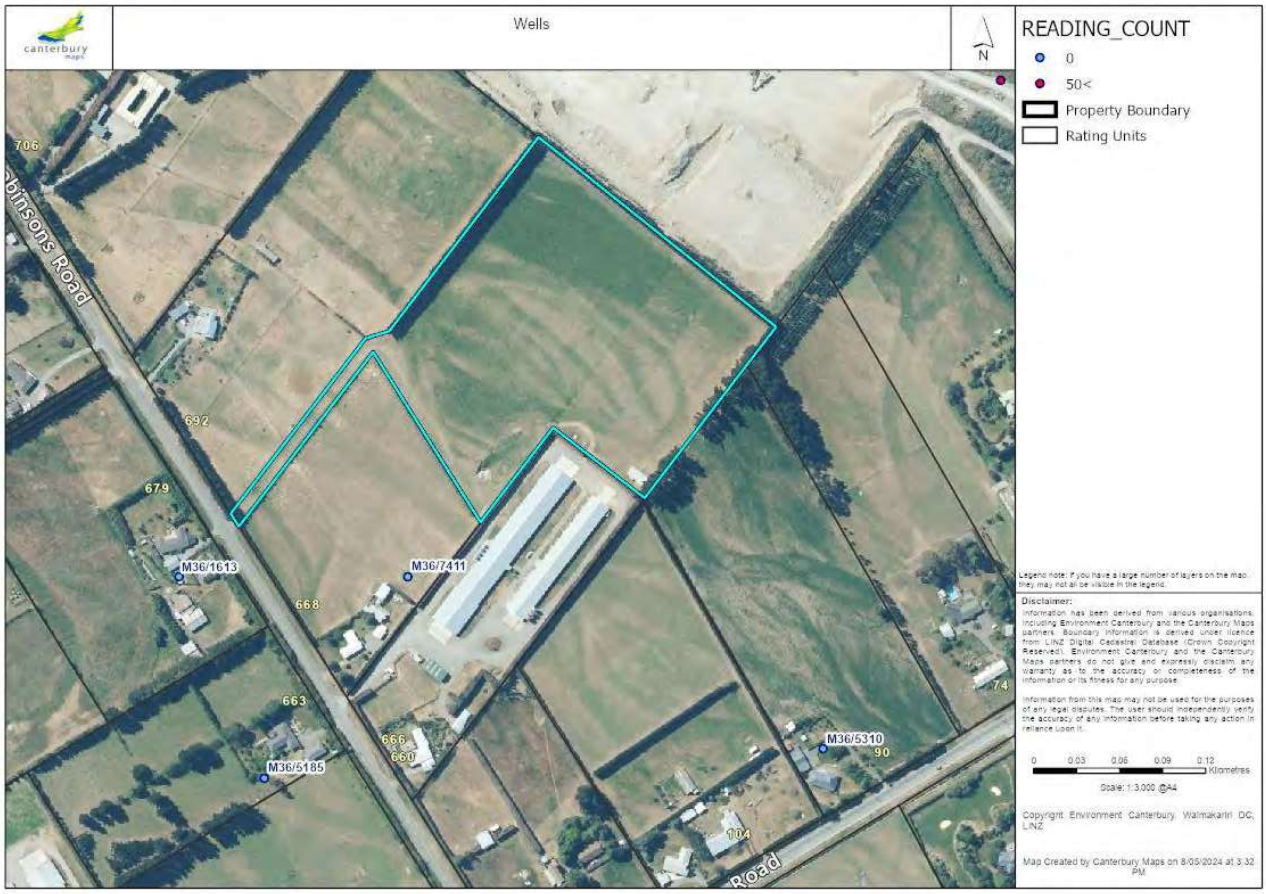


Figure 1: Wells. Source: Canterbury Maps

A search of Canterbury Maps for all active Environment Canterbury resource consents shows no active consents are held.

There are no waterways or wetlands within or surrounding the property.

The site is located between the townships of Rolleston and Prebbleton. Both towns are experiencing rapid growth, marked by new subdivisions and developments that offer a range of amenities and opportunities for residents in the area. Land use in the surrounding area is a mix of lifestyle blocks (typically 4 hectares), smaller farm holdings (used for activities such as cut and carry, drystock grazing, and horse grazing), quarrying operations and an indoor poultry business (**Appendix 5**). As shown through historic satellite imagery, fragmentation has occurred at and in the surrounding environment of the site over many years, and the built environment has then occurred following fragmentation such as houses, rural lifestyle development and other commercial uses.

2.1. Site Observations

On 25 March 2024, Charlotte Senior (consultant from Agri Intel), conducted a site inspection.

The property is comprised of four paddocks ranging from about 0.2 to 2.7 hectares in size. An established pine hedge surrounds the outer of the paddocks. The fencing, equipped with wooden posts and a few electric wires, is suitable for horse and cattle containment. However, the absence of bottom wires and gaps between wires in some areas makes it currently unsuitable for smaller livestock like sheep (**Figure 2**). Reticulated water sources and water troughs are present in the paddocks, however these were dry (**Figure 2**), suggesting that these are disconnected to the water supply. A stock water source would need to be established for reliable livestock grazing.

Figure 2: Most fencing is only suitable for large stock containment. Troughs were dry. Photos taken 25 March 2024

The non-productive area includes an unused single farm utility shed (**Figure 4**) and the lane accessway (10m wide). There are no stockyards.

Figure 3: From northern boundary looking east. Single farm shed is shown. Photo taken 25 March 2024

Pasture is limited and lacking in vigour, possibly indicating acidic soil fertility and old pastures. The removal of alkaline minerals such as calcium, and magnesium, through hay or baleage making, or absorption by grazing animals over time, without using fertiliser to optimise soil fertility, could have contributed to this condition. There have been no recent fertiliser applications.

Figure 4: Pasture is lacking vigour and in different states in various locations. Photos taken 25 March 2024

2.2. Historic Land Use

Since the property was purchased in 2020, it has been used for grazing horses.

We have reviewed the historic satellite images on Canterbury Maps and Google Earth. The block appears to have always been dryland pastoral land use; there are no obvious signs of cropping, or moderate to high stock grazing intensity, or irrigation activity. A maximum of 16 black cattle and wrapped baleage tubes is observed on the Google Earth satellite imagery in the past decade. There are no obvious signs of sheep.

This aligns with the observations of PDP (extract from their Soil Assessment report):

A review of historical photographs was completed by PDP in 2019 as a part of the report "Geological Investigation into the Proposed Expansion Area of Wheatsheaf Quarry, Prebbleton." It showed that historically the site has been used for agricultural pastural uses.

The earliest available photograph is from 1942, when the site and the surrounding areas were mostly vacant paddocks with a few rural residential properties. A clear northwest – southeast orientation of the historical meanders and channels is evident across the area, as noted above. The only building on the site is a small barn that appears to have been built between 1994 and 2004.

The initiation of quarrying at the south – eastern corner of the currently active quarry is shown on the 1962 aerial photograph, while little change has occurred in the remainder of the current quarry area and the proposed expansion area.

The subsequent aerial photographs show the expansion of the quarry from the 1990s until it reaches its current extent.

A small area (0.16ha) south-east of the site has been used for rubbish dumping, therefore this area has no productive capability.

3. Productivity and Physical Constraints of the Land

Productive capacity, in relation to land, is defined in Clause 1.3 of the NPS-HPL as:
…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

3.1. Physical Characteristics - Soils and Land Use Capability

According to S-Maps, the site features shallow to very stony Eyre soil characterised by shallow depth, an extremely gravelly root barrier, and well-drained characteristics making it susceptible to dry soil moisture conditions, particularly during summer. The soils have a high nitrogen leaching vulnerability. **Table 1** provides more details on the dominant soil type. In accordance with the LUC classification (3s-33), the soil properties in the rooting zone (shallowness, stoniness, low moisture holding capacity and low fertility) are the dominant limitation to land use, thereby influencing its suitability for specific land uses.

Table 1: Dominant Soil type. Source: S-Maps Database

Dominant Soil (S-Maps Ref)	Sibling Name	Texture	Depth	Drainage	Nitrogen leaching risk	Profile Available Water (0-60cm)
Eyre_4a.1	Eyre	Shallow stony loam	Shallow, extremely gravelly root barrier	Well drained	Very low	61

While an independent Land Use Capability Assessment was not conducted, I visually assessed the soil based on the soil profile of the farm pit towards the southern extent of the site (**Figure 5**). This shows a light brown silt (overburden) overlying the gravel/aggregate resource. The topsoil thickness appears to be generally consistent with some undulation and is estimated to be no more than 0.5 m thick (based on comparison completed by Pattle Delamore Partners with test pit logs). This suggests that the land would not be suitable for moderate to deep rooted horticulture and arable crops.

Figure 5: Cross-sectional image of the farm pit present within the site boundary. Source: Pattle Delamore Partner's

3.2. Legal and Land Use Constraints - Lack of Irrigation Water

The soil profile available water is low, which means the land is subject to periods of moisture stress, therefore, without irrigation, the base stocking rate of the soil is relatively low.

The site lacks access to irrigation water and it falls within the fully allocated Selwyn-Waimakariri water zone. Rule 5.113 of the LWRP permitted the taking and using of less than 5L/s and 10m^3 per property per day of groundwater. However, this volume is insufficient for irrigation purposes, as 10^3 per day equates to an average daily take of 0.116L/s and only 0.24mm/day when applied over 4.17 hectares. This extremely low water volume is inadequate to generate the necessary pressure for irrigation infrastructure to function effectively. Therefore, obtaining irrigation water is only feasible through the transfer of existing consents to the site. As shown on HydroTrader, there are a limited number of such consents available for sale or lease

within the zone, with the latest transfers occurring in March and February 2022. Establishing irrigation capability would necessitate drilling a new well, estimated at $60,000, along with an additional $3,000 to $15,000 per hectare ($12,000 to $60,000 total) for infrastructure development (depending on the infrastructure used[1]). Therefore, the total cost of irrigation development stands at approximately $72,000 to $120,000 ($18 to $30,000 per hectare), exclusive of consent acquisition, ongoing operational expenses, and infrastructure maintenance. Given these financial considerations, it is unlikely that a prudent operator would pursue irrigation development on this small site, especially considering the comparatively higher per- hectare cost relative to larger sites where the expense of a new well can be distributed across a broader area.

Although Fletcher Concrete and Infrastructure Limited holds a water right (CRC213144) for the adjacent quarry, this is solely for quarry dust suppression and establishing vegetative cover and excludes the site area. Consistent with the AWA Supreme Court decision, it is not possible to add a new use for this water. Constraints within the overallocated groundwater catchment also hinder the filing of new irrigation consents. Consequently, irrigating the site would require acquiring water rights by way of a transfer as discussed above.

3.3. Land Use Constraints – Fragmentation

The site is situated in a highly fragmented landscape, with few large, geologically cohesive land parcels in the vicinity. The neighbouring parcels are no larger than 4.17 hectares, except for the existing quarry on the northern boundary. The dominant land use in the area is rural lifestyle rather than land-based primary production, which typically has land parcels too small to be used for economically viable land-based primary production.

The existing fragmentation significantly hinders the potential productivity of the land; the more fragmented the High-Productive Land (HPL) is, the more challenging it is to implement land-based primary production. As outlined in the Section 32 report for the NPS-HPL[2], *While the fragmentation of land ownership is legally reversible, in practice this is not common as a property's value generally increases when it is converted to a rural lifestyle property. As a consequence, fragmentation of HPL generally results in the permanent loss of that land for land-based primary production.*

It is highly unlikely that the surrounding parcels will be consolidated into a single operating unit in the future, as this would require land sales or lease agreements with neighbouring owners, along with potential reverse sensitivity issues. Although the Winstone Aggregates quarry on the northern boundary is not part of the application site, it further constrains land use by preventing the integration of the subject site into a larger, more practical land management area in the short term. As a result, it is highly unlikely economies of scale needed for agricultural production can be achieved. Moreover, the high capital value of the land within the local area ($200,000 to $590,000 per hectare) makes productive agricultural land use commercially unviable, as detailed in **Section 5**.

[1] Systems with low development costs, such as k-line sprinklers, have more limitations, such as longer return periods, higher labour intensity and potential damage to crops when moving them

[2] Page 29, National Policy Statement for Highly Productive Land: Evaluation report under section 32 of the Resource Management Act

4. Land Use Productivity Assessment

Several potential land use options were assessed, including dairy farming, arable and horticulture, baleage production, and drystock grazing. Reasonably practicable options that could result in the HPL being retained for land-based primary production were assessed for each land use. A financial analysis was also completed based on the most suitable land use.

4.1. Land Use Options

4.1.1. Dairy Farming

This land has never been used for dairy farming and several factors make it extremely improbable for such use:

- Lack of economies of scale - The land's size could only support only around 14 dairy cows (at 3.6 cows/ha on the effective 4 hectares), severely lacking the efficiency scale required. The costs associated with building a cowshed, effluent infrastructure, and compliance for a smaller property, would be prohibitively expensive.
- Significant capital development required - The soil profile available water is low, which means the land is subject to periods of moisture stress, therefore the base stocking rate of the soil is relatively low. Achieving this stocking rate would demand substantial investment in developing efficient irrigation systems, and significant capital fertiliser to boost and maintain soil fertility. The existing reticulated water supply needs maintenance to ensure all paddocks have a sufficient supply. The troughs observed during the farm visit were dry and appeared to have been disconnected.
- Lack of supply - Fonterra and other large milk producers would not allow a farm of this small scale to supply, necessitating operation in a bouquet town supply setting, which would require considerable marketing.
- Reverse sensitivity - The noise and odour from milking early mornings and effluent management would lead to reverse sensitivity effects in the surrounding areas, with a large number of households located within 1km of the property.

4.1.2. Horticultural Land Use

There is no historical evidence horticulture land use on this property, and several significant limitations restrict such usage:

- Soil characteristics - The ideal soil type for horticulture and arable land use is a deep, fertile loam with moderate to high water holding capacity. The shallow, well-drained soil on this property is prone to soil moisture deficits, hindering crop growth, especially during summers. High-risk and return crops, such as radish seed, would not be suitable unless there was considerable development in efficient irrigation infrastructure with a short return period. The limited soil depth (20-50cm) further hinders the cultivation of deep-rooted crops, including various root vegetables and cereal crops. Shallow soil depth may impede cultivation methods, potentially introducing gravel into the topsoil profile. These observations align with the land's Land Use Capability class (3s), where physical soil characteristics are the most dominant limiting factor.

- Lack of irrigation systems: Irrigation is essential for high-intensity land use. The property's average annual rainfall is about 550 mm, insufficient for sustaining high-yield crops. Without irrigation, crop yields will be significantly restricted.
- High establishment costs and reverse sensitivity issues: Establishing an intensive horticultural operation on a relatively small site is costly. The block of land would have to be incorporated into a bigger growing operation in order to achieve sufficient scale to enable the landowner to maximise productivity. The potential for reverse sensitivity from neighbours in a lifestyle area poses a significant risk. Investors in horticulture are likely to seek alternative locations without such threats to production, avoiding areas where residential complaints could impede farming activities.
- Cold winters: The region's cold winters limit the potential range of crops that can be grown, further restricting horticultural opportunities.
- Remoteness from processing facilities: The site's distance from processing facilities adds to the logistical and financial burden.

4.1.3. Arable Land Use

Arable land use faces similar challenges to those faced by horticultural land use. In addition, arable rotations involve alternating the types of crops grown on land from season to season. Typical rotations might include cereals, legumes, root crops, and sometimes fallow periods. This practice is important for maintaining soil health, reducing pest and disease buildup, and optimising nutrient use. For sustainability, it would need to be part of a larger arable operation. The fragmented surrounding landscape and lack of larger farming enterprises make this impractical. Transporting large machinery and equipment through a developed area with heavy traffic to manage a small site is also challenging and inconvenient.

4.1.4. Pastoral Land Use - Drystock Grazing and Cut and Carry

The property has been used to graze beef cattle for several decades. Historical satellite images also shows the land's use for making wrapped pasture baleage during periods of feed surplus in late spring and summer. This appears to have been fed back to the cattle on the property. There are some limitations to pastoral land use, as follows.

- Development requirements: To achieve the property’s full stocking potential, substantial development is required. This includes installing irrigation systems, establishing new pastures, and applying significant amounts of capital fertiliser. The current reticulated water system needs maintenance to ensure all paddocks have an adequate water supply, as observed troughs were dry. Without these improvements, the property cannot support optimal cattle numbers, thereby limiting its productivity. As detailed in **Section 3.2**, irrigating the site would require either acquiring water rights or by way of a transfer, a cost-prohibitive option. The volume of baleage depends on soil moisture conditions, soil fertility, and competition with livestock grazing. Higher volumes could be achieved with efficient irrigation systems, new pastures, and appropriate fertilisation, though the availability of contractors for fertiliser applications and baleage making may affect production.
- Dry summer conditions: The property faces challenges during dry summer conditions, which impede pasture growth. The soil's shallow nature leads to low soil moisture content, exacerbated by the lack of irrigation. This makes the land less reliable for consistent grazing, reducing its viability as a drystock grazing property.

- Lack of infrastructure: The absence of critical infrastructure limits the efficiency of drystock operations. Without a tractor or feeder for distributing baleage to livestock, and with no stockyards to facilitate the movement of livestock on and off the property, managing the stock becomes labor-intensive and inefficient. These deficiencies lead to higher labour costs and operational inefficiencies.
- Unlikely resource sharing with neighbours: Sharing resources with neighbouring properties could theoretically mitigate some of these issues. However, this is highly unlikely due to the existing rural lifestyle land use and significant fragmentation of neighbouring properties. These properties are small-scale, focusing on lifestyle rather than commercial agriculture, and typically lack the necessary infrastructure for efficient farming operations, such as adequate feeding equipment or stockyards. Additionally, their small scale and low return on investment further limit their capacity to invest in essential farming infrastructure, often resulting in a "make do" approach with minimal resources. This restricts their ability to engage in more efficient and productive farming practices, reducing the feasibility of any collaborative efforts to enhance agricultural operations in the area.
- Unsuitability for sheep: The existing fencing and lack of stockyards make the property unsuitable for grazing small livestock, such as sheep, which require higher maintenance in terms of animal health requirements. Without appropriate fencing and handling facilities, managing sheep would be impractical and labour-intensive. However, this could be largely mitigated through improved fencing.
- Need for a reliable stock water source: The current lack of a dependable stock water source further limits the property's viability for drystock grazing, as consistent and adequate water supply is essential for maintaining livestock health and productivity.

The property faces challenges in supporting an efficient and productive drystock grazing operation, relative to a similar large-scale farming operation. Without investment in infrastructure and development, as well as overcoming the natural constraints of the land and existing fragmentation, the property's potential for drystock grazing remains restricted.

4.1.5. Most Suitable Land Use

Considering various elements, it is my opinion that the most probable agricultural use for this property is small-scale pastoral land use (livestock grazing and baleage making). Given the small scale of the site impeding the ability to graze a considerable number of livestock and act as an external grazier (for example third-party dairy grazing of replacement heifers or dry cows), I consider beef steer finishing the most probable livestock enterprise.

5. Financial Viability

In terms of financial returns, the economic survey by Beef + Lamb New Zealand (B+LNZ) indicates that the average seven-year (2017-2024) average earnings before interest and tax (EBIT) per hectare for mixed cropping and finishing farms in South Island is $428 per hectare (**Appendix 6**). This farm class is typical to the Canterbury Plains, where a significant part of revenue comes from grain and small seed production, as well as livestock finishing or grazing. However, this Beef & Lamb model farm is 386 ha, while the site is 4.17 hectares, lacking economies of scale. If the 4.17 hectares is used for production, then the site will return as estimated $1,712 (**Table 2**). I have also estimated a gross margin return of $1,060/hectare from baleage making (**Table 3**)

Table 2: Beef + Lamb Class 8 South Island Mixed Finishing Average Farm Profit Before Tax (average 2017-2022 + provisional 22-23 and forecast 23-24). Source: Beef & New Zealand (B+LNZ)

Land Use	EBIT/ha/yr	Total (4.17ha)
Mixed cropping and finishing	$428	$1,712

Table 3: Baleage Gross Margin.

Baleage Gross Margin	$/ha	Total (4.17ha)	Assumptions
Revenue			
Baleage sold	$2,700	$11,259	$90/bale; 30 bales made (@250kgDMea)[3]
Expenses			
Fertiliser and applications	$738	$3,077	200kg/ha Cropmaster 15 ($1105/t) after each cut x3. Applications $25/ha
Contractor harvest	$902	$3,761	$50/bale, includes cut and wrapping
Net Margin	**$1,060**	**$4,420**	

I have used the most profitable enterprise, baleage making, for the following financial analysis, on the net return after the cost of capital. The gross margin figures shown above offer an estimate of potential profitability, but do not consider the cost of capital. Any prudent investor must consider capital cost, which could either be in the form of debt or equity. In theory, the cost of equity should be higher than the cost of debt. Currently, most banks utilise a long-term debt financing rate of 6.5% annually for planning. Additionally, in 2023, banks applied an 8% annual rate for 'stress-testing' the feasibility of loans. This analysis uses a debt cost of 6.5% and an equity cost of 8% annually. With an assumed typical debt burden of 30%, this results in an average capital cost of 6.95% per year. As of September 2021, the rating value for the land was $800,000 ($191,847 per hectare) (**Table 4**).

After deducting an annual capital cost of $13,333/hectare ($191,847/hectare x 6.95%), it becomes evident that the land is not economically viable in the long term, as shown in **Table 5**. Rural enterprises are currently enduring stringent financial pressures, dealing with reduced revenues, increased operating expenses, and rising interest rates. In my view, as a standalone unit, the 4.17 ha site cannot generate

[3] 30 bales made assumes a total of 7.5tDM/ha/yr was cut from the effective pasture area (4 hectares), amounting to about 13.6 stock units per hectare, and no stock are grazed

enough income to cover interest, taxes and a return for management. Consequently, I conclude that the site is unable to be commercially viable, both now and in the next 30 years.

Table 3: Property Ratable Value

	Ha	Total Land Value	Land Value – Per ha	Total Improvement Value	CV - Total Value
Lot 2 DP 80577 BLK IV Leeston SD	4.17	$800,000	$191,847	$10,000	$810,000

Table 4: Estimated returns per hectare over the proposed block after deducting a cost of capital.

	Per hectare	Total (4.17 ha)
Total EBIT (per annum)	$1,060	$4,240
Cost of Capital	$13,333	$55,559
Net return after cost of capital	-$12,273	-$51,319

6. Consideration of the NPS-HPL – Clause 3.10(1)

Clause 3.10(1) sets out three tests that must be met for an activity not otherwise provided for under Clauses 3.7, 3.8 or 3.9 to occur on HPL. A proposal must meet all parts of all three tests to be allowed on HPL. The following provides an assessment of these tests. These findings should satisfy Selwyn District Council that HPL Policy 3.10 is met, and therefore the HPL can be used for activities not otherwise enabled under clauses 3.7, 3.8, or 3.9 of the NPS-HPL.

Clause 3.10 (1a) - There 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 able to be economically viable for at least 30 years

Section 4 evaluates various land uses and all reasonably practicable options for retaining the highly productive land (HPL) for land-based primary production. However, a combination of unsuitable soil characteristics, lack of irrigation and water access, high establishment and operational costs, infrastructure deficiencies, and low financial returns clearly demonstrates that the property cannot support economically viable primary production. Additionally, extensive fragmentation within the local area, characterised by rural lifestyle-sized lots, precludes any practicable options for land consolidation and return to productive use, making this constraint both non-reversible and permanent. Consequently, I conclude that the site will remain commercially unviable, both now and for the next 30 years.

Clause 3.10 (1b) The subdivision, use, or development:

(i) Avoids any significant loss (either individually or cumulatively) of productive capacity of highly productive land in the district; and

In my opinion, the loss of 4.17 ha of HPL is not significant in the Selwyn District and Canterbury region, which has a moderate percentage of HPL relative to other regions.

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

The surrounding landscape is highly fragmented, with few large, geologically cohesive land parcels. The neighbouring properties are small-scale, focusing on lifestyle rather than commercial agriculture. This land is also not being subdivided into smaller lots. In my view, this proposal will not contribute significantly to any additional fragmentation of HPL.

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

In my opinion, the surrounding land has a significant area of existing quarrying activity, therefore this proposal is unlikely to result in reverse sensitivity concerns on surrounding land-based primary production.

Clause 3.10 (1c) - The environmental, social, cultural 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.

This assessment uses a cost-benefit analysis framework for HPL to identify the full range of values associated with HPL, using a Total Economic Value framework as outlined on page 37 of the NPS-HPL.

Environmental Effects

The proposal is expected to result in positive net environmental effects, primarily due to a reduction in nutrient loss to groundwater and decreased greenhouse gas emissions from agricultural activities. The development and implementation of a Post-Quarry Rehabilitation Plan will ensure that environmental impacts are mitigated and managed effectively. Additionally, the rehabilitation plan includes measures to enhance local biodiversity and promote sustainable land use practices, contributing to environmental health.

Social and Cultural Effects

The proposal will have no real net benefit of loss to social and cultural effects.

Economic Effects

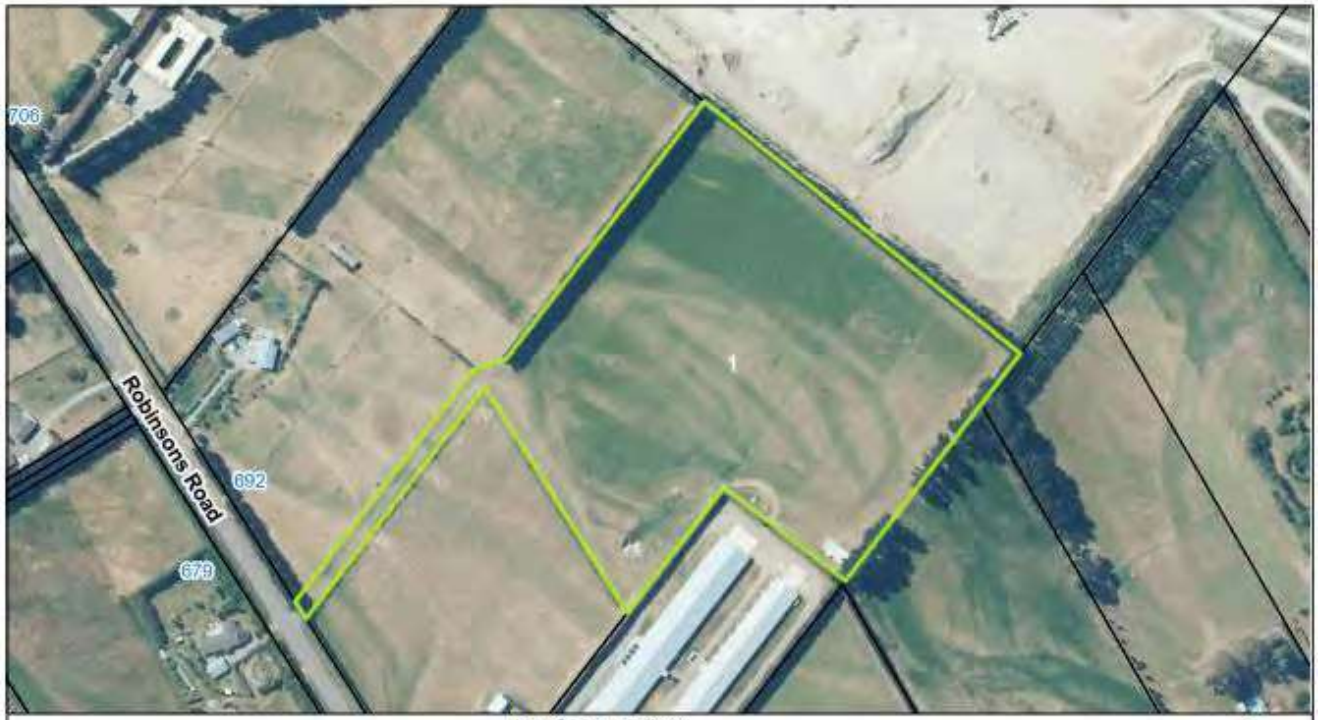
The economic benefits of the proposal are significant. Financial returns from the proposed development are substantially higher than those from the current or any potential primary production land use, which has been determined to be commercially unviable. The proposal will also create employment opportunities in the local area, boosting regional economic growth and providing stable jobs for residents. Additionally, increased economic activity will enhance the overall economic health of the region.

In my view, the combined net environmental, social, cultural, and economic effects of the proposal outweigh the costs associated with the loss of HPL. The benefits, both tangible and intangible, present a compelling case for the proposal as a more valuable and sustainable alternative to land-based primary production.

7. Appendices

Appendix 1: Property Map and Title

Farm Name:	Winstone Aggregates
Street address of primary entrance:	668 robinsons road
Size of farm	4.2 ha
Farm Portal Farm ID:	FP09274

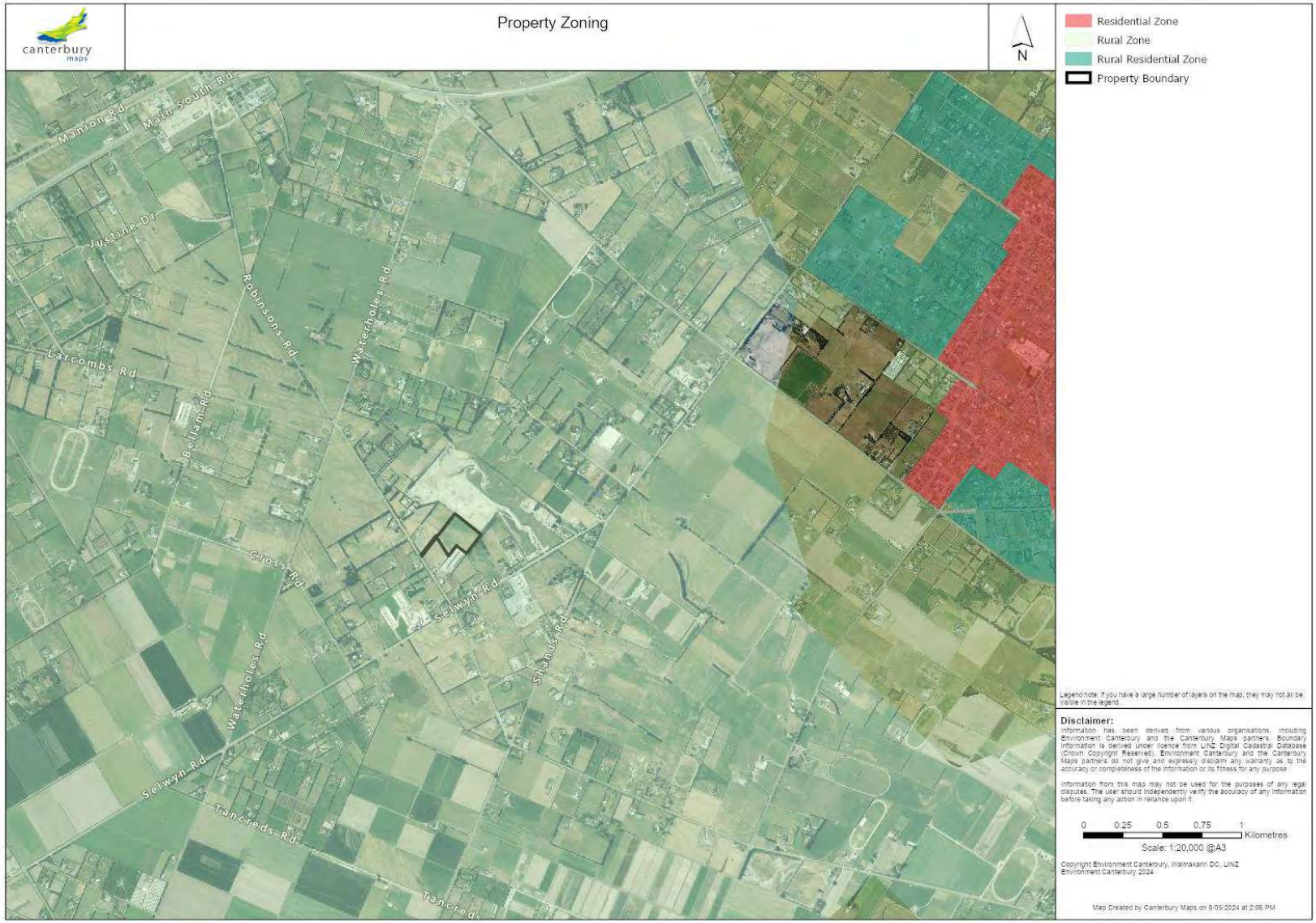


Land - Overview

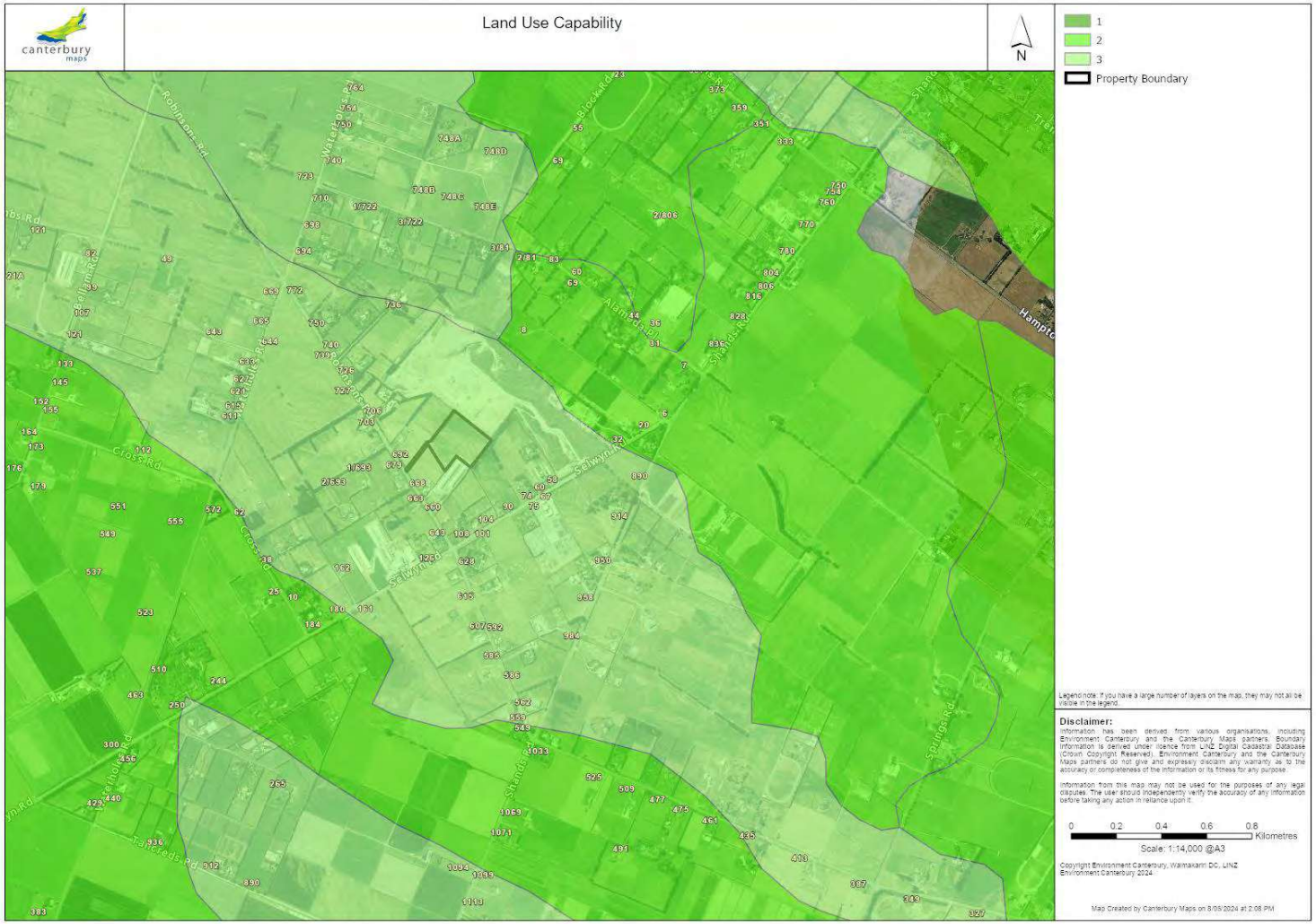
Farm Boundary Parcel Boundary N

ID	Parcel Legal Description	Area (ha)
1	Lot 2 DP 80577	4.2

Appendix 2: Zoning Map. Black outline– property area. Source: Canterbury Maps



Appendix 3: Land Use Capability Map. Black outline – block. Source: Canterbury Maps. This shows the block is LUC 3



Appendix 4: Land Use Capability report. Source: Our Environment, Manaaki Whenua.

The soil is 3s-33 meaning the dominant limitation is the physical and chemical properties of the soil.

Pin at -43.59275, 172.46553

Report prepared by Our Environment, 2:22:06 pm 8/05/2024 Manaaki Whenua - Landcare Research

Pin at -43.59275, 172.46553

Latitude Longitude
43° 35′ 34″ S 172° 27′ 56″ E
NZTM Easting, Northing
1556857, 5173219
Elevation
32m

Landscape

Surface Rock Type

Rock Group

SF
General classification of rock type into broad lithological groups.

Description

Sedimentary Rocks – very loose to compact (e.g., peat, loess, sands, alluvium, glacial till and unconsolidated sands, silts and clays)

Base Rock

Al
Principal basement lithology.

Top Rock

Al
Principle lithology (i.e. not patchy) exposed at the surface, irrespective of any succeeding stratigraphy.

Rock

Al
Lithology of the map unit beginning with the surface and/or dominant rock type and ending with the basement and/or least prominent rock type.

Data source: Surface Geology

Polygon layer delineating physiographic areas of relatively homogenous surface and near-surface lithology (rock type). Derived from stereo aerial photograph interpretation, field verification and measurement as part of the 1:63 360/1:50 000 scale New Zealand Land Resource Inventory.

Land Capability

Land Use Capability

Dominant Land Use Capability Unit (national legend)

nz3s-33
LUC codes have 3 parts: Class + Subclass + Unit e.g. 6e22. The Class (1-8) indicates general land use capability. Subclass identifies the dominant physical limitation or hazard ('e' is erodibility; 'w' is wetness; 's' is soil; 'c' is climate). Units group together areas where similar land inventories have been mapped, and which have similar agricultural suitability, or require similar land management. Where complex units occur (e.g., nz3s-34+nz6e-146) the dominant unit (i.e., nz3s-34) only will be shown.

Dominant LUC Class

3 - Land with moderate limitations for arable use, but suitable for cultivated crops, pasture or forestry

Dominant limitation to land use

s - Soil physical or chemical properties in the rooting zone such as shallowness, stoniness, low moisture holding capacity, low fertility (which is difficult to correct), salinity, or toxicity first limits production

Unit Description

Flat to undulating alluvial plains and terraces below 400 m asl with moderately shallow and/or stony Brown and Recent (yellow grey earth and recent) soils in low (<800 mm) rainfall areas with a marked summer moisture deficit.

Historic regional units

prt3s5 (South Island (other than Marlborough))

Data source: Land Use Capability

The Land Use Capability system categorizes land into eight classes according to its long-term capability to sustain one or more productive uses based on physical limitations and site specific management needs. Productive capacity depends on physical qualities of the land, soil and environment. Differences between ideal and actual land qualities may be regarded as limitations which will affect productivity and land management options. Limitations considered in the LUC include: susceptibility to erosion, steepness of slope, climate, susceptibility to flooding, liability to wetness or drought, salinity, and depth, texture, structure and nutrient supply of the soil. Note that complex map units containing two LUC units may occur. In this case reports provided will describe the dominant LUC unit only.

Baseline Highly Productive Land

Dominant NZLUC Class

3 - Land with moderate limitations for arable use, but suitable for cultivated crops, pasture or forestry

Data source: Baseline Highly Productive Land

This layer is a visualisation of the baseline extent of Highly Productive Land, represented here as Land Use Capability classes 1, 2 and 3, as mapped in the New Zealand Land Resource Inventory. The actual boundaries of Highly Productive Land in a particular location will differ to this visualisation, depending on the relevant council rural and urban zoning boundaries as defined in the National Policy Statement for Highly Productive Land (refer to clause 3.5). Please refer to your local council for this information.

By late 2025 it is expected that each regional council will also have remapped the extent of Highly Productive Land for their region, following the requirements in the National Policy Statement for Highly Productive Land (refer to clause 3.4). When this is done that updated regional map will replace the map presented here. Please refer to your local council for this information.

Full information on the National Policy Statement for Highly Productive Land is available here. (https://www.mpi.govt.nz/agriculture/farm-management-the-environment-and-land-use/national-policy-statement-for-highly-productive-land-2022/)

For full definition and description please refer to the Land Use Capability Survey Handbook. (https://digitallibrary.landcareresearch.co.nz/digital/collection/p20022coll14/id/74/)

Suitability for Arable Cropping

Land Use Capability (LUC) Class

3
Land use Capability class is divided into 8 classes, 1-4 are suitable for arable use but with increasing limitations, all remaining classes (5-8) are unsuitable for arable use.

Description

Moderate limitations, suitable for restricted crop types and intensity of cultivation.

Dominant Limitation

s
There are 4 types of limitation to arable land use, these are: erosion (e), soil (s), water logging (w) and climate (c).

Data source: Suitability for Arable Cropping

Classification of land according to suitability for arable cropping. This classification has been carried out using the New Zealand Land Resource Inventory (NZLRI) Land Use Capability (LUC) rating. LUC rates the ability of land to sustain agricultural production, based on an assessment of NZLRI factors, climate, the effects of past land use, and the potential for erosion.

The data in this layer was collected over an extended time period. Most of South Island was mapped between 1971 and 1979. In the North Island, Northland was mapped between 1985-1990, Wellington between 1987-1992, Marlborough between 1989-1993 and Gisborne East Coast between 1995-1998. The rest of the North Island was mapped between 1971 and 1979.

General Suitability

General Suitability

Multiple Use Land

Land Use Capability (LUC) Class

3 - Land with moderate limitations for arable use, but suitable for cultivated crops, pasture or forestry
Land use Capability class is divided into 8 classes, 1-4 are suitable for arable use but with increasing limitations, all remaining classes (5-8) are unsuitable for arable use.

Dominant Limitation to Arable Land Use

s - Soil physical or chemical properties in the rooting zone such as shallowness, stoniness, low moisture holding capacity, low fertility (which is difficult to correct), salinity, or toxicity first limits production
There are 4 types of limitation to arable land use, these are: erosion (e), soil (s), water logging (w) and climate (c).

Data source: General Suitability

Classification of land according to general suitability for different land uses. This classification is based on the New Zealand Land Resource Inventory (NZLRI) Land Use Capability (LUC) rating of the ability of each polygon to sustain agricultural production, based on an assessment of the inventory factors: rock type, soil, slope, present type and severity of erosion, and vegetation; along with climate, the effects of past land use, and the potential for erosion.

The data in this layer was collected over an extended period. Most of South Island was mapped between 1971 and 1979. In the North Island Northland was mapped between 1985-1990, Wellington between 1987-1992, Marlborough between 1989-1993 and Gisborne East Coast between 1995-1998. The rest of the North Island was mapped between 1971 and 1979.

Data source & provenance

Data source: Land Resource Inventory (LRI)

Pertains to: *Surface Rock Type, Land Use Capability, Baseline Highly Productive Land, Suitability for Arable Cropping, General Suitability*

This is a single spatial (polygon) layer with national coverage that contains several physical resource themes: land use capability, lithology, soil, etc. In terms of geographical data accuracy the polygon boundaries were originally mapped at 1:63,360 scale, except where more recent mapping was carried out at 1:50,000 scale in Northland, Gisborne-East Coast, Wellington and Marlborough regions. This is regional scale mapping according to the Land Use Capability Survey Handbook (https://digitallibrary.landcareresearch.co.nz/digital/collection/p20022coll14/id/74/)(Edition 3). The minimum polygon size for the smallest area of interest in the LRI mapping was nominally 10 hectares, although some 2% of polygons fall below this threshold. Average polygon size for 1:63,360 scale mapping is 335 hectares, and for the more recent 1:50,000 scale mapping is 98 hectares, reflecting both increased mapping scale and improved standards of mapping.

The LRI is a regional-scale database and caution should be used when using these data at larger scales.

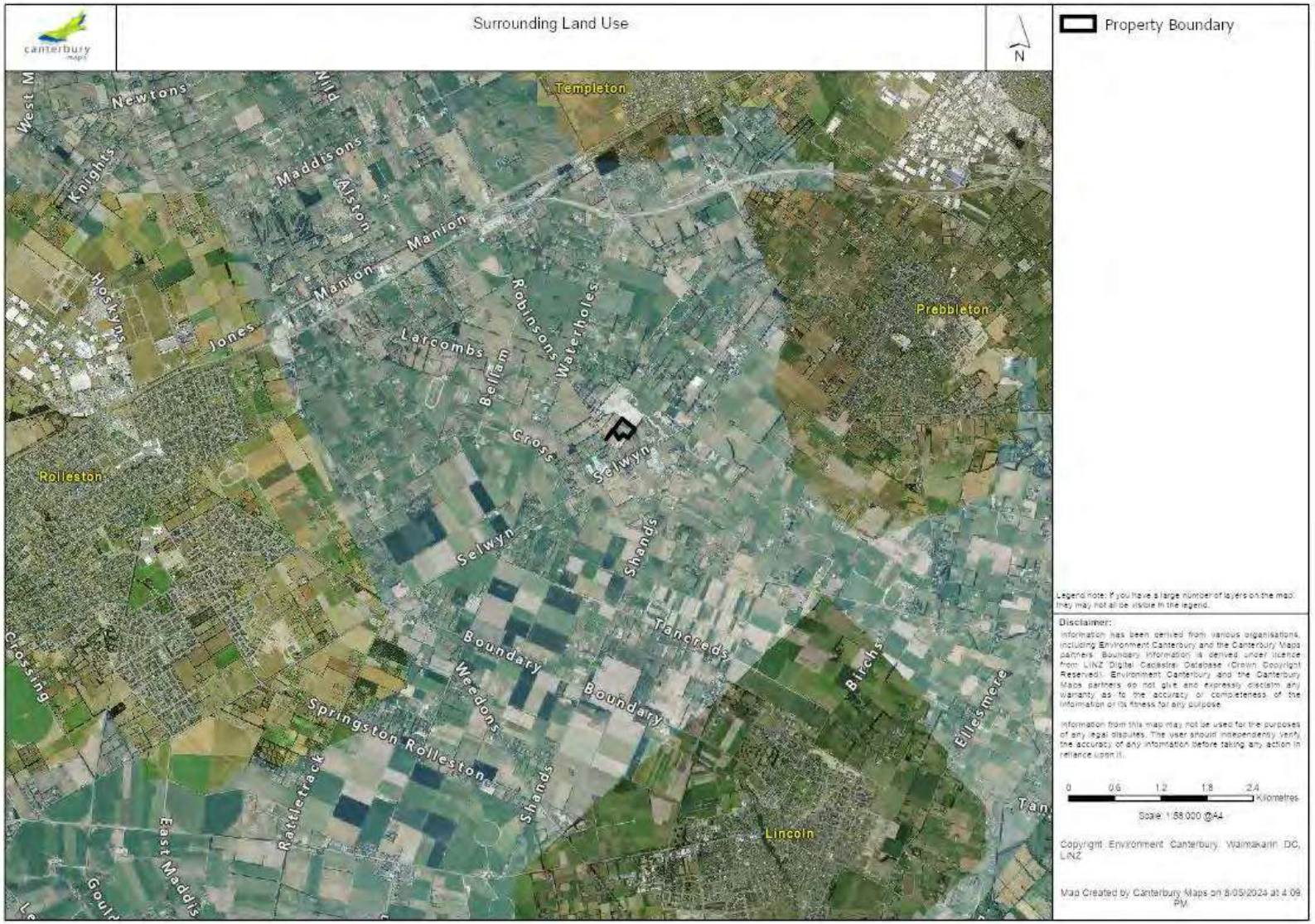
In addition to the geographical accuracy of the polygon boundaries, each resource theme is subject to uncertainties about the attributes (e.g., soil classification). Users should download and familiarise themselves with the relevant sections of the LRIS Spatial Data Layers Data Dictionary to ensure that the data are fit for their intended analysis. This is available for download from here (https://lris.scinfo.org.nz/document/9162-lris-data-dictionary-v3/) in the LRIS Portal.

Interpretations in Our Environment based on the LRI and therefore subject to its data accuracy are: Erosion Severity, Surface Geology and all five of the land suitability classifications.

OURENVIRONMENT

Manaaki Whenua Landcare Research

Appendix 5: Surrounding Land Use. Source: Canterbury Maps



Appendix 6: Class 8 South Island Mixed Finishing Beef & Lamb NZ Economic Survey

Beef + Lamb New Zealand Economic Service							27-03-24	
Sheep and Beef Farm Survey - $ Per Hectare Analysis							Notes tab	
Class 8 S.I. Mixed Finishing - New Zealand								
						Provisional	Forecast	
	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Average
Revenue Per Hectare								
Wool	$428	$19	$27	$18	$22	$27	$33	$82
Sheep	$203	$293	$376	$381	$556	$584	$529	$417
Cattle	$152	$190	$219	$125	$201	$243	$163	$185
Dairy Grazing	$194	$222	$249	$274	$249	$369	$367	$275
Deer + Velvet					$14	$18	$20	$17
Goat + Fibre								
Cash Crop	$2,089	$2,152	$2,391	$2,541	$2,260	$2,329	$2,306	$2,295
Other	$374	$258	$334	$364	$349	$239	$264	$312
Total Gross Revenue	**$3,033**	**$3,133**	**$3,596**	**$3,701**	**$3,651**	**$3,809**	**$3,682**	**$3,515**
Expenditure Per Hectare								
Wages	$172	$193	$187	$191	$184	$157	$157	$177
Animal Health	$21	$24	$24	$32	$40	$53	$59	$36
Weed & Pest Control	$326	$290	$336	$357	$415	$363	$380	$352
Shearing Expenses	$15	$18	$20	$28	$31	$31	$35	$25
Fertiliser	$307	$336	$403	$389	$467	$575	$499	$425
Lime	$13	$9	$23	$20	$11	$18	$19	$16
Seeds	$93	$90	$108	$124	$91	$100	$104	$101
Vehicle Expenses	$120	$135	$125	$130	$116	$127	$130	$126
Fuel	$97	$100	$96	$92	$129	$167	$177	$123
Electricity	$15	$12	$13	$13	$15	$12	$13	$13
Feed & Grazing	$77	$70	$81	$71	$68	$71	$78	$74
Irrigation Charges	$162	$144	$183	$193	$189	$190	$196	$180
Cultivation & Sowing	$50	$25	$39	$70	$64	$67	$71	$55
Cash Crop Expenses	$175	$215	$192	$199	$197	$167	$177	$189
Repairs & Maintenance	$142	$144	$159	$190	$172	$158	$150	$159
Cartage	$56	$52	$68	$69	$62	$68	$76	$64
Administration Expenses	$52	$52	$57	$67	$76	$65	$65	$62
Total Working Expenses	**$1,893**	**$1,911**	**$2,116**	**$2,240**	**$2,329**	**$2,390**	**$2,385**	**$2,181**
Insurance	$56	$59	$67	$79	$77	$77	$85	$71
ACC Levies	$7	$8	$7	$12	$9	$10	$10	$9
Rates	$46	$47	$51	$70	$55	$57	$60	$55
Managerial Salaries	$7	$11	$10	$15	$10			$11
Interest	$403	$322	$326	$302	$301	$376	$475	$358
Rent	$61	$68	$67	$58	$31	$32	$33	$50
Total Standing Charges	**$580**	**$515**	**$527**	**$536**	**$482**	**$553**	**$662**	$551
Total Cash Expenditure	**$2,472**	**$2,426**	**$2,643**	**$2,776**	**$2,812**	**$2,943**	**$3,047**	$2,731
Depreciation	$392	$360	$375	$370	$335	$330	$325	$355
Total Farm Expenditure	**$2,865**	**$2,786**	**$3,018**	**$3,147**	**$3,147**	**$3,273**	**$3,372**	**$3,087**
Farm Profit before Tax	**$169**	**$347**	**$578**	**$555**	**$504**	**$535**	**$311**	**$428**
For more information:	Notes tab		**© Beef + Lamb New Zealand Economic Service 2024**					