

From: [Meg Buddle](#)
To: [Plan Hearings](#)
Cc: [Paul Rogers](#); [John Larsen](#)
Subject: PC7 Hearing - Evidence of John Larsen on behalf of Scottville Farm
Date: Friday, 17 July 2020 3:14:05 pm
Attachments: [image001.png](#)
[MCB-126144-1-78-1 Final Evidence of John Larsen for Scottville Farm.pdf](#)

Kia ora

Please find attached the evidence of John Larsen in support of Scottville Farm's submission on Environment Canterbury's Plan Change 7 hearing, which we lodge on the submitter's behalf.

Could you please confirm that you have received it?

Kind regards | Nga mihi

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BEFORE THE INDEPENDENT HEARING COMMISSIONERS

IN THE MATTER of the Resource Management Act 1991 ('the Act')

AND

IN THE MATTER of the Proposed Plan Change 7 to the Canterbury Land and Water Regional Plan

BETWEEN **SCOTTVILLE FARM**
Submitter

A N D **CANTERBURY REGIONAL COUNCIL**
Local Authority

EVIDENCE OF JOHN LARSEN ON BEHALF OF SCOTTVILLE FARM

INTRODUCTION

- 1 My name is John Sofus Larsen. I am 55 years old and are currently the managing partner in Scottville Farm. I have 4 boys with the eldest two being partners in the business.
- 2 Scottville Farm is a 760 ha intensive arable and lamb fattening farm with its base in Woodfields Rd, Swannanoa.
- 3 I have been bought up on the same farm and worked here for 38 years since leaving school.
- 4 My role now is overseeing the direction of the farm operation and giving attention to detail that is required to manage farming today in an efficient, profitable and sustainable way.
- 5 I have closely followed technology during my lifetime and the advancements that have been made in farming over the last 50 years.

SCOPE OF EVIDENCE

- 6 I offer the following evidence from the point of view of an experienced arable farmer.
- 7 In my evidence I address the following issues:
 - (a) Background and context;
 - (b) The objective of PC7;
 - (c) Effects of PC7 on Scottville Farm;
 - (d) Efficiency and effectiveness of the PC7 provisions in achieving its objective;
 - (e) Environmental, social, employment, and cultural benefits vs costs of relevant pc7 provisions;
 - (f) Whether the level of detail in the section 32 and 42A reports corresponds with the scale and significance of the relevant effects anticipated from PC7;
 - (g) Other reasonably practicable options; and
 - (h) Whether the PC7 provisions are the most appropriate way to achieve the PC7 objective.

BACKGROUND AND CONTEXT

History of Scottville Farm

- 8 Scottville Farm officially began in 2001, as a family branch, farming the same land that was part of the property purchased by my grandfather in 1922. My grandfather prior to purchasing this land had a farm in Australia, although he lived in NZ with his father who had a farm in Cust.

- 9 Owing to the particular good soils on most of the land, the property originally was farmed by my grandfather as a wheat and sheep farm and who one year grew 500 acres of wheat, the largest area of any farmer in NZ at that time.
- 10 The family has been farming in this area now for 5 generations with a 6th generation growing up wanting to be included!
- 11 Irrigation was established in the very early 1970's by my father who was third generation. Since the irrigation was established the farm has been intensively cropped with good crop rotations alongside running dry stock which complement the crop operation. Without irrigation in this area of Canterbury, farming would not be a viable business.

Farming operations

- 12 Scottville Farm specialises in small seed production including ryegrass, clover, cereal and vegetable crops. Some of the seed products are exported and some go to the local market. The ryegrass and clover crops after harvesting seed are used for fattening lambs from autumn through to the spring. The straw produced from crops is on sold as a supplement, mostly to dairy farmers.
- 13 Therefore, Scottville Farm's operations are interconnected with the wider farming operations particularly in this region but also to all of NZ farming areas. Pasture seed and supplementary feed is sold to many farms throughout the country, especially in times of drought.
- 14 The farm is skilfully managed to maximise production with intensive but robust crop rotations that facilitate efficiencies alongside the lamb fattening. 80% of the farm is irrigated using centre pivots and fixed boom irrigators.
- 15 My two sons manage the cropping operation with two full time and several part time seasonal workers.
- 16 Our stock manager oversees three full time staff plus part time workers for the lamb fattening operation which finishes a substantial number of lambs. Surplus staff from stock operations help during the busy cropping season.
- 17 My role is to oversee the detail of both the cropping and lamb fattening with regular meetings with the three managers to set up systems and fine-tune the operation.

Water supply and monitoring

- 18 Scottville Farm irrigation water is primarily supplied by Waimakariri Irrigation Limited (**WIL**) scheme water, and we are also consented to take bore water from five family bores, plus another three consents with five bores on lease properties.
- 19 We have FEP requirements as part of receiving irrigation water from WIL. Our FEP was audited last year and achieved an A grade, up from our previous B grade audit 2 years prior.

- 20 We have used water monitoring for 18 years using neutron probes with 3 probes in each cropped paddock. This past year we had 48 of these triple sites which were monitored weekly during the growing season. We are also trialling Regen soil probe and weather station in collaboration with WIL. The cost of this monitoring is in excess of \$20,000 a year, just to help manage irrigation scheduling.
- 21 We are monitoring weather forecasts daily. The purpose for the extensive monitoring is to make sure that water use by Scottville Farm is efficient and economical, and that excess water application is avoided. Avoiding over-application of water also helps to reduce pathways for nitrogen leaching.

Site and locality

- 22 For maps showing the location of Scottville Farm, and the various planning overlays, refer to Appendix 1.
- 23 Scottville Farm is one of the few intensive arable farms in the Waimakariri sub-region, and one of the largest. The total area farmed is 760 ha with 600 ha under irrigation.
- 24 The main area of farmed land is on Woodfields Rd between Swannanoa and Cust which includes several blocks totalling 500 ha with a further 120 ha leased property at West Eyreton. We farm several other smaller blocks at various sites between Rangiora and West Eyreton.
- 25 The topography is very flat with soils that we used to call Wakanui and Templeton silt loams, good cropping soils. Please refer to the attached old soil map (Appendix 1, Figure 4) which I have received from a fertiliser consultant who worked on the farm around the 1970's and did our fertiliser plans during the 1980's and 1990's.
- 26 There is numerous stock water races and WIL irrigation races on the property with one small and one medium sized irrigation dams. There is no permanent running waterways other than afore mentioned.
- 27 The main property mentioned above is in in the Red Nutrient Allocation Zone from the LWRP, and the area zoned Nitrate Priority Sub-area E in PC7.

Community context

- 28 The farming business employs 10 full time staff with at least 12 part time employees. It is the main source of income for six families. Scottville Farm also supports at least 10 other families through the lease of farmland.
- 29 The flow on effect of Scottville Farm's revenue, to local businesses such as Luisetti Seeds, farm merchant stores, dairy farmers and many others, is significant.
- 30 Lastly, we strongly support charity and education with donations and help to families in need.

THE OBJECTIVE OF PC7

31 Environment Canterbury (**ECan**) stated that “the waterways within the Waimakariri sub-region are generally degraded and a number of waterbodies are failing to meet some of the CLWRP objectives”¹.

32 The specific freshwater objectives relevant to the Waimakariri sub-region, which ECan intends to be implement through the PC7 amendments, are (relevantly)²:

....

Outcome 3: The Waimakariri River as a receiving environment is a healthy habitat for freshwater and coastal species, and is protected and managed as an outstanding natural landscape and recreation resource

Outcome 4: The zone has safe and reliable drinking water, preferably from secure sources

Outcome 5: Indigenous biodiversity in the zone is protected and improved

Outcome 6: Highly reliable irrigation water, to a target of 95%, is available in the zone

Outcome 7: Optimal water and nutrient management is common practice

Outcome 8: There is improved contribution to the regional economy from the zone

Outcome 9: Land and freshwater management in the Waimakariri Zone/Sub-region will, over time, support the maintenance of current high-quality drinking water from Christchurch's aquifers

33 The method ECan proposes is:³

Part C of PC7 introduces freshwater outcomes, limits and targets for the Waimakariri sub-region and a framework that requires activities with potential effects of water quality to be managed so that the freshwater outcomes are achieved. The proposed nutrient management regime requires all properties greater than 5 ha to prepare and implement either a Management Plan in accordance with Schedule 7A (for permitted activities) or a Farm Environment Plan (FEP) in accordance with Schedule 7 (for consented activities). The equivalent threshold in the region-wide provisions is 10 ha. The FEP will identify actions that will be undertaken to minimise effects of the farming activity, including the management of run-off contaminants.

...

Part C of PC7 also introduces a Nitrate Priority Area and provisions which requires landowners within this area to reduce nitrogen losses below the "Baseline GMP Loss Rate" to ensure water quality is improved and the freshwater outcomes are met.

34 Based on my understanding, PC7 has been introduced to serve the key objective of maintaining or improving water quality, through reducing the amount of nutrients and contaminants (particularly nitrogen) from entering fresh waterbodies.

35 Therefore, it follows that PC7 is aimed at regulating those farming systems that may return surplus nitrogen (which I also refer to as N), or other nutrients or contaminants, to ground in meaningful quantities.

36 While I support the higher order outcomes where practical and justifiable, I object to the methods that ECan proposes in PC7. Because arable farming does not return surplus nitrogen to ground, I consider that, logically, arable farming should not be regulated by PC7.

37 I will expand on my issues with PC7 further below, which relate to:

¹ Section 32 Report at page 279

² Section 32 Report at page 286 and 287

³ Section 32 Report at page 280

- (a) Issues with PC7 regulating nitrogen losses from arable farming;
- (b) Issues with OVERSEER;
- (c) Issues with baseline GMP;
- (d) Difficulty with requiring long term reduction plans in Table 8-9;
- (e) Issues with zoning boundaries;
- (f) Issues with transfer of water permits and water zones; and
- (g) Issues with restrictions on increasing Horticulture areas.

EFFECTS OF PLAN CHANGE 7 ON SCOTTVILLE FARM

Application of relevant LWRP provisions (prior to PC7 amendments) to Scottville Farm

38 The LWRP plan provisions apply to Scottville Farm in the following way:

- (a) Scottville Farm is located in the Red Nutrient Allocation Zone (see Figure 2 of Appendix 1);
- (b) The rules, policies and objectives that apply to the Farm's nutrient discharges are:
 - (i) Policies 4.34-4.36. The most relevant being Policy 4.36(d), which requires that irrigation schemes manage nutrient losses from farming activities on properties they supply with water through use of the Farm Portal or other mechanisms; and
 - (ii) Rule 5.41 allows for farming activities to operate as permitted activities if they receive water from a consented irrigation scheme, as long as the irrigation scheme consent (among other conditions) includes limits on nitrogen leaching from the land on which the farming activity takes place, and requires that Farm Environment Plans are created for each farming activity, in order to mitigate the effects of nutrient discharges on water.
 - (iii) Scottville Farm operates its farming activities under the irrigation scheme Consent CRC184861 of Waimakariri Irrigation Limited (**the WIL Consent**). The WIL Consent expires on 30 Jun 2025. Our FEP is completed under the WIL consent and we were audited last year and achieved an A grade, up from our previous B grade audit 2 years prior.

Application of relevant PC7 provisions to Scottville Farm

39 As a result of PC7, the plan provisions apply to Scottville Farm in the following way:

- (a) Scottville Farm is located in the Nitrate Priority sub-area E zone, and operates its farming activities under the WIL Consent;
- (b) The relevant nutrient management provisions applying to the Farm are:

- (i) New Waimakariri-specific Policies 8.4.25 – 8.4.29. Of most relevance is Policy 8.4.29, applying to consents obtained by Irrigation Scheme Providers;
- (ii) New Waimakariri-specific Rule 8.5.30 applies in conjunction with Regional Rule 5.41. Rule 8.5.30 requires that irrigation schemes may obtain consent for the discharge of nutrients as a discretionary activity if the activities operating under the consent meet the requirements given in New Table 8-9. If an irrigation scheme does not commit to the nitrogen loss reductions in Table 8-9 (including the starting point for those reductions), the application will be classified as non-complying and is subject to the standard notification tests pursuant to S95A and 95B of the RMA.
- (iii) Farming activities seeking to operate under irrigation consents (or individual farming consents for that matter) will find it very difficult to become consented, and therefore to farm, if they are not able to meet the Table 8-9 requirements.

- 40 In broad terms, the regulatory scheme still allows Scottville Farm to operate its farming practice as a permitted activity under Rule 5.41, under the umbrella of the WIL Consent. However, the PC7 changes mean that in WIL's application to renew their irrigation scheme consent, WIL must commit to the nitrogen loss reductions in Table 8-9 (including the starting point for those reductions), for all land that is part of its irrigation scheme.
- 41 Any land owned or managed by Scottville Farm that receives water under the new WIL irrigation scheme consent would therefore have to comply with the nitrogen loss reductions in Table 8-9.
- 42 As a non-dairy farm in the Nitrate Priority sub-area E zone, the following reductions from Table 8-9 apply to Scottville Farm:

Nitrate Priority Sub-area	Farming type	Cumulative percentage reductions in nitrogen loss and dates by which these are to be achieved					
		By 1 January 2030	By 1 January 2040	By 1 January 2050	By 1 January 2060	By 1 January 2070	By 1 January 2080
Sub-area E	[non-dairy farming]	5%	10%	15%	20%	25%	30%
Notes: 1. The starting point for applying each percentage reduction in nitrogen loss in Table 8-9 is generally the Baseline GMP Loss Rate except as otherwise provided for in Policy 8.4.26 for individual farming activities and farming enterprises, and in Policy 8.4.29 for irrigation schemes ... 3. The percentage reductions required by Table 8-9 are only to be applied to farming activities that require resource consent for farming land use and where the required reduction for each stage is greater than 3 kg nitrogen per hectare for dairy, and 1 kg per hectare for all other farming activities							

The impact of PC7 on Scottville Farm

- 43 The changes brought in by PC7 with the proposed N reductions overtime will likely mean that our arable operation will in time not be economically viable and have to close down.
- 44 In order to achieve the proposed N reductions, we have limited options available to us, and the considerations involved are not straightforward. For example, one obvious option to reduce N losses is to crop a smaller area of land. However, it is more complex than that, as allowing land to go to fallow can sometimes result in increased rates of N loss.
- 45 I would like to point out that we have made continuous improvements to our operation by understanding the science behind N leaching, and that Scottville Farm is seeking to operate at good management practice on a consistent basis.
- 46 Further below, I discuss my issues with the baseline GMP/OVERSEER regime that ECan uses, and seeks to continue in the form of PC7.

EFFICIENCY AND EFFECTIVENESS OF THE PC7 PROVISIONS IN ACHIEVING ITS OBJECTIVE

- 47 In the following sections I describe the ways in which the PC7 provisions are inefficient and ineffective at achieving its objective, as outlined above.

Issues with PC7 regulating nitrogen losses from arable farming

- 48 Arable farming, unlike many other farming types, does not lead to significant discharges of nitrogen (or any other nutrients) to the ground. Therefore I see no reason for arable farming to be caught by the PC7 provisions that regulate nutrient discharges (that are a carry-over of the previous planning regime). As I will discuss further below, the modelling ECan uses to predict nutrient discharges is hugely flawed, particularly for arable farming systems, and therefore the results cannot be relied upon.
- 49 Arable farming is very input/output matched when it comes to nutrients, especially regarding N losses. The amount of N loss from arable farming is balanced out by the amount of nitrogen that is removed from the land, therefore N discharges from arable farming have to be low, if not net zero.
- 50 We nutrient budget for planned yields (see below Table 1) and match our N applications to these requirements to achieve the target yield under irrigation. So we know for example that a 12T/ha crop of wheat, if all the grain and straw is removed off the farm, requires 25kg/T so it will require 300 units of N/ha including what is in the soil already.

Crop	Plant component	Fresh Wt (FW) or Dry Weight (DW)	Typical yield (t/ha)	Harvest Index	Enter Expected Yield into yellow cells (t/ha)	Avg Concentrations at harvest (kg/t)						Crop nutrient uptake (kg/ha)					
						N	P	K	S	Mg	Ca	N	P	K	S	Mg	Ca
CEREALS																	
Wheat	Grain (FW @ 14% moisture)	FW	7-15t	0.55	12.00	18	3.2	5	1.8	0.9	0.5	216	38	60	22	11	2
Wheat	Straw (if removed)	FW	7-15t		12.00	6.9	0.7	12	1.3	0.9	1.8	83	8	144	16	11	22
Wheat	Total (if straw removed)											298.8	46.8	204.0	37.2	21.6	23.6
Wheat	Silage (38% DM)	FW	10-20t		15.0	16	2.1	11	1.3	0.9		240	32	165	20	14	

Table 1 - Crop Nutrient Uptake Calculator

- 51 As a comparison to arable farming, dairy farmers apply large amounts of N, and feed substantial amounts of supplement and a major portion of the N in this is returned to the soil in concentrated patches of urine from the cows, which as we know is the most likely potential source of increase in the concentration of N in the groundwater.
- 52 There is also a greater risk of N contamination to groundwater on dryland arable versus well-managed irrigated arable, as the required amount of water is not always available so surplus pools of N can potentially leech into sub soil after the crop is removed in the event of a reasonable rainfall event.
- 53 If PC7 is expecting reductions from arable farming regardless of the above, it will not be worth growing crops as targeted yields will not be achieved and therefore will not be economical to grow.

Issues with OVERSEER

- 54 The results of OVERSEER modelling, particularly related to arable farming, has shown its inadequacy for what it is used for. It relies too heavily on assumptions rather than actual resultant data.
- 55 Having read ECan's Report on the uncertainty associated with OVERSEER⁴ I note that arable farming is not even referred to in the Report. Arable farming has multiple scenarios because of many different crops and many different soil types, and as a result it would be incredibly hard to model the nutrient discharges from arable farming. OVERSEER does not even come close to being able to do so accurately.
- 56 Further OVERSEER modelling is also often subject to arbitrary (and sometimes false) modelling inputs which invariably gives rise to inaccurate outputs.
- 57 As I have said above, N discharges from arable farming are low, if not net zero. Therefore any modelling which says otherwise must be erroneous.

Issues with baseline GMP

- 58 PC7 overall penalises farmers that are already operating with GMP and doesn't recognise improvements that many have already made AND will continue to be made with further farmer education, technology and science proven ways to make these improvements.
- 59 To reduce to below baseline GMP will be extremely unfair when we are already operating at a very high level of nutrient management and that this baseline figure is a moving target depending on what version of OVERSEER is used to create these numbers, thus showing the fallacy of the way it is being managed.

⁴ Etheridge, Z., Fietje L., Metherell A., Lilburne L., Mojsilovich O., Robson M., Steel K., Hanson M. 2018. Collaborative expert judgement analysis of uncertainty associated with catchment-scale nitrogen load modelling with OVERSEER®. In: *Farm environmental planning – Science, policy and practice*. (Eds L. D. Currie and C. L. Christensen). <http://flrc.massey.ac.nz/publications.html>. Occasional Report No. 31. Fertilizer and Lime Research Centre, Massey University, Palmerston North, New Zealand. 14 pages.

- 60 The baseline GMP is a flawed and unfair concept as it restricts development of property and also penalises those that may have been already operating at a good management level during the baseline period 2009-2013 versus those that needed to improve and have had scope to improve since due to prior poor management.

Difficulty with requiring long term reduction plans in Table 8-9

- 61 I have difficulty trusting the science and modelling that has led to the reductions required by Table 8-9, the reason being that the results of the modelling do not align with what I have observed in practice. The results seem to point to the science and modelling having a large margin of error, at the very least.
- 62 I also struggle to understand how the plan to reduce nitrogen over the long-term timeframe included in Table 8-9 can be based on anything but uncertainty scientific predictions. As a result, I do not see the use in requiring farms to forecast as far as 2080, when there is so much uncertainty involved in getting to that date (for instance around what state the environment will be in, and what technology has become available).
- 63 I doubt whether Table 8-9 can be justified, especially given that the economic and social consequences of the reductions will be severe, and as a result need to be supported by robust scientific understanding.

Issues with zoning boundaries

- 64 The proposed zone map (shown in Appendix 1, Figure 3) show dairy farms on one side of the boundary, not in the zone, then dairy and arable on the other side, included in the Nitrate priority areas.
- 65 During particularly wet years, there is an undercurrent which leads to water from farms to the north of the proposed Nitrate priority area zones travelling in that undercurrent into the proposed zones. I would like to discuss this map at the hearing.
- 66 The inappropriate modelling of areas has led to the creation of Nitrate priority area zones that are flawed and seem almost arbitrary. The end result does not align with happens in the area in reality, based on my years of experience living, farming and observing in this area.

Issues with transfer of water permits and water zones

- 67 Science and practical irrigation experience would tell us that to reduce the amount of water available when permits are transferred to less than potential evapo-transpiration requirements of the land increases the chance of overwatering and potentially more N to groundwater. It does not allow for good irrigation and nutrient management.

- 68 We have irrigation consents on both sides of Woodfields Rd, the south side is in the Eyre Zone and the north side in Cust Zone. We know that the streams run from the North West in general and crosses Woodfields Rd, so we should be able to transfer permits from one Groundwater Allocation Zone to another, as the water flows.
- 69 This additional restriction within PC7 seems to be another example of the theory not matching the reality.

Issues with restrictions on increasing Horticulture areas

- 70 The restrictions in PC7 on any increase in Horticultural areas seems contradictory to the need to provide for more food production and food security in New Zealand.
- 71 There are the local community food needs, then national needs but also there is millions of people starving in the world and we should be able to help these poor people. This will also help our own country by growing the economy and providing for man as God intended. I quote again: ***"Moreover the profit of the earth is for all: the king himself is served by the field."-Ecclesiastes 5v9 & "He that tilleth his land shall have plenty of bread: but he that followeth after vain persons shall have poverty." – Proverbs 28v19***

ENVIRONMENTAL, SOCIAL, EMPLOYMENT, AND CULTURAL BENEFITS VS COSTS OF RELEVANT PC7 PROVISIONS

Benefits of PC7 provisions

- 72 The PC7 provisions may reduce nitrogen losses to groundwater over time, albeit based on forecasting that is uncertain and sometimes obviously inaccurate, and albeit in a way that is inappropriately restrictive of farming. We detail below some other reasonably practicable options further below that would achieve this same positive outcome.
- 73 I agree with the 190kg/ha limit per ha for pastoral farming as per the national water plan, because a good portion of this N is returned to the soil in contrast with arable farming where input closely matches output especially on irrigated land. Any further improvements to pastoral farming will be science based utilising technology advancements which will continue to become available. Take for instance the simple coating of urea with inhibitors that release the N at a more even rate and the trial work on humate coatings to urea that allow reduced urea rates for the same response. I also support reduced single application rates of urea, particularly on the lighter soils which are potentially more prone to leaching. This is basic farmer training that is required for a potential positive result without reducing productivity.
- 74 Scottville Farm fully supports the increasing stream augmentation and water storage, within the provisions of PC7. The surplus flows from rivers should be utilised in this way. Storage is needed to increase irrigation reliability to target of 95% thus supporting good irrigation practices. Augmentation of streams helps improve their use and reduces nutrient loading.

Cost to arable farmers

- 75 As I have said above, the PC7 provisions will severely hamper the ability of arable farms to operate.
- 76 Arable farming matches inputs to outputs more than other farming and does not have the same issues around concentrated leaching that can occur with dairy farming. So why should we be penalised? The Government's national water plan mentions that arable/horticulture is less than 5% of all farmland and thus has a small impact on the overall environment outcomes.

Cost to the wider farming community and NZ as a whole

- 77 Any loss suffered by arable farmers is likely to also be felt throughout the wider farming community, particularly the dairy farming sector. This is because arable farms supply dairy farms with the animal feed that dairy farmers need to operate. For example, about 50% of Scottville Farm's produce is sold to dairy farms. Dairy farms are effectively our biggest customer.
- 78 In addition, dairy product exports would be the largest single income earner for NZ, especially now with tourism on the back foot due to COVID-19.
- 79 The current Government has a plan that sets a target of lifting primary sector export earnings to \$10 billion a year by 2030 which would bring in a cumulative \$44 billion more in earnings in a decade. If successful, the plan would almost double the current value of the primary sector. How will this come about if the PC7 proposals are enacted in their current form?
- 80 I consider that there is a real disconnect between the provisions of PC7 and the objective it seeks to achieve. The below outcome, quoted above as part of PC7's objective, is a good example of this disconnect:
- Outcome 8: There is improved contribution to the regional economy from the zone*
- 81 Loss of food production becomes a high risk. When we have another COVID-type virus that affects crops, or serious drought, we will be glad of any food production we have locally.
- 82 Further, it is being argued that quality is already improving. A local well that is monitored for nitrogen levels by LAWA (M35/0132) is showing a slight improving trend over the last 10 years⁵. This well is approximately 300 metres away from some of our land (see Figure 4 of Appendix 1).
- 83 As we've said above, downturns in our business will have flow on effects for local businesses such as Luisetti Seeds, farm merchant stores, dairy farmers, the local economy and the well-being of many local families. The wider impacts of PC7 will have a major negative effect to the local and national economy and the well-being of

⁵ See trends recorded for Well M35/0132, Land Air and Water Aotearoa, <https://www.lawa.org.nz/explore-data/canterbury-region/groundwater-quality/waimakariri/m350132/>

many families, much more negative than any minor change in nitrate levels in water may have on the health of the community.

Conclusion

- 84 Although I support the objective of PC7, I do not think that the benefits achieved by PC7 outweigh the costs that follow as a consequence of the provisions.

LEVEL OF DETAIL IN THE SECTION 32 AND 42A REPORTS DOES NOT CORRESPOND WITH THE SCALE AND SIGNIFICANCE OF THE RELEVANT EFFECTS ANTICIPATED FROM PC7

- 85 As I've outlined above, the economic effects of PC7 on Scottville Farm's business will be severe.
- 86 However, neither the section 32 report, nor the section 42A report, assesses the impact of the Waimakariri PC7 provisions on our specific type of farming: arable farming.
- 87 Therefore, there is an obvious inconsistency between the level of detail in ECan's evaluation of the PC7 provisions and the effects that the PC7 rules will have on our operation (i.e. large and significant effects but low level of detail in the evaluation).
- 88 If it is accepted that there is a lack of analysis for arable farming types, then obviously ECan has not shown that the regulation of arable farming by PC7 is the most appropriate way to achieve the key objective.

OTHER REASONABLY PRACTICABLE OPTIONS

Option 1: Exclude arable farming altogether from PC7 provisions

- 89 As I have outlined above, arable farming does not lead to significant discharges of nitrogen (or any other nutrients). Therefore I consider it would not prejudice the PC7 objective to exclude arable farming altogether from the PC7 nutrient management provisions.
- 90 As part of this option, a new definition could be inserted into the plan for "arable farming", and the PC7 Waimakariri nutrient management rules would not apply to arable farming as defined.

Option 2: In relation to arable farming, remove nutrient loss modelling and instead regulate by requiring good management practice.

- 91 As I have outlined above, the scientific models used to calculate N losses from arable farms are not fit for purpose and do not generate reliable results. OVERSEER should not be used to model arable farming.
- 92 An alternative would be to exclude arable farming from the PC7 nutrient management provisions, and to introduce bespoke rules which require that arable farming operates using good management practice. I consider that it is unfair to require arable farms to go over and above this, and as I've said before, doing so is likely to make some farms economically unviable.

- 93 As for Option 1, a new definition could be inserted into the plan for “arable farming”, and the PC7 Waimakariri nutrient management rules would not apply to arable farming as defined.

Option 3: In relation to all farming, remove nutrient loss modelling and instead regulate by requiring good management practice

- 94 This would involve requirements that all farms, but especially dairy farms, improve their practices by education of good management practices along with developments in technology, rather than setting unrealistic and unjustified reductions in N applications without the solid data to prove this is necessary in every situation.
- 95 We need to seriously consider the importance of having farmer’s cooperation with any improvements that can be made. If we don’t, and there is just heavy regulation and enforcement, farmers may feel forced to supply misinformation to avoid going out of business, which will not benefit the aim of the PC7. We consider that it is far better to work with and support farmers to bring about environmental change, building on farming knowledge, experience and willingness to change.
- 96 Taking a collaborative and supportive approach may take more time to achieve the water quality results, but the results are likely to be of higher quality, longer-lasting and accompanied by good social and economic outcomes. This approach is therefore preferable to PC7.
- 97 Farmers are used to adapting to necessary change. Who else must take whatever the weather throws at us? Education alongside science-based information to encourage and facilitate changes that will reduce the risk of N loss to groundwater, is the answer.

ARE THE PC7 PROVISIONS THE MOST APPROPRIATE WAY TO ACHIEVE THE PC7 OBJECTIVE?

- 98 In short, no. I consider that any of the three alternatives outlined above would be more effective and efficient at achieving the PC7 objective.

CONCLUSION

- 99 With regards to arable farming specifically, I consider that:
- (a) It is inappropriate to apply any nutrient management provisions aimed at reducing N losses to arable farming, as arable crop farming itself does not result in a net positive discharge of N to the ground; and
 - (b) The OVERSEER modelling that ECan uses to calculate N losses from farming activities is not fit to model nutrient discharges from arable farming. Therefore it is inappropriate to model and regulate arable farms in the same way that the other farming types are modelled and regulated under PC7.

- 100 Further, I consider that PC7's regulation of all farming is inappropriate, and will lead to adverse outcomes for the district's economic, social, employment and cultural well-being.
- 101 The best way to maintain and improve the districts waterways is farmer education, technology, sound and proven science-based information and analysis, rather than enforcing unfair reductions of N applications that will have major economic and social negative affects if imposed.
- 102 I conclude that the PC7 provisions are not the most appropriate way to achieve the objective.

RELIEF REQUESTED

- 103 I request that the PC7 provisions relating to reductions in nitrogen are deleted in their entirety.
- 104 I also request that the proposed limits on increasing horticulture growing area are deleted from PC7 in their entirety.
- 105 Lastly, I request that the transfer of water permits within neighbouring Groundwater Allocation Zones should be provided for where appropriate.

John Sofus Larsen

17 July 2020

Maps

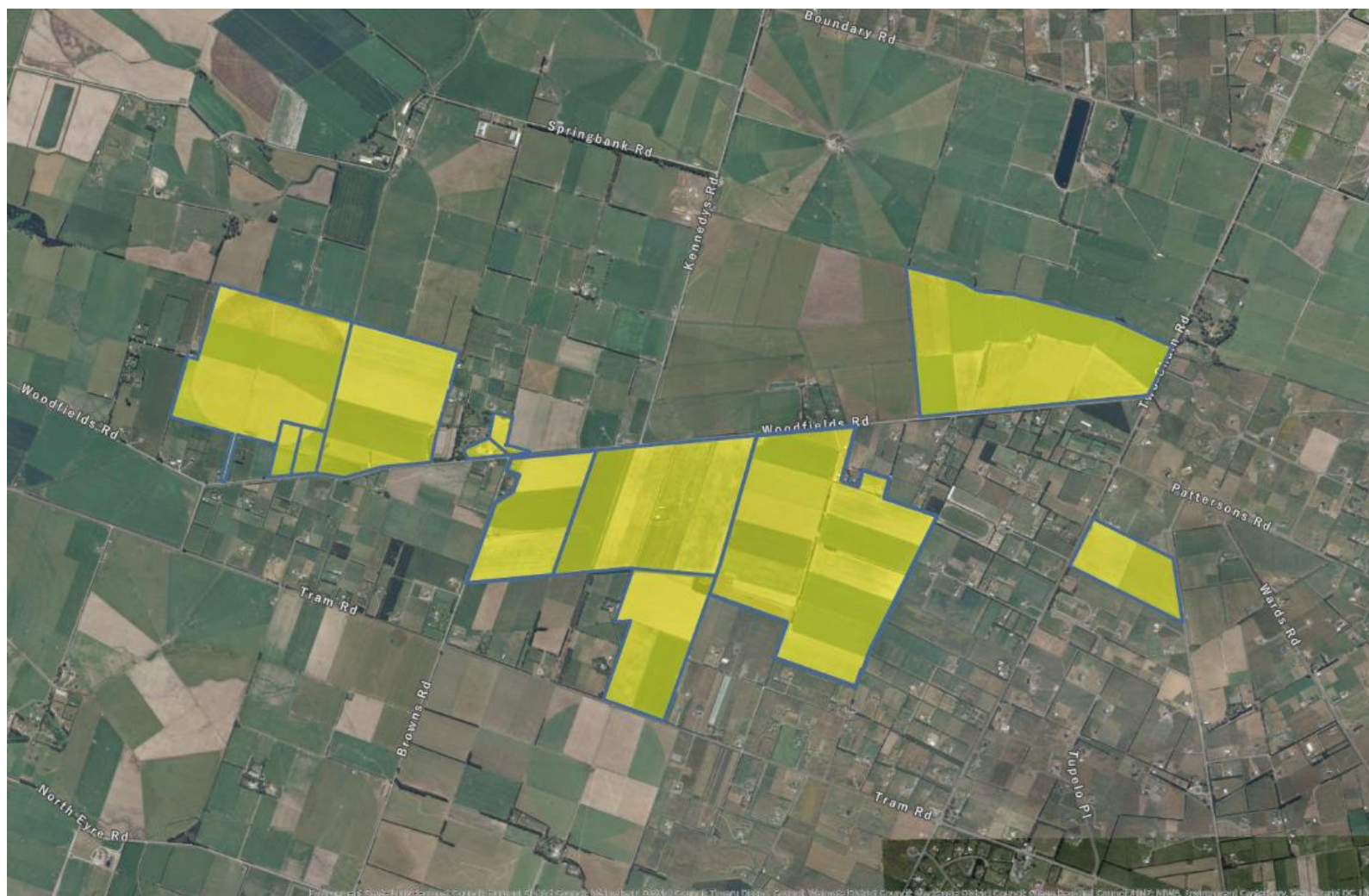


Figure 1 - Map showing location of land farmed by Scottville Farm (yellow with blue outlines)

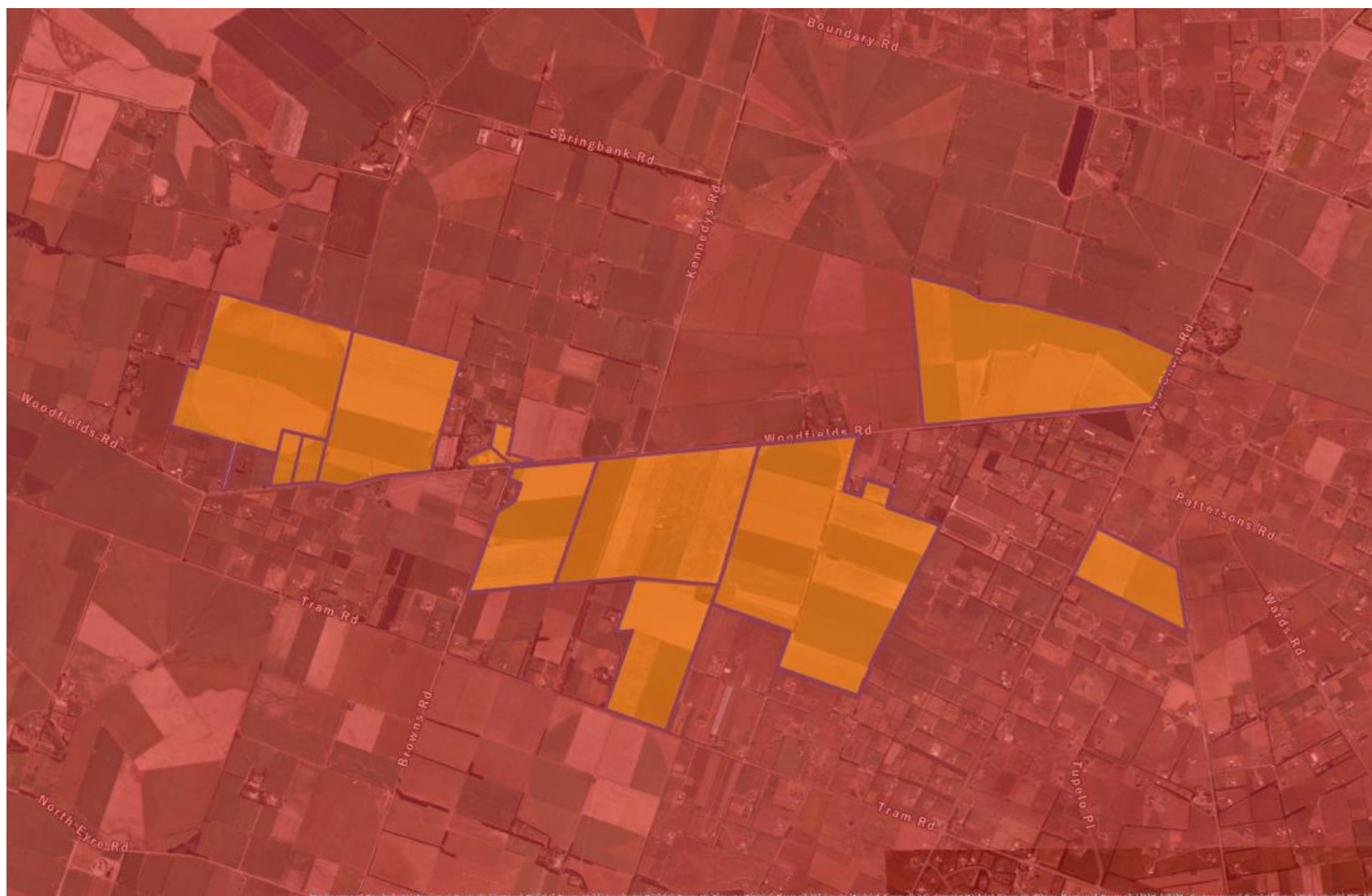


Figure 2 - Map showing location of land owned/managed by the submitter (yellow with blue outlines) within the Red Nutrient Allocation Zone from the LWRP

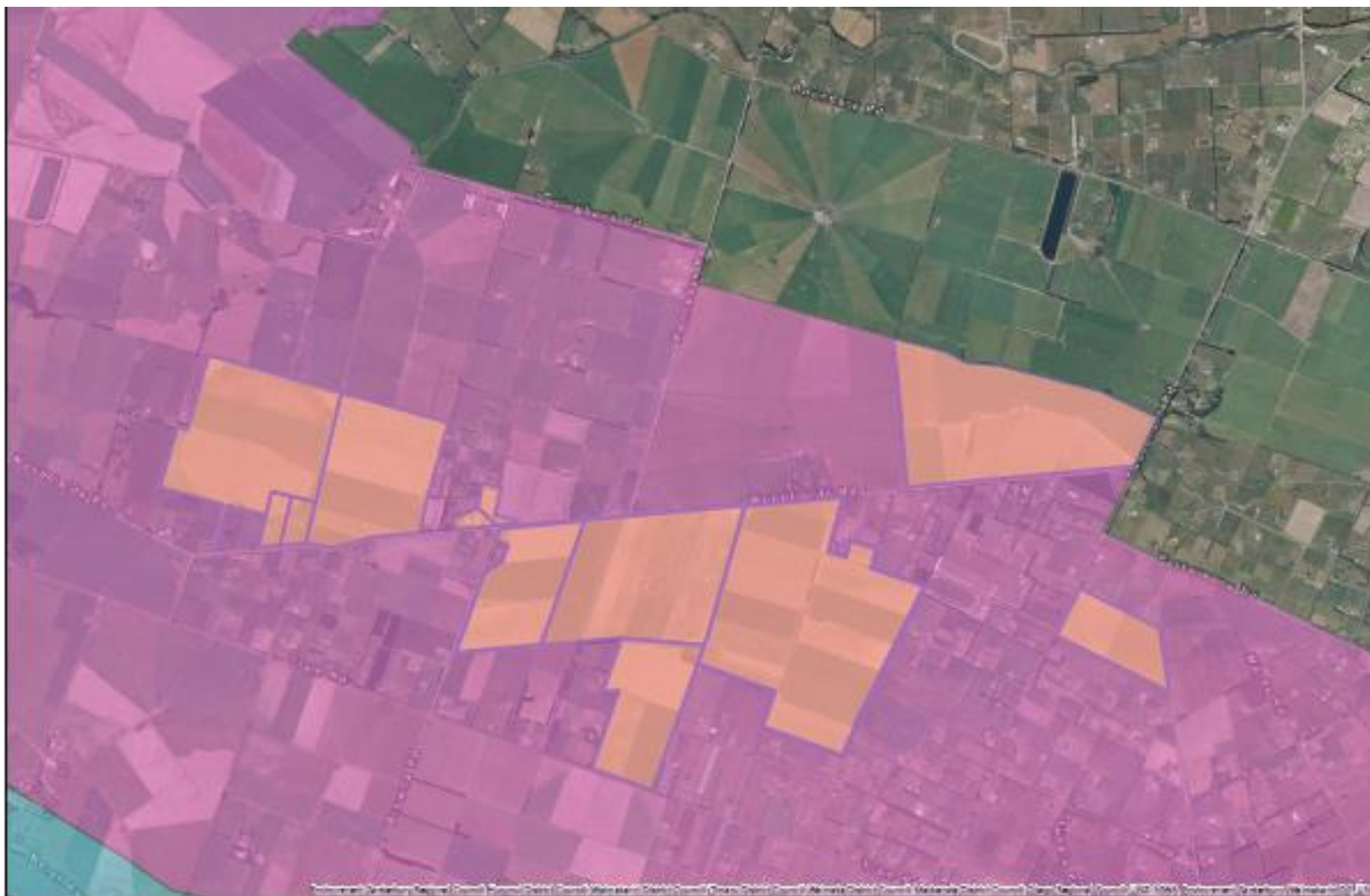


Figure 3 - Map showing location of land owned/managed by the submitter (yellow with blue outlines) within the Nitrate Priority Sub-area E from PC7 (pink overlay)

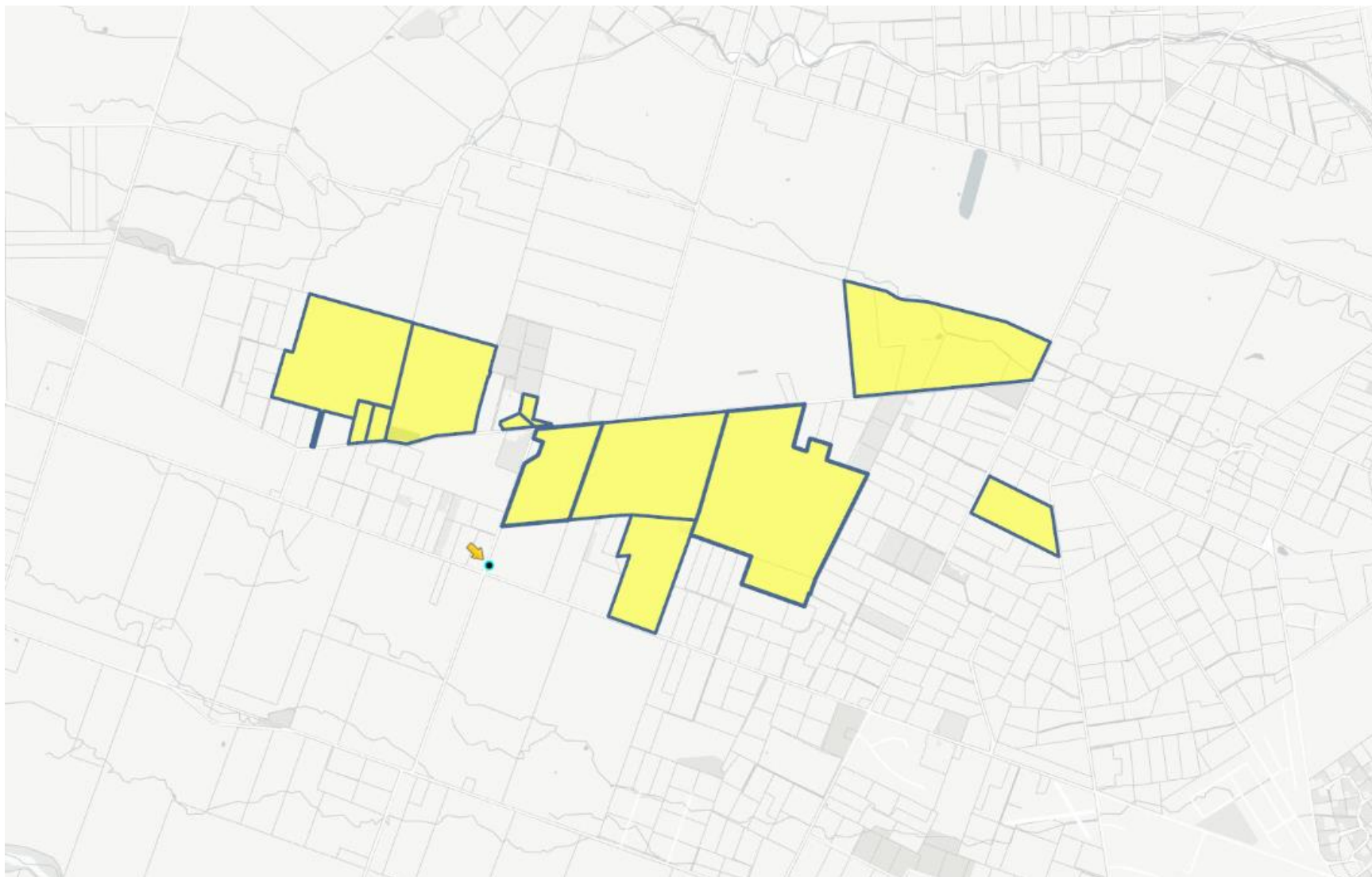


Figure 4 - Map showing location of land owned/managed by the submitter (yellow with blue outlines) with nearby waterways, and Well M35/0132 (yellow arrow)

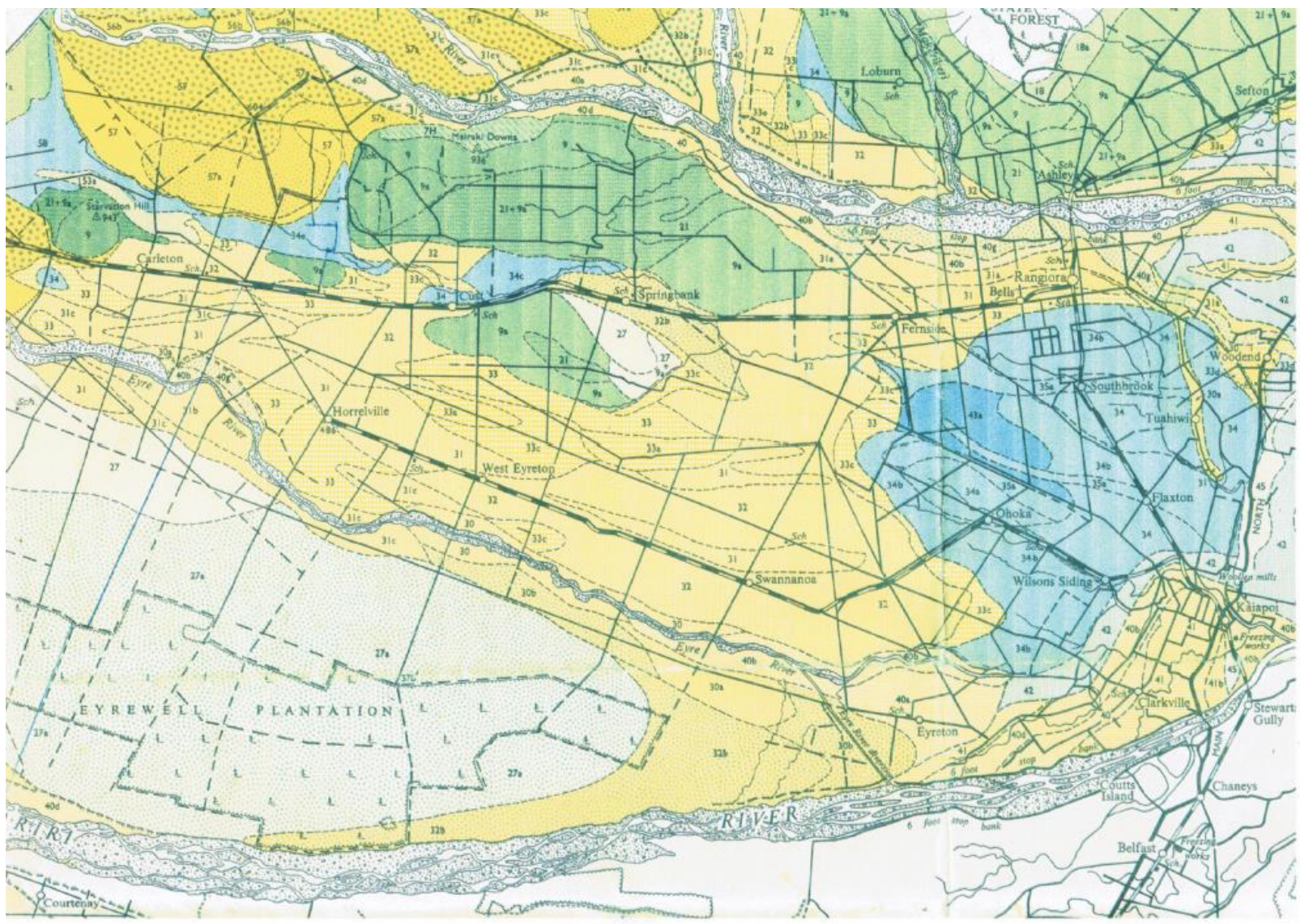


Figure 5 - Soil map