

Before the Independent Commissioner
Appointed by the Selwyn District Council

Under	the Resource Management Act 1991
In the matter of	a hearing on Plan Change 79 to the Operative Selwyn District Plan
	Birchs Village Limited
	Applicant

Statement of Rebuttal Evidence of Mark Everest

1 May 2023

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**anderson
lloyd.**

Summary of evidence

- 1 My full name is Mark Rutherford Everest. I prepared a statement of evidence dated 17 April 2023. My qualifications and experience are set out in that statement of evidence.
- 2 I repeat the confirmation given in that statement, that I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court.
- 3 Based on the rezoning in my evidence, I considered the PC79 Site is constrained by irrigation water availability and nutrient discharge allocations. I considered that productivity is constrained and will remain constrained primarily due to the land parcel fragmentation and development of residences on the PC79 site which results from earlier planning frameworks. The land on the PC79 site can no longer be managed in a highly productive manner.
- 4 Land use options without irrigation are significantly constrained to low intensity uses. It is unlikely farmers would invest in high value, highly productive crops such as vegetables without the security of irrigation water to finish crops economically.
- 5 Due to capital constraints, the likely proposition of running the PC79 site as a highly productive land based production unit would be as a lease or as a share farm, requiring the management unit to comply with the nutrient discharge within the CLWRP.
- 6 I considered clause 3.6 of the NPS-HPL and interpret the PC79 proposal as meeting clause 3.6 of the NPS HPL as defined by subclause 1.3. While the soil is classified as being highly productive, limitations, of ownership, nutrient, water and reverse sensitivity currently result in, and will continue to result in, the PC79 site soils to operate at a relatively lower productive capacity. The PC79 site is so constrained the land is not highly productive as defined by 3.6 of the NPS-HPL. Mr Mthamo has considered site constraints in his evidence in detail.
- 7 I do not consider that the PC79 site is capable of highly productive land based primary production after considering a 30 year time frame.

Tom Fraser's evidence

- 8 In this statement I have focused on the Evidence of Tom Fraser dated 23 March 2023.

Irrigation

- 9 In Mr Frasers evidence he suggests crops and yields possible for the PC79 site for potatoes, cabbages, wheat and fresh peas. I note that these appear to be irrigated yields. In Paragraphs 16 to 21 of my Statement of Evidence I outline the very low probability of obtaining sufficient additional irrigation water. Without irrigation water, the crops and yields proposed by Mr Fraser would not reliably be obtained.
- 10 Mr Fraser suggests that arable crops do not require irrigation over the summer months. Yield response to irrigation studies undertaken by the Plant and Food Research indicate that optimal yield is obtained by fully irrigating wheat right up to grain maturity¹.
- 11 While the grain is drying down over a typical four-week period, the soil moisture status continues to reduce.
- 12 In order to grow two successful crops per year as suggested by Mr Fraser, the soil moisture deficit incurred during grain dry down must be replenished with irrigation.
- 13 While I agree that some arable crops use less water than pastures, crops such as corn, peas, potatoes and grass seed often require the same or more water as an irrigated pasture². I therefore do not accept Mr Fraser's statement that less irrigation water is required for arable farming.
- 14 Mr Fraser states that the PC79 site has been historically irrigated, producing a variety of vegetable crops, grains and seeds with no irrigation in some years.
- 15 In part I agree with Mr Fraser. In some years it is possible to grow high value crops with no irrigation, however, I do not agree that a farmer would invest in growing high value crops without the guarantee of rain or irrigation. Vegetable and seed growing have high costs of production and a reliable yield is necessary to enable the operator to make a profit. Without irrigation water, there is no guarantee of a reliable yield or profit, which is why vegetable growers and quality grain and seed growers farm with irrigation.
- 16 I agree with Mr Frasers statement that his listed crops may finish successfully with only 75mm of irrigation, however, in a dry season, the irrigation demands could be three times as much to achieve the same yield potential. Mr Frasers statement is misleading with respect to assessing irrigation requirements as when an irrigation consent is sought. Applicants typically apply for sufficient irrigation water so that crops are not yield limited 90% of the time. Mr Mthamo's Statement of Evidence

¹ Craige, R.A., Brown, H.E., (2013), Irrigation management of autumn sown feed wheat.

² Rajanayaka, C., Fisk, L., (2018), Irrigation water demand and land surface recharge assessment for Heretaunga Plains, *Aqualinc Research*

(pages 47 to 52) provides a detailed assessment of irrigation requirements based on good irrigation management designed to optimise the capture of rainfall.

- 17 Mr Fraser indicates that 17ha of the PC79 site was previously irrigated and irrigation infrastructure is still installed. Mr Geddes and Mr Broadway³ now own the 17ha of land previously irrigated by CRC131234. Both Mr Geddes and Mr Broadway have described to me the remaining irrigation mainline and hydrants as being removed due to redundancy or have been damaged consequently rendering them non-functional.
- 18 While the irrigation pump and well described by Mr Fraser may be able to be used for 17ha of the 27ha able to be irrigated, new hydrants, new mainline network, and connections would need to be installed.
- 19 CRC131234 provides the consent holder with resources to pump continuously 6 litres per second. Using the same assumptions as the Aqualinc Report⁴ relied on in my Statement of Evidence, 6 litres per second is sufficient water to irrigate approximately 12 hectares of land. The current consent holder is already irrigating approximately 12 hectares of land, therefore leaving no surplus water available under consent CRC131234 to irrigate any of the PC79 site.
- 20 Irrigating the PC79 land from CRC131234 would require additional groundwater allocation to be purchased and require Canterbury Regional Council to grant consent for transfer and use as discussed in paragraphs 18 to 24 of my Statement of Evidence. Irrigation water consent transfer would likely be subject to an assessment of environmental effects which includes a nutrient loss assessment as discussed in paragraphs 25 to 36 of my Statement of Evidence.
- 21 A prudent investor would provision for the installation and consenting of an additional well in any financial viability assessments if purchasing a land without an irrigation consent.
- 22 The costs of installing a well and consenting water take and use would be unchanged from my Statement of Evidence these costs are fixed costs, relatively unaffected by scale in this case.
- 23 Paragraphs 20 to 24 of my Statement of Evidence summarise a very low probability or obtaining irrigation water on the PC79 site.

³ Advice note from Mr. Broadway to Mr. Geddes

⁴ Aqualinc Research Ltd Memorandum to Birchs Village Ltd regarding Irrigation Water Supply (17 April 2023)

Nutrients

- 24 Mr Fraser assumes that the properties would run independently as highly productive, separate units. I disagree that they could be run as highly productive separate units.
- 25 My economic analysis undertaken and summarised in my Statement of Evidence assumed that the whole 27 effective hectares of the PC79 site would be farmed as one management unit. For the PC79 land to function as one management unit, management would be by way of a lease and included into another entity, or one manager would operate all land holdings under one share-farming or lease arrangement.
- 26 It is unlikely individual land holders would invest in or engage in highly productive agriculture on their own account due to capital cost challenges associated with small scale operations. Therefore, if there was any probability of the land being used for highly productive land-based primary production, the whole 27ha would likely be managed as one management unit and be captured by Rule 11.4.13 in the Canterbury Land and Water Regional Plan (CLWRP).
- 27 Paragraph 36 of my Statement of Evidence applies and nutrient loss increases will likely restrict further development of the land to highly productive land based primary production.

NPS-HPL

- 28 My Statement of Evidence provides an assessment of probable limitations that constrains the PC79 site's ability to support land-based primary production over the long term from a farm consultant perspective, sighting:
- (a) Physical nutrient and water constraints precluding the land from supporting highly productive land based primary production.
 - (b) Legal ownership, water and nutrient availability limitations constrain the PC79 land from functioning in a highly productive manner. Reverse sensitivity effects that are already prevalent will only increase with time, imposing inferred or actual legal constraint on operations pertaining to highly productive uses.
 - (c) While the gross size of the PC79 site could be run as one management unit, it is highly unlikely this will happen due to the intensive fencing and infrastructure fragmentation that has been

undertaken as part of historical subdivision process. I therefore conclude that the shape and size of the PC79 site precludes it from operating in a highly productive capacity.

- 29 I consider the PC79 site therefore meets Clause 3.6 and Clause 1.3 (productive capacity) of the NPS-HPL as having a lower productive capacity despite being located on soils classed as capable of being highly productive.
- 30 The intent of the NPS-HPL is to prevent further loss of productive land to unproductive purposes. The land on the PC79 site is already constrained and to a lower productive capacity. Rezoning the PC79 land for residential and commercial subdivision will result in a loss of highly productive land, but will not see a loss of productive capacity in the Selwyn District.
- 31 I do not believe that the PC79 site is capable of highly productive land based primary production after considering a 30 year time frame.

Mark Everest

Dated this 1st day of May 2023