

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

Proponent

Summary and Rebuttal Statement of Evidence of Victor Mthamo

1 May 2023

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**anderson
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Qualifications and Experience

- 1 My full name is Victor Mkurutsi Mthamo and I am a Principal Consultant for the environmental science, engineering and project management consultancy Reeftide Environmental and Projects Limited (Reeftide). My experience and expertise is outlined in my evidence in chief for PC79.

Scope

- 2 I provide a summary of the conclusions in my evidence of evidence; and
- 3 My rebuttal evidence addressing evidence of the following witnesses:
 - (a) Benjamin Love.
 - (b) Tom Fraser.
 - (c) Kirk Lightbody – policy planner CCC.
 - (d) Serena Orr – planner CRC.

Summary of evidence

- 4 I provide a summary of the conclusions in my evidence of evidence. In my evidence I concluded the following:
- 5 Rezoning can only occur under NPS-HPL¹ where it is necessary to meet the development capacity requirements of the National Policy Statement on Urban Development 2020 (**NPS-UD**), and where:
 - (a) There are no other reasonably practicable and feasible options for providing that capacity within the same locality and market while achieving a well-functioning urban environment; and
 - (b) The benefits of rezoning outweigh the long-term costs associated with the loss of HPL for land-based primary production, taking into account both tangible and intangible values.
- 6 The site's productive capacity is constrained by the following factors:
 - ~~(a)~~ Soils. While the soils are predominantly classified as Land Use Capability (**LUC**) 1 – 2, wetness is a factor that constrains the productive use of parts of the Site.

¹ Clause 3.6 of the NPS-HPL 2022

- (b) Moisture deficits and irrigation availability – The Site has a single consent. The available irrigation water is not sufficient to meet the plan water demand in case of arable agriculture. It is currently not possible to apply for new resource consents for that purpose, so irrigation of the Site could only occur if existing consents were transferred from other sites.
 - (c) Nutrient limits. The Site is in a red nutrient zone. Strict nutrient limits are currently in place through the Canterbury Land and Water Regional Plan (**CLWRP**) which would significantly constrain the use of nutrients at the Site. In my opinion, those limits are unlikely to ease in the short or medium term.
 - (d) Reverse sensitivity. The Site is next to a newly established sports field, Kakaha Park. In my opinion, establishing and maintaining any primary production activities will result in adverse effects on mainly young people who will use the park. This can be managed through the use of a dense landscaped buffer. However, such a buffer will reduce the availability of land for the actual production activities, in turn further limiting its productive capacity.
 - (e) Fragmentation – The Site and the land around it are in fragmented ownership. Consolidating ownership to create a large contiguous block that can be farmed intensely will be difficult, if not impossible. Fragmented ownership is well documented as a hindrance for intensive land use productivity. On this basis, it is unlikely that the productive potential of the LUC Class 1 and 2 soils will ever be realised for the Site even assuming other constraints such as lack of irrigation water are addressed.
- 7 Alongside these factors, the ‘costs’ of losing the Site for land-based primary production must also, in my opinion, be considered in the context of land which would remain available for those activities within the Selwyn district and the Canterbury region. In particular, of all the “HPL” in those geographical areas, the Site represents a reduction of only 0.0044% and 0.026% respectively.
- 8 Put simply, BVL’s Proposal would result in the loss of negligible amount of land which, while it may be “highly productive” in terms of the NPS-HPL definition, is subject to a number of constraints which significantly limit its productive capacity over the long term.
- 9 In that context, I support PC79 in terms of clause 3.6 of the NPS-HPL and the wider objectives of that document.

Benjamin Love

- 10 In his Point 3 Mr Love writes “*The area where these developments are planned are some of the most productive farm land/soil in the country. Once it's developed this productive land is lost for ever.*”
- 11 I demonstrated in my evidence in chief that the site was constrained by a number of factors which made it not so suitable for intensive land-based production. I summarised these factors in Paragraph 11 of my evidence.
- 12 I also concluded in Paragraph 12 that the Site represents a regional and district reduction in HPL of only 0.0044% and 0.026% respectively. BVL’s Proposal would result in the loss of negligible amount of land which, while it may be “highly productive” in terms of the NPS-HPL definition, is subject to a number of constraints which significantly limit its productive capacity over the long term.
- 13 It is, therefore, my opinion that Mr Love overstates the potential loss in HPL.

Tom Fraser

- 14 Mr Fraser discusses various aspects of my evidence in his submission. Below I address the matters he raises.

Soils

- 15 Mr Fraser is concerned with my use of the word wetness to discuss the soils’ poor drainage. He writes “*Wetness is not normally used to describe soil properties. Ability for soils to drain is the more Appropriate term*”. I wrote in Paragraph 18 of my evidence how The Land Use Capability (**LUC**) described by Lynn et al. (2009)² is used in defining the soil LUC Classes. Lynn et al (2009) also identify four sub classes (soil wetness, erosion susceptibility, soil physical and chemical properties and climatic limitations) – I defined these terms in **Attachment 2** of my primary evidence. Lynn et al (2009) also define “soil wetness” as resulting from poor drainage or a highwater table”. Therefore, the term wetness is a technical and legitimate term when discussing LUC classes.
- 16 Mr Fraser also writes:
- (a) “*Mr Mthamo states that the soils have a significant physical restraint which is “wetness. This is completely incorrect. Mr Mthamo has stated in appendix 2 that 90% of the area is well or moderately well drained. The remaining 10% of soil are imperfectly drained. The imperfectly drained definition is the mid-*

² Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF 2009. *Land Use Capability survey handbook: a New Zealand handbook for the classification of land*, 3 rd ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science. 163 p.

range in soil drainage properties so cannot be considered as poorly drained. With reasonable farm management practices these moderately drained soils are capable of high productivity'.

- (b) I have been consistent in my evidence in explaining that poorly drained soil makes up 11% of the site (Paragraphs 36-38).
 - (c) Mr Fraser is correct in stating that imperfectly drained soils are in the mid-range of soil drainage properties. I note, in addition, that imperfectly and poorly drained and imperfectly drained soils can create management challenges related to the risk of soil compaction and pugging from animal treading or vehicular movement. Therefore, the imperfectly drained soils within the PC79 site are still a challenge to work with.
- 17 Mr Fraser takes issue with the crop examples I listed in Paragraph 38. He states that *"The examples stated in this paragraph are almost entirely to do with irrigation and soil nutrients and have almost nothing to do with drainage"*. The examples I provided are of crops that cannot stand wet feet. Crops that are unlikely to achieve the productive potential regardless of the cause/source of the soil wetness.
- 18 Mr Fraser lists what he calls *"Average yields of crops on class 2 soils around Prebbleton"*. It is not clear to me which property these yields have come from, the soil types, groundwater conditions, soil types, irrigation etc. As a farming systems expert Mr Fraser would be well aware that soils can vary within a very short distance. Therefore, to assume that because the yields he states came from some property near Prebbleton the PC79 would be able to achieve the same level of production is erroneous.

Irrigation

- 19 The submitter disagrees with my summary in Paragraph 44 that to maximise agriculture production irrigation is required. He argues that *"This statement is applicable for maximising pasture production (dairy farms) then irrigation is required throughout the growing season. However, for most arable crops and horticulture crops irrigation is only required for some periods of the year. For example, most arable crops do not require irrigation over the summer months as dry conditions are required during this period to harvest"*.
- 20 I consider that every plant/crop needs moisture for maximum production. The moisture has to be available at the right time it is required by the plant. This is primarily so during times of peak growth when the plant evapotranspiration rates are high and there is not enough rainfall to meet the crop demands. If there is not enough rainfall during that period irrigation is essential otherwise the plant/crop yield will be severely constrained. This is why dryland farming can be a gamble and yields are generally lower than irrigated agriculture yields unless the rainfall

season is above average or the rainfall coincides with the periods of high crop water demands.

Water Availability/Irrigation

- 21 Mr Fraser takes issue with Table 3 in my evidence. He states that “*This table estimates the total water required to maintain available soil moisture at 100% so is overestimating the amount of irrigation a farmer would apply. Plant growth is not limited till available soil moisture levels reach 50% of saturation*”. I explained in Paragraph 46 the basis for the annual volume calculations in Table 3. The volume is based on modelled irrigation applications and takes into account the site soils, the rainfall, the climate and factors in the irrigator application efficiency. What he describes as 50% saturation is what we call Allowable Irrigation Depletion in irrigation systems design. This is also taken into account in the annual volume in Table 3.
- 22 In the remaining paragraphs in this section of his submission Mr Fraser discusses irrigation management and scheduling. These site management principles are helpful in making the available water go further and ensuring that plants have water as and when then need them. They do not explain away the need for water to be made available at the critical periods.
- 23 Mr Fraser states that “*Class 1 and 2 soils such as the soils on the Site, have a deeper topsoil profile than other classes of soils which means that the total moisture holding capacity of these soils is much greater than the shallow class 3 and 4 soils. For Farm management practice this is important as autumn and spring sown crops will require little or no top up from irrigation to reach maturity by early summer harvest. Some examples of this are as follows for crops grown on the soils within the Site.* My comments with regards to the above statements are:
- (a) The shallower Eyre soils within the site have soil depths ranging from 20-45 cm which contrast to the deeper soils referred to by Mr Fraser which are over 1 m deep.
 - (b) The moisture holding capacity (Mr Fraser discusses) as opposed to the total available moisture is dependent on the soil textural classes.
 - (c) The autumn and spring planted crops may require little or no water at the start as Mr Fraser states. However, as the warmer temperatures and dry weather conditions are likely to coincide with their critical growth stages in early summer (December) and/or January irrigation may be necessary to meet the crop water requirements. This is contrary to the assertion by Mr Fraser that no water may be needed. Granted, where there is no irrigation farmers have to contend with whatever nature (e.g. hot and dry conditions) throws at them and if they could get water they would want it for insurance.

Irrigation Developments, Water Harvesting and Irrigation Efficiencies

24 Mr Fraser writes “*We have gone from wild flood irrigation to border dyke then to big gun spray irrigation. These changes resulted in around a 50% saving in water use while achieving an increase in production. Over the past 20 years there has been a further change to centre pivot application resulting in further efficiencies. More recently the shift has been to differential water application with the use of soil moisture tools to better apply the irrigation to where and when it is required*”. In response it is important to point out that:

- (a) The tools and strategies discussed by Mr Fraser ensure better use of the available water. In my assessments I have assumed high performing irrigation systems with a minimum irrigation efficiency of 80%. If higher efficiencies can be achieved on-farm this will enable the water to be used to cover more land but this does not negate the need for water. The annual volume I estimated in Table 3 is the minimum required to meet the crop demands in 9 out of 10 years.

Alternative Options Assessment

25 Mr Fraser asserts that “*Mr Mthamo has conveniently left out the most obvious parcel of land that could be developed into residential if the need was identified, which I believe it is not. This is the block of land west of Shands road towards the Motorway and bounded by Hamptons and Blakes roads. This is a very large parcel of land and if developed would last Prebbleton for at least the next 50 years. There are some major advantages when looking at this land compared to the proposed PC 79 site.*”

26 It is incorrect of Mr Fraser to say I “*conveniently left out*” what he calls the most obvious parcel of land. I stated in my Paragraphs 78 and 79 that I considered all land within the same market and locality and even beyond Prebbleton and as far as Rolleston.

27 I also considered the land parcel he refers to and my comments with regards to this land parcel are:

- (a) The land also contains HPL. Therefore, it would have been subject to the same analysis under the NPS-HPL as I did for the PC79 Site.

28 Mr Fraser is of the opinion that the block in question would be better suited because in his words the soils are “class 3 and stripy” and he puts the proportion of the shallow soils at 60%. While I do not necessarily agree with the proportions proffered by Mr Fraser I would like to highlight the following:

- (a) The PC79 also contains some shallow Eyre soils.

- (b) These shallow soils are outside the area that is subject to soil wetness making a considerable proportion of the land of lower productivity just as the block of land suggested by Mr. Fraser.
- 29 The best alternative land if available would-be land that is not within LUC Classes >3.
- (a) I discussed this in Paragraph 78 of my evidence, I also provided **Attachment 4** which showed the land that was >LUC Class 3. In the same paragraph I outlined why this land was not available or suitable for development.
 - (b) Beyond Prebbleton the next available land that was >LUC Class 3 was in Rolleston as I discussed in Paragraph 79.
 - (c) There is also a portion of land near State Highway 1 and Robinsons Road. This block is far from another existing residential development.
- 30 In Paragraph 80 I discussed how the PC79 is more suitable than other LUC1-3 land within Prebbleton. Given the multitude of constraints I identified for the PC79 the other LUC1-3 in and around Prebbleton is better suited to increased production compared to the site.
- 31 As I concluded in Paragraph 82, it is my opinion that if residential supply is needed, the Site is the appropriate location for that from a productive capacity perspective due to the factors I discussed in my evidence..
- 32 In summary I disagree with the conclusion by Mr Fraser that (a) there are other sites in Prebbleton more suitable than the PC79 site and (ii) irrigation water can be made available to the PC79 site.
- (a) I discussed the lack of irrigation water and the challenges of getting “new” water for irrigation in Paragraphs 46-51 of my evidence. I also understand from Mr. Geddes that the irrigation water that used to be available for irrigating their site was borrowed from the neighboring property and this is no longer available. This is discussed more in Mr. Everest’s rebuttal evidence.
 - (b) I have discussed above and, in my evidence, why there are no other suitable sites compared to the PC79 site.

Serena Orr

- 33 In her evidence Ms Orr states:
- (a) In Paragraph 3 that *“In addition, the proposal does not give effect to the National Policy Statement on Highly Productive Land (NPS-HPL) or meet*

the urban growth directions of the National Policy Statement for Urban Development (NPS-UD) or the SDP'.

- (b) In Paragraph 4c that the proposal does not give effect to the Canterbury Regional Policy Statement (CRPS) "*Objective 15.2.1 to maintain and improve the quality of Canterbury's soil and their productive capacity;*"

34 I agree with Ms Orrs' Paragraph 55 which states that "...subclause 3.10(1) of the NPS-HPL is limited to exempt activities not otherwise enabled under clauses 3.7 (rural lifestyle), 3.8 (subdivision), and 3.9 (non-productive uses). Subsequently clause 3.6 which is not specified, is not subject to an evaluation of permanent or long-term constraints under clause 3.10" However,

35 However, I do not agree with:

- (a) Paragraph 55 in which she says "*This means the only criteria relevant for consideration when rezoning highly productive land is clause 3.6(1)*". The whole of Clause 3.6 should be considered. For example, Clause 3.6(2) states:

In order to meet the requirements of subclause (1)(b), the territorial authority must consider a range of reasonably practicable options for providing the required development capacity, including:

- (i) *(a) greater intensification in existing urban areas; and*
 - (ii) *(b) rezoning of land that is not highly productive land as urban; and*
 - (iii) *(c) rezoning different highly productive land that has a relatively lower productive capacity.*
- (b) Paragraph 56 in which she states that "*Any constraints on PC79 for land-based primary production therefore does not affect the classification of PC79 land as highly productive, and are not relevant considerations under clause 3.6 (other than in the assessment of reasonably practicable options for providing the required development capacity). In paragraph 95 of Mr Mthamo's evidence, he states that few other sites have lower productivity or less constraints than PC79 and the proportional reductions in HPL for the district and region are insignificant. It is my view that proportional reductions of HPL are not relevant in the context of whether rezoning is appropriate. The cumulative effects of subdivision, use and development on the availability and productive capacity of HPL in Selwyn District is a more appropriate consideration, as is required under clause 3.13 of the NPS-HPL*".

- 36 I state in Paragraph 30 of my evidence that “*Clause 3.6(2) requires that in assessing (b) above, consideration must be given to a range of options including rezoning of land that is not highly productive as urban, and rezoning different HPL that has a relatively lower productive capacity*”. To this end I provided a detailed discussion and an assessment of the productive capacity of the PC79 land in Paragraphs 36-76 of my evidence.
- 37 In Paragraphs 76-82 I also discussed the consideration of alternative sites beyond the PC79 site and concluded in Paragraph 82 that “*..there is no land within that subject area that has overall lower productive capacity than the site. Given the multitude of constraints I have discussed for this Site, I consider this land to meet the test provided in Clauses 3.6(2)(b) and (c) NPS–HPL relative to other land within the Prebbleton fringe*”.
- 38 In Paragraph 66 Ms Orr states that “*In addition to the above Chapter 6 policies, the CRPS supports the NPS-HPL through Objective 15.2.1 for the maintenance of soil quality*”. I identified several factors in my evidence that make the site less productive than the LUC class imply. It was my conclusion that the land is of lower productive value compared to other land in and around Prebbleton.

Kirk Lightbody

- 39 Mr Lightbody states that “*PC79 does not give effect to the NPS-HPL, in particular Clause 3.6, and as such the request should be rejected.*”
- 40 However, the rest of Mr Lightbody’s evidence is focused on the development capacity and not necessarily on the land’s productive capacity. I, therefore, comment no further on Mr Lightbody’s evidence.

Conclusion

- 41 It is still my opinion the PC79 has sufficient constraints that hinder the land’s productive potential.