Before the Independent Panel appointed by
Central Hawke's Bay District Council

Under	the Resource Management Act 1991
In the matter of	The hearing of an application by **PAOANUI POINT LIMITED** to subdivide part of a 380 hectare rurally zoned property to create 48 residential allotments

BRIEF OF EVIDENCE OF PHILIP MICHAEL TITHER

Dated 5 July 2023

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Introduction

1. My full name Is Philip Michael Tither. I am one of the principals and director of AgFirst Pastoral (HB) Ltd. We provide farm management consultancy services to sheep, beef and deer farmers and to the agribusiness sector primarily in Hawke's Bay but also work throughout New Zealand and occasionally internationally.

Qualifications and experience

2. I have an Agricultural Science degree from Massey University graduating in 1983.

3. I am a Registered Farm Management Consultant with the New Zealand Institute of Primary Industry Management (NZIPIM) gaining registration in 1991. I was made a fellow of the Institute in 2017.

4. I have worked for 40 years as a farm management consultant of which 28 of those have been with AgFirst. AgFirst have 11 branches throughout New Zealand. Our branch (AgFirst Pastoral (HB) Ltd) is based in Hawke's Bay.

5. I have significant experience in farm business analysis and benchmarking and am an experienced user of farm simulation modelling using Farmax. I was a founding shareholder of Farmax Ltd just over 20 years ago and spent 15 years on the Farmax board. David Brownrigg and I sold our shareholding to Farmax Ltd 5 years ago, but we are still active users of the farm management tool. My experience with use of the Farmax model is extensive. I believe that I have the greatest number of farmer clients using Farmax tools within the NZ sheep and beef consultancy industry. Farmax is an appropriate tool for evaluating the physical and financial impacts of land use change.

Code of Conduct

6. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note and agree to comply with it, as I have in completing this statement . I consider that each of the matters on which I express an opinion is in my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

7. I confirm that I am independent of the parties to these proceedings.

Summary of investigation and work completed.

8. In preparing this statement and conducting the farm productivity modelling work I describe in it; I firstly reviewed the following information and documents:

   - Goodman Rural report *Pourerere Development Residential Beach Sites* dated 20th of October 2022, prepared by Mr SP Goodman.

   - Landvision report - technical memorandum for an application for subdivision consent under the resource management act 1981 in respect of 25 Punawaitai Road, Pourerere Beach prepared by Mr. Lochie Grant

   - Relevant sections of the Assessment of Effects on the Environment (AEE) *Application For Subdivision Consent Punawaitai Road* (Stage 3) and associated Subdivision Plans (Appendix 3).

   - National Policy Statement – Highly Productive Land (NPS-HPL) and Ministry for the Environment Guide to Implementation (March 2023) (pages 19 to 26 in particular),

9. I also visited the adjacent Punawaitai Station property owned by the Havelock Bluff Trust on Tuesday 13th of June 2023 to view the land and in turn assess expected impact on productivity.

10. I have since prepared Farmax farm simulation models to evaluate both physical and financial impacts of the proposed subdivision utilising.

    - my knowledge of the region

    - previous modelling carried out using Beef + Lamb Economic Service surveys.

    - guidance and feedback from the neighbouring farmers of Punawaitai Station, Charlie and Mel Harris.

11. Finally, I have read Mr Goodman's statement of evidence dated 28 June 2023.

The Questions

12. In preparing this statement, I have been asked to address the following questions:

(a) Do you agree with the finding in the Goodman Rural report dated 20 October that there would be a 4.5% reduction in farm surplus as a result of the subdivision?

(b) What is your assessment of the impact of the subdivision on "overall productive capacity" of the farm property, as it exists prior to that subdivision?

(c) What alternative productive uses (falling within the definition of "land based primary production" in the NPS-HPL) could the farm property sustain?

(d) What is the total reduction in overall productive capacity of the original farm holding, taking into account the previous subdivision stage?

(e) Do you have any comment on the issue of pugging by livestock and impacts on the freshwater /aquatic habitats and values ?

(f) Do you agree that lost capacity could be mitigated elsewhere?

Question 1. - Percentage reduction in farm surplus

13. I disagree with the findings by Goodman Rural that reducing the flat land area by 18 ha would only result in a 4.5 % reduction in economic farm surplus (EFS).

14. My analysis of the impact of loss of 18 ha of flat land is a reduction in economic farm surplus of 65%.

15. The components of this economic loss include:

- effective land area reduced by 5.5%
- pasture production on the flat land is 39% higher than the farm average
- under my modelling the current farm system's meat and wool production is reduced by 7.6%
- the margins earned on flat land are higher per kg of dry matter eaten than hills and so revenue declines by 15.1%
- with reduction in land area it is only variable costs that change and there is a component of fixed costs within a farm business. Consequently, I calculate a reduction in farm expenses of 4.4%

- using my modelled typical farm business expenses, the result is a significant reduction in economic farm surplus (of 65%).

16. In regard to the NPS-HPL the loss of meat and wool production potential is the key factor to focus on, as the measure of 'productive capacity'.

Land areas

17. I firstly note that the Goodman Rural report is based on the removal of 17ha of land from the available grazing area (see page 3 of the Report), whereas the subdivision plans included with the AEE show a 18.25ha area of land being removed from production as Stage 3a (lot 100).

18. By my calculations the reduction in effective grazing area (as determined by me, see paragraph 29 below) is 5.5%.

19. However, as I also discuss below, the reduction in net earnings (farm surplus) or overall productive capacity is not a simply 'pro rata' reflection of the loss in grazing area, as appears reflected in the Goodman Rural report (calculating a 4.5% reduction in farm surplus, slightly less than the 4.6% reduction in farm size (reference to 17 ha removed from parent block of 370ha)).

20. There are three key reasons for this, as I discuss in more detail later in this evidence.

21. The first reason is because of the higher pasture growth rates and higher feed quality from the more productive flats, 18 hectares which is being subdivided and converted to housing. When I factor this into the model, I calculate the impact on meat and wool production (as a measure of "*productive capacity"*, as referred to in the NPS-HPL) is a loss of 7.6% and gross income declines by 15.1%.

22. The second reason is because some costs are largely fixed and unlikely to change with the loss of farm area. My assessment is that operating expenses would only decline by 4.4% relative to the pre subdivision scenario. When this is factored in (greater marginal expenses per area of remaining land, less 'economy of scale') I assess a reduction in the economic farm surplus of just over 65%.

23. Table 1 below summarises outputs from my modelling comparing the current farm (Baseline) scenario to a farm model with 18 ha reduction in flat land from the subdivision.

Table 1- Summary of Farmax modelling for loss of 18 ha flat land

	Baseline	Minus 18 ha	Difference	% change	
Effective ha	325	307	18	5.5%	
Gross Income	$ 378,937	$ 321,763	$ (57,174)	-15.1%	
Total Farm Expenses	$ 312,319	$ 298,503	$ (13,816)	-4.4%	
EFS	$ 66,618	$ 23,260	$ (43,358)	-65.1%	*Economic farm surplus*
Pre tax profit	$ 7,917	$ (31,054)	$ (38,971)		*After debt servicing assuming district average*
Total Kg Product	81643	75448	-6195	-7.6%	*Kilograms of meat and wool*

24. A third reason why I disagree with the Goodman Rural assessment is because I have applied a different 'effective area' as the starting point. In particular, I have assessed the current farm at approximately 325 effective hectares, whereas the Goodman Rural report assumes a 370ha effective area as the baseline scenario.

25. These three key differences between my models and the models prepared by Goodman Rural are explained further below.

Effective Area

26. The subject farm has a title area of just under 377 ha and I understand that Goodman Rural used a modelled effective area of 370 ha (page 3 of the Report) i.e. only 7 ha ineffective. However, having studied the aerial photography and viewed the property, I consider that there are reasonably significant proportions of the property that are currently ineffective for pastoral production including:

- easterly facing hills overlooking the beach predominantly covered in gorse.
- steep eroding land with little available grazing.
- an exotic plantation forest of approximately 5 ha.
- buildings, tracks and waterways.

27. I estimated an effective pastoral area for the existing property of 325 ha.

28. As the Goodman Rural Report notes (page 3), some 17ha (actually 18) of the 86 ha of LUC 3 land on the property is being removed, being about 21% of the best quality LUC 3 land on the property, 18.0 ha of which is within what I assess to be the effective area under the baseline scenario.

29. Overall, given the subdivision in question will remove 18 ha of effective land from the property as a whole, my calculation of effective land reduction from the proposal is 5.5%.

Pasture growth differential

30. Farmax can be modelled with a single block to represent the whole farm depicting the overall average, which will incorporate the more highly productive areas through to the lowest producing areas of the property. Alternatively, if information is available on land area characteristics, then we can develop a more precise model by allocating different pasture productivity and feed quality estimates to the different parcels of land, depending on their productivity factors such as slope.

31. Because the change in income calculation by Goodman Rural is only in proportion or 'pro rata' to the land area change calculated, I suspect that a single block area has been used in their modelling. In my opinion, this is too simplistic to be reliable or accurate.

32. I have viewed slope maps for the property and have allocated the effective area into 4 land classes comprising

-	flat	less than 4° slope	85 ha
-	easy	slope 4° to 15°	195 ha
-	medium Hill	16 to 20°	25 ha
-	moderately steep	20 to 25°	20 ha

33. As discussed in the following section of this evidence, I estimate that overall, the farm has a potential stocking rate of around 3650 stock units. On that basis, I calibrated potential pasture growth to ensure that the model is feasible at this stocking rate.

34. The overall property average potential pasture growth rate required to carry my assessed potential stocking rate is 7,185 kg of dry matter per ha per year.

35. I estimate that the flat land will have potential pasture production of around 10,000 kg of dry matter per ha per year i.e. 39% higher pasture growth than the farm average of 7,185 kg.

36. I note that Mr Lochie Grant assessed the Luc 3 flats as having an average carrying capacity of 12 stock units per ha versus the farm average at 9.2, so using this methodology shows a 30% higher carrying

capacity for the flat land, being in the same ballpark with the assumption I made on differential pasture production.

37. The higher available pasture growth for the flat land is a key input to the Farmax model and after the model user defines how the livestock policy will adapt to not having this pasture supply available then the model can calculate that the reduction in meat and wool production. In this case our modelled decrease in total meat and wool production of 6,195 kg is a 7.6% reduction over the total farm business.

Feed Quality and Enterprises

38. Viewing the subject property across the fence and inspecting the pastures on the adjoining Punawaitai Station confirmed that the feed quality on the flats is significantly better than the typical and surrounding hill pastures, Consequently, in my simulation model I have assumed the flats produce high-quality feed, the easy Hills are rated as medium quality, and the steeper hills as low quality. As I now explain, these quality ratings impact on the potential animal performance (i.e., conversion of dry matter to meat and wool production) and they also have an impact on what I refer to as 'policy choice'. Policy choice is the term used to describe the attributes of the farming system that a farmer will choose to implement on different areas of their farm. For example, the animal species e.g. sheep versus beef and the chosen production system such as breeding or finishing.

39. Farmers will vary the stock type and performance expectations depending on the attributes of the land including things such as pasture quality and the impact of contour on the ability to implement appropriate stock policy.

Photo 1. High-quality pastures on flats

40. This photo (taken from within the Punawaitai Station property looking towards the proposed subdivision area where the sheep are currently grazing) shows the high quality ryegrass pastures in this flatter area of land.

41. My modelling was consistent with the Goodman Rural report model utilising breeding ewes and dry cattle enterprises.

42. For the sheep policy, I utilised a scaled version of the Beef + Lamb Economic Service model and split the cattle finishing enterprise equally between bull beef and steer finishing. I modelled most of the bulls sold as store (unfinished i.e. have not yet achieved slaughter weight) yearlings and the steers finished to prime condition ready for slaughter at 2.5 years of age. Details of stock numbers modelled are as shown in Appendix – paragraph 110.

43. With these chosen cattle policies I modelled wintering 501 dry cattle along with 1288 sheep. The Farmax model calculates an overall total stocking rate of 3645 stock units based on feed intakes of 560 kg of dry matter per stock unit.

44. The high-quality flat land provides an opportunity to utilise the dry matter with higher returning finishing stock options, whereas the hill country is suited more to a combination of breeding stock and lower growth rates on finishing stock.

45. These policy choices and resultant animal performance have a significant impact on the income generated from the dry matter and in turn financial margin achieved on the meat and wool production.

46. The baseline model I have applied produces an overall average gross income for sheep of 19.2 cents per kg of dry matter eaten and for beef of 18.7 cents per kg of dry matter eaten.

47. With the reduction in flat land I expect that typically pastoral farmers would choose to finish less stock.

48. My modelled response to removing 18 ha from the effective area as a result of the subdivision is that most of the lambs would be sold store at weaning (without finishing) and that the farmer would not carry over any rising 2-year-old bulls. This means the higher performing stocking polices (set out in my Appendix paragraph 111), i.e. Gross Margin for Lambs Post Weaning at 20.1 cents per kg of dry matter and for R2 Bulls at 25.5 cents) are not available and the return from the breeding ewe

policy is reduced because of commission costs from selling animals store (unfinished).

49. The table below summarises the gross income and gross margins for the 5 enterprises modelled for the baseline (current farm system) and compares this to the expected policies with 18 ha less flat land showing these on a per kg of dry matter eaten basis.

Table 2

Impact of Policy change and Performance on Income per kg Dry Matter Eaten

Baseline Model

	Gross Income Cents per Kg DM Eaten	Gross Margin Cents per Kg DM Eaten	% of Total Feed Demand
Breeding Ewes	19.1	13.3	36%
Lambs post weaning	20.1	12.5	3%
Finishing Steers	14.5	10.5	30%
R1 Bulls	22.0	17.5	23%
R2 Bulls	25.5	21.9	8%
Sheep Average	19.2	13.2	39%
Beef Average	18.7	5.8	61%
Whole Farm Average	18.9	14.1	

18 ha Flat land lost

	Gross Income Cents per Kg DM Eaten	Gross Margin Cents per Kg DM Eaten	% of Total Feed Demand
Breeding Ewes selling stores	18.2	12.5	39%
Finishing Steers	14.5	10.5	33%
R1 Bulls sold store	19.4	15.0	28%
Whole Farm Average	17.3	12.6	

Change c / kg	-1.6	-1.5
% change	-8.3%	-10.7%

50. Taking the two higher performing finishing enterprises out of the modelled stock mix reduces gross farm income per kg of dry matter eaten by 8.3% and when combined with the reduction in dry matter available reduces the overall gross income income by just over 15%.

51. The model is demonstrating what we see in practice in that areas of land that have the ability to produce high quality pastures not only produce more dry matter and have a consequent higher carrying capacity but there is a leverage affect on overall animal performance and this impacts more widely on the economic efficiency of converting dry matter into financial return.

Income Calculations

52. The overall estimates of expected gross farm income in Mr Goodman's model and mine are very similar on a per ha basis i.e. my model indicates an expected gross farm income in an average year of $1,166 per ha (ie $378,936 over 325 (effective area) ha, see Table 3 below) and Mr Goodman's model for the existing production is calculated at $1,142 per ha (ie $422, 508 over 370 ha, see Goodman Rural Report, Table at Section 4.0) .

53. The total income largely differs because of the different estimates of effective area as explained above.

54. To calculate income, I populated my Farmax model with product prices for lamb, beef and wool at the average of the past 5 years.

55. Store stock prices are derived from their historic relative value to carcass values.

Economies of scale

56. By contrast to income, overall expenses calculations are significantly different between Mr Goodman's model and mine. His calculation of total farm expenses is $211,271 ($571 per ha), mine is $312,319 ($961 per effective ha) (see my Table 3).

57. The key difference is that I have included an allowance for wages of management of $80,000.

58. Economic farm surplus necessarily includes financial recognition of the cost of owner's time if an employed manager has not been included in the accounts, as is standard practice for farm accounts analysis (see also definition in Appendix paragraph 114).

59. I have populated my expenses file using the 2023 forecasts from the Beef + Lamb Economic Service models. Some expenses have been set on a variable basis (such as per stock unit) but others have been recognised as being predominantly fixed costs and unlikely to change with a loss of grazing area, thereby reflecting the impact of loss of economy of scale.

60. The costs that I have set as fixed versus variable can be identified by the comparison of the baseline model to the model where the 18 ha of flats are lost.

Table 3-Comparison of average year Profit and Loss

FARMAX

Compare Forecast Profit and Loss

Jul 23 - Jun 24

			325 Ha	Lose 18 ha Flats	Difference
Revenue	Sheep	Sales - Purchases	138,300	121,012	-17,288
		Wool	11,750	10,624	-1,127
		Capital Value Change	0	2	2
		Total	**150,051**	**131,638**	**-18,413**
	Beef	Sales - Purchases	228,886	190,126	-38,760
		Total	**228,886**	**190,126**	**-38,760**
	Total Revenue		**378,937**	**321,763**	**-57,173**
Expenses	Wages	Wages	18,223	16,858	-1,365
		Management Wage	80,000	80,000	
	Stock	Animal Health	20,993	19,421	-1,573
		Shearing	17,007	14,652	-2,354
	Feed/Crop/Grazing	Cash Crops	159	150	-9
		Forage Crops	11,000	11,000	
		Regrassing	4,000	4,000	
	Fertiliser	Fertiliser (Excl. N & Lime)	47,381	43,831	-3,550
		Nitrogen	3,652	3,652	
		Lime	3,645	3,372	-273
	Other Farm Working	Weed & Pest Control	8,201	7,586	-614
		Vehicle Expenses	7,000	7,000	
		Fuel	9,549	8,834	-715
		Repairs & Maintenance	25,513	23,601	-1,911
		Freight & Cartage	4,957	4,585	-371
		Electricity	3,317	3,068	-248
	Standing Charges	Administration Expenses	12,000	12,000	
		Insurance	7,000	7,000	
		ACC Levies	3,645	3,372	-273
		Rates	10,078	9,520	-558
	Total Farm Working Expense		**297,319**	**283,503**	**-13,816**
	Depreciation		15,000	15,000	
	Total Farm Expenses		**312,319**	**298,503**	**-13,816**
Economic Farm Surplus (EFS)			**66,618**	**23,261**	**-43,357**
Other Expenses		Rent/Leases	24,638	22,792	-1,846
		Interest	33,932	31,390	-2,542
Farm Profit before Tax			**8,048**	**-30,921**	**-38,970**
Farm Profit per ha before Tax			**25**	**-101**	**-125**

EFS is a measure of farm business profitability independent of ownership or funding, used to compare performance between farms.
EFS should include an adjustment for unpaid family labour and management. This can be added to the expense database as management wage.

Farmax Red Meat 8.3.0.3

61. In my models I also included a $16 per stock unit allowance for interest and rent payments. This is the average of the economic service survey farms. The interest line within the Farmax model refers to the investment in livestock capital at an interest charge of 8%. As stock

units decline with land area subdivided or sold, the capital invested in livestock would be reduced and I make allowance for that in my comparison of the Baseline and Smaller Farm model.

62. A key factor in the comparison of expected profit before tax levels are that the current farm has the potential to produce a small profit whereas with the loss of the most productive land I expect the farm business to become marginal. Without economic viability productivity and physical sustainability are threatened.

Question 2- Impact on Overall Productive Capacity

63. My understanding of the NPS-HPL is that it refers to retaining overall "productive capacity", which is then defined as including 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

64. I note when populating the Farmax model I have drawn on assessment of the physical characteristics such as slope, aspect, drainage and pasture composition to determine dry matter supply and feed quality of each block. The size of the different blocks and livestock policies are also applied to determine productive capacity.

65. The focus of the Goodman Rural Report is on economic farm surplus, which is not the same thing as productive capacity, or the "ability of the land to support land based primary production" as under the NPS. Whether or not a surplus (or deficit) is made in today's market conditions can depend on factors other than the level of productive output (wool is a classic case of that at present, but wool prices may change in future).

66. This evidence deals specifically with the physical production of meat and wool as a more reliable measure of 'productive capacity', at this point in time.

67. My model of the smaller farm is based on production systems as they are today and as explained above, calculates a loss of meat and wool

production of 6195 kg from the 18 ha (344 kg per ha) which is a reduction of 7.6% in total production for the farm.

68. The block size proposed for the 48 lot residential subdivision of around 0.2 of a ha per site will, I believe, result in a negligible productive use. The block size is too small for any effective grazing or cropping.

69. I therefore estimate that all of the production capacity from the 18 ha of farmland will be lost if converted in the manner proposed.

70. As part of answering question 3 around potential for other land uses (addressed further below) I have modelled an option of enhancing the pastoral productivity of 18 ha of flat land with specialist forage.

71. In this case I have modelled a system utilising the herb Plantain along with more productive clovers and pastures renewed every 3 to 4 years. This forage option has become popular over the past decade and is well demonstrated on many farms in Hawke's Bay as well as scientifically verified by On Farm Research at Poukawa.

72. The Summary in Table 4 below outlines the key impact from establishing 18 ha of the flats area into plantain and clover pastures to increase sheep performance.

Table 4 - Impact of enhancing forage productivity.

	Baseline	Improve 18 ha with forage	Difference	% change
Effective ha	325	325	-	0.0%
Gross Income	$ 378,937	$ 405,196	$ 26,259	6.9%
Total Farm Expenses	$ 312,297	$ 322,805	$ 10,508	3.4%
EFS	$ 66,640	$ 82,391	$ 15,751	23.6%
Pre tax profit	$ 7,917	$ 22,988	$ 15,071	
Total Kg Product	81643	85988	4345	5.3%

73. As can be seen, and compared with a 15 % reduction in gross income (and 65% reduction in EFS, as under Table 1), converting the 18ha to more productive use results in a 6.9% increase in gross income, and 23.6% greater EFS.

74. The concept modelled is that the enhanced feed quality provides the opportunity to increase live weight gains for weaned lambs in the

summer and to increase breeding ewe performance in spring, resulting in both increased lamb weaning weights and higher ewe body weights.

75. The faster finishing of male lambs provides the opportunity to then prioritise replacement ewe lambs. This combined with improved spring nutrition of a proportion of the breeding ewes reflects into improved per head performance of the whole flock.

76. Thereby the flat land is utilised to leverage the performance of the hill country.

77. This model provides an opportunity to lift the pre-tax profit by just over $15,000 ($837 per ha) and increases meat and wool production by a further 4345 kg i.e. an extra 241 kg per ha on the 18 ha developed. At a whole farm level this is a 5.3% increase in meat and wool production, compared to a 7.6% loss in production with 18ha removed through subdivision.

Table 5 shows the impact on financial results from dry matter eaten.

Impact of Policy change and Performance on Income per kg Dry Matter Eaten

Baseline Model

	Gross Income Cents per Kg DM Eaten	Gross Margin Cents per Kg DM Eaten	% of Total Feed Demand
Breeding Ewes	19.1	13.3	36%
Lambs post weaning	20.1	12.5	3%
Finishing Steers	14.5	10.5	30%
R1 Bulls	22.0	17.5	23%
R2 Bulls	25.5	21.9	8%
Whole Farm Average	18.9	14.1	

Forage on 18 ha

	Gross Income Cents per Kg DM Eaten	Gross Margin Cents per Kg DM Eaten	% of Total Feed Demand
Breeding Ewes Increase liveweight	21.0	15.3	37%
Lambs on Forage	29.5	23.4	3%
Finishing Steers	14.5	10.5	30%
R1 Bulls & R2 Bulls	22.9	18.6	30%
Whole Farm Average	19.9	15.1	

Change c / kg	1.0	1.1	
% change	5.4%	7.7%	

78. This shows the gross margins on the whole farm lifting by 7.7% from the contribution of high quality feed.

Question 3 - Alternative Productive Uses

79. The section above indicates the potential to enhance productivity in association with the core business of sheep and beef farming. I believe that this frost free flat land also has potential for annual cash crops or permanent horticultural crops, and so disagree with the Goodman Rural report (page 4) in this respect.

80. I understand that buttercup squash has been grown in the paddocks proposed for the subdivision and leasing of land out to specialist squash growers is a relatively common use of acceptable quality flats in this coastal Central Hawke's Bay zone.

81. A small orchard was run on adjacent land by the previous owner of Punawaitai Station.

82. I recognise that moisture retention on these slower draining flats would be a potential limitation and that to enable successful horticultural development on a longer term basis a drainage program along with suitable irrigation would be necessary.

83. The subject land already has drainage ditches and a degree of fall which I expect would enable well-designed drainage to be implemented.

Photo 2- open drains

84. This photo taken from adjacent land looking towards the subject area shows some of the existing open drains.

85. My assessment of these flats is that they are typical of the Central Hawkes Bay coastal zone whereby they are of a slower draining nature which provides enhanced value in dry seasons but can be a limitation in wet years such as what we have experienced in 2022/23.

86. Consequently limiting farming of heavy cattle over the winter months is a commonly employed strategy to protect these valuable areas. I note that the adjacent Punawaitai Station property which I travelled across did not have significant pugging damage on their flats, despite being an all cattle operation, and the wet conditions over the past year or more. Choosing to farm lighter rising one year cattle and careful management are key factors but this indicates to me that these are not unusually wet flats.

87. Inspection of exposed banks provided a perspective of the soils on the adjacent property and my expectation is that the subject land next door will have similar attributes.

Photo 3 below taken on 13th of June 2023 does not indicate excessive wetness.

88. The enhanced forage policy outlined would focus most of the grazing to improving productivity of the sheep system with consequent benefits to sustainable soil management.

89. The gross margins for the improved forage system are outlined in the Appendix paragraphs 112 & 113 .

Question 4 - Original Farm

90. Using the modelling of current farm systems, meat and wool production for the area being subdivided is estimated at 344 kg per ha (refer paragraph 67 above) and so by adding the previous subdivision of (approx.) 5 hectares we can estimate that already productive capacity of 1720 kilograms of meat & wool has been lost.

91. Production before taking out this 5 ha would have been estimated at 83,363 kg (baseline model of 81,643+1720) . The lost 5 ha represents 2.1% of the farm total. When this is added to the proposed subdivision, the total production lost is 7915 kgs which is 9.5% of total production.

Question 5-Environmental Impacts

92. The Goodman Rural report suggests continued farming of the land being subdivided would be harmful to aquatic life, as a result of sediment (the subdivided being located close to a stream and prone to pugging, see pages 3-4).

93. All food and fibre production systems have environmental impacts, and our farmers, regional authorities and central government are all working to ensure these impacts are acceptable to the wider community and sustainable.

94. In response to this point in the Goodman Rural report, I now consider 3 environmental factors in relation to the proposed subdivision land including:

- Sediment loss to water
- Greenhouse gas emissions
- Nitrogen loss to water

Sediment Loss

95. The subject land is predominantly flat and not exposed to significant losses of soil to water if properly managed. I note that some of the open drains within the subject property are currently unfenced and exposed to livestock eroding the stream bank. This is a relatively significant critical source point and if the owners of the property were aiming to moderate sediment loss to water then removing cattle access to the waterways would be a higher priority than ceasing livestock grazing on flat land.

96. Other best practice management would include only grazing lighter animals in periods where the soil is wet e.g. sheep or rising one year cattle and using direct drilling for forage renewal, as I understand to be applied on Punawaitai Station.

97. If these best management practices were followed then I believe that sediment losses would be low. These could be objectively evaluated utilising Overseer modelling if required.

Greenhouse Gas Emissions

98. The Farmax model allows us to estimate the greenhouse gas losses relative to production. A key ratio is the efficiency index for kgs of CO2 equivalent's per kg of product (meat and wool).

99. The modelling shows that the smaller farm, without 18 ha of finishing land, will have a greenhouse gas efficiency of 15.9 kg CO2 e / kgs product.

100. Retaining the 18 ha and having a higher proportion of finishing stock improves the overall farm efficiency to 15.8 . A smaller number is better with less environment impact relative to the food production.

101. The enhanced forage system which enables higher live weight gains and improved animal performance reduces the ratio further to 15.2.

102. Overall the enhanced forage model shows a potential 4.4% improvement in efficiency of production across the whole property.

Nitrogen loss to water

103. There are many factors which impact on nitrogen loss. Modelling using Overseer can assist in identifying trends and expected impacts of farm policy. At this stage I have not modelled the farm system in Overseer as I feel this is outside the scope of the brief. Overseer could also

possibly be used to evaluate the impact of the alternative proposed land use of septic tanks.

104. If nitrogen loss to water is identified as a key risk factor to the freshwater/aquatic life then recent research has identified that converting to plantain based pastures will provide a significant reduction in nitrogen loss.

105. Other new research/technologies in the future may provide opportunities for us to keep land productive and moderate environmental impacts.

Question 6- Potential to Mitigate Lost Capacity on the Remaining Land?

106. The question of whether the lost physical and financial productivity can be made up by improving yield on the rest of the land, as was discussed in the Landvision report section 11.7, and 11.12, and in Mr Goodman's evidence (paragraphs 9-14). I do not disagree that many farms have a yield gap between current performance and potential and through intensifying productivity and/or applying best management practice to the remainder of the land that some of the losses could be made up. Farmers have their reasons for not always targeting full potential and the optimum level of productivity will vary depending on personal objectives and business/practical constraints.

107. In general my expectation is that the greatest opportunities for both physical and financial improvements lie with higher quality land capable of growing a wider range of different crops and forages. Flat land also enables practical application of more precise management and technology. My expectation is that current and future technology opportunities will be greater for more productive/intensive land relative to extensive areas with greater physical limitations. Taking away 18ha of this opportunity means it is lost from the farm system. At present the farm can have increased productivity applied across the whole farm, including the 18ha. That would not be the case in future.

108. History has shown that pastoral farms need to be more productive than they were in previous times and that farming can be a marginal (or negative) financial proposition in varying economic conditions. I expect that preserving yield potential across the whole farm will be important in the future for physical and financial viability.

Conclusion

109. Flat land where high quality pastures can be grown has considerable benefit to improving productive capacity and financial outcomes for pastoral farms, especially if best practice systems are implemented. In my opinion, loss of the 18ha of land being subdivided would result in a 7.6% reduction in productive capacity and a significant reduction in economic farm surplus and future viability.

Appendix

110. Stock numbers for Baseline system

Stock Reconciliation Numbers by Month for Punawaitai Station
Jul 23 - Jun 24

Sheep	Jul 23	Aug 23	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24
Ewe Lamb						352	352	352	308	307	276	275
Ewe Hogget	275	274	273	272	271	270						
Ewe	969	962	945	938	935	810	1045	1012	1009	1006	1003	1000
Ram	13	13	13	12	13	13	13	13	15	13	13	13
Mixed Lamb					281	699	494	369				
Total Sheep	**1257**	**1249**	**1231**	**1222**	**1500**	**2144**	**1904**	**1746**	**1332**	**1326**	**1292**	**1288**

Beef	Jul 23	Aug 23	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24
Bull Calf					112	224	223	223	223	223	223	223
1-Year Bull	223	223	223	223	136	56	56	56	56	56	56	56
2-Year Bull	55	55	55	55	55	47						
Steer Calf										112	112	112
1-Year Steer	112	111	111	111	111	111	111	110	110	110	110	110
2-Year Steer	110	110	109	109	109	95	67	40				
Total Beef	**500**	**499**	**498**	**498**	**523**	**533**	**457**	**429**	**389**	**501**	**501**	**501**

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Please note these models relate to the subject property owned by Poanui Point. The farm title refers to the farm name of the business that owns the Farmax subscription.

111. Baseline gross margins

Gross Margin for Breeding Ewes
Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales	134	53.1	2.68	142.21	19,056	
		Works Sales	282	18.7	6.45	120.42	33,959	
		less Purchases	3	74.7	13.98	1,044.39	3,133	
		Total					**49,883**	**6.9**
	Internal Sales		743	30.5	3.43	104.54	77,676	
	less Internal Purchases						0	
	Wool		2,578	2.2	1.84	4.07	10,496	
	Change in Capital Value						0	
	Total Revenue						**138,055**	**19.1**
Expenses	Stock	Animal Health	1,339			7.11	9,513	
		Shearing	2,578	2.2	2.52	5.56	14,339	
		Total					**23,852**	
	Interest on Capital						17,726	
	Total Variable Expenses						**41,578**	**5.8**
Gross Margin							**96,477**	**13.3**

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Gross Margin for Lambs Post weaning

Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales	149	33.9	3.06	103.73	15,456	
		Works Sales	588	17.2	7.22	124.08	72,962	
		less Purchases					0	
		Total					**88,418**	**147.9**
	Internal Sales						0	
	less Internal Purchases		743	30.5	3.43	104.54	77,676	
	Wool		494	1.2	2.20	2.54	1,255	
	Change in Capital Value						0	
	Total Revenue						**11,996**	**20.1**
Expenses	Stock	Animal Health	130			5.09	664	
		Shearing	494	1.2	4.68	5.40	2,668	
		Total					**3,332**	
	Interest on Capital						1,195	
	Total Variable Expenses						**4,527**	**7.6**
Gross Margin							**7,469**	**12.5**

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Gross Margin for Finishing Steers

Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales					0	
		Works Sales	109	303.0	5.44	1,648.19	179,653	
		less Purchases	112	220.0	3.71	816.02	91,394	
		Total					**88,259**	**14.5**
	Change in Capital Value						0	
	Total Revenue						**88,259**	**14.5**
Expenses	Stock	Animal Health	201			16.13	3,245	
		Total					**3,245**	
	Interest on Capital						21,001	
	Total Variable Expenses						**24,247**	**4.0**
Gross Margin							**64,012**	**10.5**

Farmax Red Meat 8.3.0.3

Gross Margin for R1 Bulls

Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales	167	350.2	2.90	1,016.98	169,835	
		Works Sales					0	
		less Purchases	224	110.0	5.00	550.13	123,229	
		Total					**46,606**	**10.1**
	Internal Sales		56	355.5	2.74	975.54	54,630	
	less Internal Purchases						0	
	Change in Capital Value						0	
	Total Revenue						**101,237**	**22.0**
Expenses	Stock	Animal Health	239			28.66	6,852	
		Total					**6,852**	
	Interest on Capital						13,924	
	Total Variable Expenses						**20,776**	**4.5**
Gross Margin							**80,461**	**17.5**

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Gross Margin for R2 Bulls

Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales					0	
		Works Sales	55	316.5	5.40	1,709.46	94,020	
		less Purchases					0	
		Total					**94,020**	**60.9**
	Internal Sales						0	
	less Internal Purchases		56	355.5	2.74	975.54	54,630	
	Change in Capital Value						0	
	Total Revenue						**39,390**	**25.5**
Expenses	Stock	Animal Health	46			15.76	719	
		Total					**719**	
	Interest on Capital						4,842	
	Total Variable Expenses						**5,562**	**3.6**
Gross Margin							**33,829**	**21.9**

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112. Gross margins with improved forage

Gross Margin for Breeding Ewes

Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales	134	58.3	2.67	155.92	20,893	
		Works Sales	441	19.4	7.15	138.74	61,186	
		less Purchases	3	74.7	13.98	1,044.39	3,133	
		Total					**78,946**	**10.6**
	Internal Sales		630	29.8	3.54	105.39	66,395	
	less Internal Purchases						0	
	Wool		2,592	2.2	1.85	4.02	10,408	
	Change in Capital Value						3	
	Total Revenue						**155,751**	**21.0**
Expenses	Stock	Animal Health	1,319			7.28	9,600	
		Shearing	2,592	2.2	2.56	5.56	14,415	
		Total					**24,015**	
	Interest on Capital						18,257	
	Total Variable Expenses						**42,271**	**5.7**
Gross Margin							**113,480**	**15.3**

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Ewe body weight increased by 2 kgs and lambing percentage increase from 121% to 126%

113. Post weaning lamb finishing enterprise

Gross Margin for Lambs on forage

Punawaitai Station, Jul 23 - Jun 24

			Number	kg/hd	$/kg	$/hd	$ Total	c/kg DM
Revenue	Stock	Store Sales					0	
		Works Sales	624	18.9	7.28	137.39	85,732	
		less Purchases					0	
		Total					**85,732**	**123.1**
	Internal Sales						0	
	less Internal Purchases		630	29.8	3.54	105.39	66,395	
	Wool		432	1.2	2.20	2.75	1,188	
	Change in Capital Value						0	
	Total Revenue						**20,525**	**29.5**
Expenses	Stock	Animal Health	126			5.21	656	
		Shearing	432	1.2	4.32	5.40	2,333	
		Total					**2,989**	
	Interest on Capital						1,239	
	Total Variable Expenses						**4,228**	**6.1**
Gross Margin							**16,296**	**23.4**

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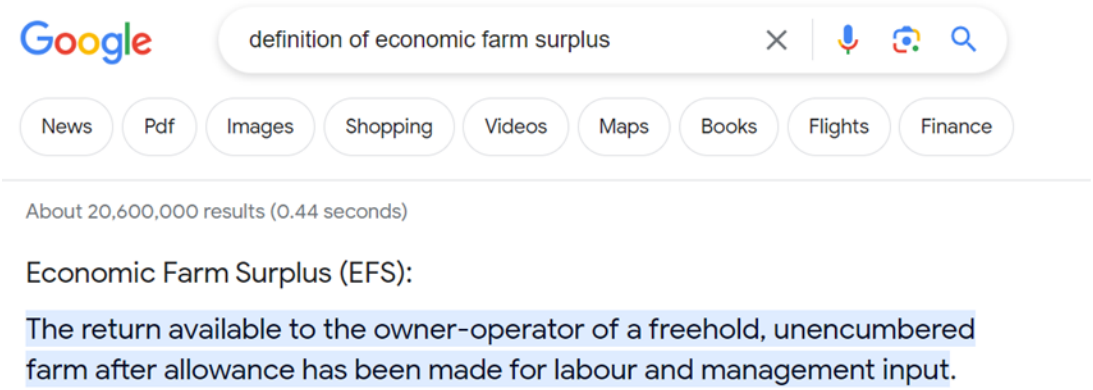
Average lamb daily gain - 210 g per day

114. **Definition of Economic Farm Surplus**



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