

Before the Hearing Panel
Appointed by the Central Otago District Council

Under The Resource Management Act 1991

In the matter of Private Plan Change 14 to the Central Otago District Plan

Evidence of Paul McGregor Edwards

13 May 2020

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Introduction

- 1 My name is Paul McGregor Edwards.
- 2 I have a Diploma in Agriculture and Diploma in Farm Management from Lincoln University.
- 3 I have been employed by Compass Agribusiness Ltd for the last 15 months and hold the positions of General Manager Consultancy and Agribusiness Consultant.
- 4 I have 31 years' experience in the stock and station industry with PGG Wrightson. The expertise and experience held within Compass Agribusiness has also been relied upon in completing this brief.
- 5 Compass Agribusiness was engaged to provide an objective analysis of the productive potential of Shannon Farm on a before and after basis so that the impact on production that results from Plan Change 14 can be quantified, and to assess the productive potential of Shannon Farm based on key productivity requirements.
- 6 In preparing this assessment I have drawn and relied on the wider expertise and experience held within Compass Agribusiness. I have also relied on industry information and site-specific information provided by NZ Cherry Corp and Waterforce, as identified in this brief. I have undertaken two site visits in February and March 2020.
- 7 In preparing this statement of evidence I have considered the following documents:
 - (a) the PC14 request;
 - (b) section 42A report; and
 - (c) relevant submissions.

Code of Conduct for Expert Witnesses

- 8 While this is not a hearing before the Environment Court, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2014 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within 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.

Scope of evidence

- 9 I have prepared evidence in relation to:
- (a) a comparative assessment of productivity of Shannon Farm under the status quo and PC14 proposal; and
 - (b) factors relevant to the productive potential of land in Central Otago.

Executive Summary

- 10 I have undertaken a comparative assessment of productivity over the PC14 Site, Shannon Farm, under the current land uses (assuming an average efficient operator) and as proposed by PC14. This demonstrates that the PC14 land uses will result in a significant increase in productivity, assessed as a 223% increase in productive output, or a 1031% increase in financial output.
- 11 I have identified factors relevant to productive potential of land in Central Otago, and have considered Shannon Farm against each of these factors, as follows:
- (a) Water for irrigation – Water is critical to deriving additional production out of land. NZ Cherry Corp holds both a groundwater permit and shares in the Ripponvale Irrigation Company Limited (RICL). I understand that the groundwater permit is sufficient to meet the irrigation and frost fighting demands of the cherry orchard extension included as part of PC14, assuming a planted area of 22 hectares. In order to provide sufficient reliability for frost fighting, a water storage facility for 20,000 cubic metres is required. I further understand that the quantity of water available under the RICL shares is limited and NZ Cherry Corp have elected to retain this water to improve reliability. Accordingly, no additional water is available to support productive uses over the remainder of Shannon Farm.
 - (b) Climate / microclimate – Important factors include whether the site is frost prone, subject to high wind speeds, and the number of growing degree days. The climate across Shannon Farm is generally suitable for horticultural production, however there are several characteristics which increase risk to yield, and other locations across the district which are more favourable with respect to growing degree days.
 - (c) Topography / aspect – Flat or moderately sloped land is preferred for horticultural development, to enable operation of machinery. South facing slopes will have reduced growing degree days, which impacts on fruit ripening. Shannon Farm has areas of flat or moderately sloped land to the south, with slopes becoming increasingly steeper and south facing towards the north.

- (d) Economic cost – Development will only proceed where this is economically viable. I consider that cherry orchards are the most economically viable land use in this location, however cherries are a high risk crop when weather events are considered.
 - (e) Labour supply – Limited access to labour can be a significant constraint on production. The proximity of Shannon Farm to Cromwell is generally a positive influence on labour supply, subject to cost of living impacts. NZ Cherry Corp has established a small workers' accommodation area within the cherry orchard extension area and intends to increase this provision (subject to obtaining resource consent) as part of the wider development proposal.
 - (f) Soil type – Crops which are suited to Central Otago can be established across a range of soil types, subject to provision of irrigation. Cherries in particular require free draining soils. Soils across the flatter areas of Shannon Farm are generally acceptable for horticulture and viticulture, but only where reliable water is available.
- 12 I consider that the proposed cherry orchard extension responds to the productive characteristics of the site to maximise productive potential, by utilising of those parts of the site with the best climate, aspect and soils for the most economically viable productive use, within the constraints of available water.

Comparative assessment of productivity

- 13 Comparative assessment of productivity Compass Agribusiness was engaged to provide comparative analysis of Shannon Farm on a before and after basis so that the impact on production that results from the Plan Change 14 proposal can be quantified
- 14 In assessing the productivity of Shannon Farm under both the status quo and PC14 proposal the following methodology was used:
- (a) define the land management / production system;
 - (b) calculate productive outputs, using actual data and / or industry benchmarking; and
 - (c) calculate financial performance, using actual data and / or industry benchmarking.
- 15 A summary of the assessments are provided below, with further detail contained in **Appendix 1**.

Status quo / current land uses

- 16 The 244.3ha current property is a smaller scale drystock (sheep, cattle, goats, deer) property with small areas of summer fruit orchards in differing states of repair.
- 17 There are two main forms of productive output generated from the current production system on an annual basis:
- (a) drystock: made up of sheep and beef predominantly, although historically the property has run some goats and deer. Productive output is measured in total kilograms of meat and fibre; and
 - (b) orchard: made up of fruit picked, measured in total kilograms of fruit.
- 18 Modelling of production across the assessed areas for an average efficient operator resulted in the following productive outputs:

Productivity				
<i>Drystock</i>				
Land Class	Area (hectares)	Feed Grown per hectare per year (kgDM/ha/yr)	Total Feed Grown (KgDM)	
High Country	149	2000	298000	
Dryland	20.9	3000	62700	
Irrigated	41.5	8000	332000	
Partially Irrigated	14	5000	70000	
	<u>225.4</u>		<u>762700</u>	kgDM
Feed conversion efficiency (feed grown / kg meat and fibre produced) = 40x				
			<u>19068</u>	kg meat & fibre
<i>Orchard</i>				
Land Class	Area (hectares)	Fruit Produced per hectare per year (kg/ha/yr)	Total Fruit Produced (kg)	
Orchard	<u>12.1</u>	10400	<u>125840</u>	kg fruit
<i>Total Production</i>				
Total kg Meat Fibre & Fruit produced from property			<u>144908</u>	

- 19 Total productive output was then used to determine a projected financial return. I have determined earnings before interest tax and depreciation (**EBITDA**) as a benchmark, as per the table below:

Financial				
<i>Drystock</i>				
Land Class	Area	Total Feed Grown (KgDM)	Feed Utilisation	Total kgDM consumed
High Country	149	298000	55%	163900
Dryland	20.9	62700	75%	47025
Irrigated	41.5	332000	75%	249000
Partially Irrigated	14	70000	75%	52500
	225.4	762700		512425
Drystock assessed on a per stock unit basis 1 stock unit = consumes 550kgDM/annum			Total assessed stock units	932
Otago industry average for sheep and beef extensive \$53/su *70%			\$37	
Drystock EBITDA			\$34,565	
<i>Orchard</i>				
Land Class	Area (hectares)	Fruit Produced per hectare per year (kg/ha/yr)	Total Fruit Produced (kg)	
Orchard	12.1	10400	125840	
		EBITDA/kg	\$2	
		Orchard EBITDA	\$251,680	
<i>Total EBITDA</i>				
		Total EBITDA	\$286,245	

PC14 proposal

- 20 The proposed development includes a 29.2ha cherry orchard incorporating workers' accommodation, and provision for the rezoning of approximately 120ha of the property for rural lifestyle land uses. The remaining area is defined as High Country and Open space areas.
- 21 I have assessed the property under what Compass Agribusiness would consider to be an 'average efficient operator and business model'.

22 There are three main forms of productive output based on the Plan Change 14 end use:

- (a) cherry orchard production: made up of fruit picked, measured in total kilograms of fruit;
- (b) drystock: made up of sheep predominantly, with a small grazing allowance for the High-Country Open Space area primarily as a feed control / reduce fire risk mechanism. Measured in kilograms of meat and fibre produced; and
- (c) domestic productive output: the rural lifestyle development incorporates a total area of approximately 120ha. Based on our assumption of 1,000m² for a house and curtilage, a resultant 104ha is available for productive land uses. I have classified this land area as “domestically” productive land, and to take a conservative approach I have excluded this land from any output in the model.

23 The assessed productive outputs are:

Productivity						
Land Class	Area (hectares)	Fruit Produced per hectare per year (kg/ha/yr)	Total Fruit Produced (kg)			
<u>Cherry Development (29.2ha total)</u>						
Total area planted	22.2	14359	318770			
Seasonal Workers Accommodation Allocation	4	0	0			
Ineffective	3	0	0			
			318770	kg fruit		
Land Class	Area (hectares)	Feed Grown per hectare per year (kgDM/ha/yr)	Total Feed Grown (KgDM)	Feed Conversion Efficiency	Total Meat and Fibre Produced	
<u>High Country / Open Space</u>	95.1	2000	190200	40	4755	
<u>Lifestyle Development (120ha total)</u>						
Domestically Productive Land	104.0	0	0	0	0	
House & Curtilage Assessed Area (1000m ² /lot)	16.0	0	0	0	0	
	244.3				4755	kgMF
Total Productive Output Post Plan Change 14 Development						
			Total kg Meat Fibre & Fruit produced from property		323,525	kgMFF

24 As I state above, no productive output for the rural lifestyle area has been included in our model, however I am of the firm opinion that there is potential for productive output from the 104ha area outside of the estimated house and curtilage area. Through storage of rainwater or other sources, there is opportunity for owners to

grow / support a range of productive rural activities. These activities, although not necessarily of a commercial nature, can include and are not limited to fruit growing, viticulture, livestock grazing, and domestic gardens for private use. Some existing examples, supporting my view, are included in the evidence of Mr Iain Weir.

25 The corresponding financial output under PC14 is:

Financial			
Product	Total Produce (kg)	EBITDA (\$/kg)	Total Income (\$)
Total cherry production at maturity	318770	\$8.14	\$2,594,786
Total meat and fibre produced	4755	\$1.81	\$8,607
	323525		\$2,603,393
Non Produce Based Income Streams			
Seasonal Workers Accommodation			\$180,000
Notional High Country Mountain Bike Income			\$167,700
			\$2,951,093

Comparison of productivity under status quo and PC14 development

26 My analysis supports a considerable increase in productive and financial output from Shannon Farm under the proposed Plan Change 14 development. There is significant capital and time investment required before these outputs will be achieved, and the underlying reliance on cherries and their known volatility means that these outputs can change markedly between seasons, but given a long term average approach, the substantial increase from the current base level is clear.

Shannon Farm <i>Production Summary</i>		
		% Increase
Existing / Baseline	144,908	
PC14 Proposal	323,525	223%

Shannon Farm <i>Financial Summary (EBITDA)</i>		
		% Increase
Existing / Baseline	\$286,245	
PC14 Proposal	\$2,951,093	1031%

Factors relevant to the productive potential of land in Central Otago

- 27 In this section I consider factors that would be relevant to determining the “productive” potential of land in Central Otago. I also specifically consider that part of the Shannon Farm site which is proposed for future rural lifestyle development under those factors.
- 28 In this section factors that have an impact have been ranked using a traffic light system:
- (a) **Red** = High Impact
 - (b) **Orange** = Medium Impact
 - (c) **Green** = Low Impact

Irrigation Water

High Impact

- 29 As recognised in the Council’s section 42A report, water in a broad context is essentially the most important resource in Central Otago to derive additional production out of land regardless of its LUC class. This is demonstrated by:
- (a) relative to horticulture, in the Cromwell basin and Upper Clutha areas the expansion of viticulture and more recently new cherry orchard plantings and future cherry developments onto land that was, in many cases, plagued with rabbits and weeds and was essentially worthless. This is also reflected in land values, for example, Bendigo Station land is now commanding prices circa. \$40,000 / hectare undeveloped on the condition that enough water is available;
 - (b) from a pastoral perspective the same can also be said, with once dryland flat and hill country blocks now being farmed as highly intensive finishing units achieving results comparable to other areas regarded as having more “productive” type land; and
 - (c) Ms Hampson's assessment further demonstrates the high proportion of high producing exotic grassland, orchard, vineyard and other perennial cropping occurring on land that is not classed LUC 1- 3.

- 30 In a report titled *Establishing and operating a Sweet Cherry orchard in Central Otago*, the author Mr Simon Witheford states¹:

Irrigation is critical for cherry production in Central Otago and without surety of good water supply for irrigation along with contingencies, such as a storage pond, then the planting of an orchard should not be considered.

- 31 Water is a precious resource and is now being managed and legislated as such. It is certainly a finite resource that is frequently limited in the resource management sense. Renewing existing consents and permits such as those in place at Shannon farm is not guaranteed and, based on my experience with many other farms and productive land blocks in the region, securing an increase in existing take can be difficult.
- 32 In respect of the Shannon Farm property, I understand that NZ Cherry Corp holds both a groundwater permit and shares in the Ripponvale Irrigation Scheme.
- 33 The Otago Regional Council Water Permit to take and use ground water for the purpose of irrigation, frost fighting, stock water, domestic water and firefighting is for a term expiring 1 April 2050. This requires that the rate of abstraction shall not exceed 30 litres per second, 2,592 cubic metres per day, 77,760 cubic metres per month and 699,840 cubic metres per annum. This groundwater is abstracted via a bore that is located in the south eastern corner of the property. Whilst the annual allocation of this permit is significant, the take is limited by its instantaneous pumping level which is 30L/sec which means that additional storage is required during high demand periods to maximise use of available water.
- 34 The take authorised by this resource consent is further supported by shares in the Ripponvale Irrigation Company Limited (**RICL**). The allocation of water under the shares is limited to both an irrigation area of 28.4 hectares and a maximum annual volume of 213,000 cubic metres.
- 35 NZ Cherry Corp have sought advice from Waterforce regarding irrigation and frost fighting water requirements for the cherry orchard extension. I am informed that the bore is sufficient to meet the irrigation and frost fighting demands of the cherry orchard extension included as part of PC14, assuming a planted area of 22 hectares. In order to provide sufficient reliability for frost fighting, a water storage facility for 20,000 cubic metres is required.
- 36 NZ Cherry Corp have advised me that they intend to utilise the RICL shares to improve reliability over the proposed orchard extension, and to support any further planting within the 4 hectare area currently reserved for workers' accommodation.

¹ At page 9

Further detail in relation to this water supply strategy is detailed in the evidence of Mr Larsen. That strategy aside, Waterforce have also considered what area of orchard could be independently supported by the RICL shares and conclude that this is in the order of 4 hectares, subject to availability of water.

- 37 Based on the information provided to me regarding anticipated use of water within the proposed cherry orchard extension, I conclude that the remainder of Shannon Farm does not currently have access to water.

Climate / Microclimates

High Impact

- 38 Central Otago is unique to New Zealand with its normally hot dry summers and very cold winters. The Cromwell Basin enjoys predominantly normal Central Otago weather and its extremes. Central Otago can have shorter seasons with late spring frosts and early autumn cooling. The sub regions within Central Otago can have a range of growing degree days that can impact the viability of crop types. In a normal climatic year, the weather is adequate for horticulture/viticulture activities in particular Pinot Noir, summer fruit and cherry production, although the number of growing degree days (based on information from the growOTAGO maps) are not as high as in other parts of the district.
- 39 In determining suitability for horticultural and viticultural development, important factors are whether the site is frost prone, and whether it is subject to high wind speeds. A low number of frost days in September is sought to avoid as far as possible frosts damaging budburst. Low to moderate winds minimise the incidence of physical injury to trees, vines and fruit.
- 40 In preparing my assessment I spoke with the previous owner and current lessee of the land, to better understand the microclimate characteristics of the site. The property is situated at the foot of the Pisa range with deep gullies flowing from range out onto the farm. I was advised that these geographic features funnel the wind across the farm and at times strong winds cause significant loss to summer fruit crops. In addition, a damaging but infrequent wind is a downhill or Katabatic wind which develops in spring when skies are clear, and the mountains have a heavy snow cover. These winds are usually very cold and impossible to moderate by frost fighting methods. This season the lessee of Shannon Farm estimates circa 10 tonnes of apricot production was lost through a single wind event.
- 41 Climate change is also a consideration, because it occurs over a prolonged time period its immediate effect is minimal. For larger scale, long term investments climate change and its effect will have an impact. In recent years weather events are becoming more extreme, seasons are generally commencing and concluding later, and average temperature is slowly rising. Extreme weather events coupled

with seasonal variation are impacting Central Otago production with wind and out of season frost being the main contributors.

- 42 In conclusion, I consider that the general climate at Shannon Farm is suitable for orchard production, however there are several unique characteristics, some of which increase risk to yield, as historical performance suggests.

Topography / Aspect

Medium Impact

- 43 Shannon Farm is predominantly southerly facing with the slope increasing gradually as you move northwards to the midpoint of the property. From the midpoint onwards the slope becomes increasingly steeper to the high-country area.
- 44 Establishment of orchards on steeper land makes it more difficult to manage the crop and operate machinery, which in turn gives rise to health and safety issues. Orchards should be located on flat or moderately sloped land ensuring that tractors and sprayers are able to carry out operational tasks.²
- 45 The south facing slope of Shannon Farm will have an impact on fruit ripening. In respect of viticulture, growing degree days are particularly important. South facing slopes lose about one growing degree day above 10°C for each degree increase in slope, and as a result, in my opinion there are significant areas of land in the district that would be preferable and better suited to viticulture. Similarly for orchards, as the slope increases towards the foot of the hill, the impact on ripening increases.

Economic Cost

Medium Impact

- 46 Increasing the productive capability of land will always have an economic cost, this cost must be measured against the benefit. There are significant tracts of productive land in the Central Otago area that could be developed if capital was available. The Shannon Farm models demonstrate that if capital can be injected, the productive capability will increase – in this case exponentially.
- 47 During the discovery phase of this report, several information providers suggested, in their opinion, land viability / profitability should be the measure being considered. An example from a local well-respected orchardist was that the primary reason why no new apricot orchards are being planted is because they are not economically

² *Establishing and operating a Sweet Cherry orchard in Central Otago*, at page 9

viable. Survey figures below support this opinion (Central Otago Labour Survey Horticulture and Viticulture 2018):

Fruit Type	Cherries	Pipfruit	Peaches & Nectarines	Apricots	Other	TOTAL
2014/15 Planted hectares	548	437	259	256	65	1565
2017/18 Planted hectares*	826	488	238	213	65	1830
2021/22 Projected hectares	1291	569	253	226	74	2413

- 48 In addition, the current lessee of Shannon Farm has existing areas of orchard that have been “thinned” with a chainsaw as they were no longer commercially viable. In his opinion growers are increasingly becoming price takers, as a result of supermarket specials and now limited roadside sales. Medium to poorer quality fruit has little or no demand / value. Local factories historically processed this fruit.
- 49 The predominance of cherry orchards and new planting in the area indicates that this is the most economically viable horticultural land use. However, cherry orchard development comes with significant capital cost, particularly where full netting of the orchard is proposed. The cost of that investment must be sustained for approximately seven years to full production.
- 50 Efficiencies can be achieved through business scale. However, increasing the scale of one enterprise also exposes greater risk to market and production fluctuations. Cherries are a high-risk, volatile crop when weather events are considered – frosts at the wrong time of the year can have a devastating effect on yield and accordingly economic performance.
- 51 A mix of income streams from an investment perspective has advantages for long term viability and profitability. My assessment of alternative productive land uses (summer fruit, pastoral land use, etc) in determining the productive output of the status quo, together with analysis of productive factors, indicates that those alternative uses are likely to provide limited economic support to the cherry business, particularly where no water is available to support those land uses.

Labour Supply

Medium Impact

- 52 Access to labour must be considered when developing productive land from a horticultural perspective. Shannon Farm is no different, the farm is situated 2 kilometres west of Cromwell, this location can have both a positive and negative impact on labour supply.

- 53 Positive impacts include:
- (a) staff can reside in Cromwell – Cromwell has all the necessary services including supermarkets, retail, schools and recreational facilities;
 - (b) employment opportunities for other family members in the Cromwell area;
 - (c) access to rental accommodation; and
 - (d) central hub to access other parts of Central Otago including an international airport 45 mins drive away.
- 54 Negative impacts include:
- (a) cost of living in Cromwell – Cromwell is New Zealand’s fastest growing small town with population growth driving up house demand and prices.
- 55 NZ Cherry Corp has been proactive in assisting workers with accommodation to alleviate the housing pressure that is building in Central Otago. It currently has a facility on site that provides sixty staff with a campsite, toilets, showers, cooking facilities and a common room. Extension of the workers' accommodation is proposed (subject to obtaining resource consent) should the cherry orchard expansion proceed.

Soil Type

Low Impact

- 56 The section 42A report addresses the mapped location of LUC 3c3 and 3s6 soils across the site and concludes that these areas are suitable for horticultural development and particularly orcharding, when irrigated (pages 6 and 48). I agree that soils across the flatter areas of Shannon Farm are generally acceptable for orchards, however access to reliable water is an absolute requirement for horticultural use of those soils.

Paul Edwards

13 May 2020

Appendix 1 – Productivity assessment

Status quo

Production system

- 1 I have been provided with historical information from the Leyser family which has supported my analysis. However due to a lack of context I decided to also look at relative industry average performance to determine productive and financial capacity under the current production system.
- 2 To achieve an understanding of what the current productive capability is, the property has been mapped to approximate areas to provide a summary of all areas shown in Figure 1 below. These areas were derived based on productive potential (yield), and the resultant area can be used to develop an understanding of what could be expected to be achieved from an average efficient operator.

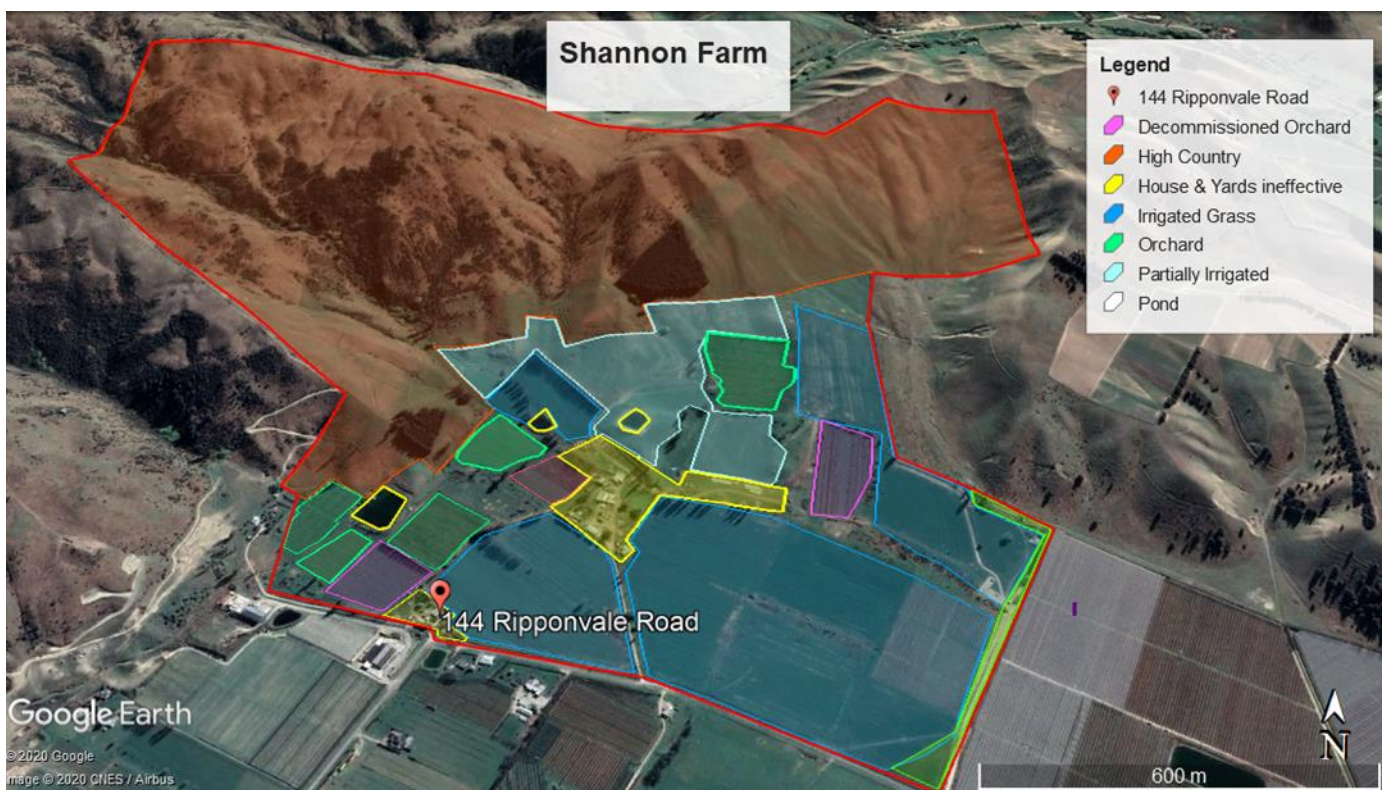


Figure 1: Productive capability of Shannon Farm.

- 3 The 244.3ha current property is a smaller scale drystock (sheep, cattle, goats, deer) property with a small area of summer fruit orchards in differing states of repair.
- 4 The lower southern portion of the land is of gentle to easy undulating contour, the north-eastern portion is medium to steep and incorporates part of a gully and some

hill tops, while the north-western portion of the property is predominantly of a steeper nature.

- 5 My summary of the assessed areas is shown below in Table 1:

Table 1: Area of assessed areas of Shannon Farm

Shannon Farm <i>Existing</i>		
Assessed Areas (ha)		
High Country		149
Irrigated grass		41.5
Partially Irrigated		14
Orchard		7.7
Decommissioned Orchard		4.4
Ineffective		6.8
Dryland		20.9
		244.3

High Country Area

- 6 This area is predominantly classified as high country area and is predominantly steep and south facing. It has limited productive potential being suited to extensive grazing, predominantly steep, south facing and with a reliance on a significant area of usable cultivatable land to be of any significance in terms of year-round use.

Irrigated Area

- 7 I identified irrigated and partially irrigated areas using an aerial map from 2017. These areas are watered by a mix of k-line, rotorainer and some contour flooding.
- 8 Shannon Farm has an Otago Regional Council Water Permit to take and use ground water for the purpose of irrigation, frost fighting, stock water, domestic water and firefighting for a term expiring 1 April 2050. The rate of abstraction shall not exceed 30 litres per second, 2,592 cubic metres per day, 77,760 cubic metres per month and 699,840 cubic metres per annum. This groundwater is abstracted via a bore that is located in the south eastern corner of Shannon Farm.
- 9 Whilst the annual allocation of this permit is significant, it is limited by its instantaneous pumping level which is 30L/sec. This limits the available area to approximately 58ha of pastoral based farming unless significant storage is built. This consent is further supported by shares in the Ripponvale Irrigation Company Limited with 28 hectares rated for irrigation, however it must be noted that this water is supplied on a roster system, and with this property at the end of the current scheme, reliability is limited.

Orchard Area

- 10 Currently the orchards are in a mix of apricot, nectarine and pears, with a significant area of decommissioned historical orchards – presumably because this use is no longer viable. There are very few nearby summer fruit orchards, with poor productivity from these fruits driving change to alternative crops, predominantly cherries and grapes in the local area. The current orchards have historically been planted in specific areas, these sites providing the appropriate microclimate, with other areas that are in pasture not suitable.

Dryland

- 11 Essentially the rolling to steeper components of the property surrounding the current pastoral irrigated area.

Ineffective

- 12 This area incorporates housing and surrounds including sheds and yards.
- 13 The areas identified can be used to assess what would be achieved by an average efficient operator to provide a basis to benchmark from. These land areas considered alongside their natural resources (soil type, water, contour, aspect etc), are considered to provide a sound basis for a model of productive potential.

Productive capacity

Drystock

- 14 The 2017 accounts provided by Leyser indicated a mix of trading hoggets, trading cattle and small numbers of goats and deer. With significant variations between opening and closing stock numbers and not knowing the dry stock farming strategy, I consider it inappropriate to use these numbers as a starting point for productive capacity. My approach has focused on identifying the different types of land available for dry stock farming, using known local pasture production figures and deriving total pasture produced on a kilogram of dry matter (kgDM) basis. Using a standard quality of pasture, this can then be extended out to provide an average meat and fibre yield (kgMF) based on a standardised feed conversion efficiency. Essentially, how much grass is eaten directly correlates to how much meat and fibre is produced.
- 15 Based on my model the property has the ability to grow 762,700kgDM per annum. When considered alongside the ANZ Red Meat Benchmarking report 2019, which supports an average feed conversion efficiency of turning kgDM to kg meat and fibre at 40x, the property produces a total of 19,067 kg of meat and fibre of under my assessed parameters.

- 16 This was cross checked with actual production based on Leyser 2017 accounts of 22,261kgMF. It must be noted that Leyser accounts indicate a profit share cattle trading agreement that cannot be quantified and my view of the property feasibly supporting the stock numbers shown at balance date is low.
- 17 Based on 225ha available for dry stock production, this is equivalent to 85kgMF per hectare per annum. This is in the lowest quartile as in the ANZ Red Meat Benchmarking report 2019, and aligns with my expectation given scale, fertility, and land type.

Orchards

- 18 The existing orchard varies with a number of varieties of summer fruit trees, ages and productive capacity. Predominantly apricots, with some nectarines and pears, and includes 4.4ha of “decommissioned orchard”, which has the remnants of trees but are no longer in production and have predominantly been used to support a firewood business. This has led me to look at an industry average and simplify the process by looking at the property as if apricots were the sole tree. In my experience there is very little viable pear and nectarine grown in Central Otago now and certainly no new plantings.
- 19 Industry average for summer fruit orchards has been derived from local information provided by a nearby well-respected grower, which is considered relevant. Their view was an average of 10,400kg/ha for apricots is appropriate and therefore across all 12.1ha in or previously in trees is equivalent to 125,840kg fruit per annum. It must be noted that wide variations exist in the industry with significant differences in management, intensity, and growing method for example. Our discussions have given comfort that this is a fair representation of average.

Financial performance

Drystock

- 20 Using the total kgDM produced, the equivalent number of stock units able to be carried on the property can readily be determined. One stock unit is considered to consume 550kgDM/annum. Each land class, as well as having differing grass yields, has differing utilisations due to contour and how feed can be managed. My analysis supports carrying 932 stock units. Local Alexandra based ICL Chartered Accountants Ltd produce annual benchmarking reports for Otago property types. Their benchmarking supports an average EBITDA per stock unit of \$53 per stock unit for comparable property types. My analysis includes an adjustment on the performance of the current Shannon Farm property to 70% of this benchmark, due to small scale of the property. My assessed average efficient EBITDA for the dry stock element is therefore \$34,565 per annum.

Orchards

- 21 Apricot income is seasonal, and the predominant markets are export to Australia and supply to meet New Zealand domestic demand. Due to the lack of industry average benchmarks from an apricot profitability point of view, I have had to rely on nearby well-regarded industry information and support this with information sourced. Figure 2 below shows the 2018 / 2019 wholesale price for apricots in New Zealand and for Central Otago presents a range of \$3-\$5/kg. My discussions with industry have supported minimal profitability at the lower end of this range (breakeven). For our financial benchmark, I have used an EBITDA of \$2/kg fruit, which would present the higher side of net profitability for this fruit. My assessed average efficient EBITDA for the orchard element is \$251,680 per annum.

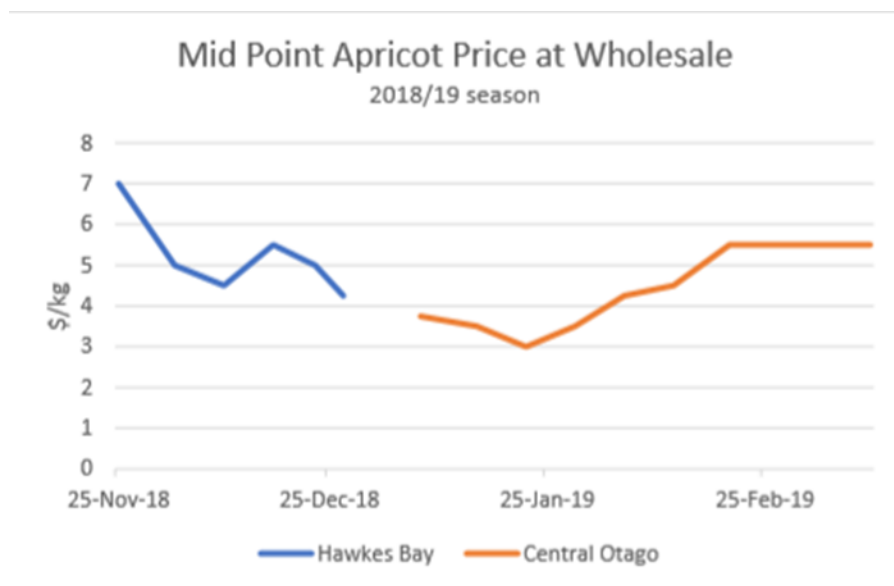


Figure 2: Mid-point apricot price at wholesale.

PC14 proposal

Production system

- 22 This proposed development includes a 29.2ha cherry orchard, 120ha rural / lifestyle subdivision, with the remaining area defined as High Country and Open space areas as depicted on the structure plan that forms part of the plan change request.

Cherry Orchard

- 23 This part of the development adjoins the existing 32ha NZ Cherry Corp orchard. Using the known percentage of effective area in the neighbouring orchard (88%), I have used this to derive the total planted area. 29.2ha total area less 4ha allocation for the seasonal workers accommodation gives 25.2ha available for planting x 88% = 22.2ha expected to be planted. The known outcomes in terms of productivity and

financial outputs from the existing operation has been used to assess the likely outcome from the proposed expanded cherry development once fully established. With a planned planting programme over the next few years, full productive capacity of the orchard (which this report has been assessed on) will realistically not occur until 2026/2027 when all trees hit a mature age.

High Country / Open Space Areas

24 These areas are predominantly made up of the high-country area under the current status quo analysis and intertwines slightly into the proposed lifestyle subdivision. This area will have limited productive capacity from an existing meat, fibre and fruit capacity. However, it is noted that the intent is to work alongside the Cromwell Mountain Bikers Club and the public allowing access for biking and walking in this area. In terms of assessing a fair equivalent financial benefit from the use of this area for recreation there is a live example of a similar business model operating at Glendhu Bay, Lake Wanaka which charges \$30 for an adult day pass (although I note there is no intention to charge for access to Shannon Farm).

Lifestyle subdivision

25 The proposed lifestyle subdivision at Shannon Farm covers a total area of 120ha and allows for up to 160 sites ranging in minimum areas from 2000m² to 3ha. I have allowed 1000m² to be utilised for house and curtilage on each lot, and assumed that productive use of the remainder of each site is not precluded. 1000m² is higher than average however given the expected end owner, a higher allowance has been used.

26 The summary of assessed areas is:

Table 2: Summary of assessed areas post-PC14.

Shannon Farm Proposed post PC14		
Assessed Areas (ha)		
Cherry Development (29.2ha total)		
Total area planted		22.2
Seasonal Workers Accommodation Allocation		4
Ineffective		3
High Country / Open Space		95.1
Lifestyle Development (120ha total)		
Domestically Productive Land		104
House & Curtilage Assessed Area (1000m ² /lot)		16
		244.3

Productive capacity

Cherry Development

- 27 Key production statistics have been taken from the neighbouring NZ Cherry Corp orchard for the basis of this report. The average production based on the three years 2016-2018 was a total of 403,734kg (sold), or across the assessed planted area of 28.12ha area 14,359kg/ha/per annum. The assessed fruit productive output at an equivalent status quo production level is 318,770kg. The fruit production is very much dependant on climatic conditions in this location with frosts during flowering a critical period along with crop management. Over the three seasons which the average yield was assessed, the total tonnage sold from the property ranged from 451,684kg in 2018 to 319,370kg in 2017.
- 28 The productive capability is very reliant on water from a growth and frost fighting perspective. The nature of the existing water permits in terms of instantaneous allocation means that there is enough water to support the cherry orchard development but not beyond.

Meat and Fibre Productive Outputs

- 29 Using the same assumptions as the model for the Phase 1, status quo position, I have assessed the productive capacity for the available high-country area.
- 30 High country open area – assumed to be producing 2000kg DM/ha/annum and using the same feed conversion efficiency of 40x, creating a productive output of 50kg of meat and fibre per hectare per annum.
- 31 The assessed total productive output from meat and fibre assessed at 4755kg meat and fibre.

Other Productive Outputs

- 32 No additional productive output has been included in my model however, I am of the firm opinion that there is productive capacity on the 104ha lifestyle area outside of the estimated house and curtilage areas, subject to the ability to provide sufficient irrigation (for example, through collection of rainwater).



Figure 3: An example of a small vineyard on 4000m² sections in Wanaka.

Total Productive Output

- 33 Total weight of meat, fibre and fruit produced on the property on an annual basis post development is assessed at 323,525kg with upside potential with the non-inclusion of productive outputs derived from the lifestyle blocks. As stated previously, there is significant natural variance in seasonal productivity with fruit growing and this needs to be taken into consideration when comparing the productive variance.

Financial performance

Cherry Development

- 34 With access to information from the adjoining 32ha NZ Cherry Corp orchard owned I have analysed the 3-year period 2016-2018 to establish the average return on a kg fruit sold basis. The average EBITDA was \$8.14/kg fruit picked over this period and this has been extrapolated out across the total projected fruit yield. Profitability is largely dependent on fruit size and quality and the ratio of larger fruit has increased over the three years analysed from circa 43% in 2016 to 68% in 2018. The period analysed had fluctuations in EBITDA of fruit sold of \$7.95/kg up to \$8.72/kg fruit sold.
- 35 In addition to the fruit income, income is derived from the proposed seasonal workers' accommodation area which is income derived from the housing of seasonal workers. This investment is considered separately, as in addition to being

utilised to accommodate cherry orchard workers in an 8-week period in December / January for the cherries, it provides an accommodation option for the wider industry, in particular stone fruit in February, grape harvest March / April and grape pruning June / July. This will be of significant benefit to the area as accommodation at these times is scarce.

High Country / Open Space Development

- 36 The meat and fibre output has been assessed using the same financial return on a per kg basis as what was modelled in part 1. As discussed, there is minimal meat and fibre productive output from this land type.
- 37 The intended main use, to work alongside the Cromwell Mountain Bikers Club and the public allowing access for biking and walking in this area, has a notional value attached to it. Information provided by the Cromwell Mountain Bikers Club, has been used to derive an approximate model. Summer will be the busiest period with an expected 500 people per week, autumn and spring 370 per week and winter will have very low numbers. Based on a net return of \$10 per trip, total value attributed to the enterprise is \$167,700. As alluded previously, the comparable model at Glendhu Bay charges gross \$30/adult/day.