

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of an application to the **WAIKATO DISTRICT COUNCIL** by **YASHILI NEW ZEALAND DAIRY COMPANY LIMITED** for a land use consent to authorise construction and operation of an infant formula manufacturing plant

STATEMENT OF EVIDENCE OF FRASER JAMES COLEGRAVE

1. INTRODUCTION

Qualifications and experience

- 1.1 My name is Fraser James Colegrave. I am an economics consultant, and a founding partner of Covec Limited, an applied economics consultancy based in Auckland.
- 1.2 I hold a first-class honours degree in Economics from the University of Auckland (1996).
- 1.3 I am a member of the New Zealand Association of Economists and a member of the New Zealand Resource Management Law Association.
- 1.4 I have 20 years commercial experience, the last 13 of which I have worked as an economics consultant. My main area of expertise is land use economics. I have worked on a wide range of land use issues for various public and private sector clients across New Zealand.

Involvement in project

- 1.5 I have been retained by Yashili New Zealand Limited to comment on the economic effects of the establishment and operation of the proposed infant formula manufacturing plant at Pokeno.
- 1.6 I have been involved with the Pokeno Village development since 2008, when I was commissioned by the then-Franklin District Council to assess the

development's likely infrastructure requirements. After the Auckland local government reorganisation, Franklin District was disestablished and Pokeno became part of Waikato District, and my contract was transferred across with it. Since my initial engagement, I have continued to be actively involved with the planning for Pokeno and implementation of Plan Change 24 in various capacities, and therefore have a thorough understanding of the local economic context.

1.7 I have visited Pokeno numerous times, with my last visit being in May 2013.

Purpose and scope of evidence

1.8 The purpose of my evidence is to quantify the likely economic impacts of the proposed Yashili development if consent is granted and the plant is constructed and operated as proposed. I assess the economic impacts of both plant construction and operation at the regional and national levels.

1.9 Specifically, my evidence will:

- (a) Review the economic importance of the dairy industry (and related industries) to the region and the rest of New Zealand (Section 3).
- (b) Describe the methodology used to estimate the economic impacts of construction and operation (Section 4).
- (c) Assess the economic impacts of plant construction (Section 5).
- (d) Assess the economic impacts of the plant operation (Section 6).
- (e) Identify other potential economic/financial benefits (Section 7).
- (f) Provide a brief conclusion (Section 8).

1.10 A summary of the evidence is contained in Section 2.

1.11 My evidence should be read together with the evidence of William Zhao and Terry Norwood. I have derived my information as to numbers of contractors, employees, etc., from Mr Norwood.

Expert Witness Code of Conduct

1.12 I have read the Code of Conduct for Expert Witnesses, contained in the Environment Court Consolidated Practice Note (2011) and I agree to comply with it. I can confirm that the issues addressed in this statement are within my area of expertise and that in preparing my evidence I have not omitted to

consider material facts known to me that might alter or detract from the opinions expressed.

2. **SUMMARY OF EVIDENCE**

2.1 New Zealand's dairy industry has grown rapidly over the last 20 to 25 years, fuelled both by increases in the number of cows, and also increases in farm productivity. However, our share of the downstream value chain is relatively small. As a result, there exists a unique opportunity to improve economic wellbeing simply by expanding into downstream dairy product manufacturing. The proposed development provides a perfect example of this.

2.2 The analysis upon which this evidence is based uses a technique called economic impact assessment (EIA) to assess the economic effects of plant construction and operation. This technique, which I have successfully used to inform various other Council policy and planning processes, captures both the direct and flow-on effects of proposals on regional and national GDP, incomes and employment.

2.3 According to my analysis, construction will generate:

- (a) Regional GDP of \$43 million, and national GDP of \$149 million.
- (b) Regional household incomes of \$30 million, and national household incomes of \$97 million, and
- (c) Regional employment for 728 people and national employment for 2,372 people (both for one year).

2.4 Further, the ongoing economic impacts of operation are estimated to be:

- (a) Regional GDP of \$72 million, and national GDP of \$191 million.
- (b) Regional household incomes of \$30 million and national household incomes of \$70 million, and
- (c) Regional employment for 697 people and national employment for 1,586 people.

2.5 In addition to the economic impacts estimated above, the proposed development will also (i) provide an important sign of investment confidence, (ii) help recover sunk infrastructure costs, (iii) boost the rating base, and (iv) help achieve economic efficiency in the land market. Accordingly, I see no reason to deny consent on economic grounds.

3. IMPORTANCE OF DAIRY TO THE REGION AND NEW ZEALAND

3.1 Before estimating the economic impacts of the proposed development, I first characterise the role of dairy (and related industries) in both the regional and national economies. This provides important context for the estimated economic effects of the proposal.

3.2 New Zealand's dairy industry has grown rapidly over the last 20 to 25 years and is now one of the most significant sectors of the national economy. In fact, national GDP statistics show that the value of dairy cattle farming has increased 8.6% year-on-year since 1987.¹

3.3 As New Zealand's dairy production has grown, so too has its share of the world market. For instance, in 1989, New Zealand was the 14th highest dairy producing nation, accounting for just over 1.5% of global milk production.² By 2011, it was the 8th highest and its market share had doubled to nearly 3%.³ Figure 1 plots this rampant growth.

3.4 While the size of New Zealand's dairy industry seems impressive in its own right, it appears even more remarkable when put in context of our relatively small population. For instance, while New Zealand accounted for just under 3% of global milk production in 2011, it comprised only 0.06% of global population. Thus our share of global milk production was 46 times higher than our share of global population.



¹ Statistics New Zealand, National Accounts, 2012

² <http://www.dairyco.org.uk/resources-library/market-information/supply-production/>

³ ibid

3.5 The rapid growth of New Zealand’s dairy reflects both a strong increase in the number of dairy cows (Figure 2)⁴ and also steady growth in productivity (Figure 3)⁵.

Figure 2: Size of New Zealand Dairy Cattle Herd

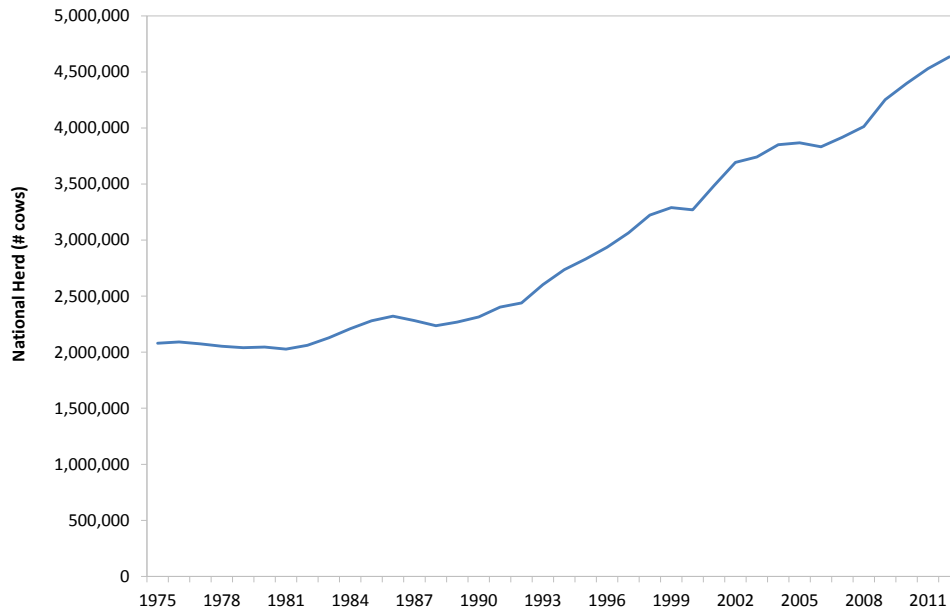
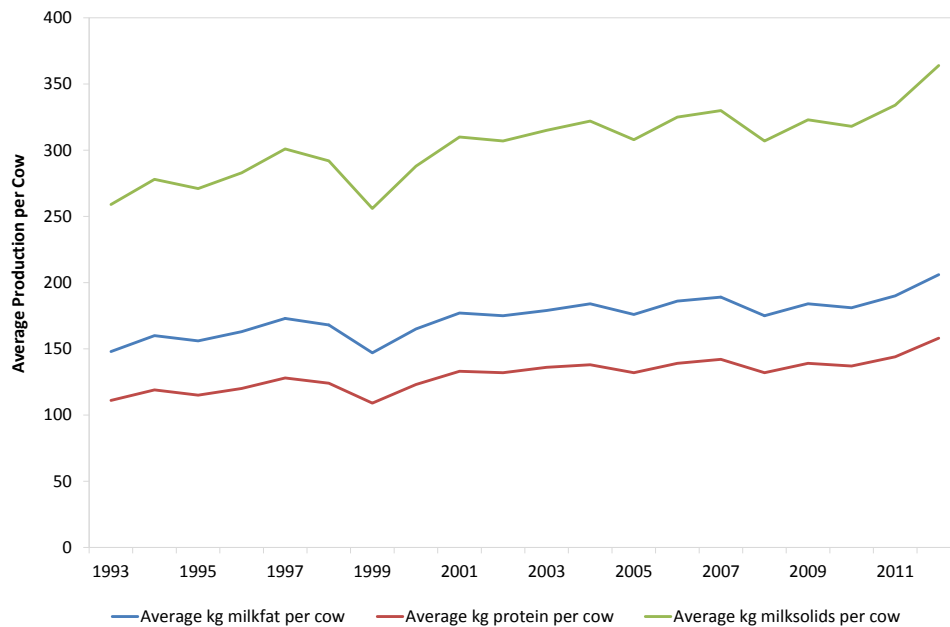


Figure 3: New Zealand Dairy Industry Productivity Growth



3.6 While many regions of New Zealand contribute to the strength of this industry, the Waikato Region stands out. For instance, in 2011/2012, the Waikato Region accounted for 30% of herds (Figure 4) and 25% of cows (Figure 5)

⁴ New Zealand Dairy Statistics 2011/12

⁵ ibid

Figure 4: New Zealand Regional Shares of Herds in 2011/12

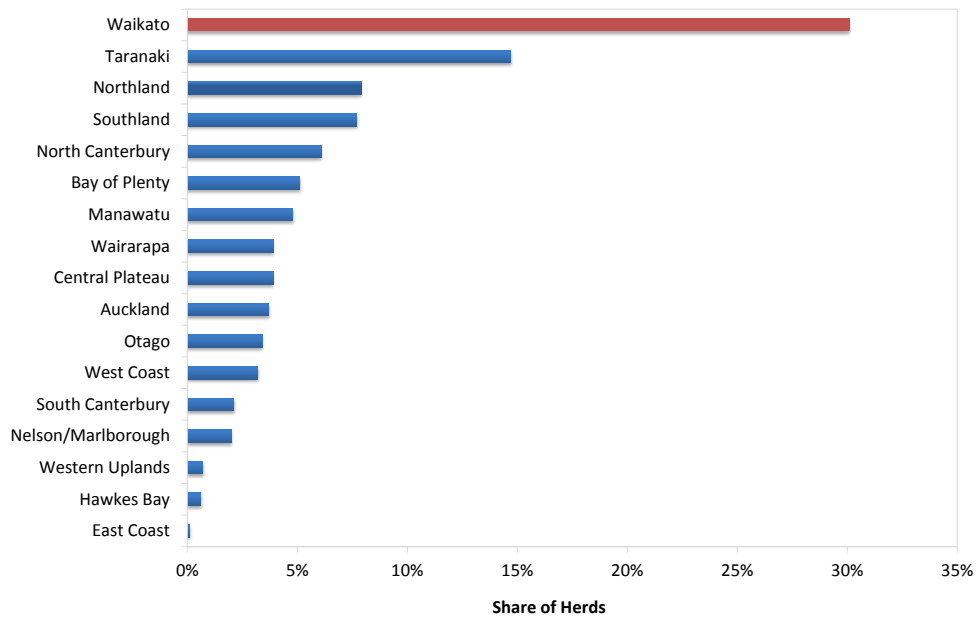
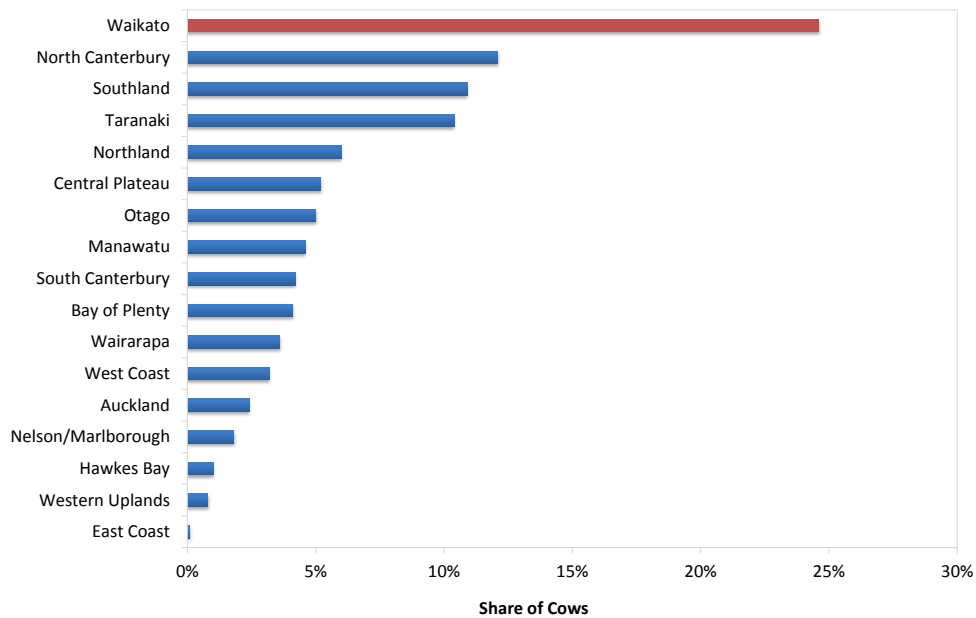


Figure 5: New Zealand Regional Shares of Cows in 2011/12



- 3.7 Despite the strength of our dairy industry, however, New Zealand currently has very little high-end dairy product manufacturing. For instance, in 2011/12, there were nearly 17,000 dairy farms but only 112 businesses involved in high-end dairy product manufacturing (including infant milk formula).
- 3.8 Hence, there exists a significant opportunity to harness a greater share of the value chain simply by expanding more into high-end downstream sectors, and the proposed development is a perfect example of this.

4. **ECONOMIC IMPACT METHODOLOGY**

4.1 Having set the scene, I now describe the methodology used to assess the economic impacts of plant construction and operation. The methodology is called economic impact assessment (EIA), and is the same one that I have previously used this to assess the economic effects of various other sectors and organisations. For instance, I have successfully used EIAs to:

- (a) Inform Waikato Regional Council's decision to part-fund The National Cycling Centre of Excellence in Cambridge in 2011.
- (b) Assist Christchurch City in setting its "sinking lid" policy for Class 4 gambling (pokies) in 2009; and
- (c) Gain resource consent for a large mussel farm in Northland in 2012.

4.2 The purpose of an EIA is to understand the full economic effects of a proposed or existing economic activity by examining the way that it interacts with – and stimulates – other parts of the regional or national economy. It is most useful when decision makers wish to understand the broader implications of a proposal on key economic indicators, such as GDP, income and employment.

4.3 EIAs incorporate an input-output table, which is a highly-detailed matrix that shows how the different sectors of an economy are interrelated. Specifically, the input-output table shows the particular set of inputs that each sector requires to produce its own outputs. For instance, a tyre manufacture requires inputs from a wide range of suppliers, such as steel and rubber manufacturers. These producers in turn, will require input from their own suppliers, and so on. The input-output table captures all these inter-industry dynamics, so that the effects of a change in one sector ripple throughout the analysis.

4.4 Using some fairly advanced mathematics, the input-output table can be 'solved' so that all the inter-industry linkages are boiled down to a smaller set of numbers, known as multipliers. These show the overall impact that an increase in one sector has on GDP, employment and income in the economy of interest. The resulting impacts comprise three parts:

- (a) Direct Effects – these are the direct effects of the entity in question. For instance, the new plant will draw upon a number of local industries, particularly dairy farms, and therefore directly stimulate key sectors of the regional economy.
- (b) Indirect effects – construction and operation of the new plant will require inputs from a number of other industries. These suppliers, in

turn, will draw upon their own suppliers, and have a cascading effect. The sum of all these inter-industry demands is the indirect effect.

(c) Induced effects – the direct and indirect effects will result in increased employment, and hence increased household income. A proportion of this new income will be spent in the regional economy and give rise to further economic stimulus. This is known as the induced effect.

4.5 The overall economic impact is the sum of the direct, indirect and induced effects.

4.6 While the multipliers for well-established industries can be derived simply by solving the input-output table (as noted above), the multipliers for emerging industries – such as infant formula production – cannot. This is because the detailed interrelationships between new industries and the rest of the economy are not well understood, so are not yet hard-coded into the input-output table.

4.7 As a result, this analysis required me to undertake a detailed mapping exercise, in which the projected construction and operating expenditures of the organisation were assigned to different parts of the regional and national economies. Once the resulting economic footprints were identified, I then overlaid the corresponding multipliers for each industry to derive the regional and national economic impacts of plant construction and operation. As a matter of clarification, I note that any overseas expenditures have been excluded.

4.8 The results of the analysis are measured in terms of regional and national:

(a) GDP;

(b) Employment; and

(c) Household incomes.

4.9 I now apply this framework to estimate the potential economic impacts of plant construction and operation.

5. **ECONOMIC IMPACTS OF CONSTRUCTION**

5.1 The following table identifies the expected costs of construction, and also shows where each line item is likely to be sourced. The total construction cost is \$220 million.

Table 1: Projected Construction Costs

Construction Expenses	Cost \$m	Estimated Cost Split		
		Waikato	Rest of NZ	Overseas
Land & Consents	\$10	100%	0%	0%
Site Development	\$2	50%	50%	0%
Plant & Building - Equipment	\$46	10%	30%	60%
Plant & Building - Labour	\$69	38%	37%	25%
Site Services - Plant	\$10	0%	25%	75%
Site Services - Labour	\$10	38%	37%	25%
Infrastructure & Systems - Materials	\$22	20%	60%	20%
Infrastructure & Systems - Labour	\$51	40%	40%	20%
Totals	\$220	\$70m	\$80m	\$70m

5.2 Plugging the regional and national expenditures into their respective input-output tables produces the estimated construction impacts shown in Table 2. To be conservative, I have not modelled the potential economic impacts of land and consents. Further, where any uncertainty exists about the origin of inputs, I have erred in favour of a lower regional share, a lower national share and a higher international share.

Table 2: Estimated Economic Impacts of Construction

Impact Measures	Waikato	Rest of NZ	Total NZ
GDP (\$m)			
Direct	\$16	\$22	\$38
Indirect	\$18	\$49	\$67
Induced	\$8	\$35	\$44
Total	\$43	\$106	\$149
Employment (FTEs)			
Direct	291	403	694
Indirect	319	759	1,078
Induced	117	483	600
Total	728	1,644	2,372
Household Income (\$m)			
Direct	\$14	\$18	\$32
Indirect	\$12	\$31	\$44
Induced	\$4	\$18	\$22
Total	\$30	\$68	\$97

5.3 To briefly summarise: Construction of the plant is estimated to generate \$43m of regional GDP, with a further \$106 million accruing to the rest of New Zealand, bringing the national total to \$149 million.

5.4 In addition, construction is estimated to generate regional employment for 728 people (for one year) and 1,644 jobs elsewhere in New Zealand, yielding a national employment impact of 2,372 jobs (for one year).

5.5 Finally, construction is estimated to boost regional household incomes by \$30 million and national household incomes by \$97 million.

6. ECONOMIC IMPACTS OF OPERATION

6.1 Yashili provided a detailed breakdown of their expected operating revenues and costs, which I have used to estimate the ongoing economic impacts of plant operation. The estimated annual revenue is between \$320 and \$400 million, while the operating expenditures are listed below.

Table 3: Projected Annual Operating Costs

Operating Expenses	Cost \$m	Estimated Cost Split		
		Waikato	Rest of NZ	Overseas
Ingredients				
Milk	\$39	100%	0%	0%
Ingredients	\$85	17%	17%	66%
Oils	\$22	0%	0%	100%
Manufacturing Costs				
Chemicals	\$1	10%	10%	80%
Laboratory	\$2	10%	10%	80%
Repairs and Maintenance	\$6	10%	30%	60%
Quality Control	\$2	40%	40%	20%
Packing	\$37	50%	50%	0%
Waste Disposal	\$1	100%	0%	0%
Warehouse	\$4	50%	50%	0%
Energy	\$6	20%	80%	0%
Administration	\$5	50%	50%	0%
IT/IS	\$1	50%	50%	0%
Wages				
Process Operators	\$7	10%	90%	0%
Administration Labour	\$2	10%	90%	0%
Totals	\$218	\$81	\$53	\$84

6.2 To determine the overall economic impact of operations, I first estimated the direct GDP, employment and income contributions of the plant itself. Then I mapped its regional and national expenditures to their respective sectors to determine the flow-on effects (i.e. the indirect and induced effects of plant operation). For the purposes of this analysis, I have assumed that annual revenue is \$360 million, and that 10% of net profits are retained within the region. The rest is assumed to be repatriated to the parent company overseas.

6.3 Table 4 shows the annual economic impacts produced by the analysis.

Table 4: Estimated Annual Impacts Once Fully Operational

Impact Measures	Waikato	Rest of NZ	Total NZ
GDP (\$m)			
Direct	\$49	\$68	\$117
Indirect	\$16	\$31	\$47
Induced	\$7	\$20	\$27
Total	\$72	\$119	\$191
Employment (FTEs)			
Direct	385	\$257	642
Indirect	208	\$368	576
Induced	105	\$264	368
Total	697	889	1,586
Household Income (\$m)			
Direct	\$18	\$14	\$32
Indirect	\$8	\$16	\$24
Induced	\$3	\$10	\$14
Total	\$30	\$40	\$70

6.4 To briefly summarise: Operation of the plant is estimated to boost regional GDP by \$72 million per annum, and national GDP by \$191million. In addition, plant operation is estimated to generate permanent regional employment for 697 people and permanent national employment for 1,586 people.

6.5 Finally, operation is estimated to boost regional household incomes by \$30 million per annum and national household incomes by \$70 million. Clearly, the economic impacts of operation are significant.

7. **OTHER ECONOMIC/FINANCIAL BENEFITS**

7.1 In addition to the economic impacts identified above, the proposed development will also have a range of other economic benefits. These include the following.

Catalytic effects

7.2 The development will provide an important signal of investment confidence and may help attract other businesses to the area. In doing so, it will assist the wider structure plan development to reach critical mass more quickly.

Cost recovery

7.3 The development will pay development contributions under the Local Government Act 2002 to cover the costs of growth-related infrastructure. According to the officer's report, this contribution will exceed \$1.1 million. The early payment of such contributions not only helps contain debt-servicing

costs (and hence the total cost of infrastructure) but also directly improves Council's financial position.

- 7.4 Increased value of the rating base and ongoing rates contributions – the completed development will be comprise a significant addition to the rating base. This will in turn benefit all ratepayers by reducing the rate per dollar of land value (compared to the situation that would prevail without the development). Indeed, because the development will impose minimal additional costs on Council, its rating contribution will exceed its marginal cost, thus providing a direct financial benefit.
- 7.5 For example, if we use the estimated cost of construction as a proxy for rateable (capital) value, the general rates paid by the development to Waikato District Council would be around \$390,000 per annum. Since the development will create very few ongoing costs to Council, this ongoing rates contribution provides a surplus that the Council can use to benefit of all ratepayers. A similar chain of logic also applies to regional rates.

Economic Efficiency in the Land Market

As noted in the evidence of Mr Norwood, the site has a number of valuable attributes that made it the preferred choice for the proposed development. These include proximity to the State Highway network, zoning, site topography, proximity to key markets, and so on. Given the sites natural fit with all these key criteria, it seems likely that the development would be a highest and best use of the land, and therefore represent an efficient use of a scarce natural resource, namely land.

8. CONCLUSIONS

- 8.1 This evidence has considered the potential economic impacts of constructing and operating the proposed plant, and has shown that both will have significant effects on the regional and national economies. In addition, it has shown that the development may speed the rate of growth across the wider Pokeno Structure Plan area, improve Council's financial position by aiding cost recovery, and also achieve economic efficiency in the land market.
- 8.2 At the same time, it provides a perfect example of how New Zealand can secure a greater share of the dairy value chain by expanding into high-end dairy product manufacturing. I therefore see no reason to deny consent on economic grounds.

Fraser Colegrave (July 2013)