Sheep and Goat Milk Processing Business Case

10 July 2018

Project Background and Description

New Zealand's economy is made up of diverse regions, each specialising in different activities depending upon its natural resources, infrastructure and people. While they differ, each region has the potential to attract further investment, raise incomes and increase employment opportunities. The sheep and goat milk industry provides an opportunity to achieve these through the development of added value products for export. Furthermore, the environmental impacts of traditional bovine dairy farming can be substantially reduced.

At present the development of the sheep and goat milk industry is supported by New Zealand Food Innovation (Waikato) Limited (NZFIW) through the provision of contract product development and small, commercial scale powder manufacturing services to companies. This greatly reduces the risks for start-ups and has enabled a number of fledging businesses to establish themselves in export markets before investing in their own processing facilities or moving to large scale contract manufacturers. Due to the challenges of storing and transporting fresh milk, all milk processed at NZFIW comes from North Island farms. The location of NZFIW has to some extent restricted the growth of a nationwide sheep and goat milk industry and there is significant interest from stakeholders in regions across New Zealand to have access to small, commercial scale processing infrastructure.

In addition to this, NZFIW has witnessed strong and growing demand in nutritional formulas which contain imported whey powder from ovine and caprine species. Whey powder makes up approximately 13 percent of the total formula and is an essential ingredient for markets such as China. Companies manufacturing sheep and goat milk formulas containing whey, are currently forced to import 100 percent of the whey powder. Reliance on imports brings about security of supply and quality risks, which if realised could hinder the continuation and growth of the industry. This gap in New Zealand's manufacturing sector provides an opportunity for a self-sustaining new industry.

The feasibility of manufacturing whey powder (and butter) in New Zealand has been investigated by Peter Hobman through Project Alpha. The project was supported by NZFIW and findings are expected to be released in late 2018. The scope of the report has looked at all aspects from farm to market, and gives a high level financial review. It is important to note that Project Alpha has focused solely on meeting the forecasted demand for whey protein to be used in the manufacture of products at NZFIW. It does not consider sheep and goat milk nutritional products that will be manufactured at other sites in New Zealand, or the processing requirements to meet future market demands.

This proposed project will add to the findings of Project Alpha and be broader in scope, by assessing the economic viability of infrastructure investment that will support the development of a sheep and goat milk industry in New Zealand as a whole. Consideration will be given to a range of potential product formats, including

liquids, butter, cheese and protein powders, that will meet the demand for whey and determine the best scenario to maximise the return on a bucket of milk. The project will also provide recommendations on the business structure required to successfully manage the return on investment.

Project Scope

The project involves business case activity to assess the economic viability of investing in processing infrastructure to support the development of a sheep and goat milk industry in New Zealand. It will also provide recommendations on the business structure required to successfully manage the return on investment. This shall include investigation and review of:

- Global market opportunity for sheep and goat milk products i.e. which markets and which product formats offer the greatest potential for New Zealand?
- Global market dynamics and potential channels.
- Regional opportunities
- Farm supply requirements i.e. sheep and goat numbers, conversion costs
- Environmental implications of developing the sheep and goat industry
- Processing infrastructure requirements
- Manufacturing model
- Potential customers
- Business model – open access or private equity
- Potential shareholder or financial partners and their objectives
- Financial model
- Risk analysis and benefits (SWOT analysis)
- Compliance of manufacturing and supply channels

Viability will be assessed on three dimensions - the market opportunity for high value sheep and goat milk based products, farm supply requirements and the processing infrastructure needed to maximise the return on a bucket of milk.

Information will be obtained through desk-based research and interviews with a range of stakeholders across six regions throughout New Zealand. Stakeholders will include Economic Development Agencies, Iwi, farmers, processors and marketers.

Export market opportunity

The export market opportunity will be evaluated separately via a market research company with expertise in global dairy markets. Proposals are currently being sought by Commercial Information. This piece of work will include an assessment of the global market situation for four product formats (liquids, cheese, butter and protein powders) to understand market size, growth and trends and to identify three of the most attractive markets for deeper analysis.

The second stage of the market assessment will explore the competitive landscape and value chain of the markets identified in phase one. This will identify the most viable markets and product formats, price-points at sale and across the value-chain. This information will be used to inform appropriate processing infrastructure, milk supply requirements and ensure the proposed investment is economically viable.

Farm supply requirements
The farm supply requirements will be determined through interviews with farmers, as well as analysis of the farm conversion costs and stock numbers required to meet market demand.

Processing infrastructure requirements
Requirements for processing infrastructure will be determined from information obtained through stakeholder interviews, market research, the identification of potential customers, shareholders and financial partners as well as manufacturing and supply chain compliance considerations.

Business model
The business model shall explore open access like that of NZFIW and other alternatives, such as private equity and the co-operative model. There is likely to be considerable debate on a range of factors that will have to be taken into consideration from investment, risk and competitive perspectives. Shared learnings are on offer from NZFIW providing an example of a successful open access model to New Zealand companies and exports. Private equity however, may be more viable due to significant capital requirement, or a combination of both models may be appropriate. Co-investment is another possibility and would spread the competitive advantage beyond one company. All scenarios will be considered.

General
The project will also include a SWOT analysis, evaluation of the environmental implications of developing a sheep and goat industry and potential value propositions from a health and nutrition perspective, taking into consideration existing science and regulatory frameworks.

Main outcomes
The main outcomes of the Business Case will be:

- An understanding of the global market opportunity for sheep and goat milk products and factors required for New Zealand companies to succeed.
- A detailed description of the economics and technology for a dairy processing solution that will grow the industry in New Zealand (in both the North and South Islands).
- Qualification of the key stakeholders (both growers and channels to market) to participate in the development phase.
- Definition of a preferred operating model that will best deliver on the potential.

Specific exclusions from scope
The report will not include an in-depth market summary of all product formats. It will focus on four products which are considered to have high value potential (based on our knowledge of cow milk trends) including liquids, cheese, butter, and protein powders. Although high value, nutritional powders will be excluded, as the market opportunity has already been validated.

Project costs, economics and benefits

The project is a Business Case development activity that spans twelve months, commencing on contract signing.

Most of the information gathering will be conducted in the first three months, allowing time for analysis, evaluation and debate of different workable models.

The total funding applied for is $490,000 excluding GST. This includes a Commercial Information scope plus Commercial Information contingency allowance. The costs are operating investment only.

We are asking for this to be Commercial funded by the Provincial Fund. The resultant data set will Commercial Information and able to be shared in a way that secures the best outcome for New Zealand. Commercial Information

The required timing of costs (excluding the contingency allowance) are:

Commercial Information in the first quarter
Commercial Information in the second quarter
Commercial Information in the third quarter
Commercial Information in the last quarter

We are requesting the first payment of Commercial Information following contract signing with the next payments made in three monthly instalments thereafter. Commercial Information

A progress report summarising the work completed and next steps, will be submitted on a quarterly basis.

Project Plan

Project scope	Budget hrs/expenses	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Cost
Setup	60hrs + Co expenses													Commercial Information
Market Research														
Global market assessment	Co													
In-depth market assessment	Com													
Processing														
Stakeholder interviews	80hrs + Co expenses													
Processing requirements	120 hrs													
Potential manufacturers	40hrs + Co expenses													
Compliance considerations	16hrs													
Manufacturing model	32hrs + Co expenses													
Farm Supply														
Stakeholder interviews	80hrs + Co expenses													
Farm supply requirements	100hrs + Co expenses													
General														
Environmental implications	16hrs													
Business model	8hrs													
Potential shareholders/ partners	8hrs													
Governance	8hrs													
SWOT Analysis	16hrs													
Financial model	75hrs													
Value propositions/gaps	50hrs													
Project Leadership														
Project support	260hrs													
Project management/report writing/communications	260hrs													
Steering group meetings	168hrs + Com expenses													
Total cost														
Contingency (20% of budgeted hours)														
Total cost + contingency														

Expenses are for travel to and/from stakeholder interviews, meetings

Risk management

The project risks are considered to be low. The project will be limited in scope with FoodSouth as the prime contractor. It will be led by John Morgan with support from Privacy of natural persons who bring skills and experience to successfully deliver the project.

An expert Steering Group will oversee the actions and progress of the project team, providing guidance throughout the project and challenging recommendations to ensure robust and workable outcomes are delivered.

Project Plan evaluation

The project plan has been developed and critiqued by the project team who have experience in managing and delivering similar projects.

Strategic Case and Regional Alignment

Alignment with objectives of the Fund

The project will provide feasibility data to underpin regional investment in the North and South Islands. It therefore has the potential to have a significant impact on regional economic development through the creation of a new industry across New Zealand and access to new export markets. This in turn would help create sustainable jobs.

The project also has potential to help New Zealand meet its climate change objectives, as sheep and goat milking is recognised as having a substantially lower environmental impact than conventional dairying.

The outcomes of the project also have potential to enhance the returns for Māori through their business investments and role as landowners.

Alignment with additionality objectives

The project will add to findings from previous research in the sheep and goat milk space and research in progress.

Project Alpha

Part of the Waikato Action Plan and funded by SRO to understand the viability of manufacturing whey powder and butter from sheep and goat milk to support future infant formula production at NZFIW. The project looks at all aspects from Farm to Market but only provides a high-level financial review. This project is broader and more detailed in scope, and will cover a wider range of products, a deeper analysis of the export market opportunities and comprehensive financial feasibility model of processing infrastructure. The development of the New Zealand sheep and goat milk industry cannot rely solely on nutritional powders and will require a diverse portfolio of high value product formats.

Horizons 3 Sheep Milk PGP Programme

Funding to Spring Sheep covering the market opportunities for sheep milk, development of quality sheep genetics and new product development. This includes research into the potential advantages of sheep milk for those with intolerances to

cow's milk. The proposed project will consider developments from this programme but differs in its inclusion of goat's milk and being national in focus.

NZIER Report

This was commissioned as part of the Southland Regional Development Strategy in October 2017 to assess the potential for sheep milking in Southland. The proposed project will differ by considering both sheep and goat milking from a national perspective. The findings of the NZIER Report will be considered.

KPMG Report

Commissioned by Canterbury Development Corporation in April 2017 to assess the sheep milk market. As above the proposed project will consider both sheep and goat milking from a national perspective. The findings of the KPMG Report will be taken into consideration.

Benefits the region will get from the Crown investment

The regions will benefit from the Crown investment through the stimulation of economic development from creating a new agricultural industry and through the lower environmental impact achieved from a change in land use.

Description of the current state of the proposal and why the project hasn't been done before

Sheep and goat milking is an emerging industry that has come about largely through the need to find alternative and diverse land uses that will secure a sustainable future for New Zealand agriculture. Projects to date, although a good starting point, have been regionally centric and narrow in focus. This proposal involves a broader, more detailed and impartial approach that will determine an action that is viable for New Zealand as a whole. It will however consult stakeholders in six regions throughout New Zealand to understand regional objectives, interests and initiatives to date.

Regional interests and initiatives that will be taken into consideration, include (but not limited to):

Southland

Sheep Dairy Demonstration Farm

Canterbury

There is a vision to build a sustainable sheep milking industry in the region aiming at 50,000 milking ewes within five years and two million in twenty years. The creation of a strategy and work programme was discussed recently at a meeting of stakeholders including Ngāi Tahu Farming and Westland Milk.

Hawkes Bay

There is strong interest in expanding sheep and goat milk operations in this region including an EOI to build a factory with drying facility. There is also the ability to leverage off the existing goat industries in the Hawkes Bay and Manawatu regions, and the sheep industry in the central North Island.

Principal Role of Applicant

FoodSouth as part of the New Zealand Food Innovation Network (NZFIN) is government owned and tasked with growing New Zealand's value-added food and beverage exports. FoodSouth is a limited liability company and is 50.1% owned by ChristchurchNZ and 49.9% by Callaghan Innovation. In the case of this project, FoodSouth is acting as a catalyst to assemble a case for building new value added dairy processing infrastructure to stimulate development of the sheep and goat milking industry.

NZFIN has no shareholding within the sheep or goat industry which means it is well placed to lead the project, report opinions, express findings, form conclusions and make recommendations without bias. Being national in its focus, the proposed work program is not wedded to geography and aims to deliver an outcome that is the most viable for New Zealand rather than one particular region.

NZFIW's senior management and board members will bring extensive industry experience and share their learnings with the project team, through their participation in the project's Steering Group.

Private consultants will be called upon to provide information and expertise, collate findings and write up the report.

Describe the Project Leadership Team

The project team includes a Working Group and Steering Group.

FoodSouth CEO, John Morgan, will lead the project's working group with support from Shane Kells (team member) and Jan Hales (project manager/team member).

A Steering Group is being formed which we anticipate will include Privacy of natural persons

Conflicts of Interest

NZFIN has no shareholding within the sheep or goat industry and therefore is well placed to lead a project such as this, and make recommendations without bias, that will bring the greatest benefit to New Zealand.

The project will require input from experienced private sector consultants. Several of these have ties to the dairy industry, as follows:

Privacy of natural persons

Privacy of natural persons

Privacy of natural persons

Commercial Viability

NZFIN through FoodSouth and NZFIW have carried out several projects of this nature.

Examples include:

Project Alpha

Butter and Whey Protein Powder Infrastructure Feasibility funded by SRO to understand the viability of manufacturing whey powder and butter from sheep and goat milk to support future infant formula production at NZFIW.

Farmer's Mill Export Market Development

AgMARDT funded project to identify the most attractive export markets, channels, product formats and potential value propositions that will support the growth of Farmer's Mill.

Non-Dairy Drying Powders in New Zealand

AgMARDT funded project to validate the market demand for high value non-dairy powdered products and identify feasible processing solutions to meet these needs
Stage One – non-dairy drying feasibility study.
Stage Two - business case completed for Quayside Holdings, which has been approved to project status.

Ngāi Tahu New Product Innovation Programme

Funded by the Ministry for Business Innovation and Employment through the Te Pūnaha Hiringa Māori Innovation Fund. The project aimed to assist Ngāi Tahu realise the economic potential of its food assets and foster innovation among its people, by helping it develop and commercialise a selection of food products.

What will happen upon delivery of the project?

This project involves the development of a Business Case for investment in new processing infrastructure that will support the development of the sheep and goat milking industry. The activities that will be undertaken on completion will ultimately depend upon the project findings and the viability of further investment. Providing this is the case, the next stage would likely be a bid into the Provincial Fund alongside key players to build dairy processing infrastructure in the South and North Islands.

A final report detailing the findings will be communicated to stakeholders.

Summary

NZFIN has been working with a wide range of firms and these relationships can give assembly of this case a flying start. The feeling within NZFIN is that there is a case to be made for additional processing infrastructure for the sheep and goat industry. The gap within the whey powder market exists presently and there is a shortage of quality whey powder worldwide. Furthermore, there is growing demand for sheep

and goat milk products in general, due to their potential to address the health and environmental concerns associated with cow milk products.

Overall the benefits to New Zealand will be vertically integrated from farming, social, environmental, manufacturing and exports.