# 'The Whey Forward' Project Summary

## Introduction

Whey is a by-product of cheese-making and is a significant cost to niche cheesemakers to have carted or disposed of. For every 10kg of cheese made, there is between 80 and 90L of whey produced. However, whey is a highly nutritious product that can be used for stock feed through to high-end whey protein powders. As individual businesses, most niche producers do not have a quantity of whey that would be suitable for further processing, however as an industry, there may be opportunities to increase the utilisation of whey with multiple benefits. Previous work by Dairy Australia and others have resulted in the development of a 'whey app' and this project seeks to build on this application to understand the feasibility of developing a whey industry in SA.

The cost of whey disposal is a barrier to the growth of niche processors. By reducing the cost and making disposal / removal or value adding of whey easier, business will be able to increase production therefore improve on-farm dairy profitability and employment as well as potentially increase employee numbers in cheese-making or whey processing facilities.

## Objectives

- Reduced trade waste costs to business
- Improved environmental credentials through a reduction in waste and possible use of whey in biogas production
- Consider how whey can be utilised by SA Water in their biogas facility at Glenelg to reduce cost to business, increase profitability and reduce greenhouse emissions
- Opportunity for new business development and employment growth through carting whey, processing in a value-added plant or increasing primary production through using as stock feed.
- Ongoing collaboration within the niche processor community to develop industry-wide opportunities. There is already an existing Niche Dairy Processor Network that is facilitated by DairySA and from that a Whey Discussion Group (WDG) has developed. The WDG has met several times to consider how to address this issue and includes a number of processors, GISA representatives, PIRSA, Dairy Australia, Hydraco, SA Dairy Farmers Association and DairySA.

## Outcomes

Xcheque produced a whey feasibility study for the South Australian niche dairy processor sector (appendix 1). The project identified several possible alternative options for use and reuse of whey. The following table outlines these options including key capital items required to implement each strategy and potential issues associated

| Option | Key Capital Items | Key Issues |
|---|---|---|
| ***Sewer disposal*** | • pH control<br>• Grease trap or<br>• Dissolved Air Flotation | • Current & future discharge standards<br>• Future of charging regime (price increase) |
| ***Farm irrigation*** | • Storage dam / silo<br>• Irrigation system | • Area required / tonnes cheese<br>• Soil pH<br>• Wet weather disposal<br>• Odour |
| ***Biogas*** | • Outload silo | • Full truck loads required for optimum economics |

| | | |
|---|---|---|
| ***Compost production*** | • Outload silo | • Full truck loads required for optimum economics |
| ***Sale to piggery*** | • Outload silo<br>• Receiving silo<br>• Pig feeding system | • Full truck loads required for optimum economics<br>• Negotiation of sale price |
| ***Liquid whey protein concentrate*** | • Whey collection silo<br>• Fat clarifier<br>• Ultrafiltration plant<br>• Pasteuriser | • Capital cost<br>• Product development & marketing<br>• Net benefit of product cost & value |
| ***Dry whey powder*** | • Powder drier & associated infrastructure | • Capital cost & economy of scale |

Key outcomes from the analysis were

- There are clear opportunities for cost reduction for those cheese manufacturers that are currently disposing of whey to sewer
- Management of the transport logistics and cost will be the key to utilisation of whey in biogas production, compost or a piggery.
- Application of whey in food grade products is economically challenging for cheese manufacturers with a scale of less than 5,000 tonnes.

## Opportunity for Whey in SA

At a workshop following presentation of The Whey Forward project findings, participants recommended a 3-tier approach to utilising whey:

### Short term

- Stock feed options through transporting whey to piggeries were the most likely option that is available for processors with minimal or no capital investment.
    - Mapping of niche processors to produce a 'whey run' where the most effective transport possible is achieved. GISA have produced a possible route for this to occur (appendix 2)

### Medium term

- Reduce trade waste and increase productivity through implementing RO prior to cheesemaking.

### Longer term

- Value add to whey product through development of a liquid whey processing plant to produce WPC35.
- That a UF plant to process approximately 1 to 5million litres of whey annually should be designed and costed.
    - Mark Schleyer (Process Partners) was suggested as a technical design expert
    - A local engineering / industrial design firm to cost the build was desired.
- It was proposed that interstate and overseas research should be undertaken to gather potential human food opportunities for South Australia.

## Next Steps

- Project report and summary to be widely distributed throughout the niche processor industry.
- Whey Discussion Group members who were unable to attend on the day will be briefed in detail and any further thoughts included in this draft report
- Seek further funding to
    - develop an industry level process for distributing whey to piggeries,
    - costing and demonstrating the benefits of RO to cheesemakers and yogurt makers.
    - Undertake design work & costing on a WPC35 processing plant

## Summary

The project report and workshop findings have been distributed to all niche processors in South Australia and Whey Discussion Group members who were unable to attend have been briefed or have received multiple offers of a briefing. There has currently not been a concerted effort by the niche dairy processing industry to take the next steps in developing the whey opportunities despite trade waste costs regularly increasing. It seems that it will be only when this becomes completely prohibitive for business that there will be interest in moving ahead with one or more of the options identified in The Whey Forward report. Without a key driving business, organisation or individual that coordinates an industry response, it appears that individual businesses will continue to attempt to tackle the whey issue alone. Future opportunities rely on smaller niche processors appending their whey to a few larger niche processors.

## Acknowledgements

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Appendix 1: Xcheque “The Whey Forward” report

Appendix 2: GISA map of possible whey transport route