How can we create value from compliance in the dairy industry?

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Kellogg Rural Leaders Programme 2016

Executive Summary

Investment in time and capital to satisfy compliance requirements in the dairy industry is increasing year by year. While this is a necessary requirement to operate a business in our modern environment there is potential to create value out of this at the same time. Often when we look at disruptions we look for solutions as to how to get around them or avoid them rather than embracing the change and making the most of the opportunity.

The aim of this project was to investigate an opportunity to develop an audited farm assurance scheme in New Zealand. The process included looking at the existing programmes which have recently come to the market as well comparing the opportunity in New Zealand with what is in place in Ireland with Origin Green Ireland. DairyNZ's Sustainable Milk Plans which have been used in different catchments across the country could also offer a template to be built on to develop an assurance programme.

While Synlait and Miraka have recently launched their assurance programmes in anticipation of demand from consumers as well as showcasing an opportunity to create extra value. This could be expanded and rolled out across all primary industries and also the tourism sector. There is a large amount of commonality in what the primary industries and tourism are focussed on and that is selling New Zealand products and experiences.

Based on findings from this study and looking at similar assurance schemes, the following recommendations could take the opportunity to the next level and should be investigated further.

- An assurance scheme committee should be started with representatives from supply companies, DairyNZ, Beef and Lamb, MPI, and other interested parties
- It will be wise to canvas farmers early and ensure that a majority of suppliers are in support of such a scheme to give it the required critical mass to get moving
- Marketers within supply companies should investigate the value of this increased brand value to determine a return for the scheme
- Logistical aspects of an assurance scheme would need to be sorted at the start of the project to ensure that the workload requirements are able to be met (data collection and auditing)
- It is important that the industry support (rural professionals) have the capability and capacity to handle the likely increased demand from farmers also

The next steps following this report in my view are –

- A meeting of interested parties should be gathered to further work through details of how such a farm assurance scheme could be implemented and funded (look to the case studies as examples of a template)
- There may be an opportunity to incorporate the Synlait and Miraka programmes under a New Zealand umbrella programme that satisfies the other requirements of a cross sector assurance scheme
- Once a clear and defined strategy has been established it will be important to get a group of influential and innovative farmers on board to ensure that a critical mass of product supply backs the initial proposal to ensure that a large majority (ideally all) of farmers are on board before any programme is launched
- Marketing will be important so any initial committee should consider getting suitably qualified marketing personnel on board to establish an easily recognisable brand to go along with the launch

While there would undoubtedly be some resistance to this opportunity by farmers seeing more compliance as a hassle, the reality is that most of what is being reported and audited is legally required to operate a business in New Zealand anyway. We need to stand back, have a critical look and identify the opportunity from challenges which are placed in front of us. All New Zealanders should strive to improve our environment and be excited about an opportunity to increase the value of our products by meeting an auditable standard.

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Foreword

This project was undertaken as part of the Kellogg Rural Leadership Programme. Initially my motivation came from frustration with the amount of work some farmer clients were putting in to meet standards set by Fonterra and others only to receive the same returns as other farmers who were not meeting those standards. There has been a significant investment in time and capital by farmers to meet compliance requirements and currently no return for that investment other than the right to supply or 'licence to operate'. I believe that everyone can achieve their goals for water quality, nutrient management and financial viability but sometimes we need to think outside of the square – how can we turn a weakness or threat into a strength? Looking back from the reverse angle often encourages people to think differently. There is an opportunity for us all to be a part of something special in New Zealand not just in the primary industries but also tourism and the wider community. Too often we are negative towards those people who are doing well and likewise those that fail (tall poppy syndrome) – we need to celebrate success and get in behind those people to build on our brand and reputation. I believe that we can increase the value of our products while at the same time improving the environment and landscape that we live in. The saying '*we need to be in the black to be green*' is relevant and should be remembered when analysing the potential for farm businesses to meet their compliance requirements.

Acknowledgements

I would like to thank my wife, Brooke for her patience and understanding through what has been a challenging six months with the arrival of our first son Moss coinciding with the start of this project. Your encouragement and support has made me strive to do the best that I can at all times. Thank you.

I would also like to acknowledge the New Zealand National Fieldays Society Incorporated who provided financial support for the Kellogg Rural Leadership Programme. I am proud to represent the Society as a Future Leader and look forward to giving back to the Society in years to come. I am thankful for the opportunity to investigate a new idea while at the same time developing my personal leadership skills.

Thanks must also go to those people who helped me with information from the various organisations, explaining what has been tried in the past and the process behind current strategies. This includes staff from Fonterra, Miraka, Synlait, Waikato Regional Council and DairyNZ. I appreciate your openness when discussing programmes which are unique to your companies and which have taken brave leadership to get started.

Thank you to my mum, Annette, for your help in editing the project and ensuring the text was direct and to the point.

Thanks also to Patrick Aldwell for your insightful comments and feedback, as well as a legacy of instilling a critical thought process in my mind.

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1.0 Introduction

Operating a business in a modern environment involves an increasing amount of compliance as regulation changes over time to protect and enhance the environment, workplace safety and ensure minimum standards for employees. Most of this has come from legal changes but there is an opportunity for farmers, businesses and marketers to be a step ahead, meet the market and create a best practice scenario because it is the right thing to do. This would no doubt lead to improved values for produce as shown by the organic market where perception is everything even if the product quality is no different to that produced conventionally.

The aim of this project is to explore an opportunity for the New Zealand dairy industry or even New Zealand in general (including the tourism, drystock and horticulture sectors as well) to create a brand or minimum standard that is auditable which should create more value for our products as it quantifies what a large proportion of farmers are already doing.

There is already a growing 'green' movement and consumers are more conscious of where their food is from. With the advent of social media good and bad stories can damage or build a food company's reputation quickly so it is important to build a reliable and auditable story as is demonstrated by the Origin Green Ireland concept developed by the Irish Food Board. As an industry and brand we need to decide what we stand for and combine that into a recognisable standard building on the 'FernMark' brand (Fernmark, 2016).

2.0 Aims and Objectives

The primary aim of this project is to explore an opportunity to develop value from compliance which is already being carried out within the dairy industry. There is also an opportunity to incorporate the red meat sector and tourism as a part of this assurance scheme to create a stronger and more quantifiable 'brand New Zealand'. As a part of the investigation process I will look in to what is already being carried out within this space in New Zealand by Fonterra, Synlait and Miraka as well as overseas in Ireland with the Origin Green programme.

3.0 Literature Review

3.1 New Zealand Dairy Industry background

The New Zealand dairy industry involves 11970 herds (LIC, 2015) across a large range of soil types and land use capabilities. Anecdotally (in my interactions with farmers) there has been a change in the attitude of dairy farmers since the Dairying and Clean Stream Accord 2003 was outlined and then superseded with the Sustainable Dairying: Water Accord 2013 there is still a lot more to be done partly due to the increase in total dairying area but also due to the change in consumer demands. There has been a significant investment by dairy farmers in fencing (24000km as at May 2014 – SDWA report, DairyNZ & DCANZ, 2014), and effluent systems, but there remains an incomplete step in the reporting and compliance of nutrient management (75% of farms had data collected by 31 May 2015 – SDWA report - Two years on, DairyNZ & DCANZ, 2015).

While the above data focuses on the environmental area, there are also significant compliance requirements in regards to Health and Safety, Animal Welfare, Water Use and People Management/Human Resources most of which are standard for a business operating in New Zealand and employing staff. Many farmers already achieve a high level of compliance often this is currently not recorded or audited anywhere which can lead to difficult situations or prosecution when things do go wrong. There is a lack of cohesion between fertiliser companies, milk supply companies, regional councils and the data that they collect individually which is often utilised in different circumstances both for compliance and/or management.

Currently data is collected on farm to satisfy a variety of requirements but there is no reward or return to farmers other than being satisfied that they are operating their business to best practice. Within the farming sector there are operators who are not meeting best practice (submitting nutrient use requirements, operating a compliant effluent system) but are also not being financially penalised unless they are investigated and found to be in breach of the Resource Management Act.

The development of Overseer (Overseer, 2016) over the past thirty years has provided regional councils, farmers and fertiliser companies a tool to measure and manage nutrients. There has been a range in the way this information has been embraced and while there are some limitations with the model it has provided farmers and growers the opportunity to test different scenarios before implementation. As with all industries there is a range in the population with different motivations and acceptance or willingness to change – this could change markedly for an individual over their lifetime.

3.2 Adoption of new concepts

As with most new concepts or ideas there is a range in the rate of uptake. The rate of adoption of innovations and adaptations has been described as a bell shaped curve, initially by Rogers and Shoemaker (1971) and then Rollins (1993). Figure 1 presents this population mix in a bell shaped curve. The groups as part of the population are lead by the innovators, who are around 2.5% of the population and are described as venturesome, eager to try new ideas and often belong to and communicate with other innovators. The innovators have a strong technical understanding and reasonable financial resources. Early adopters make up 13.5% of the population and are generally more localised than innovators, this group have the greatest degree of opinion leadership and often are looked to by other adopters for advice and information which makes them a crucial group when trying to encourage positive change. The early majority are 34% of the population and adopt before the average time. This group tends to deliberate for some time before adopting an idea and follow the early adopters willingly but will seldom lead. The late majority also make up 34% and tend to be sceptical and cautious in their approach. They do not adopt until most others in their social systems have done so and social norms need to favour the innovation or practice before they are convinced. The final group are the 16% of laggards. These are traditionalists who have a propensity to be guided by the decisions of the past, are very suspicious and allow a long time to elapse before adopting an innovation or practice. This group tend to have their focus on the rear-view mirror. For the group of laggards it is important to have minimum standards which in New Zealand is generally met by the Resource Management Act and enforced locally by Regional Councils.

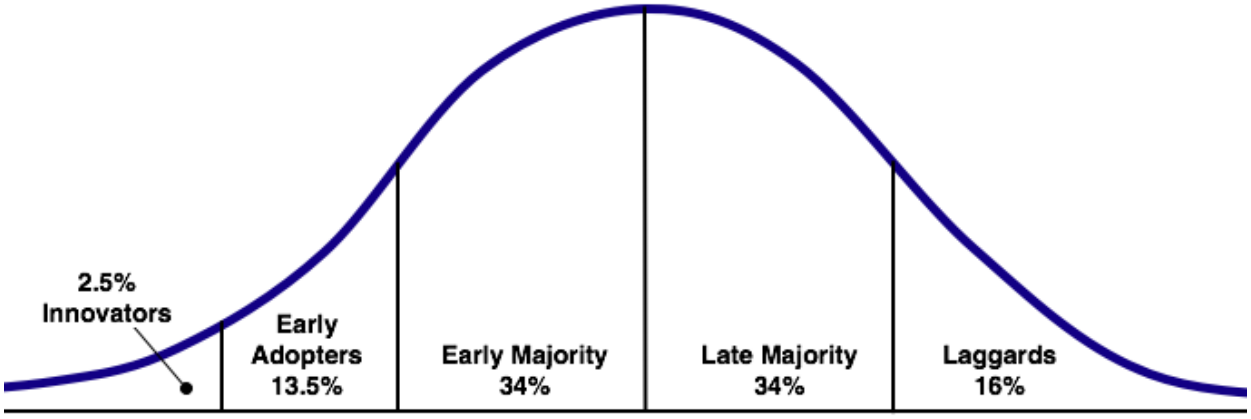

Figure 1: Adoption curve as described by Rogers and Shoemaker (1971).

If there was an incentive to encourage farmers to take up new technologies (financial or otherwise) there may be a greater rate of change. While compliance per se is not a new technology there are always ideas that go above and beyond current standard practice and technology particularly when dealing with effluent and nutrient management.

3.3 Pros and Cons of creating an auditable standard

Initially the positive aspects of creating an auditable standard for the dairy industry (or even the whole agribusiness sector) are increased value for products (increasing brand recognition); increased integrity within the rest of society; ability to operate into the future (social licence to operate) as well as lifting the performance of the whole sector at a greater rate.

The negative aspects of having an auditable standard could be that the laggards are going to limit the whole process which could affect its credibility; it could create a division within a milk supply company with some farmers not wanting to participate for one reason or another; and there could also be a perception that any additional compliance process will increase workload and cost for the farmer as there would need to be more staff and auditors employed by milk supply companies and/or farmers to complete the process.

Most producers would agree that creating more value for products is a good thing especially if that can be done with things that are already being carried out as a part of operating their business to meet current compliance requirements. The dairy industry is often negatively perceived in the wider community due to previous media exposure of poor performers (who could be described as the laggards) across the sector ('dirty dairying'). These laggards are a risk to the whole industry and either need to be managed to improve their standard operating procedure or for them to be forced out through non-compliance. Building a brand and a positive story around the good things that are being done on farms will help to overcome the previous negative stigma portrayed by the media.

The 'New Zealand Story' (New Zealand Story, 2016) describes a brand for New Zealand export businesses to be a part of and help to build accurate perceptions of New Zealand overseas. A large proportion of the New Zealand brand is built around agriculture, the strength of our product quality and high food standards that we hold but this is not often utilised well to market agricultural exports in New Zealand. Even with the New Zealand story having been promoted by politicians recently this tends to focus on other sectors (non-agriculture) when in fact there has always been a large amount of innovation and resourcefulness in agriculture especially when confronted with a limitation or restriction.

"New Zealand is renowned globally for its clean environment and farming expertise. What isn't widely known is the competitive edge we have in other sectors thanks to the innovation and resourcefulness inherent in our businesses." New Zealand Story, (2016).

Tourism is inherently connected to what happens on the farm or the winery, and the regions of New Zealand are as important to tourism as Auckland airport is, if not more so. This can be seen in many of the images used for marketing that are taken from regional settings. The New Zealand tourism strategy report (MBIE, 2015) describes how tourism adds value to other export sectors but in agriculture we often do not capture this increased value especially when we are selling Whole Milk Powder (WMP) and other commodities on an international auction platform such as Global Dairy Trade.

"Tourism adds value to other export sectors by promoting the 100% Pure New Zealand brand internationally. It also adds value to industries within New Zealand that benefit from adding tourism experiences to their product offering, such as farm stays, factory tours, and winery restaurants. Tourism helps drive regional economic growth and supports the revitalisation of towns and communities. This helps build regional pride and creates employment opportunities" MBIE, (2015).

There is a frustration amongst farmers about meeting increasing amounts of compliance with no extra benefit to them other than the ability to continue to operate. As a result of this there are question marks over the quality of data provided (Fonterra nitrogen programme) which is critical when this data is used to influence policy particularly at a regional level. One negative risk of having an auditable standard would be that it would put farmers off further – ie. it would lock in the workload requirement that some may consider optional even though these processes should be standard procedure already. Farmers are often reluctant to open their business for audit by a third party, out of concern for what else might be found. This should be seen as motivation to make sure the business is operating in the right way as it is *'the right thing to do'* not because *'we've done it this way forever so why should we change'*. Farmers need to be a part of the

change rather than expecting someone else to do the work. It is important that the story is told from the point of view of those who are implementing changes as it will give more credibility.

Another negative risk of having an auditable programme is that not all farmers would be keen on it (the late majority) which could create some backlash and potentially create two milk pools – that milk that does not meet the standard and that which does. This could create some risk for the supply company if dissenting farmers look to go elsewhere or create their own company. It is therefore important to have buy-in from a large majority of farmers that this is the right thing to do – legally most of what would be included is required anyway.

There is also a risk that if nothing is done in this space, that New Zealand products will get left behind as others around the world develop their own assurance programmes and brands further while New Zealand relies on our image from the past. Origin Green, (2016) does a great job of covering all agricultural businesses as well as food and beverage companies in Ireland. There is an opportunity for New Zealand to include tourism in a similar assurance programme as there is a significant amount of commonality between agriculture and tourism (MBIE, 2015). Regulation is increasing anyway with most regions requiring consents or likely to require consents to farm in the near future so the compliance cost is going to be there anyway – we may as well create some value from it. Another complaint which is often heard from farmers is that there is a lot of repetition of the same information whether this is collected by the supply company, regional council, fertiliser company, accountant, consultant and others associated with that business. If there was one auditable document this would bring everyone into one place and avoid a large duplication of work.

Dewes (2014) described the opportunity for a central database with validated data which would satisfy the requirements from regional councils such as Horizons, Canterbury, Otago and Hawkes Bay which have all had recent plan changes requiring such data. Absence of such recording of changes in land use in New Zealand has led to over allocation of resources (water in particular) which may not have occurred if there had been more monitoring at an earlier stage (Dewes, 2014). This data is required by over half of the regional councils currently and it is likely that more councils will require farm plans in the future. Collecting the data centrally, and having this audited and validated by an authorised independent third party would reduce workload and also give more credibility to the data.

The positive aspect of having an auditable standard is the value created from the existing compliance actions which are already being carried out. It is important that the story and value proposition is sold to farmers to bring them on board early rather than creating the proposal and then trying to convince them of

the benefits later. Farmers need to be a part of the story from the beginning. Communication is critical in conveying the message and poor delivery of this could risk the viability of the whole proposal.

Both van Reenen (2012) and Waugh (2011) described how a collaborative approach between farmers, environmentalists, iwi and community groups was the way to get real change in the nutrient management and water quality space. While there is a requirement for regulation for those laggards in the bottom 10% of the population who are most likely ignorant of any detrimental impacts of their operation, a carrot approach is still going to create more change for the remainder of the industry and so a combination of both methods will be required. Waugh (2011) described how having farmers involved in policy changes empowers them and this collaborative approach has been demonstrated in the recent Healthy Rivers – A Plan For Change (Waikato Regional Council, 2016), with the establishment of a Collaborative Stakeholder Group (CSG) to collaboratively provide practical solutions to the council.

4.0 Methodology

When investigating an opportunity for increasing value of milk products from compliance I was made aware of what Synlait and Miraka were already doing in New Zealand. Origin Green Ireland is a recent development in that country which operates along similar protocols. I was initially interested in obtaining data from the Fonterra nitrogen programme and comparing this to data held by Regional Council however, the Fonterra nitrogen programme data focuses on the outputs from Overseer and the Waikato Regional Council did not have readily available information across the whole catchment on effluent compliance which is their focus rather than nitrogen losses. I was able to obtain some data from the Upper Waikato Sustainable Milk Plan project which was completed in 2013. I was able to interview the relevant people managing each of these schemes which provided the information for each case study.

The information sought was based around how the programmes worked, what their focus was, what information/data was collected, how much time investment was required from the farmers and what the returns to the farmers were. Based on this information I was able to profile these as case studies including – Synlait – Lead with Pride; Miraka – Te Ara Miraka; Origin Green Ireland; DairyNZ Sustainable Milk Plans; Fonterra Nitrogen Management Programme. I also talked to Fonterra about the opportunity for a farm assurance scheme which may have the potential to offer a premium payment to farmers.

The Origin Green Ireland information was mostly taken from their website although I did try and make contact with an Irish farmer who is part of the programme I did not hear back from them. It is important to consider that with widespread internet access, it is important to maintain creditability about your

organisation by having most of the general information about your product accessible online as was the Origin Green information.

5.0 Case Studies

5.1 Synlait – Lead with Pride

Synlait have developed their 'Lead with Pride' programme (Synlait, 2016) as they wanted to be ahead of changes which were identified as likely to be coming to the industry in the near future. Lead with Pride was launched in 2013 and recognises and financially rewards suppliers who achieve dairy farming best practice. Lead with Pride was developed as an opportunity that was identified within the community as there was negativity from the public around dairying and its perceived impacts. Other reasons included creating some recognition for those farmers which are doing good things; portraying and identifying to Synlait clients and customers the reality of what happens on farm; and also certify those farms as best practice.

Lead with Pride is not a compulsory programme and is worth up to 6c/kgMS to farmers, which is split between 2c/kgMS for being certified, 2c/kgMS for low SCC (<150000 cells/mL), and 2c/kgMS for other milk quality parameters (bactoscan, temperature etc.). Farmer involvement is anticipated to be around 50 farms of 170 supplying farms in the 2016/2017 season. The programme covers milk quality, human resources, animal health and welfare, and environmental compliance. Industry documents such as the DairyNZ HR toolkit were used to develop standard operating procedures which are specific for each farm. Asurequality audit each farm annually after the initial certifying process which involves a much more indepth auditing requirement.

There is the potential for this programme to create more value in the future from both current customers encouraged by what Synlait are doing and new customers moving to Synlait having been attracted by the Lead with Pride programme.

5.2 Miraka – Te Ara Miraka

Te Ara Miraka (Miraka, 2016) was developed as a part of the values of the main shareholders driving a social conscience strategy, as well an opportunity to leverage value back to the shareholders and suppliers. Te Ara Miraka is described as their way of doing things - within Miraka and beyond they ensure that their activities are sustainable and have minimal impact on the environment. Te Ara Miraka is compulsory for Miraka suppliers for the 2016/2017 season onwards although it is not part of their conditions of supply.

Te Ara Miraka involves an annual assessment for each supplier which is audited by QCONZ. The assurance programme covers the environment, human resources, animal health and welfare and milk

quality. There is 20c/kgMS allocated with payments scaled on a pro-rata basis depending on how much of the criteria is met. The programme is about establishing farmer excellence standards that are based on the values of the shareholders and company.

5.3 Origin Green Ireland

Under the Origin Green Ireland branding which is an initiative by the Irish Food Board, all Irish dairy farms are part of an annually audited Sustainable Dairy Assurance Scheme (SDAS) (Origin Green, 2016). This scheme sets out requirements for best practice on Irish dairy farms in animal health and welfare, land management, biosecurity, safe farming practices and the safe production of milk. The SDAS calculates the greenhouse gas emissions of each participating dairy herd using the carbon navigator tool and provides detailed feedback to each farmer helping them to improve the sustainability performance of their farm. The annual audit is carried out by SGS and the scheme is accredited under the European Standard for Product Certification – ISO 17065: 2012.

This scheme is effectively being implemented across all 18000 Irish dairy farms (which compares with just under 12000 herds in New Zealand) but under the Origin Green Ireland branding which also includes a total of 533 companies with plans submitted to qualify under the Origin Green branding. Of these 533 companies, 214 have become fully registered to date. The Origin Green brand covers all food and beverage companies producing in Ireland including Bakery, Beverages, Confectionary/Snacks, Consumer Dairy, Dairy, Eggs, Horticulture, Meat, Prepared Food and Seafood. The website plays strongly on the fact that Ireland is a pasture based farming system and produces a third more pasture on an annual basis than the European average. Carbon efficiency and water use efficiency are also used strongly to convey the sustainability strengths of Irish produce. Interestingly most of what the Origin Green brand is about and the strengths they portray are all key attributes that New Zealanders would use to describe our agricultural systems.

The Irish have shown great initiative and have done well to drive Origin Green to a strong current position. It is frustrating as a New Zealand producer to see that we are not actively in this space as our product efficiency has been shown to be world best through previous studies (Saunders et al., 2009). A country wide assurance scheme would need to have everyone on board and if this could include all processors, drystock, horticulture and food and beverage producers as well as tourism this would have massive potential for New Zealand industries.

5.4 DairyNZ Sustainable Milk Plans

DairyNZ have developed a Sustainable Milk Plan (SMP) template that has been rolled out across a number of catchments in recent years (Upper Waikato, Canterbury, Waipa) (DairyNZ, 2016). While these templates have increased in complexity over time, they remain reasonably straight forward for farmers and other interested parties to understand. The SMP's cover areas such as Water Management, Effluent Management, Waterway and Biodiversity Management, Land and Soil Management, Storage Infrastructure and Waste Management, and Nutrient Management. Farmers are questioned about how they manage each of these areas while also completing an indepth look at areas that could be improved or modified to further improve water quality and biodiversity management on farms. While the SMP's have been voluntary for farmers to participate in and have been funded by DairyNZ, and central government and the Waikato River Authority in those catchments, there have been significant resources available to those farmers to improve or modify their systems often at below cost (DairyNZ, 2016). Any farmer agreed actions are voluntary and if the actions are not completed there are no ramifications for the farmers. While this could be seen as a weakness, the implementation of the SMP's has achieved a lot good gains which may not have been achieved otherwise. These gains have included famers investigating the cost of effluent system upgrades which they may have thought prohibitive previously; looking at timing of fertiliser applications; implementing a riparian management plan or even just altering their grazing management to reduce nitrogen losses (DairyNZ, 2016).

Selected data from the Upper Waikato catchment shows that while effluent management is improving there are still areas for improvement including ensuring that storage facilities are secure. This sub group of 90 farms showed that 55 had synthetically lined ponds (61%), 23 had clay/earth ponds (26%) and 12 were pumping from sumps (13%) (Brocksopp *pers. comm*. 2016). This subgroup shows that while a group of farmers have invested in compliance there are a group of others that may not be compliant 365 days of the year (as a spray from sump can not technically satisfy the Waikato Regional Councils guidelines) but those farms are not currently being penalised/rewarded for their bad/good performance.

It may be possible to further develop the SMP template to encompass Health and Safety, Animal Welfare and Human Resource components to create a document suitable for a farm assurance scheme. There are already documents such as the DairyNZ HR toolkit which could be used to benchmark an improved SMP as has been utilised by Synlait with their Lead with Pride programme. There may be gaps in the areas of Animal Welfare and Health and Safety where there is legislation to meet but perhaps no industry wide standard operating procedure to follow. This would be easy enough to establish however.

5.5 Fonterra Nitrogen Management Programme

Fonterra's Nitrogen Management Programme (part of Supply Fonterra, Fonterra 2016) was developed in anticipation of regulatory policy being developed by Regional Councils. While this is a part of farmers obligations to supply Fonterra it is not a 'condition of supply' and therefore farmers who do not complete their requirements will still have their milk picked up. Under the Farm Dairy Assessment which is carried out annually by QCONZ or Asurequality on every farm there is a requirement for all farms to have a nutrient budget. However these are not analysed in depth or critiqued at all. The required standard refers to section 8.4 of the suppliers handbook which states that suppliers must meet the following standard –

- Provide accurate information to Fonterra about your farm system as detailed in the dairy diary by 30 June each season; and
- Provide evidence to support these records upon request.

Over the past three seasons, there has been an improvement in the numbers of farmers submitting data to Fonterra for the Nitrogen Management Programme but there are still question marks over the quality of this data. Each farm's data is given a rating from 1-5 based on how reliable and/or accurate the person inputting the data into Overseer feels the data is. While there has been collaboration with fertiliser companies in New Zealand there is still a large amount of duplication occurring which is a frustration to farmers. While some regions have policies in place which require farmers to accurately model their farm through Overseer as part of their consents this is not required in other regions which does make it difficult for Fonterra to have standardised rules across its supplier base.

Figure 2 shows a schematic diagram of how Fonterra perceives the Nitrogen Management Programme should work alongside the regulation and audit process (Factsheet – Fonterra Nitrogen Management Programme, 2016). While this looks good in theory, in reality there is still a large variation in the input data between different users of Overseer despite the development of the Overseer Input Standards. Some of this variation can be explained by lack of farmer understanding in some cases as well as frustration and ignorance. If this process was audited for each farm annually, this would improve the quality of data (both input and output) in Overseer (with an understanding of the limitations of Overseer at this point in time). A farm assurance programme that covered nutrient management alongside health and safety, environment, milk quality and animal health and welfare would achieve this improvement in data quality and potentially also increase the value of products by having a brand associated with it.

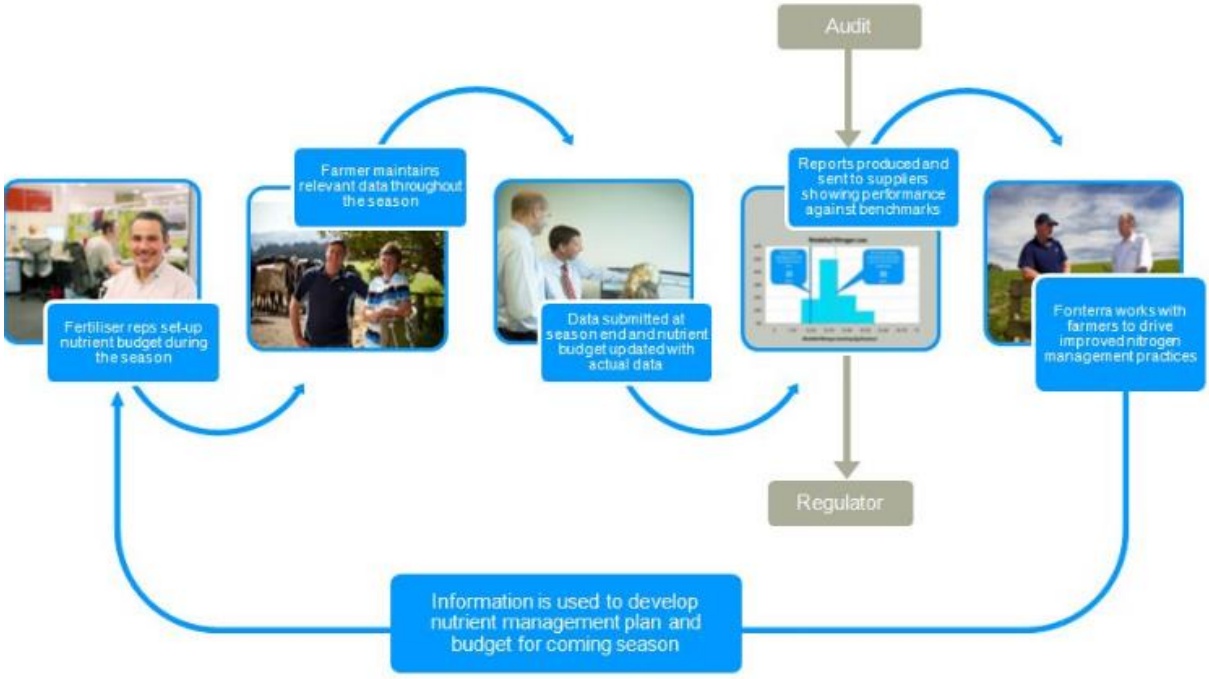

Figure 2 – The Nitrogen Management Process from the Fonterra factsheet on the Nitrogen Management Process (Fonterra, 2016).

Table 1 shows data provided by Fonterra for the 2012/2013, 2013/2014 and 2014/2015 seasons indicating the number of Fonterra suppliers submitting their nitrogen reports (New Zealand and Waikato numbers as a percentage) and also the rating of the datasets as determined by the person inputting the data. The ratings were based on a 1-5 scale (see Table 2) although no 1 or 5 scores were given out as a 1 indicated that Fonterra contacted the farmer to obtain information to create a nutrient budget, and a score of 5 would indicate that the data was audited by an independent party and none of the datasets had this. Effectively the farms that did not have any information submitted should have a rating of 0 under these criteria. While the submissions have improved from 34% to 75% of all Fonterra suppliers and 38% to 72% for Waikato Fonterra suppliers there is still a large question mark over the quality of the data provided to Fonterra as shown by the fact that in 2014/2015 there was still 66% of the Waikato datasets with a score of 3 or less.

Season	2014/2015	2013/2014	2012/2013
NZ submission	75%	58%	34%
Waikato submission	72%	64%	38%
Ratings			
4	34%	22%	NA
3	51%	52%	NA
2	15%	26%	NA
N loss Waikato kgN/ha	35	35	36
>38kgN/ha	36%	34%	36%

Table 1 – Data from Fonterra showing the number of farms submitting their Nitrogen data requirements and also the rating score showing the quality of data (data provided by Fonterra, 2016).

In relation to the nitrogen loss figures in Table 1 I have used the figure of 38kgN/ha which was a previous industry benchmark for the Waikato Region. This is now out of date with the changes in Overseer and is also slightly higher than the average nitrogen loss figures for the Waikato based on the Fonterra numbers. While the average was around 35-36kgN/ha leached through the three years, there remains question marks over the quality of the data particularly with the range in ratings for the data. In some cases where the farm data was lacking, for example where a soil type was missing for the effluent block then the most vulnerable soil type was assumed to be modelled to show the 'worst case' scenario in the absence of other data (Mat Cullen, Nuala Platts *pers. comm.*, 2016). This would then create a scenario which was not representative of the actual scenario. The only way to have accurate annual data would be to have an audited farm assurance scheme.

Rating		Criteria
1	Deficient	**Data for critical fields is not provided, or highly likely to be inaccurate.** Where any of these fields are likely to be significantly misstated the file is considered to be of poor quality and should be prioritised for audit. Files with a '1' rating should be excluded from collated data reporting. Where possible, the service provider should attempt to access better information to allow the file to be corrected to an acceptable standard.
2	Marginal	**Data for multiple non-critical fields is not provided, or likely to be inaccurate. Therefore, multiple assumptions are required to complete the file.** Where multiple non-critical input fields require assumptions to be made the rating will be '2' and the file should be excluded from collated data reporting and prioritised for audit. Where possible, the service provider should attempt to access better information to allow the file to be corrected to an acceptable standard.
3	Adequate	**Data is missing, or of poorer quality for a small number of non-critical inputs.** Assumptions are required, but unlikely to significantly impact on whole farm reported output values.
4	Complete	**All necessary data is provided, and is credible, and pasture model outputs are within normal range for the region and the farm system.**
5	Excellent	**All necessary data is provided, is credible and is backed by records that have been sighted by the service provider.**

Table 2 – criteria for quality of data in the Fonterra Nitrogen Programme as provided by Mat Cullen, Fonterra 2016.

6.0 Discussion

The Synlait and Miraka programmes are quite similar in their assessment and audit process with the main difference at the moment being that the Synlait Lead with Pride programme is not compulsory while the Miraka Te Ara Miraka programme is compulsory for all suppliers from June 2016. While the Fonterra Nitrogen management programme is part of Supply Fonterra (conditions of supply) the penalties for not submitting data are not currently being upheld for one reason or another. Submission rates for data have improved in the past three years but I believe that if farmers saw some tangible benefit (financial or otherwise) that they would make a greater effort and be more encouraged to invest in their farm operations before they are forced to by regulation.

There has been discussions within Fonterra around establishing a farm assurance programme which may include a pasture fed brand component and premiums for milk produced from diets high in pasture (>90% for example), this has largely been rejected by early farmer groups. To get buy in from farmers within Fonterra it is important to sell the story well and get together a reasonable group of influencers and innovators (maybe 50 farmers) to give the proposal credibility among other producers.

The Origin Green Ireland programme has good marketing and is extensive in its coverage of all farms in Ireland but it could go further and include tourism operators within Ireland. This is a definite opportunity which New Zealand could pursue and set a benchmark internationally for brand recognition. The auditing aspect which is carried out by a third party is important to ensure strong credibility of the programme. This would mean that the laggards either are not part of the programme and miss out on the premium payments or change land use to something which is not under the 'Brand New Zealand' assurance scheme.

While all of the programmes have their different strengths, there is an opportunity for an audited universal assurance programme. To make the most of this effort it would be wise to include tourism, horticulture and drystock (red meat, wool, velvet) sectors as well to grow the brand New Zealand story. The Synlait Lead with Pride programme is very strong with the extensive audit process involved but there perhaps is not enough incentive at 6c/kgMS. However, in time there is potential to grow this premium as consumers become aware of the value proposition. I expect that such an assurance scheme could be worth a 10-15% premium compared to equivalent products from other countries.

The farm assurance programme could be modelled on the DairyNZ SMP's which are already being used to satisfy regional council requirements in some catchments in Canterbury. Early indications are that they would be suitable for the Waikato Regional Council farm plans which are also proposed in the Healthy Rivers changes. Currently the SMP's focus on environmental aspects but these could be extended to cover animal health and welfare, human resources and employment areas using the DairyNZ templates for best practice as Synlait Lead with Pride has shown.

While there is some communication between regional councils and milk supply companies at the moment, there is no central database collecting data (Dewes, 2014). A central database would help to create creditability and also avoid repetition of work which has already been carried out. This may mean some resources (employees) are redirected from milk supply companies and fertiliser companies to DairyNZ and regional councils (or whoever was managing the farm assurance scheme) as well as the auditors as there would be less requirement for data collection but an increased requirement for interpretation and possibly

modelling system changes and 'what if' scenarios. With more regional councils requiring farm plans and placing limitations on nutrient loss and water use, a central database with farm plan information would make sense.

7.0 Opportunity for an audited Farm Assurance scheme

In considering the issues with collecting data voluntarily from farmers and the quality of that data, it would be beneficial to create a scheme that covers all bases, and satisfies any regional council requirements while at the same time being able to be audited and meet an international accreditation scheme (such as ISO 65 as Synlait's Lead with Pride is subject to). Fonterra have considered looking at something along the lines of a farm assurance scheme but have found it difficult to separate any premium out of the milkprice which needs to be calculated in a transparent fashion.

With Fonterra legally having to pick any milk up in the country under DIRA legislation this could increase the cost of transport if they were able to 'stream' different milk lines as they would with Stolle milk and organic milk and previously colostrum. There may be an opportunity to create value from a premium on products sold as 'assured' under a 'Brand New Zealand' which could then be paid out of profits under the Fonterra set up (ie. separate from milkprice). For other companies such as Open Country it may have to be offered as a separate premium which is not too dissimilar to how they pay for low somatic cell count and volume at the moment.

Real traction and brandpower would be gained if a farm assurance scheme was to be rolled out across all primary industry sectors (red meat, dairy, velvet, wool, horticulture) and the tourism industry as a New Zealand branding exercise. This would go above and beyond what Origin Green in Ireland has done as it would include all major export industries in New Zealand not just food and beverage producers. For a scheme like this to be successful it would need collaboration across all sectors and buy-in that what was being done was beneficial for New Zealand as well as everyone involved – this should include Iwi and community groups. The starting point for this solution is for all parties to agree on what the issues are, agree on the common ground (aspects that all parties want to see occur) and define a strategy from there. If farmers front foot this with a farm assurance scheme this could gain a large amount of respect from the rest of the community.

There is an increasing requirement for this type of information to be collected to satisfy regional councils and also central government organisations such as Inland Revenue and the Ministry for Business Innovation and Employment (employment law and health and safety regulations). It would be beneficial to

show to consumers as well as regulators that businesses are operating at best management practice or certainly above minimum standards.

8.0 Conclusion

Farmers are an adaptive group and in the face of different challenges there are usually innovations or new technologies developed to overcome these challenges. While there is no silver bullet to solving water quality and environmental issues it is important that the good work that has been completed is recorded, built on and rewarded. This would create a business case to encourage more farmers to do the right thing because there is a tangible financial reward. New Zealand already has a strong perceived brand around the world being clean and green with very high food safety standards. Should we quantify this brand and extract the maximum value from this by showing our customers that we are open to auditing our processes?

A significant proportion of farmers are already meeting high standards of animal welfare, health and safety, human resources, nutrient management and effluent compliance. Having an assurance scheme that financially rewards farmers who have invested time and capital will help to further increase the rate of gain for those farmers who need to lift their performance ie. the laggards and late majority. Part of increasing the rate of change within farm systems will need to come from industry support however – helping farmers make an informed decision for their business by looking at the whole farm system alongside their goals and motivating factors.

New Zealand needs to promote positive change by rewarding those that are doing a good job – an auditable scheme that unites exporters and local businesses under one brand is the vehicle to do this job.

9.0 Recommendations

While compliance is a requirement to ensure that all businesses are operating in a responsible and safe manner, there is an opportunity to create some value from this at the same time. An assurance scheme that is audited annually could be the vehicle to provide a reward/return for the increased compliance investment (time and capital) shown by New Zealand producers and other businesses (ie. tourism).

- An assurance scheme committee should be started with representatives from supply companies, DairyNZ, Beef and Lamb, MPI, and other interested parties
- It will be wise to canvas farmers early and ensure that a majority of suppliers are in support of such a scheme to give it the required critical mass to get moving

- Marketers within supply companies should investigate the value of this increased brand value to determine a return for the scheme
- Logistical aspects of an assurance scheme would need to be sorted at the start of the project to ensure that the workload requirements are able to be met (data collection and auditing)
- It is important that the industry support (rural professionals) have the capability and capacity to handle the likely increased demand from farmers also

The next steps following this report in my view are –

- A meeting of interested parties should be gathered to further work through details of how such a farm assurance scheme could be implemented and funded (look to the case studies as examples of a template)
- There may be an opportunity to incorporate the Synlait and Miraka programmes under a New Zealand umbrella programme that satisfies the other requirements of a cross sector assurance scheme
- Once a clear and defined strategy has been established it will be important to get a group of influential and innovative farmers on board to ensure that a critical mass of product supply backs the initial proposal to ensure that a large majority (ideally all) of farmers are on board before any programme is launched
- Marketing will be important so any initial committee should consider getting suitably qualified marketing personnel on board to establish an easily recognisable brand to go along with the launch

10.0 References

Brocksopp, A (2016) personal communication regarding the DairyNZ SMP data in the Upper Waikato catchment (April 2016).

Cullen, M and Platts, N (2016) personal communication regarding Fonterra Nitrogen Programme May 2016.

DairyNZ, (2016). www.dairynz.co.nz/environment/in-your-region/waikato-environmental-policy/upper-waikato-sustainable-milk-project/ - Information on the Upper Waikato Sustainable Milk Plan project. Accessed 28 May 2016.

DCANZ and DairyNZ, (2014). Sustainable Dairying: Water Accord. One year on. First annual progress report.

Dewes, AM (2014). Economic resilience and environmental performance of dairy farms in the upper Waikato region. A thesis submitted in partial fulfilment of the requirements for the degree of Masters of Science at The University of Waikato.

Fernmark, 2016. www.fernmark.nzstory.govt.nz/licensees - Directory of Fernmark Licensees. Accessed 20 May 2016.

LIC, 2015. www.lic.co.nz/user/file/DAIRY%20STATISTICS%202014-15-WEB-6%20NOV%2015.pdf – LIC dairy statistics. Accessed 26 April 2016.

MBIE, 2015. www.mbie.govt.nz/publications-research/publications/tourism/nz-tourism-strategy-2015.pdf NZ Tourism Strategy 2015 report. Accessed 6 June 2016.

Miraka, 2016. www.miraka.co.nz/environmental-policy.html - Miraka website outlining Te Ara Miraka. Accessed 26 April 2016.

Fonterra, 2016. nzfarmsource.co.nz/assets/ContentPages/Resources/Fact-Sheets/Factsheet-Nitrogen-Management-Programme.pdf. Fonterra factsheet on Nitrogen Management Programme. Accessed 20 May 2016.

New Zealand Story, 2016. www.nzstory.govt.nz/what-is-nz-story New Zealand government website on the New Zealand Story. Accessed on 6 June 2016.

Origin Green, 2016. www.origingreen.ie/about/origin-green-promise/ Origin Green Ireland website. Accessed 26 April 2016.

Overseer, 2016. overseer.org.nz/about-us#history Overseer nutrient budget website. Accessed 6 June 2016.

Rogers, EM and Shoemaker, FF (1971). Communication of Innovations: A cross cultural approach. New York: The Free Press.

Rollins,, T. (1993). Using the Innovation Adoption Diffusion Model to target Educational Programming. Journal of Agricultural Education, 34(4), 46-54.

Saunders, C, Barber, A,and Sorenson, L-C (2009). Food Miles, Carbon Footprinting and their potential impact on trade. AARES 53rd annual conference at Cairns 10th to 13th Febuary 2009.

Synlait, 2016. www.synlait.com/site/uploads/2013/04/Lead-With-Pride-Brochure.pdf - Synlait Lead with Pride Brochure. Accessed 20 May 2016.

van Reenen, E (2012). Increasing uptake of environmental practices on sheep and beef farms (Kellogg Rural Leadership Project).

Waugh, N (2011). Farmer Adaptation to Change with the Threat of Regulation - The Carrot or the Stick. (Nuffield Project).

Waikato Regional Council, 2016. www.waikatoregion.govt.nz/healthyrivers/ - Waikato Regional Council website outlining the Healthy Rivers Plan for Change policy. Accessed 28 May 2016