

LOCAL FOOD SYSTEM AND ENVIRONMENTAL SUSTAINABILITY EXPERIENCES IN THE UNITED STATES

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1. EXECUTIVE SUMMARY

Vermont is considered to be one of the leading states in the US in the development and implementation of initiatives centred on linking local food to local markets. Vermont has a very rich culture and set of complex initiatives that sit under the umbrella of the local food movement. My fellowship centred on the role that institutions in Vermont play in coordinating and supporting local food system initiatives.

A secondary objective of my fellowship was to examine the intersection of support for local food system initiatives and support for environmentally sustainable farming systems. As the impact of agricultural land use intensity continues to cause the quality of New Zealand's land and water resources to decline, there is an increasing need for our farmers and landowners to adopt environmentally sustainable farming practices that can help to reduce this degradation of our natural capital.

I proposed taking the learnings from these local food system and environmental sustainability initiatives and assessing how they could be implemented in New Zealand. This could occur through the organisation I work for, the NZ Landcare Trust, taking a lead role in piloting or trialling a number of these innovative approaches in the regions where we work with farmers. Alternatively, it could involve the NZ Landcare Trust leading new strategic partnerships and collaborative initiatives with farmers, central and local government agencies, NGOs, and the agribusiness sector to implement some of these innovative approaches at a national level in New Zealand.

The Winston Churchill Fellowship centred on site visits, meetings and discussions with a range of individuals, groups and organisations involved in the local food system and/or environmental sustainability in Vermont. A detailed itinerary of the fellowship study visits and meetings is provided in Appendix 1. Given the scale and complexity of the food system, and recognition that the state of Vermont is a national leader in this area, the majority of the fellowship was based there. Brief side visits were organised to Connecticut and Colorado to expand my opportunities to visit other local food system initiatives in those states.

The food system issues, programmes and initiatives that I examined fell broadly into one or more of five categories. These categories were: (1) local food access and hunger; (2) local food and education; (3) local food and health; (4) local food support systems; and (5) local food and sustainability. The key learnings across these five categories are described in the main body of the report. More detailed notes from the underpinning site visits and meetings are provided in Appendix 2.

One of the key objectives of the fellowship was to examine the support provided for local food system initiatives in Vermont. There are a wide range of people, agencies, networks and programmes that encourage and support the local food system in Vermont. I focused on three agencies that have some parallels with the work of the NZ Landcare Trust and offer the most likely avenues for applying the learnings from this fellowship within a New Zealand context. These agencies were: (1) the Vermont Agency of Agriculture, Foods and Markets (VAAFAM); (2) the Vermont Farm to Plate Network; and (3) the Rutland Area Food and Farm Link.

The VAAFAM work programmes and initiatives in support of the state's local food system have very real potential to be transferred to New Zealand. Some, if not all of the agency's Local Food Market Development Program could be duplicated in New Zealand and could be lead by the NZ Landcare Trust in collaboration with other related organisations. The potential strength of the Trust leading this work would be our independence from government, which is a key reason for our success in engaging with landowners and farmers. As a non-government organisation, the Trust benefits from an 'arms length' relationship with government and the fact it is not a regulatory agency. This appeals to the farming community given some of their concerns and issues in working with regulatory agencies.

However, to date, the Trust's work has centred on building direct relationships with farmers and landowners and supporting their sustainable land and water management work - at the farm to catchment scale. The Trust has undertaken very little work in the wider food value chain and lacks the networks and

capabilities to grow this work internally. Through collaborating with other organisations this weakness could be turned into an opportunity. However, it would necessitate a significant change in the Trust's focus on resource management and environmental sustainability to engaging with partners in wider food system initiatives.

One potential way to bridge between the Trust's current work programmes and collaborating on much broader food system initiatives would be to chose a specific project or initiative to focus on. Clearly the intersection between sustainable production (and sustainable land and water management) and promoting foods derived from those production practices represents such an opportunity. It would allow the Trust to focus its strengths on its existing skills and networks but allow for collaboration with broader aspects of the food system as they relate to sustainable production.

A new initiative at the nexus of food systems and environmental sustainability is currently developing in New Zealand - Food Farms and Freshwater (3F). 3F's vision is for "New Zealand and international consumers to value and choose food products that support farmers to farm more sustainably, with the result that water quality and biodiversity are restored in New Zealand within two generations". 3F intends to create and communicate a new environmental standard and verification system for farming and to grow the market for superior quality food products that meet this standard. They believe this is necessary to provide greater incentives and funds for farmers to deliver swimmable and fishable freshwater. In essence this is an innovation proposal to create a market for "environmentally friendly" farmer produce.

The NZ Landcare Trust is in discussion with 3F about the potential to collaborate with them in a range of catchments across New Zealand. It was hoped that this fellowship would identify similar initiatives in Vermont to learn from. It would appear that such initiatives are in their infancy in Vermont, in much the same way they are in New Zealand. In fact, it may be through the innovation and leadership of the 3F

initiative that the learnings from this New Zealand experience could be shared with stakeholders with similar interests in Vermont and Connecticut.

I have made four recommendations, and identified four associated initiatives that could be explored further in regard to their application in New Zealand. In order of priority of implementation they are: (1) Farm Food and Freshwater (3F) Collaboration; (2) Regional Farm Business Development; (3) Regional Food System Coordination; and (4) National Farm to Plate Network. The Trust is entering a more detailed phase of negotiation regarding its partnership with 3F and it is likely that this will give the Trust its first "runs on the board" at the nexus of the food system/environmental sustainability space. There is also potential to develop the Trust's strengths in supporting farm business environmental performance into a broader farm business development role. Over time the Trust could also examine the feasibility of establishing a regional or national food system coordination role.

The timing appears to be right for the development and marketing of foods that have been produced by practices that support (rather than degrade) environmental quality. Some type of extension of eco-grown branding is the general outcome of many of the fellowship conversations. The challenge will be to create some type of accreditation scheme for farming practices that are "environment friendly" that give consumers confidence that the products they purchase have some type of framework behind them that guarantees authenticity regarding their environmental claims.

By incorporating a strong component of fostering environmentally sustainable farming practices in the production of food, and by partnering with agencies across the whole food systems sector, the Trust stands to create a unique point of difference in its future work. This will allow the Trust to operate at the nexus of supporting our agricultural economy whilst at the same time safeguarding the environment upon which all farming systems, and New Zealand's identity, are reliant.

2. INTRODUCTION

In June 2013 I had the opportunity to attend a 3-day workshop on managing agricultural non-point source pollution in Vermont, USA. The workshop was organised by New Zealand's Ministry of Foreign Affairs and Trade so that participants could compare Vermont and New Zealand approaches to land and water management. It made sense to compare Vermont and New Zealand, given we are both focused on balancing our economic reliance on agriculture with the need to provide a clean and green brand for our tourism industries.

It was by chance that during this workshop and information exchange I discovered some innovative practices in Vermont that were focused on the local food system. Vermont is considered to be one of the leading states in the US in the development and implementation of initiatives centred on linking local food to local markets. Vermont has a very rich culture and set of complex initiatives that sit under the umbrella of the local food movement. For example, farmers markets, the sourcing of local produce to food retailers and restaurants, linking farms to schools (coordinating the supply of locally grown produce to schools), and farms to institutions programmes (coordinating the supply of locally grown produce to a range of organisations).

At the 3-day workshop there was not adequate time to discuss these various local food systems initiatives, and the role that institutions in Vermont play in marketing, coordinating, and supporting these approaches. It is an area that could hold considerable promise for further collaboration, given New Zealand's economic reliance on agricultural and horticultural production and the associated impacts of land use intensification on the quality of land and water resources.

I believed some of these local food system initiatives could be applied successfully to our agricultural systems in New Zealand. More time was required to examine how these innovations have developed in Vermont, how they are resourced, and what critical success factors would be required to ensure they would work effectively if they were initiated in New Zealand. A good example of one of these initiatives is

the role of the Local Foods Administrator at the Vermont Agency of Agriculture, Foods and Markets (VAAFAM).

The Local Foods Administrator at VAAFAM is primarily responsible for cultivating relationships and opportunities between Vermont producers and institutional (organisational) markets. The Administrator is responsible for a range of activities including: (1) increasing access to local foods in government agencies; (2) coordinating a grants programme to increase Vermont producers' access to institutional markets and increasing the quantity of local food available in their institutions (for example, funding projects that will improve the efficiency of marketing, production, processing, storage and transportation of local product to assured institutional markets); and (3) supporting a series of local food systems initiatives including food hubs, farmers markets, the Vermont Working Lands Enterprise Initiative and the Vermont Farm Show.

The key aim of my Winston Churchill Fellowship was to visit staff at the VAAFAM to learn more about the role of the various strategies and initiatives to support Vermont's local food system. Due to the complexity and sheer depth of local food initiatives in the state there was a need to meet with a number of people and organisations beyond the VAAFAM. For example, the University of Vermont's extension team members, the Vermont Farm to Plate Network and a range of other NGOs focused on improving access to local foods.

It was clear that Connecticut (adjacent to Vermont) was also a leading US state in the development and support of local food systems initiatives. Given Connecticut's close proximity to Vermont, there was value in visiting with institutions and people in Connecticut who are leading the implementation of innovative local food system initiatives.

I proposed taking the learnings from these local food system initiatives and assessing how they could be implemented in New Zealand. This could occur through the organisation I work for, the NZ Landcare Trust, taking a lead role in piloting or trialling a

number of these innovative approaches in the regions where we work with producers.

Alternatively, it could involve the NZ Landcare Trust leading new strategic partnerships and collaborative initiatives with producers, central and local government agencies, NGOs, and the agribusiness sector to implement some of these innovative approaches at a national level in New Zealand.

A secondary aim to the Winston Churchill Fellowship was to examine the intersection of support for local food system initiatives and support for environmentally sustainable farming systems. As the impact of agricultural land use intensity continues to cause the quality of New Zealand's land and water resources to decline, there is an increasing need for our farmers and landowners to adopt environmentally sustainable farming practices that can help to reduce this degradation of our natural capital.

The NZ Landcare Trust, amongst a number of other agencies, works with the farming community to improve the adoption of sustainable land management practices on farm. There are a variety of good management practices (GMPs) and mitigation options that have been successfully implemented on our farms that can reduce the export of on-farm contaminants (sediments, nutrients, and faecal contaminants) into the wider environment.

However, there is a very real potential for governmental imposition of regulatory controls on farming to improve environmental outcomes. Evidence of this can be found in legislation to control land use to achieve desired water quality (and quantity) standards or targets. Land and water regulatory regimes proposed for the Lake Taupo and the Tukituki catchments (Hawke's Bay) are recent examples of this.

Regulation is only one of a number of methods that can be used to improve the adoption of environmentally sustainable farming practices by land users. Education is another method, along with incentives to support behavioural change. One of the biggest challenges facing organisations (like the NZ Landcare Trust) that work to support farmers and landowners adopting more sustainable land use

practices is the ability to engage with these land users. The threat of regulation is not a positive mechanism for enhancing engagement with land users. However, providing meaningful incentives to encourage change to sustainable practices offers real hope in improving the level of engagement with land users.

Many farmers complain of the cost of adopting environmentally sustainable farming practices. "How can I be green if I'm farming in the red" is an often heard comment. However, there is some real truth to this assertion. Most farm systems changes to more sustainable land use practices (ones that reduce the loss of sediment, nutrients or faecal contaminants off the farm) either come at a cost to the economic viability of the farming enterprise, or at best, are cost neutral.

What is really needed to enhance engagement with land users and to encourage farm systems changes to more environmentally sustainable land and water management practices are some clear economic incentives to do so. Mechanisms to establish an economic advantage from producing food in an environmentally sustainable way, and providing this food to consumer markets for a premium may be one of these much needed incentives. There is a growing body of evidence, both in New Zealand and internationally, that consumers are willing to pay more for food that has been produced in an environmentally friendly (sustainable) way and produced locally.

I believe there is an opportunity to merge both of these consumer preferences into food markets that allow for the production of local foods through environmentally sustainable farming systems. Where these products are bought for higher prices (at a premium) than from more conventional (commodity-driven) farming systems, the producer (farmer) also gains an economic incentive for adopting environmentally sustainable farming practices. A win-win for both producers, consumers and the environment.

To be realistic, New Zealand's agriculture economy is reliant on producing large volumes of food using conventional farming systems. Such systems have

required considerable investments by those involved, and local food system initiatives will not replace their importance to our economy in the foreseeable future. However, there are many farmers who are, or would like to, adopt more environmentally sustainable farming practices and are looking for economic benefits to encourage changing their systems. This is likely to become a growing farmer audience for the NZ Landcare Trust (and other agencies involved in supporting agriculture in New Zealand). Showcasing successful approaches to producing environmentally sustainable products, that also maintain and enhance the economic viability of farming businesses, presents a real opportunity to encourage the efforts of this group of farmers.

It may be that just small economic incentives, combined with the pride and community support that comes from producing local food, in an environmentally friendly way (with great stories to support the journey!) are just the type of incentives needed to encourage meaningful behavioural change to more sustainable land and water management practices. The innovations (and stories) emerging from Vermont and Connecticut, as they have embarked on some very innovative food systems initiatives, do indicate that such outcomes are also possible in New Zealand.

3. METHODOLOGY

The Winston Churchill fellowship centred on site visits, meetings and discussions with a range of individuals, groups and organisations involved in local food system and environmental sustainability initiatives in Vermont. Given the scale and complexity of the food system, and recognition that the state of Vermont is a national leader in this area, the majority of the fellowship was based there. Brief side visits were organised to Connecticut and Colorado to expand my opportunities to visit other local food systems initiatives in those states.

The fellowship itinerary was largely developed through the key contacts that I meet whilst attending the workshop on managing agricultural non-point source pollution in Vermont in June 2013. In particular, through the generous support of George Burrill, Honorary Consul to New Zealand in Vermont and Chuck Ross, Secretary for Agriculture in Vermont. Considerable support for developing my Vermont itinerary of visits and meetings was provided by staff of the Vermont Agency of Agriculture, Foods and Markets (VAAFAM). Principle staff who supported my Fellowship from VAAFAM were Abbey Willard, Kristina Sweet and Ali Zipparo. The intention of these site visits and meetings was to expose me to a wide range of local food system initiatives and innovations.

In Connecticut I was supported by my colleague and friend Professor Ben Tyson, Department of Communication, Central Connecticut State University and by Jiff Martin, Associate Extension Educator, Sustainable Food Systems, University of Connecticut Extension. In Colorado I was supported by Wendy White, Marketing Specialist, Colorado Department of Agriculture, Markets Division.

A full list of my itinerary, detailing the people and agencies I visited, can be found in Appendix 1. Information that was generated from these visits and discussions was transcribed and can be found in Appendix 2. These notes were prepared to ensure more detailed documentation and context was recorded from the fellowship visits and discussions. The knowledge generated from these visits and discussions forms the basis of the section Key Learnings.

4. KEY LEARNINGS

4.1 LOCAL FOOD ACCESS AND HUNGER

HUNGER FREE

The meetings with the Vermont Food Bank and Hunger Free Vermont provided some valuable information regarding issues with food access and hunger in Vermont. The services both organisations provide were very inspiring and I greatly valued the opportunity to gain knowledge from the staff I visited.

However, links to supporting sustainable land and water management through local food production were not a focus of their work. At a slight tangent, the issue of social good, and the role that farmers and producers can play in making food available that would otherwise be wasted was interesting. In reality, decisions made by farmers to contribute to alleviating hunger are likely to be very personal in nature. Those farmers that offer their generosity to food banks are not looking for public recognition of this support and seek to do it 'behind the scenes'.

This is very reminiscent of the New Zealand experience with farmers. They are often quiet achievers who avoid self promotion. I describe the 'cringe factor' that any farmer might well feel for making their generosity more widely known (refer to Appendix 2. Vermont Food Bank).

The current arrangements, where food banks and other charitable entities supporting hunger alleviation, deal directly with farmers and producers is an effective model. There seems little point for an entity such as the NZ Landcare Trust to broker or facilitate the transaction between both parties and it does not fit with the Trust's mission of "community involvement in sustainable land management".

FOOD HUBS

I visited a number of food hubs during my visit, most notably the Intervale Center and the Rutland Area Farm and Food Link (RAFFL) (refer to Appendix 2). Broadly speaking, food hubs can be an effective mechanism for increasing consumer access to local foods through their aggregation, distribution and marketing practices.

The food hubs I visited were examples of social enterprises and seemed to be functioning very well in the context of making local food more accessible to consumers whilst also generating income. With both Intervale and RAFFL, the food hub component of both organisations was generating a profit, and that profit was in turn helping to subsidise and support other services that both organisations were providing.

Food hub style initiatives are in their infancy in New Zealand, with initiatives like Oooby (Out of our own backyards) leading the way¹. They are in competition with mainstream supermarket on-line purchase and delivery services. The point of difference being to support local growers, to purchase in-season fruits and vegetables, and to have locally sourced food that is effectively aggregated in one transaction.

It was valuable to be able to see these operations first hand, and to be able to talk to staff involved in implementing them. However, this is not an area that the NZ Landcare Trust is likely to move into. It is far more likely that the Trust will promote and make information available about such initiatives through its general communication channels related to sustainable land and water management initiatives. If the Trust were to employ a local foods coordinator, then there would be the potential to more effectively coordinate and champion such enterprises. This is described in more detail in the section Local Foods and Support Systems.

COMMUNITY SUPPORTED AGRICULTURE (CSA)

I was fortunate to visit a couple of farming operations in Connecticut that broadly align with Community Supported Agriculture initiatives (refer to Appendix 2. Provider Farm and Four Root Farm). According to Wikipedia "Community-supported agriculture (CSA; sometimes known as community-shared agriculture) is an alternative, locally based economic model of agriculture and food distribution. A CSA also refers to a particular network, or association of individuals, who have pledged to support one or more local farms, with growers and consumers sharing the risks and benefits of food production"².

By definition "CSA members, or subscribers, pay at the onset of the growing season for a share of the anticipated harvest; once harvesting begins, they periodically receive shares of produce. In addition to produce, some CSA services may include additional farm products like honey, eggs, dairy, fruit, flowers and meat. Some CSAs provide for contributions of labor in lieu of a portion of subscription costs. The term CSA is mostly used in the U.S. and Canada, but a variety of similar production and economic sub-systems are in use worldwide ²".

The day I visited Provider Farm was the day in the week they made their produce available to their members. This enterprise required its members to make a farm visit each week, to choose their produce. Other initiatives may deliver the produce direct to the consumer or make it available at a central location for members to pick up. There is quite a spectrum in terms of the degree of relationship and access to both the farm and the producers in CSAs. More information on the operation of the two farms I visited can be found in Appendix 2.

Importantly, CSAs provide needed financial support to producers so that they can undertake early planning work, have the capital to invest in their business operations prior to the growing season and share the costs and risks of production with their customers.

These are stand alone enterprises that operate directly between the farmer/producer and the consumer. There was little to indicate that their production methods were any more or less environmentally sustainable than producers not involved in such schemes. It would be interesting to determine if CSA producers, with their focus on providing local foods to consumers, actually adopt more enhanced sustainability practices than those producers providing their foods to more conventional markets. Again, these are not the types of enterprise the Trust would engage in directly. However, if the Trust employed a local foods coordinator, this role could involve providing support services to such enterprises. In particular, training in farm systems and sustainability practices.

DIRECT TO CONSUMER

I visited a number of farmers markets in Vermont and these visits are described in more detail in Appendix 2. They were very similar to the way farmers markets operate in New Zealand. The area of difference when it came to "direct to consumer" access to local foods was the role of food cooperatives in Vermont. I had the opportunity to visit a range of food cooperatives in Vermont and Connecticut, most notably the City Market Onion River Coop in Burlington (refer to Appendix 2)³.

According to Wikipedia "a food cooperative or food co-op is a food distribution outlet organised as a cooperative. Food cooperatives are usually consumers' cooperatives where the decisions regarding the production and distribution of its food are chosen by its members. Food cooperatives follow the 7 cooperative principles and typically offer natural foods. Since decisions about how to run a cooperative are not made by outside shareholders, cooperatives often exhibit a higher degree of social responsibility than their corporate analogues"⁴.

By definition "the origination of the modern cooperative movement began in the 1970s when many "second wave" cooperatives started. The goals of these cooperatives were to provide an alternative, organic and anti-corporate alternative to chain grocery stores. Food cooperatives began to emerge in major cities and college towns, catering to the food-conscious. Co-op members made the decision of what foods to buy and how to purchase and distribute it"⁴.

Due to their more independent nature, and their social values, there was a very strong agenda of promoting local foods in these cooperatives. It was at the City Market Onion River Coop that I encountered marketing of both local and environmentally sustainable produce. There was a particular focus on telling the stories behind some of the farms and farmers that the Coop sources its produce from. This extended to photos of the farm and farmers and descriptions of their commitment to

sustainable production practices. For example, farming in ways that supported soil health. Their website features a range of these local producer profiles³.

Although not a food cooperative, the South Burlington supermarket Healthy Living (marketed as a family-owned whole foods supermarket) also personified a similar marketing philosophy focused on providing both local and organic (or 'eco grown') produce to its customers (refer to Appendix 2.)⁵. Again, there were producer profiles describing their commitment to environmentally friendly production practices. These profiles also extended to wider social values including the employment conditions of immigrant farm labourers.

In New Zealand, there is clearly an opportunity to expand these types of direct to consumer food enterprises. Much like food hub initiatives (for example Ooooby) and CSAs, food cooperatives in New Zealand are limited and are still largely in their infancy. There are some significant economic challenges with these types of operations, not least of which is competition from conventional supermarkets and consumer awareness/behaviour when it comes to making local and/or environmentally sustainable food choices. The limited contribution of organic food production to the total food production economy being a case in point.

The role for the NZ Landcare Trust in coordinating and developing these types of initiatives is quite limited at present. Their growth in New Zealand will rely on the entrepreneurial spirit of key players in the food industry combined with increasing consumer preference for quality food, produced to high environmental standards. It would appear that this push from consumers is a growing trend, and will likely have a significant impact on the food industry in future years⁶.

4.2 LOCAL FOODS AND EDUCATION

My experience of educational initiatives that involved local foods and/or environmental sustainability centred on the Vermont Agency of Agriculture, Foods and Markets (VAAGM) Farm to School Program, and visits to Middlebury College and Shelburne Farm.

FARM TO SCHOOL PROGRAM

The intersection of schools, food and education is a fairly complex space. There is an array of programmes and initiatives operating at federal, state and local levels with varying aims and objectives. One of the leading initiatives is the Farm to School Program and my experience of this was facilitated by the VAAGM's Farm to School Coordinator Ali Zipparo. I undertook two school-based visits to Charlotte Elementary and Vergennes High School in Vermont (refer to Appendix 2.).

The Farm to School Program aims to "enrich the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools and preschools"⁷.

The Vermont Farm to School Network makes the following observation on its website. "Farm to School is a complicated system. There are many ways we could intervene and create change, but some work better than others. And if Farm to School is going to realize its ambitious vision, we need to act strategically and coordinate dozens of players, organizations, and stakeholders to move together towards a common goal. So Vermont FEED, the Vermont Agency of Agriculture, Food and Markets, and the Vermont Farm to School Network convened a strategic systems mapping process. We came together with more than 60 Farm to School leaders to understand how we can collaborate and take action to spark the growth and change we want"⁷.

More information on the outcomes of this strategic mapping process are described on their website. More information on the Farm to School Program and the grants available to participating schools are described in Appendix 2.

A critical difference between the United States and New Zealand is the way food is made available to children in both countries. Although I am making a broad generalisation I believe it reflects the dominant experience of school children when I state that in most New Zealand schools children bring their own lunch to school. They are not feed lunches by the school through a school cafeteria but instead bring a lunch to school that is prepared at home. This difference would have a profound impact on the delivery of a Farm to School Program in New Zealand, given in the United States it is predicated on sourcing local foods for the school cafeteria to then prepare and distribute meals to school children.

However, there are shifting patterns in the way schools provide meals to children in New Zealand. Most of these new initiatives are being driven by a desire for children to engage in a learning environment where they are not also hungry. Initiatives centre of providing meals, breakfast and/or lunch to school children who may be disadvantaged by socio-economic circumstances. The intention is to provide these children with nutritious meals so that they can focus their attention on learning in school and to not have their educational experience compromised by hunger.

However, there is no indication that such initiatives will be mainstreamed across New Zealand, nor that school lunches will be provided directly by the school to its students. For these reasons many of the initiatives related to the Farm to School Program, in particular, incorporating local and healthy food into food purchasing practices by schools are not relevant in a New Zealand context.

The Farm to School Program's educational practices associated with food and their link to wider environmental sustainability are far more relevant. There are clearly parallels with the New Zealand experience, for example, the Enviro Schools initiative and educational offerings associated with environmental sustainability as part of the national curriculum.

MIDDLEBURY COLLEGE

The visit to Middlebury College and the discussion with staff at the Franklin Environmental Center and those associated with purchasing food for the University cafeteria was very interesting (refer to Appendix 2.). The way university students in both the United States and New Zealand purchase food is the same, that is, it is through freedom of choice. As opposed to the way food is provided to school-aged children in both countries, as described above.

This presents an opportunity to engage university students regarding food choices, in particular, local and/or healthy food choices. A 'hook' of this nature has the potential to generate interest in how food is produced and how it is provided to students. This can then lead to wider interest in issues such as food security, access, safety, sustainability, nutrition and politics to name a few. This is certainly the case with the Middlebury College experience and has been supported and complemented by a range of initiatives encouraging student learning in food systems (refer to Appendix 2).

This could offer the NZ Landcare Trust a new mechanism to engage with university students. However, at present the Trust lacks experience, skills and initiatives which relate to food systems. The Trust's core work focuses on natural resource management, farm systems, ecology, and behaviour change and as such can already engage directly with a range of universities and university students through its existing programmes of work. The Trust's ability to collaborate on local food system initiatives with the university sector is limited at present and will only become a reality if the Trust develops a food system component to its work.

SHELBURNE FARMS

The visit to Shelburne Farms was very rewarding and inspiring. It is a unique model for hands on education in relation to both farm systems and environmental sustainability and I am not aware of anything in New Zealand that has a parallel with this organisation. There are opportunities for New Zealand school students to visit farms and to learn about farming and wider sustainability issues but not on the scale or degree of programme integration that is offered at Shelburne Farms. This is also true of the approach to supporting and training educators at Shelburne Farms⁸.

The ability to replicate such an initiative in New Zealand would be a challenging exercise and definitely lies beyond the scope of the NZ Landcare Trust. However, the ability to convene a collaborative group to examine and test the feasibility and value of such an initiative is not. A more achievable option may lie in using an approach similar to that undertaken by the Farm to School Program and to undertake a strategic mapping exercise of potential collaborators in this space. Until it is tested, it is difficult to determine the level of interest, need and opportunity to develop educational offerings related to farming and food systems.

At present there are a significant range of offerings in the environmental education space in New Zealand. I do not have the background or experience to determine how well this intersects or integrates with education and learning opportunities associated with agriculture, farming and food systems. Undertaking a mapping exercise with key organisations and leaders in this space could be a useful undertaking.

Alternatively, a more manageable approach could be to work at a more local to regional level with a group of educators to explore whether elements of the Shelburne Farms experience could be delivered to students and educators as a pilot exercise. Three primary steps in developing such an initiative would be to: (1) determine if something similar is already being offered; (2) determining school/educational provider appetite for such an initiative; and (3) whether it would benefit the achievement of educational outcomes associated with the national curriculum.

4.3 LOCAL FOODS AND HEALTH

The visit to the University of Vermont Medical Centre and the discussion with Diane Imrie, Director of Nutrition was very rewarding. Incorporating local food into patient menus and the hospital's cafeterias has been a very successful initiative and is described in more detail in Appendix 2. It is interesting to note that the focus on the food system and the drive to procure more local food has been incorporated into an expanding hospital sustainability framework that extends to such issues as water recycling and energy efficiency.

The potential for the Trust to apply the food system innovations developed at this medical centre in New Zealand are somewhat limited. Firstly, it would appear that these innovations have been led from within the institution, through the leadership of Diane and others. It has not required a third party to broker or facilitate this work. Secondly, the Trust has no experience to date of working with the health sector or health care providers. The Trust's strength lies in supporting sustainable land and water management initiatives with farmers, landowners and the wider community.

However, there is the potential to explore a role for the Trust in supporting "Food to Institutions" programmes similar to those currently being delivered by the Vermont Agency of Agriculture Foods and Markets. These programmes encourage institutions to develop and implement strategies aimed at increasing the amount of local food they source. For example, the amount of local food a hospital may source for its meals. Such a programme can be very effective in situations where the move to source more local food is not already being lead and championed successfully from within the institution. In circumstances where additional support is needed then a third party (for example, VAAFM) may be able to assist staff in implementing such an initiative within their institution.

This leads to consideration of a wider role for the Trust in convening a group of organisations and leaders who have a desire to see more local food incorporated into institutions in New Zealand. The Trust could play a role in facilitating and supporting such a group or network. This would have some parallels with the Trust taking an initiating role in establishing an initiative similar to the Vermont's Farm to Plate Network. A specific sub-objective of this Farm to Plate type network might be to convene a group interested in exploring strategies to incorporate more local food within institutions in New Zealand. This opportunity is discussed in more detail in the section Local Food and Support Systems.

Diane made the point that if the NZ Landcare Trust was going to get involved with bringing local/sustainable/healthy food into institutions like hospitals it would be advisable to start by ensuring there was a 'champion' or advocate for healthy food choices on any Farm to Plate type of strategy or steering group that was established to coordinate local food system initiatives in NZ. There is the potential for considerable resistance to the concept of promoting local sourcing of food into institutions if you do not have buy in from a dietician or someone in the hospital system involved in food management (for example, food procurement or food preparation).

4.4 LOCAL FOODS AND SUPPORT SYSTEMS

One of the key objectives of the fellowship was to examine the support provided for local food system initiatives in Vermont. Clearly there are a wide range of people, agencies, networks and programmes that encourage and support the local food system in Vermont. I have chosen to focus on three agencies (and their underpinning local food system initiatives) that have some parallels with the work of the NZ Landcare Trust and offer the most likely avenues for applying the learnings from this fellowship within a New Zealand context. These agencies are: (1) the Vermont Agency of Agriculture, Foods and Markets; (2) the Vermont Farm to Plate Network; and (3) the Rutland Area Food and Farm Link.

VERMONT AGENCY OF AGRICULTURE, FOODS AND MARKETS (VAAFAM)

It is not possible to cover the breath of work undertaken by the VAAFAM in this report, but the following initiatives and programmes highlight some of the agency's support work for local food systems. This information has been extracted from the Agency's 2012 annual report⁹.

1. Food Export Northeast

The Food Export Program of the Vermont Agency of Agriculture Food & Markets connects Vermont food companies with international markets. It operates in close partnership with Food Export-Northeast, Vermont Specialty Foods Association, and the Vermont Global Trade Partnership.

2. Farm to School Program

Vermont has been engaged in Farm to School programming since 2006, and is a national leader in the Farm to School movement. The Vermont model has been replicated by other states, and elements have been used as best practice examples by the USDA. Vermont currently has sixty schools participating in Farm to School programming.

3. Ag & Culinary Tourism

The Vermont Agriculture and Culinary Tourism Council was created in 2010 to ensure the inclusion of agriculture in the tourism sector. Members of the council include state-wide organizations such as the Cheese Council, Maple Association, Grape & Wine Council, Brewers Association, VT Farms Association, Farmers' Market Association, Northeast Organic Farming Association, Department of Tourism & Marketing, Shelburne Farms, UVM Tourism Data Center and, Vermont Fresh Network.

In August the council launched DiginVermont.com, an agriculture and culinary tourism website that brings the Vermont food scene under one collaborative brand, provides dynamic story telling about Vermont's food producers and connect visitors to more than 400 food experiences around the state.

4. Working Lands

The Working Lands Enterprise initiative provides for the management and investment of \$1 million into agricultural and forestry based businesses. Over 97 percent of Vermonters value the working landscape. Approximately 20 percent of Vermont's land is used for agricultural purposes and 75 percent as forestry. The backbone of Vermont's "working landscape" is the economic viability of the agriculture and forestry based businesses. It is Vermont's working landscape that allows us to be a key economic engine within the northeast metropolitan markets of the regional farm and forest economies.

In addition to the above food system initiatives and programmes there is a specific VAAFM "Local Food Market Development Program". This program is focused on "cultivating relationships and opportunities between Vermont producers and institutional markets"⁹. The Program Lead is Abbey Willard who organised key components of my fellowship itinerary in Vermont. The Local Food Market Development Program includes the following activities:⁹

- increasing access to local foods in state government
- Farm to institution development efforts (increasing Vermont producers' access to institutional markets and increasing the quantity of local food available in Vermont institutions)
- participation in the Vermont Farm to Plate Network's Aggregation and Distribution working group
- food access and Farmers Markets (in particular, enhancing beneficiaries access to food from farmers markets)
- supporting food hubs and ag-based community groups
- produce safety

Abbey Willard was one of my key contacts in Vermont so there were significant opportunities to talk with her about the work of the VAAFM, in particular, her work associated with the Local Food Market Development Program and links to other work programmes of the VAAFM that were related to local food system support or resource management/environmental sustainability.

The VAAFM work programmes and initiatives in support of the state's local food systems have very real potential to be transferred to New Zealand. Some, if not all of the Local Food Market Development Program could be duplicated in New Zealand and could be lead by the NZ Landcare Trust in collaboration with other related organisations. The potential strength of the Trust leading this work would be our independence from government, which is a key reason for our success in engaging with landowners and farmers. As a non-government organisation, the Trust benefits from an 'arms length' relationship with government and the fact it is not a regulatory agency. This appeals to the farming community given some of their concerns and issues in working with regulatory agencies.

The weakness of this approach would be the Trust's lack of skills and experience in dealing with the wider food system - beyond the farm gate. To date, the Trust's work has centred on building direct relationships with farmers and landowners and supporting their sustainable land and water management work - at the farm to catchment scale. The Trust has done very little work in the wider food value chain and lacks the networks and capabilities to grow this work internally. Through collaborating with other organisations this weakness could be turned into an opportunity. However, it would necessitate a significant change in the Trust's focus on resource management and environmental sustainability by engaging with partners in wider food system initiatives.

One potential way to bridge between the Trust's current work programmes and collaborating on much broader food system initiatives would be to chose a specific area or niche to focus on. The intersection between sustainable production (and sustainable land and water management) and food access presents such an opportunity. It would allow the Trust to focus its strengths on its existing skills and networks but allow for collaboration with broader aspects of food systems as they relate to sustainable production. This opportunity is described in more detail in the section Recommendations.

VERMONT FARM TO PLATE NETWORK

The Vermont Farm to Plate Network is an initiative of the Vermont Sustainable Jobs Fund, with a focus on building economic prosperity (and associated employment) in relation to local food systems¹⁰. For more information on my visit to this organisation and their work programmes refer to Appendix 2.

This organisation, like the NZ Landcare Trust is a NGO, operating at arms length from government, but with funding to support government priorities as they relate to employment and economic growth in the state's food sector. There are significant parallels with the Trust, the difference being the Trust's focus on landcare and environmentally sustainable farming - as opposed to wider food system support. Much like the Trust, they take a leadership role in the sector in which they operate, and they have similar core strengths related to brokering, facilitation and network support.

They are a relatively new player in the local foods system space in Vermont and as a consequence they have had to prove their value in supporting local food system initiatives, whilst at the same time being seen to not replicate existing initiatives or networks. The associated issues of mandate, patch protection and competition for limited resources accompany any organisation at this point in its life cycle. The NZ Landcare Trust is now 20 years old and has established its reputation in the sector in which it works, so questions over its value are arguably not as sharp as those for Farm to Plate.

I had the opportunity to attend the 5th annual Farm to Plate Network Gathering on 29-30 October in Killington, Vermont and it was there that I witnessed the real value of the organisation. Given the topic of the gathering was "Good Food from Healthy Soil and Clean Water" it was an ideal opportunity to explore the nexus between local food systems and environmental sustainability. In many ways the NZ Landcare Trust organising a similar 'gathering' - whether that be a conference, workshop or meeting - would make perfect sense. It would allow the Trust to play to its strengths in relation to sustainable land and water management whilst opening the door to collaborative opportunities with leaders and agencies involved in the wider food systems value chain.

There was discussion regarding how the Trust could enter the food systems space at the meeting with Farm to Plate in Montpelier (refer to Appendix 2). The suggestion was to use information and data on the value of local food systems to the New Zealand economy as a lever for central government to invest in this space in partnership with the Trust. This would follow a similar approach to the Vermont experience, where the Farm to Plate Network was largely mandated by legislation aimed at growing the value of food systems to the state's economy.

Having such a 'top down' mandate from state government effectively provided the framework and funding to initiate the Vermont Farm to Plate Network. Whether a similar model would play out in New Zealand is an interesting question. Most of the Trust's successful initiatives have been implemented at the regional level first. For example, its support for landcare groups, catchment management projects, biodiversity forums, and more recently landscape scale ecological restoration programmes. From successful regional implementation, national scale programmes have then been supported. It may be that the best way for the Trust to initiate something similar to the Vermont Farm to Plate Network is to pilot it at a regional scale first. This idea is explored in more detail in the section Recommendations and would seek to replicate elements of Vermont's more regionally-based local food system support organisations like the Rutland Area Farm and Food Link.

RUTLAND AREA FARM AND FOOD LINK (RAFFL)

The Rutland Area Farm and Food Link (RAFFL) is a not for profit organisation that aims to "expand availability and access to locally produced foods, bolster the greater Rutland region's agricultural economy, and increase community appreciation and understanding of the positive impact of farms and farmers on the Rutland region"¹¹. Their mission is "to build connections that grow a strong agricultural economy and healthy community".

According to their website they "engage at the local and state level to ensure viable farms in our future". "Our work includes farm business development, cooking workshops and learning, gleaning, an on-line local foods market and the Locally Grown Guide, a resource to local farms and food"¹¹. For more information about RAFFL and their programmes and initiatives refer to Appendix 2.

From a NZ Landcare Trust perspective, many of RAFFL's work programmes are not a match for our own work programmes. There is little alignment between the Trust and RAFFL in terms of local food system initiatives simply because the Trust has not entered this space. However, RAFFL's focus on farm business development would align with the Trust's work with farmers and landowners to develop "Whole Farms Plans" which aim to optimise environmental sustainability and farm production /business profitability.

RAFFL offers an interesting model for the Trust to consider in terms of developing a similar initiative in New Zealand largely due to the scale at which it is operating. It is not operating principally at a state level, like VAAFMM or the Vermont Farm to Plate Network. It is more focused on a regional delivery model - to the Rutland District - but also contributes and collaborates with state level initiatives. This closely resembles the way the Trust work programmes are lead and implemented by its network of regional coordinators.

One option for implementing a similar approach to RAFFL in New Zealand would be for the Trust to pilot a regionally-based initiative that supported local food systems. This would be more successful if the Trust primarily focused its efforts around its core strengths, supporting sustainable land and water management initiatives, and how this support could be integrated into a broader platform for growing the regional food economy. This will be described in more detail in the section Recommendations.

4.5 LOCAL FOODS AND SUSTAINABILITY

In June 2013 I had the opportunity to attend a 3-day workshop on managing agricultural non-point source pollution in Vermont, USA. The workshop was organised by New Zealand's Ministry of Foreign Affairs and Trade so that participants could compare Vermont and New Zealand approaches to land and water management. It made sense to compare Vermont and New Zealand, given we are both focused on balancing our economic reliance on agriculture with the need to provide a clean and green brand for our tourism industries.

There were a variety of presentations and discussions at the workshop, including a day of field visits to farms to look at BMP implementation and to discuss issues associated with environmentally sustainable farming. There was a particular focus on farming in the Lake Champlain catchment given concerns about declining lake water quality and associated links to land use and management practices. A report was prepared from the workshop that provides more detail about the land and water management regime in Vermont¹². A variety of readings were provided to workshop participants in preparation for the workshop. This included an excellent article on water pollution in Vermont from a law, science and cultural perspective¹³.

There are some very significant parallels between approaches to land and water management in Vermont and New Zealand. If I use Lake Champlain as a case in point, then approaches and proposals to manage this lake's water quality sit within the spectrum of New Zealand's regulatory framework measures, including proposed next steps for freshwater management reforms.

My fellowship was less focused on sustainable land and water management policy and implementation in Vermont, and more focused on the intersection between environmentally sustainable farming and the ability to use those practices to market foods on their sustainability provenance, particularly to local markets. In particular, whether the marketing of local foods was also combined with marketing foods that have been produced from environmental sustainable farming practices.

There was certainly clear evidence of these dual values - local and sustainable - being used to market produce in Vermont's food cooperatives and in independent supermarkets (for example, Healthy Living in Burlington)^{3,5}. In the Healthy Living store, the fruit and vegetable produce was marketed on a number of values - local, organic, or eco-grown. In some cases the produce was marketed on two of these values, for example, local and organic or local and eco-grown. I enquired with a produce staff member as to what these attributes meant. Organic meant certified organic. Eco-grown meant it was grown or farmed in an organic way but not certified organic. There was no definition of local. One of the potential concerns with marketing foods as eco-grown is the degree (or not) that farm-based practices actually reflect organic certification practices.

But such combined marketing, on both the food's local provenance and it being produced from environmentally sustainable farming practices was not common. The majority of the marketing was based on a singular value - for example, local, or organic, or nutritious. Combining marketing on multiple food values was rare and could potentially reflect the complexity (and possible resulting confusion for consumers) of marketing such foods as being local and "environment friendly".

I had a number of interesting discussions with staff from the Vermont Agency of Agriculture, Foods and Markets and the University of Vermont Extension regarding the production of foods from "lake friendly farming" practices. This topic was also discussed in an open session at the gathering (refer to Appendix 2 for more detail). Heather Darby from UVM Extension indicated that she had prepared a short note to her agency proposing a lake friendly farming initiative.

The timing seems to be right for the development and marketing of foods that have been produced by practices that support (rather than degrade) lake water quality. Some type of extension of eco-grown branding into lake friendly branding is the general notion of the conversations. The challenge being to create some type of accreditation scheme for farming practices that are lake friendly to give consumers confidence that the products they purchase have

some type of framework behind them that guarantees authenticity regarding their environmental claims.

I had an interesting conversation with Robin Chesman who manages the Farmers Cow initiative in Connecticut (refer to Appendix 2 for more detail regarding this innovative business). They are thinking about some type of sustainability framework, meeting some type of bar or standard regarding their stewardship practices but they don't know quite what that looks like at present. Robin stated that about 40% to 60% of farms in Connecticut operate under some form of conservation easement because the land is too hilly to farm or is in wetlands etc. This implies there is already a huge amount of biodiversity protection already going on in the state that they could capitalise on in terms of branding.

I suggested that perhaps instead of taking on the challenge of marketing "lake friendly farming" products it would be easier to play to their existing strengths. The notion of "wildlife friendly farming" or "critter friendly farming" springs to mind. In fact their stewardship framework could be modelled on the Land for Wildlife initiative in New Zealand and then promoted through their branded products.

A significant concern and challenge regarding any certification or accreditation scheme for environmentally sustainable farming practices relates to the compliance costs for farmers of entering into such a scheme. It would seem that many landowners do not choose to become certified organic producers in part because of the regulatory requirements involved. Many producers adopt sustainable land management practices but not necessarily to the degree required to achieve organic certification. There may be potential to develop some type of certification scheme that has elements of the organic certification process but is not as rigorous. This would remove some of the barriers to participation that many farmers are concerned about whilst at the same time giving consumers some confidence in farmers' assertions about growing produce in an environmentally sustainable manner.

A particular goal of the NZ Landcare Trust is to collaborate with New Zealand entrepreneurs who are gaining a premium from the food they produce whilst

at the same time also safeguarding the environment. Taupo Beef¹⁴ and 3F (Food Farms and Freshwater)¹⁵ are examples of these, with a particular focus on water quality protection and enhancement. River-friendly and lake-friendly farming has the potential to create valuable niche markets for New Zealand produce.

The 3F website states "our vision is for New Zealand and international consumers to value and choose food products that support farmers to farm more sustainably, with the result that water quality and biodiversity are restored in New Zealand within two generations.

For our vision to become a reality we need to create transformative change across the supply chain for agriculturally based food products, and significantly improve New Zealand's environment. The first key step is for Food, Farms and Freshwater (3F) to create and communicate a new environmental standard and verification system for farming. We want this standard to deliver swimmable and fishable water. The system will be designed to be cost-effective and easy to use, and also able to credibly withstand consumer and competitor scrutiny. Our aim is that farmers who meet the standard (verified through auditing) will receive a premium from processors/retailers/consumers to enable them to reinvest in environmental services, and incentivise change for other farmers.

The second step is to grow the market for superior quality food products that meet this standard. This is necessary to provide greater incentives and funds for farmers to deliver swimmable and fishable freshwater. Following this, it will be necessary to grow the supply of food that meets the 3F standard. This will ensure that the market is consistently satisfied and that processors or other groups of farmers can more securely invest in creating and promoting brands that meet and use the 3F environmental standard. 3F intends to establish itself as a charitable trust, with the aim to create a business model to become a self-sustaining social enterprise as soon as it is viable to do so"¹⁵.

The NZ Landcare Trust is in discussion with 3F about the potential to collaborate with the Aorere River community in the Tasman District of the South Island as a pilot catchment. It was hoped that this

fellowship would identify similar initiatives in Vermont to collaborate with and to learn from. It would appear that such initiatives are in their infancy in Vermont, in much the same way they are in New Zealand. In fact, it may be through the innovation and leadership of the 3F initiative that the learnings from this New Zealand experience could be shared with stakeholders with similar interests in Vermont and Connecticut.

5. RECOMMENDATIONS

In my application to undertake this fellowship I proposed taking the learnings from local food system initiatives in the United States and assess how they could be implemented in New Zealand. This could occur through the organisation I work for, the NZ Landcare Trust, taking a lead role in piloting or trialling a number of innovative food systems approaches in the regions where we work with farmers. Alternatively, it could involve the NZ Landcare Trust leading new strategic partnerships and collaborative initiatives with producers, central and local government agencies, NGOs, and the agribusiness sector to implement innovative food system approaches at a national level in New Zealand.

Local food systems aim to connect food producers and food consumers in the same geographic area. Local food offers an alternative to the global food model, where food often travels considerable distances to reach the consumer. A local food network involves relationships between food producers, distributors, retailers, and consumers in a particular place. Sourcing food locally involves reducing the distance between production and consumption. However defining what local means can be problematic. There is no universally agreed definition for the geographic component of what local or regional means. Ultimately, it is left to the consumer to decide what local and regional food means for them. For the purposes of the recommendations set out in this report, a regional initiative means a region as defined by local government boundaries within New Zealand.

I have identified four potential initiatives that could be explored further in regard to their application in New Zealand. One of them could be implemented at a national level, the other three could be implemented at a regional level to begin with. The initiatives that have been identified are: (1) National Farm to Plate Network; (2) Regional Food Systems Coordination; (3) Regional Farm Business Development; and (4) Food Farms and Freshwater Collaboration. The following section broadly describes these four initiatives with recommendations for further progressing them in New Zealand.

1. NATIONAL FARM TO PLATE NETWORK

This would involve emulating the Vermont Farm to Plate Network at a national level in New Zealand. However, as New Zealand's Land and Water Forum experience has identified, having a mandate for taking on a collaborative governance role at this scale is a fundamental requirement for success¹⁶. The legislative mandate to establish a sustainable jobs fund provided the impetus for the Vermont Farm to Plate Network. This creates a challenge for the NZ Landcare Trust as there is no specific legislative push in New Zealand to grow the local food system economy. Another challenge is the lack of skills, experience or track record of the Trust in the local food system space.

The Trust is very successful in its convening, coordination, facilitation and networking roles in the context of sustainable land management but this does not extend to the wider food value chain. There is more of an opportunity for the Trust to take on a leadership and coordination role in relation to environmentally sustainable farming than in the context of the local food system sector. This is explored in more detail in Recommendation 3.

It would seem that the logical next step if the Trust is going to pursue a leadership and coordination role in the local food system sector is to pilot an initiative at the regional level first. A successful outcome at the regional level would greatly assist any attempt to scale up to a national role.

2. REGIONAL FOOD SYSTEM COORDINATION

This would involve establishing a local food system coordinator role similar to the Vermont Agency of Agriculture Foods and Markets. For example, Abbey Willard at VAAMF is responsible for managing the Local Food Market Development Program at the agency. This program is focused on "cultivating relationships and opportunities between Vermont producers and institutional markets". This includes such tasks as: increasing access to local foods in state government; farm to institution development efforts (increasing Vermont producers' access to institutional markets and increasing the quantity of local food available in Vermont institutions); participation in the Vermont Farm to Plate Network's Aggregation and Distribution working group; food access and Farmers Markets (in particular, enhancing beneficiaries access to food from farmers markets); supporting food hubs and ag-based community groups; and produce safety.

Early on the Vermont Farm to Plate Network's strategic planning work identified the need for a local foods coordinator in the VAAFM. This helped to establish the role in the agency and to provide a mandate for the associated work programme. An alternative way of working would be for the Trust to establish a regional food system coordinator role and then mandate that person to provide the leadership, support and resources to establish a Regional Farm to Plate Network. This Regional Farm to Plate Network would then provide a platform for the regional food systems coordinator to initiate some of the tasks of the VAAFM's Local Food Market Development Program.

Again, as with Recommendation 1, the issue of both a lack of mandate and a lack resourcing to establish either a Regional Farm to Plate Network or a regional food systems coordinator role are significant challenges for implementing such initiatives in New Zealand. There is also the issue of the lack of experience or track history of success of the Trust coordinating or supporting local food system initiatives at a regional scale. The best approach may be to develop a regional coordination and support initiative that builds on our strengths in sustainable land management and build a local foods system component into this over time. This is described in more detail in Recommendation 3.

3. REGIONAL FARM BUSINESS DEVELOPMENT

To build credibility in the local food system sector it would make sense for the Trust to leverage off its existing capabilities and networks in a closely aligned arena, that is, sustainable land and water management at the farm to catchment scale. In particular, the Trust's growing strengths in supporting farm business development. The Trust has been developing Whole Farm Plans in partnership with farmers that optimise the farming operation for both productivity/profitability and environmental performance. This farm planning platform could be broadened to include wider support for farmers. For example, it could be extended into training and support related to audited self management and ecological restoration.

This sustainability platform could then be combined with farm business development training and support. For example, financial management, marketing, managing staff, health and safety, RMA compliance and succession planning. Support in relation to food systems would integrate with this wider farm business development framework for those farmers who have an interest in diversifying their farm business into local food enterprises. Local food system initiatives would then become embedded in a wider Trust support role in relation to the economic development of the agriculture sector.

This would have some similarities to the role being played by the Center for an Agricultural Economy based in Hardwick, Vermont (refer to Appendix 2 for more information about this organisation).

4. FOOD FARMS AND FRESHWATER (3F) COLLABORATION

A new initiative at the nexus of food systems and environmental sustainability is currently developing in New Zealand - Food Farms and Freshwater (3F). The 3F's vision is for "New Zealand and international consumers to value and choose food products that support farmers to farm more sustainably, with the result that water quality and biodiversity are restored in New Zealand within two generations"¹⁵. 3F intends to create and communicate a new environmental standard and verification system for farming and to grow the market for superior quality food products that meet this standard. They believe this is necessary to provide greater incentives and funds for farmers to deliver swimmable and fishable freshwater. In essence this is an innovation proposal to create a market for environmentally friendly farmer produce.

Their intention is not to be restricted to lake water quality improvement, but to improve the water quality of waterbodies in general (for example, rivers and coastal areas). The NZ Landcare Trust is hoping to collaborate with this initiative as they start to identify suitable catchments and associated waterbodies in New Zealand to pilot the initiative in. Partnering on this initiative would help to build credibility and capability of the Trust to work in the wider food system space. The Trust would work with catchment farmers to implement an environmental accreditation scheme. This would leverage a core strength of the Trust - its ability to engage with the farming community and to encourage the adoption of BMPs.

By collaborating with the 3F team, the Trust could access knowledge, expertise and networks in the wider food system sector (beyond the farm gate to the broader added value chain). This could be a necessary precursor to establishing other local food system initiatives, for example, convening a regional or national Farm to Plate Network (refer to Recommendations 1 and 2).

CONCLUSIONS

Prioritising these recommendations will assist in ensuring that adequate resourcing and support from the Trust is available to implement them. The Trust is already collaborating with 3F (Recommendation 4) so it makes sense to prioritise this initiative. Successful engagement with the 3F initiative will assist in progressing further food system innovations. Establishing a regional farm business development initiative (Recommendation 3) would make logical sense given the Trust's success at piloting new innovations at the regional scale first, before scaling them up and rolling them out at a national level. It would also play to the Trust's strengths in supporting landowners to adopt environmentally sustainable farming practices whilst at the same time creating opportunities for the Trust to collaborate with other agencies and partners in a wider food system support role.

In time the Trust may be well placed to convene and coordinate a regional or national Farm to Plate Network initiative and become more engaged in the wider local food system sector and associated food value chains (Recommendations 1 and 2). By incorporating a strong component of fostering environmentally sustainable farming practices - in the production of food - and by partnering with agencies across the whole food systems sector - the Trust stands to create a unique point of difference in its future work. This will allow the Trust to work at the nexus of supporting our agricultural economy whilst at the same time safeguarding the environment upon which all farming systems, and New Zealand's identity are reliant.

6. REFERENCES

1. Ooooby. Out of our own backyards. <https://www.ooooby.org/auckland/about>. Accessed 4/5/16.
2. Community Supported Agriculture. https://en.wikipedia.org/wiki/Community-supported_agriculture. Accessed 13/6/16.
3. City Market Onion River Cooperative. <https://www.citymarket.coop/>. Accessed 13/6/16.
4. Food Cooperatives. https://en.wikipedia.org/wiki/Food_cooperative. Accessed 13/6/16.
5. Healthy Living Market and Cafe. <http://www.healthylivingmarket.com/>. Accessed 14/4/16.
6. NZ Landcare Trust. Sustainability adds value. <http://www.landcare.org.nz/News-Features/Features/Sustainability-Adds-Value>. Accessed 13/6/16.
7. Vermont Farm to School Network. <http://strategy.vermontfarmtoschool.org/index>. Accessed 13/6/16.
8. Shelburne Farms. <http://www.shelburnefarms.org/about>. Accessed 14/6/16.
9. Vermont Agency of Agriculture, Foods and Markets. 2012: Summary of Agency Activities.
10. Vermont Farm to Plate. <http://www.vtfarmtoplate.com/>. Accessed 20/5/16.
11. RAFFL: Rutland Area Farm and Food Link. <http://www.rutlandfarmandfood.org/about/>. Accessed 17/5/16.
12. Workshop on Managing Agricultural Non-Point Source Pollution: A New Zealand-Vermont Initiative to Share Experiences. 2013. Report prepared for the Ministry of Foreign Affairs and Trade.
13. Water Pollution in the Green Mountain State: A Case Study of Law, Science, and Culture in the Management of Public Water Resources. 2012. Vermont Journal of Environmental Law. 13: 705-754.
14. Taupo Beef. <http://www.stuff.co.nz/business/farming/74301144/Taupo-Beef-wins-top-sustainability-award>. Accessed 21 June 2016.
15. Food Farms and Freshwater. <http://www.3f.co.nz/#!about-3f/cjg9>. Accessed 21 June 2016.
16. Land and Water Forum. Note on Collaboration. <http://www.landandwater.org.nz/Site/Resource.s.aspx>. Accessed 21 June 2016.
17. Fiscal Policy Studies Institute. What is Results-Based Accountability? <http://resultsaccountability.com/about/what-is-results-based-accountability/>. Accessed 13/4/16.
18. Results Leadership Group. Results-Based Accountability for Governments and Non-Profits. <http://resultsleadership.org/>. Accessed 13/4/16.
19. Natural Resources Conservation Service, United States Department of Agriculture. Environmental Quality Incentives Program. <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>. Accessed on 13/4/16.
20. Ben and Jerry's. Caring Dairy. <http://www.benjerry.com/caringdairy>. Accessed on 13/4/16.

21. Beef + Lamb New Zealand. Land and Environment Plans. <http://www.beeflambnz.com/lep>. Accessed on 14/4/16.
22. Intervale Center. <http://www.intervale.org/about-us/>. Accessed 4/5/16.
23. Poultney Mettowee Natural Resources Conservation District. <http://www.pmnrcd.org/>. Accessed 18/5/16.
24. Agronomy and Conservation Assistance Program; University of Vermont. <http://www.uvm.edu/extension/cropsoil/acap>. Accessed 18/5/16.
25. NOFA-VT: Northeast Organic Farming Association - Vermont. <http://nofavt.org/about-us>. Accessed 17/5/16.
26. Hunger Free Vermont. <http://www.hungerfreevt.org/>. Accessed 17/5/16.
27. New Zealand GAP. <http://www.nzgap.org.nz/>. Accessed 18/5/16.
28. Farm Service Agency. United States Department of Agriculture. <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=lown&topic=cep>. Accessed 18/5/16.
29. The REMI Model: Regional Economic Model, Inc. <http://www.remi.com/the-remi-model>. Accessed 14/6/16.
30. Shelburne Farms: United Nations Regional Center for Expertise. <http://shelburnefarms.org/greater-burlington-region-of-vermont-designated-united-nations-regional-center-of-expertise-for>. Accessed 17 June 2016.
31. 6th Annual Farm to Plate Gathering, Killington, Vermont 2016. <http://www.vtfarmtoplate.com/get-connected/network-gathering>. Accessed 16 June 2016.

APPENDIX 1: DIARY OF VISITS

DATE	AGENCY	PEOPLE	TOPIC	LOCATON
8 October	Vermont Agency of Agriculture, Foods and Markets	Abbey Willard and Agriculture Development Staff	Presentation by Nick on the Morgan Foundation NZ River Prize Award. Discussion of fellowship aims and Vermont local food system initiatives and support.	116 State Street, Montpelier, Vermont
8 October		George and Lola Burrill, Chuck Ross and Abbey Willard	Welcome dinner at farm	35 Taproot Farm Lane, Hinesburg, Vermont
9 October	Vermont Food Bank	Kristina Sweet, Chris Meehan, Michelle Wallace	Food access	33 Parker Road, Barre, Vermont
9 October	University of Vermont Extension	Kristina Sweet, Heather Darby and Roger Rainvale (farmer)	Water quality and food systems	Borderview Farm, Alburg, Vermont
10 October	Shelburne Farmers Market Burlington Farmers Market	Retailers	Food products and services	Shelburne and Burlington, Vermont
11 October	South Burlington Farmers Market	Retailers	Food products and services	South Burlington, Vermont
13 October	Vermont Agency of Agriculture, Foods and Markets	Chuck Ross, Secretary of Agriculture	Local food system initiatives and sustainable land and water management	Penny Cluse, 169 Cherry Street, Burlington
13 October	Intervale Center	Abbey Willard, Chuck Ross, Travis Marcotte, Sona Desai	Local food system initiatives, incubator projects, food hub, farm tour	180 Intervale Rd, Burlington, Vermont
13 October	University of Vermont Medical Center	Abbey Willard, Diane Imrie	Local food programs	111 Colchester Ave, Burlington, Vermont
14 October	Middlebury Farmers Market	Abbey Willard, Sophie Esser Calvi	Food products and services	Marbleworks, Middlebury, Vermont
14 October	Middlebury College	Abbey Willard, Nan Jenks-Jay, Daniel Detora, Sophie Esser Calvi, Jay Leshinsky	Dining services and local food procurement, other local food programs	Franklin Environment Center, Middlebury College, Vermont
15 October	Charlotte Elementary School and Vergennes High School	Ali Zipparo, Deidre Holmes, Lynne Rapoport	Farm to School programs	Charlotte and Vergennes, Vermont

15 October	Rutland Area Farm and Food Link (RAFFL)	Ali Zipparo, Tara Kelly, Hilary Solomon, Jennifer Alexander	RAFFL local food programs	67 Merchants Row, Rutland, Vermont
16 October	Northeast Organic Farming Association of Vermont (NOFA)	Abbey Willard, Erin Buckwalter	Direct to consumer programs, local food programs	14 Pleasant St, Richmond, Vermont
16 October	Hunger Free Vermont	Abbey Willard, Drake Turner, Katy Davis	Hunger free programs, universal meals	38 Eastwood Dr, South Burlington, Vermont
16 October	University of Vermont Extension	Kristina Sweet, Ginger Nickerson	Food and water quality programs	Hunger Mountain Cooperative, Montpelier, Vermont
20 October	Honorary Consul to New Zealand in Vermont	George Burrill	Local food system initiatives	Burlington, Vermont
21 October	Vermont Farm to Plate Network	Ellen Kahler, Erica Campbell	Local food system support	Montpelier, Vermont
22 October	Shelburne Farms	Alec Webb, Megan Camp	Local food system and environmental education	Shelburne, Vermont
26 October	Central Connecticut State University	Ben Tyson	Food system initiatives, research and environmental sustainability	Higganum, Connecticut
27 October	Cato Corner Farm	Liz and Mark MacAllister	Cheese makers	178 Cato Corner Road, Colchester, Connecticut
27 October	Raspberry Knoll Farm	Mary Concklin	Berry farmer and Fruit IPM Specialist (UConn Extension)	North Windham, Connecticut
27 October	The Farmers Cow Calfe	Robin Chesmer	Niche dairy products	Mansfield, Connecticut
27 October	Provider Farm	Kerry and Max Taylor	Community Supported Agriculture	Salem, Connecticut
27 October	Four Root Farm	Four young farmers	Vegetable CSA	East Haddam, Connecticut
28 October	Yale Sustainable Food Project	Mark Bomford	Food systems learning and research	New Haven, Connecticut
29-30 October	5th Vermont Farm to Plate Gathering	Food systems network	Local food system support network	Killington, Vermont
2 November	Center for an Agricultural Economy	Sarah Waring	Local food system support	Hardwick, Vermont
3 November	Business to Business Farmers Markets	Various food businesses	Local foods business development	Denver, Colorado
5 November	Colorado Department of Agriculture and Colorado State University Extension	Wendy White, Shaina Knight, Martha Sullins	Local food system support	Broomfield, Colorado

APPENDIX 2. NOTES OF KEY FINDINGS FROM VISITS

VERMONT FOOD BANK

There was discussion with Chris Meehan and Michelle Wallace of the Vermont Food Bank regarding financial incentives for farmers to provide food to the food bank. One possibility would be to put a value on food provided to the food bank, for example, a tax credit for farmers. As present it is the goodwill of farmers providing this food for free. Such a tax credit would require putting a monetary value on the food provided from the farm.

Farmers are not seeking any profile for their charitable practices. Clearly there are social factors involved in farmers' decisions to provide food to the hungry, including the 'feel good' factor of making such a positive contribution to society. There was discussion of marketing farmers as being 'caring farmers' by providing this food to the hungry. It was agreed there would be a real cringe factor associated with such an approach and would not be popular with farmers.

When asked the question "how do you know you are making a difference?" there was discussion of Vermont Food Banks' use of a Results Based Accountability Framework. According to the Fiscal Policy Studies Institute "Results-Based Accountability™ (RBA), also known as Outcomes-Based Accountability™ (OBA), is a disciplined way of thinking and taking action that communities can use to improve the lives of children, youth, families, adults and the community as a whole. RBA is also used by organizations to improve the performance of their programs or services. Developed by Mark Friedman and described in his book *Trying Hard is Not Good Enough*, RBA is being used throughout the United States, and in countries around the world, to produce measurable change in people's lives"¹⁷.

There was further discussion of tools and support to undertake RBA and reference was made to the Results Leadership Group. According to the Results Leadership Group website "Results Leadership Group consultants, educators, coaches, and facilitators develop the capacity of government and non-profit

organizations to produce measurable results for clients and communities"¹⁸. The Results Leadership Group describe results leadership as "the capacity of individuals at any level within an organization, partnership or collaboration to produce measurable results for clients and communities. Such capacity is fostered both through the development of individual competencies and by structuring institutions to support results-based decision making"¹⁸.

Such a framework could be valuable when considering piloting any new local food system initiatives in New Zealand.

UNIVERSITY OF VERMONT EXTENSION - MEETING 1

The meeting with University of Vermont Extension staff member Heather Darby was hosted on Borderview Farm with farm owner Roger Rainvale. Discussion focused on EQIP - the Environmental Quality Incentives Programme administered by the Natural Resources Conservation Service (United States Department of Agriculture). EQIP involves an evaluation of a farm's environmental management practices, incorporating cost sharing between the farmer and government to adopt Best Management Practices (BMPs) for water quality improvement. Examples of BMPs include such practices as manure/effluent management and the management of bunker/silage leachate. The average programme grant was approximately \$1,500 per practice per farm.

According to the USDA "the Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. EQIP may also help producers meet Federal, State, Tribal, and local environmental regulations"¹⁹.

Those who can apply are "owners of land in agricultural or forest production or persons who are engaged in livestock, agricultural or forest production on eligible land and that have a natural resource concern on that land may apply to participate in EQIP. Eligible land includes cropland, rangeland,

pastureland, non-industrial private forestland and other farm or ranch lands"¹⁹.

"Financial assistance payments through EQIP are made to eligible producers, to implement approved conservation practices on eligible land or to help producers develop Conservation Activity Plans (CAP) to address specific land use issues. Payments are made on completed practices or activities identified in an EQIP contract that meet NRCS standards. Payment rates are set each fiscal year and are attached to the EQIP contract when it is approved"¹⁹.

There was discussion of Ben and Jerry's Caring Dairy Programme. The ice cream company Ben and Jerry's offer financial rewards to the dairy farmers that supply them based on the farmer adopting certain good management practices (GMPs) on farm. The Caring Dairy Programme is now starting to move to higher farm standards for the GMPs, for example, incorporating animal welfare issues. It is assumed this will lead to a premium for those farmers who produce dairy products to higher environmental sustainability standards.

According to their website "Ben & Jerry's Caring Dairy™ program, with over 300 participating farms in America and Europe, is helping farmers make a difference from soil to sunshine and everything in between. Through the use of a simple, web-based self assessment, farmers are able to look at their operation with fresh eyes. And since every dairy farm is one of a kind, just like our flavors, we help each farmer develop a unique action plan to improve his or her practices. In exchange for participating, Caring Dairy™ farmers get a little extra for their effort. And we can't think of a more important investment, because that's the milk we're made of!"²⁰

There is the potential for Ben and Jerry's to market their ice cream as coming from farms that are environmentally sustainable, and for example, protect the water quality of local water bodies (for example, Lake Champlain). It would appear that the company is not currently capitalising on this branding opportunity and whether they do in the future remains to be seen.

Heather Darby explained that she has developed a draft initiative that focuses on a 'gold star'

certification programme for producers that could satisfy consumers desires for environmentally sustainable products. The concept involves working with farmers who would supply food that conformed to a high (gold) standard of environmental stewardship. These farmers would attain a premium for their products as a consequence of this certification. There is a need for an independent body to audit such a certification programme.

Clearly there are opportunities for industry bodies to fund and implement such a certification process, incorporating farmer training to achieve certification, and independent evaluation (audit) of programme compliance.

There was discussion of the Vermont Agency of Agriculture, Food and Markets' Accepted Agriculture Practices (AAPs) initiatives that have formerly been focused on managing farm systems practices on medium to larger farming operations (>200 animals). AAPs are designed to achieve implementation of a standard group of farm management practices to protect water quality. The Agency's intention now is to focus on all farms, not simply those with over 200 animals that had to comply with higher standards for farm management in order to comply with the Clean Water Act. AAPs will now become Required Agricultural Practices (RAPs) and apply to all but the smallest farms (for example hobby/lifestyle properties).

There is an opportunity to create a bridge between the regulatory framework that will establish RAPs and the 'gold star' certification programme that could be lead by industry. This would be similar in New Zealand to a situation where Regional Councils set a minimum set of standards for farm environmental management, for example, the farm planning regime being established by Environment Canterbury. In parallel industry bodies are developing a Matrix of Good Management Practice, or some other code of industry good practice (for example Beef + Lamb NZ's Land and Environment Plan framework)²¹. Creating a bridge between both these regulatory and industry-led compliance requirements has the potential to establish some type of environmental stewardship certification process.

This would have the potential to satisfy consumers' requirements for food that is produced to a high environmental standard and satisfy regulatory/industry requirements to improve environmental management practices within farming enterprises. For this to be successful there is a need for food produced under such a certification process to garner a premium when bought by the consumer. Arguably, it is that economic incentive that will encourage widespread adoption of sustainable land and water management practices.

For such consumer behaviour, and associated sustainable farm management practices to improve water quality, requires more than individual farmers to take up such a certification challenge. It would need to be adopted by a larger number of farmers at the subcatchment to catchment scale. Interestingly, Roger is a member of the Franklin/Grand Isle Farmers Watershed Alliance. This is a collective farmer action group who are managing a water quality improvement programme in this watershed (catchment). Clearly there are collective farmer structures like this alliance that could support the widespread implementation of a certification programme at the catchment scale.

FARMERS MARKETS

I visited the following farmers markets during the course of my fellowship:

- Shelburne Farmers Market
- Burlington Farmers Market
- South Burlington Farmers Market
- Middlebury Farmers Market

These markets were very similar in terms of their operation to New Zealand farmers markets. One of the most obvious differences being their ability to run year round outdoors in New Zealand due to fairly benign autumn and winter weather. It would appear that the smaller farmers markets (for example, South Burlington and Shelburne) close during the colder fall and winter seasons. Larger markets (for example, Burlington) move to an indoor venue during the colder months.

An interesting innovation at the South Burlington Farmers Market was the focus on getting children engaged and participating. This market had a kids club (effectively a junior foodies club) where children

could do colouring in competitions while the adults shopped. They were encouraged to become a member and receive a \$3 credit to spend at any of the stalls at the market. This was a simple and positive way to help foster an interest in healthy local foods.

FOOD COOPERATIVES AND SUPERMARKETS

Healthy Living

I visited Healthy Living in South Burlington, Vermont, during my study tour. It is described as a "Family-Owned Natural Foods Supermarket"⁵. Interestingly, the fruit and vegetable produce was marketed on a number of values - local, organic, or eco-grown. In some cases the produce was marketed on two of these values, for example, local and organic or local and eco-grown. I enquired with a produce staff member as to what these attributes meant. Organic meant certified organic. Eco-grown meant it was grown or farmed in an organic way but not certified organic. There was no definition of local.

This raised some questions regarding the term 'eco-grown'. Is this a bit like the term 'organically grown', used to market food that may or may not have strong credentials in terms of how close (or far away) this food is grown to a certified organic compliance framework?

Directly across the road from Health Living was the South Burlington Farmers Market. Having both retail operations adjacent to each other confirmed there was ready access to locally grown produce, available at quite a wide spectrum in terms of cost.

VERMONT SECRETARY OF AGRICULTURE

I had a breakfast meeting with Chuck Ross, the Vermont Secretary of Agriculture. There was discussion of the agency's multiple goals, in particular, to increase community access to local food and to increase farmer access to new markets. The Farm to Plate Network has valuable information on quantifying the financial value of the local food system to the Vermont economy. There is potential for significant growth in the local food system contribution to the state's economy given the push to market Vermont foods to markets outside of the state (for example, Boston and New York). The

intention with this is to shift the marketing approach from 'locally grown' to 'Vermont grown'.

In that respect, by moving the marketing drive to 'Vermont grown' the selling point, or value proposition, could potentially move away from the focus on 'locally grown' to 'sustainably grown' - trading on Vermont's reputation for farming that is based on quality stewardship of land and water resources. There is considerable potential to further grow Vermont's clean and green image by marketing Vermont foods as being derived from environmentally sustainable farming practices. The parallels with the New Zealand situation are obvious.

There may in fact be the potential to create niche products that support more specific environmental goals, for example, meat or dairy products derived from farms in the Lake Champlain catchment. These foods would be produced on farms whose management practices support lake water quality improvement goals and could be marketed as 'lake friendly products'. This is the approach being taken with Taupo Beef in New Zealand, where Taupo Beef is marketed as a high quality meat product that is farmed in sympathy with water quality improvement goals for Lake Taupo¹⁴.

Chuck suggested I visit Shelburne Farms, given their proximity to Lake Champlain and their philosophy regarding integrating environmental education with farm systems/food system education. Shelburne Farms is considered to be both an innovator and a leader in the local food system space in Vermont and nationally.

INTERVALE CENTER

The Intervale Center acts as an incubator for food-related business development initiatives. Their website states that "the Intervale Center is a 501(c)3 nonprofit organization in Burlington, Vermont. Our mission is to strengthen community food systems. Since 1988, we've been dedicated to improving farm viability, promoting sustainable land use and engaging our community in the food system. We're helping to build a community food system that honors producers, values good food and enhances quality of life for Burlington and beyond!"²². "We steward a unique community resource – 350 acres of bottomland along the Winooski River called the

Intervale – that is home to our programs and enterprises".

I was hosted by the Intervale Center's Chief Executive Travis Marcotte and the visit began with a tour of their food hub. Sona Desai manages the food hub, which is a membership based entity within the wider Intervale Center. They aggregate foods from farmers and prepare boxes (packages) of food for their member consumers. The food hub effectively functions like a cooperative food market, but delivers food packages direct to its members. In New Zealand, the food hub has some parallels with consumers making internet food orders with the larger supermarket chains but most closely resembles the Auckland-based Ooooby initiative.¹ Profits from Intervale's food hub (approximately a 40% margin) contribute to the total revenue generation of the Center.

The food hub visit was followed by a farm tour of the Center. The Intervale Center owns some of its own land and leases the rest from the city of Burlington. There are approximately 10 farm business operating at the Center. The farmers lease farm space from the Center to run their own farming businesses. Some of these businesses have been run for a number of years from the Center and are known as 'anchor farms'. An example would be the farm business that undertakes niche vegetable growing for local restaurants.

Other businesses are established in a proof-of-concept type approach, to practically test and explore the viability of innovative food system enterprises. These incubator farms establish a start up, innovative farming business that runs for approximately five years. Successful prototypes (incubators) then establish their own independent operations elsewhere (away from the Intervale Center) and the vacated farm land is then available to be leased to the next entrepreneur. A current example would be the farm business growing kale and preparing value added kale products (for example, drinks).

The Center includes a community vegetable garden that is open to the public for 'community gardening'. The Center also operates a native plant nursery selling seedlings and young plants to farmers to undertake riparian planting projects to protect and

restore Vermont waterways. Again, profits from the nursery sales support the total revenue generation of the Center.

UNIVERSITY OF VERMONT MEDICAL CENTER

The medical center is attached to the University of Vermont where I had a meeting with Diane Imrie, Director of Nutrition who manages a staff of approximately 150. The hospital provides approximately 2 millions meals per year and they source a considerable percentage of local food to prepare these meals. Without being precise about the numbers, probably 50-70% of their meat and fresh produce is sourced locally and all seafood is from the United States.

In terms of values, healthy and nutritious food is the number one priority, with local sourcing being a secondary priority. Diane suggested that some people in the local food movement might see this as heresy - because of the intense focus in Vermont on localised food sourcing - but this is a hospital so healthy food choices are fundamental. For example, no antibiotics in meat and low pesticide use with fruit and vegetables. And ideally, no GMOs.

Patients can order their food as they would with room service at a hotel. Anytime they choose to eat a meal they simply dial the 'control centre' who forwards their order to the hospital kitchen to be 'cooked to order'. Again, the food choices on the hospital menu are all healthy choices. This is also true of the hospital cafeterias that both serve healthy food prepared on site. Food choices include a salad bar, soups, fresh sandwiches, and 'Vermont on a Plate' (a selection of locally sourced cheeses and low fat meats etc.) all at very affordable prices. For example, \$2 for pumpkin soup and \$3 for a salad. None of the food costs are subsidised but the operation runs like a non-for-profit, that is, the food service is not designed to make a profit but simply to break even.

The hospital is now focusing on integrating their healthy food focus with their wider environmental/sustainability objectives. For example, establishing rain gardens, composting etc. Interestingly, there is very little food waste, none is rescue food (to feed the hungry) and a lot of the vegetable scraps are used to make stocks etc.

The conversation focused on how to take these innovative approaches and apply them within a New Zealand context. Diane made the point that if the NZ Landcare Trust was going to get engaged with bringing local/sustainable/healthy food into institutions like hospitals it would be advisable to start by ensuring there was a 'champion' or advocate for healthy food choices on any Farm to Plate type of strategy or steering group that was established to coordinate local food system initiatives in NZ.

There is the potential for considerable resistance to the concept of promoting local sourcing of food into institutions if you do not have buy in from a dietician or someone in the hospital system involved in food management (for example, food procurement or food preparation).

FRANKLIN ENVIRONMENT CENTER, MIDDLEBURY COLLEGE

The discussion at the college focused on how to incorporate more healthy and more local food into the campus food system. The college is involved in the "Real Food Challenge - Eat Real" initiative which aims to provide more healthy food choices in the campus cafeteria. The goal is to achieve the availability of 20% 'real food' (healthy food) in the cafeteria by 2020.

One of the issues with sourcing local food can be its cost - at times it is expensive to use local foods. One of the economic incentives for providing locally sourced food is to identify ways of reducing food waste. This includes managing portion size and controlling the service provision of portion size (as opposed to letting consumers determine portion size).

A similar message to the visit to the Vermont Medical Center was recounted when it came to how to engage students in implementing healthy and local food sources in the campus food system. If you are going to engage students (and young people in general) and collaborate with them, then they need to be involved and participate in the whole process. One of the best approaches has been to work with teams and to use team work to engage students in real world initiatives. Cited examples included initiatives examining the humane treatment of dairy farm workers and mechanisms to get healthy local

food into the cafeteria through such campaigns as "No Meat Mondays".

Another innovation is the Middlebury Food Print - a strategy to engage students in the 'real world' food system, beyond academia. The college has recently established a tenured professorial position focused on the food system, teaching and researching in subject areas including food justice and food access.

Food Works is a summer internship/summer school programme for students to gain experience in food systems. They operate the programme in three locations - Kentucky, Washington DC, and Vermont. There is also discussion in Vermont between the 5-6 leading colleges to focus on an initiative to promote local food system studies into the higher education curriculum. One of the opportunities is to promote Vermont as "the academic destination for studying food systems innovation".

FARM TO SCHOOL PROGRAM - CHARLOTTE ELEMENTARY SCHOOL

I undertook a visit to Charlotte Elementary School with the Agency for Agriculture Food & Markets Farm to School (F2S) Coordinator, Ali Zipparo, and the local 'on the ground' F2S Coordinator Deidre Holmes. The Farm to School Program aims to get more local food into school meals and is supported by the Vermont Farm to School Network⁷. The aim of the F2S Network is to "provide statewide leadership, coordination, and advocacy to advance new and existing Farm to School efforts in Vermont classrooms, cafeterias and communities". The vision of the Farm to School Network is "Every Vermont student and school community is engaged in a local food and farm culture that nurtures children's health, cultivates viable farms, and builds vibrant communities".

Local coordinators like Deidre are funded through a range of different models, for example, funding is provided through the school, funding is provided from a government agency, or funding is provided through a hybrid of both school and government agency sponsorship. A fundamental difference between American and New Zealand schools is that American schools feed their school children lunch in a cafeteria system. In New Zealand, by and large, students take their own lunch to school. Along with

provided lunch to the students, Charlotte Elementary also provided snacks. They do not have a morning tea breaks like New Zealand but instead students are encouraged to grab a quick snack from the snack cart or from a bucket of fruit that is sent to the teacher's classroom.

It would appear that some teachers are more supportive of 'modelling' local food eating behaviours with their students and are more supportive of local food system education in the classroom. I think the same might well be said for the differences between schools in terms of their interest in supporting local food system initiatives. Importantly, it depends how well these initiatives fit into the curriculum, what priority the teacher puts on this subject, and whether the teacher actually has time in their curriculum schedule to fit this type of work in.

Unlike New Zealand, where students bring their own food to school for lunch, in Vermont students are provided with lunch in the cafeteria, and for some, breakfast as well. This allows considerable opportunity to influence the amount and types of local food going on to the menu.

This in turn has an effect on the amount of food waste and the amount of food that ends up being composted at the school. Food waste is kept to a minimum and what is left is not fit for food rescue (to feed the hungry) and is composted. Charlotte Elementary had lunch menus incorporating local produce and meats and they also operated a salad bar. The school was located in a relatively small town, in a farming community, but still had a roll of about 400 students.

How much local food actually ends up in school meals is very dependent on the senior leadership within a school, and particularly, their support for such initiatives as the Farm to School Program. Critically important is the support from the school chef or cook to use local food in the preparation of school meals.

The Agency of Agriculture, Foods & Markets provides a wide range of support and resources to encourage local food systems initiatives within schools. For example, there are F2S grants. One grant is aimed at assisting schools to firstly pilot and plan for developing a local foods initiative from farms into the

cafeteria. The grant provides US\$2,500 and is designed to develop a F2S Action Plan for the school. This action plan is effectively a way of developing a strategy for the school to integrate local food and the farming community into their school system. It is based on the three Cs. (1) Classroom education; (2) Cafeteria - namely aiming to increase the amount of locally sourced food in school meals; and (3) Community - engaging the broader community in the F2S initiative.

Community engagement may take the form of a farmer visit to the classroom, school visits to farms, getting volunteers to prepare local foods for the school menu and having school/community celebrations of local food. For example, a harvest event incorporating local foods.

FARM TO SCHOOL PROGRAMME - VERGENNES HIGH SCHOOL

Very similar initiatives outlined at Charlotte Elementary were also being implemented at Vergennes High School where we were hosted by Lynne Rapoport, a local F2S coordinator. At Vergennes High School, where possible, food from the school vegetable gardens was being incorporated into the school cafeteria menu.

Vergennes High School had received a F2S grant and had used the funds to implement a range of local food system initiatives. One very successful initiative for the school was hosting a harvest feast event as a way of engaging the wider school community. This is a good example of the three Cs approach to implementing a F2S action plan.

RUTLAND AREA FARM AND FOOD LINK

The Rutland Area Farm and Food Link (RAFFL) is a not for profit organisation that aims to "expand availability and access to locally produced foods, bolster the greater Rutland region's agricultural economy, and increase community appreciation and understanding of the positive impact of farms and farmers on the Rutland region"¹¹. Their mission is "to build connections that grow a strong agricultural economy and healthy community".

They operate an on-line website for farmers to advertise their produce to consumers. The produce

is trucked to a central drop off site where it is packaged up according to the consumers order and then delivered to the customer. Effectively it is a food hub, and operates in a similar manner to the Intervale food hub but is not membership based. It is a purely commercial, retail operation. RAFFL operate the on-line website and make a % margin by acting as the broker/facilitator of this service and that margin is used to support the operating costs of the organisation.

RAFFL provide a number of other services including cooking workshops and learning, farm business development, the Rutland County Nutrition Coalition - a group advocating for local food and improved nutrition, and the Locally Grown Guide - a resource/directory of local farms and food offerings. The guide assists in finding places that sell or supply local foods including farm stalls/stands, farmers markets and other retail outlets¹¹.

Interestingly, RAFFL came into being at the same time a number of other NGOs and initiatives related to local food systems appeared. RAFFL pre-dates the formation of the Vermont Farm to Plate initiative. It would appear that the Farm to Plate initiative was a response to the proliferation or 'pepper potting' of local food system initiatives across Vermont. The intention with Farm to Plate being to improve coordination and connectedness between this diversity of local food system initiatives. The Vermont state government sought to get a better handle on all these initiatives and so established Farm to Plate to act as an umbrella organisation. RAFFL was effectively providing this coordination/umbrella service at a more local level (Rutland area) as opposed to the state level (Farm to Plate). There could well have been more tension with the emergence of Farm to Plate, given it is providing a similar service to RAFFL albeit at a larger scale (state) scale. Importantly, the aims and objectives of RAFFL fitted well with the Farm to Plate strategic directions.

POULTNEY METTOWEE NATURAL RESOURCES CONSERVATION DISTRICT

During the RAFFL meeting I also had the opportunity to talk to Jennifer Alexander who works with the Poultny Mettowee Natural Resources Conservation District. According to their website "Created in 1940,

the Poultney Mettowee Natural Resources Conservation District (PMNRCD), was the first of fourteen Conservation Districts located in Vermont. The Conservation Districts were created by the Federal Government in response to the soil loss catastrophes of the dust bowl era. PMNRCD is a political subdivision of the State of Vermont, and is governed by a supervisory board made up of volunteers that live, and are elected by residents, in the District²³.

The PMNRCD focuses on practices that protect water and soil and foster healthy local communities. Their website states that "the mission of the PMNRCD is to develop programs for landowners and the general public within the District that encourage the best practices for conservation of healthy soil and clean water. The District brings together the efforts of citizens and organizations that share the common goals of conserving, protecting, and enhancing the natural and cultural resources of our watersheds"²³. Jennifer described a specific initiative, ACAP (Agronomy and Conservation Assistance Program) that was being employed to incentivise the adoption of good management practices (GMPs) on watershed (catchment) farms.

On the University of Vermont (UVM) Extension website I found the following blurb about ACAP. "In 2010, the Vermont Agency of Natural Resources (ANR), UVM Extension, and the Poultney-Mettowee Conservation District teamed together to develop and administer the Agronomy and Conservation Assistance Program (ACAP). The goal of ACAP is to devote three staff agronomists to provide direct technical assistance to animal agriculture operations in three distinct regions of the Lake Champlain watershed, and to implement farm practices that will minimize adverse effects of agricultural operations that will improve water quality in Lake Champlain and tributaries"²⁴.

The website went on to state "the staff agronomists will advise participating farmers on topics such as crop production to reduce erosion and nutrient loss from fields, farmstead best management practices for improved manure and water management, fencing to keep livestock away from water resources, reduce phosphorus runoff using soil aeration and alternative manure application systems, whole-farm nutrient

balances and other identified Best Management Practices (BMPs)²⁴.

Two priority strategies of ACAP are:

- increase the number of extension personnel available for on-farm technical assistance, education and support; and
- to provide financial and regulatory incentives to install fencing (temporary or permanent), watering systems, and stream crossings in order to improve management of animals in and around streams and rivers.

Specific areas or practices to be targeted may include: nutrient management; nutrient mass balance; manure storage & handling; cover crops; soil aeration and/or manure injection; conservation tillage; field buffers; sensitive area seeding/grassed waterways; livestock exclusion from streams; farmstead clean water separation; barnyard areas; milking center waste; silage leachate; and livestock mortality²⁴.

There is clearly a difference between the United States and New Zealand in respect of government grants (or subsidies/incentives) to financially support landowners to adopt GMPs/BMPs. In New Zealand, agricultural subsidies and a range of support mechanisms for agriculture (including state funded extension programmes) were cut as a result of creating a free market economy. The downside of this has been the removal of an effective, albeit financial, incentive to enhance the adoption of environmentally sustainable farming systems on private land. This issue re-occurs in the discussion with UVM Extension staff involved with horticulture research extension. New Zealand may well benefit from introducing mechanisms that incentivise private landowners to provide for ecological services that benefit the wider community.

NORTHEAST ORGANIC FARMING ASSOCIATION OF VERMONT

The Northeast Organic Farming Association of Vermont (NOFA-VT), according to their website "has served as the voice for organic production for commercial producers, homesteaders and gardeners. We work to support local, organic farmers and gardeners, make healthy food more accessible to all Vermonters and build strong,

agriculture-based communities. We work to help every producer understand the values of farming organically, and every consumer to understand the impacts of eating organic food. By building public awareness, we grow markets for organic food. Through organic certification, technical assistance, research, policy and advocacy, we work to grow organic agriculture in Vermont²⁵.

NOFA-VT offer a range of services focused on organic farming, market development and community access to organic foods. Support includes farmers to consumers initiatives, community outreach, business development in relation to marketing and business practices, hosting conferences and providing training (for example, workshops for farmers involved in CSAs (community supported agriculture) initiatives). Business development is focused on analysing market trends and examining options to diversify produce and product base. It all includes promoting better access for produce, for example, through collaborative approaches to running farms stands and stalls amongst farmers. NOFA then uses successful farm stand models (approaches) to encourage other farms/farmers to get involved in using this approach to sell produce to consumers.

From a consumer perspective, NOFA offers programmes to incentivise people to consume local food. One initiative involves encouraging people on a benefit, who receive food stamps, to use those food stamps to buy food at farmer markets. It does not need to be organic food but simply local food. This gets the consumer thinking about making different food choices, for example, buying locally produced food or eco-grown/organic food.

Importantly, NOFA runs technical assistance programmes designed to help farmers to become organically certified, or at least to become more environmentally sustainable in regard to their farming practices. For example, encouraging approaches to sustainable land management practices that would broadly fall under the umbrella of 'eco-grown' farming but are not strictly organic (certified) farming practices. They also encourage certified organic farmers to become more environmentally sustainable in regards to their farming systems.

HUNGER FREE VERMONT

Hunger Free Vermont's mission is to "end the injustice of hunger and malnutrition for all Vermonters"²⁶. According to their website "Hunger Free Vermont has evolved into Vermont's principal anti-hunger authority and leading nutrition policy advocate". They effectively act as an advocacy and lobbyist for key hunger alleviating programmes and initiatives at a state level. They focus on hunger related issues involving the wider community and not simply children. For example, hunger issues associated with senior citizens. They have a diverse funding base that includes government grants, individual donors and philanthropic organisations.

Hunger Free Vermont's programs include: (1) assisting schools in establishing and expanding school breakfast and lunch programs; (2) helping community groups provide nutritious meals to low-income children during out-of-school time over the summer months and in afterschool programming; (3) running learning opportunities to empower low-income Vermonters to make healthy choices through nutrition education, emphasizing the importance of regular physical activity, and improving cooking skills; (4) improving access to and participation in 3SquaresVT (formerly the Food Stamp Program); and (5) helping child care providers access the Child and Adult Care Food Program (CACFP). This program provides child care centers, home-based child care, and after school programs with nutrition education and reimbursements.²⁶

They have a particular focus on advocating for the "Universal School Meals" initiative. According to their website "school breakfast and lunch programs improve nutritional health and academic performance, reduce behavior problems, prevent obesity, introduce children to new and local foods, create community at school, and help relieve the family food budget. But many Vermont kids are not eating right. Some aren't getting the nutrients they need and some aren't getting enough to eat at all"²⁶. Universal School Meals are designed to avoid dignity issues related to the stigma attached to some school students receiving free or subsidised meals as a consequence of their socio-economic situation. By providing free meals (universal meals) to all school students this has the potential to avoid this stigma

and to ensure all students avoid learning issues associated with hunger.

UNIVERSITY OF VERMONT EXTENSION - MEETING 2

The meeting with University of Vermont (UVM) Extension staff member Ginger Nickerson focused on Good Management Practice adoption, particularly in a horticultural context, and food safety. There was discussion of the GAP initiative in the horticulture sector. GAP stands for Good Agricultural Practices for horticultural production and the New Zealand horticultural industry has adopted this international framework and tailored to the New Zealand environment²⁷.

According to Horticulture New Zealand, "New Zealand GAP is a quality assurance programme that provides a traceable, accountable system from crop to customer for the production of fruit, vegetables, olives and flowers. It ensures best practices are in place for the production, packaging and distribution of New Zealand fresh produce, and reduces the risk of health, safety and environmental issues - so customers can buy with confidence"²⁷.

Ginger is working on a project with growers in Vermont to produce a 'mini gap'. This 'mini gap' requires a lower level of compliance than the full GAP certification framework, using an on-line web-based environment. For example, farmers use it to prepare a plan to address potential E. coli contamination in the food supply system. E. coli contamination is a significant issue in regards to food safety and human health.

This is an interesting concept and sits closely with the distinction between organically grown food that conforms to a rigorous certification framework, versus food that is 'eco-grown'. 'Eco-grown' food being food that is produced to similar standards as organic certification practices but is still not certified organic. 'Eco grown' implies less 'top down' prescription of farming systems in terms of agreed GMPs/BMPs and enables more flexibility for farmers/growers and less bureaucracy. However, the flip side is uncertainty regarding how well a farmer/grower had conformed to voluntary GMP prescriptions and is simply trading on the 'eco-grown' branding.

Ginger's focus on food safety issues is somewhat different than many of the other UVM extension team members who are focused on large scale farm trials for GMPs/BMPs. For example, Heather Darby's work at Borderview Farm (refer to UVM Extension Meeting 1). Growers in Vermont are not perceived as significant water quality 'polluters', so horticultural practices have received less attention than other agricultural (pastoral) practices, for example, dairy farming.

Ginger described other research focused on growing crops on river floodplains and associated flood prone areas. This is a consequence of Hurricane Irene where flooding inundated crop areas, the flood waters contaminated the crops and made them unfit for food consumption - again, a food safety focus. This has prompted research into building more resilience into the way flood plain areas are cropped. The research included investigating the use of alternative crops species in these areas, for example, growing fruit trees as their height may keep the crop (the fruit) above the flood level and avoid contamination issues.

Ginger is also investigating multi-functional riparian buffer areas where growers might benefit economically by planting some type of crop into these areas that would also generate an income. One of the complicating factors occurs where farmers or growers receive a conservation grant to put in a riparian buffer area but that area then becomes tied up as a conservation easement that limits the ability to do anything further on the land. An example of one of these conservation grants would be those provided under the provisions of the Conservation Reserve Enhancement Program of the United States Department of Agriculture.

According to the Farm Service Agency (FSA) "the Conservation Reserve Enhancement Program (CREP) targets high-priority conservation issues identified by local, state, or tribal governments or non-governmental organizations. In exchange for removing environmentally sensitive land from production and introducing conservation practices, farmers, ranchers, and agricultural land owners are paid an annual rental rate. Participation is voluntary, and the contract period is typically 10–15 years, along with other federal and state incentives"²⁸. Paying for

ecological services via these types of grants is not common practice in New Zealand but is increasingly being discussed as a potential mechanism (and incentive) for greater adoption of environmentally sustainable farming practices by landowners.

VERMONT FARM TO PLATE NETWORK

The meeting with Vermont Farm to Plate Network staff members Erica Campbell and Ellen Kahler provided an excellent opportunity to learn about this key local food system coordination and leadership initiative. The Vermont Farm to Plate Network was established through state legislation, effectively like a statutory body in New Zealand (for example Fish and Game NZ). They are a NGO (Non Government Organisation), have charitable status and operate independently from government. Having said that, their legislative mandate determines to a large extent how they operate and what services they deliver.

The Vermont Farm to Plate Network is an initiative of the Vermont Sustainable Jobs Fund, with a focus on building economic prosperity (and associated employment) in relation to local food systems. According to their website "in 2009, Farm to Plate Investment Program legislation was signed into law and tasked the Vermont Sustainable Jobs Fund (VSJF) with the creation of a ten year Farm to Plate Strategic Plan to:

- increase economic development in Vermont's farm and food sector;
- create jobs in the farm and food economy;
- improve access to healthy local food for all Vermonters"¹⁰

The Farm to Plate Strategic Plan describes the development process VSJF used to work with over 1,200 farmers, producers, technical assistance providers, and farm and food sector industry leaders to create Vermont's food system plan. The plan includes 25 goals and dozens of strategies to strengthen and grow Vermont's food system. The plan explores the major issues impacting Vermont's food system through analysis of high impact leverage areas and broader cross-cutting issues¹⁰.

It took approximately 18 months to undertake the consultation process that informed the strategic plan. The state legislators requested this plan, but allowed the Vermont Farm to Plate Network to develop it in

their own way. Chuck Ross, the Secretary of Agriculture, is an appointed member of the Farm to Plate board of directors, with other directors being independently appointed. There are nine staff (full time equivalents) employed to implement the Vermont Sustainable Jobs Fund and approximately four of these staff work in the Vermont Farm to Plate Network. The public perception is that Vermont Farm to Plate is basically a network of local food system operators and initiatives, with coordination provided by these staff members.

The Vermont Farm to Plate Network has largely used an economic deterministic model for their strategic direction. That is, it is largely based on determining how employment and business sector activity associated with local food systems drives economic activity at the local to state scale. This focus on the contribution to the state economy is not driven by bluntly gathering data on such statistics as agricultural production. For example, in Vermont, dairy farming is a relatively small contributor to the total national revenue generated by the dairy sector from a production standpoint. That is akin to the view that dairying is a sunset industry in Vermont, given the scale of production in other states. However, when you look at the wider food system initiatives and economic activity generated by dairy farming in Vermont, you begin to appreciate all the other value added business that is generated off the back of milk products. It is this complexity, and the interdependence of a range of local food business initiatives that Farm to Plate is focused on.

The Vermont Sustainable Jobs Fund used the REMI model (Regional Economic Model) to develop baseline information on what the local food system sector is worth to the economy. The REMI model incorporates aspects of four major modeling approaches: Input-Output, General Equilibrium, Econometric, and Economic Geography²⁹. A series of scenario building exercises were then undertaken to determine how this sector's contribution to the state economy would change over time. This economic modelling was then incorporated into the Farm to Plate Strategic Plan. A Results Based Outcomes framework was then used to develop Key Performance Indicators (KPIs) aligned with the Farm to Plate strategic goals and objectives.

There was general discussion of the role of "backbone" or coordination type organisations like Farm to Plate or the NZ Landcare Trust in achieving collective impact. It was suggested that the Trust could benefit from mining government/private foundation datasets and information and potentially using the outcome of this research to encourage central or local government to establish an organisation similar to the Farm to Plate Network in New Zealand. In essence this would involve putting an economic argument to government (for example, the Ministry of Primary Industries and/or the Ministry of Business, Innovation and Employment) to establish such an entity in New Zealand to grow the local foods economy.

SHELBURNE FARMS

I had an interesting discussion about the nexus between local food systems, sustainability and environmental education with Alec Webb and Megan Camp of Shelburne Farms. According to their website "Shelburne Farms is a nonprofit organization educating for a sustainable future. That means learning that links knowledge, inquiry, and action to help students build a healthy future for their communities and the planet. Our home campus is a 1,400-acre working farm, forest, and National Historic Landmark. We care about the sustainability and quality of life on earth. We care about young people having hope for the future. We believe that sustainability is grounded in individual awareness and action in our own communities"⁸.

Their website describes the following core work areas of the Shelburne Farms operation.

1. We offer learning experiences that inspire young people to make informed decisions to build a sustainable society in the 21st century.
2. We steward and share our working landscape and historic property in ways that are environmentally, economically, and culturally sustainable, using it as a campus for learning.
3. We collaborate with educators, schools, and other partners to learn from each other so that we can transform education and extend our collective impact around the world⁸.

There was discussion of a wide range of initiatives that Shelburne Farms is collaborating on, including: Vermont FEED; the Burlington School Food Project; the Lake Champlain Basin Education Initiative, the Vermont Farm to School Network and the Farm-Based Education Network.

A significant component of their operation involves providing professional development opportunities to educators - training the trainers/teachers. Attendance at these training events is financially supported by Shelburne Farms so that educators/teachers can attend these learning opportunities without creating a burden on the school's resources. They target leading teachers for these learning opportunities. These teachers in turn talk to, and support, other teachers within their school to deliver environmental education programmes.

There was discussion of Shelburne Farms involvement in RCE - the United Nations Regional Centre for Expertise in Education for Sustainable Development. The following media release from their website provides some background to this initiative.

"Burlington, Vermont. May 13, 2014. This week, Vermont's Greater Burlington Region received official designation as a Regional Center of Expertise (RCE) on Education for Sustainable Development by the United Nations University Institute for Advanced Studies of Sustainability. The region, which includes the Vermont portion of the Lake Champlain Basin, is one of 136 RCEs worldwide, and one of only five in the United States. A network of worldwide RCEs aspire to achieve the goals of the Global Action Programme for Sustainable Development by translating its global objectives into the context of the local communities.

The Greater Burlington Region is being recognized for its collaborative and groundbreaking education for sustainability programs, such as the University of Vermont's service-learning partnerships with local schools and NGOs; Shelburne Farms' education program, the Sustainable Schools Project; among others.

This designation will allow the Greater Burlington Region to network with and learn from other RCEs around the world that are documenting promising practices in education for sustainability. The University of Vermont and Shelburne Farms are co-ordinating the effort to create a Greater Burlington RCE multi-stakeholder network of educators, NGOs, government, business leaders, students, faith groups, and community members"³⁰.

Interestingly, there are no RCEs in New Zealand at present. The University of Waikato has made an application to the United Nations for RCE status and the outcome of that is still pending. The NZ Landcare Trust is headquartered on the University of Waikato campus and is already collaborating with academics, researchers and students across the fields of geography, resource management, sociology and the biological sciences. It would seem there may be an opportunity to broaden this collaboration to include education for sustainability and could be a vehicle for growing the Trust's idea to establish "Junior Landcare" in New Zealand.

Megan described how Shelburne Farms provide reports to their funders to show they are "making a difference". They report on various KPIs related to changing teacher practices related to sustainability as a way of documenting their impact.

CONNECTICUT FARM VISITS

I was hosted by Jiff Martin, Associate Extension Educator, Sustainable Food Systems, University of Connecticut Extension and Kip Kolesinskas, former State Soil Scientist with US Department of Agriculture (Natural Resources Conservation Service) in Connecticut, on four farm visits and a visit to the Farmers Cow Calfe. The farms were Cato Corner Farm, Raspberry Knoll Farm, Provider Farm, and Four Root Farm.

CATO CORNER FARMS, CONNECTICUT

I had the pleasure of meeting Liz and Mark MacAllister, owners and operators of Cato Corner Farm who make premiere cheeses for high-end markets and restaurants in Connecticut and New York. They market their products as both locally grown and eco-grown. For example, they sell to the Green Market in New York City and to be able to sell

products within this market you have to be in a 250-mile radius of the city. They also sell their cheeses through specific relationships with retailers, through farmers markets, and through food cooperatives.

The United States Department of Agriculture provide grants to farmers to implement conservation practices on their farms. Farmers can potentially capitalise on niche markets where they can get a premium for their products as they are marketed as coming from farms that use these sustainable/conservation farming practices. Cato Corner Farm have implemented a variety of these conservation practices through assistance from the Connecticut Farm Land Trust. They have established preservation areas on the farm with easements (covenants) over woodland and wetland areas.

THE FARMERS COW CALFE, CONNECTICUT

This was an excellent meeting with Robin Chesmer, a local dairy farmer who was also the general manager of a new initiative - the Farmers Cow. The Farmers Cow markets their milk and other dairy products in a niche business that appeals to consumers who like the idea that their milk comes from a local company. There are only 6-7 farmers involved in the business, and in total they milk about 3,000 cows. They only use about 20% of the milk from all those farmers (the milk from approximately 500 cows) in the business, the other 80% goes to the local dairy cooperative and is processed in the conventional way. They help to promote their brand by running a cafe (the Farmers Cow Calfe) that sells their products direct to customers. This includes their milk and ice cream along with traditional cafe items.

They market themselves by differentiating their products as being local - branded as "real local". Their secondary branding is "environmentally sustainable". This is a broad catch all, not just for water quality practices but wider sustainable land management practices, particularly conservation practices. For example, supporting biodiversity and wildlife in the local landscape. There are parallels with the initiation of "Land for Wildlife" in New Zealand. This is an Australian biodiversity management initiative that is being trialled in New Zealand through the efforts of a former Winston Churchill Fellow employed by the Royal Forest and Bird Society of New Zealand.

Robin discussed the idea that the Farmers Cow is thinking about some type of sustainability framework, meeting some type of bar or standard regarding their stewardship practices but they don't know quite what that looks like at present. Robin stated that about 40% to 60% of farms in Connecticut operate under some form of conservation easement because the land is too hilly to farm or is in wetlands etc. This implies there is already a huge amount of biodiversity protection already going on in the state that they could capitalise on in terms of branding. I suggested that perhaps instead of taking on the challenge of marketing "lake friendly farming" products it would be easier to play to their existing strengths. The notion of "wildlife friendly farming" or "critter friendly farming" springs to mind. In fact their stewardship framework could be modelled on the "Land for Wildlife" initiative and then promoted through their branded products.

The Farmers Cow is a relatively new venture that is marketing themselves very aggressively on their locally sourced milk, without actually defining exactly what local is. It does assume an area with a fairly small radius from their farming operations, that could then be widened out. For example, to attract much bigger markets in larger New England cities like Boston. Their growth area is the food service industry, for example, higher end cafes and private establishments like Yale and other colleges. They employ two people as marketers. They know and trust these people to represent their business and to grow interest in supplying their products to retailers, including supermarkets.

Where they sell in supermarkets they cannot compete on price. To do this they would need to be producing a significant volume of milk for the price to come down through economies of scale. Clearly their point of difference is locally produced dairy products as opposed to mass produced food. The farmers involved with the Farmers Cow provide an excellent example of a hybrid model. They still provide 80% of the milk to a conventional dairy cooperative, but retain 20% of it to market and sell on added value attributes.

PROVIDER FARM, CONNECTICUT

Provider Farm, run by Kerry and Max Taylor is a combination vegetable Community Supported Agriculture (CSA) operation and beef farm. They use organic farming methods and grow vegetables on approximately 15 acres and farm beef (13-14 head of cattle) on another 20 acres of leased farm land. Their CSA has 260 clients in summer and 80 clients in winter (clients are their shareholders). At the beginning of the growing season their clients pay up front for approximately 20-25 weeks of access to the vegetable crops they grow on the farm. Their clients visit the farm once a week and pick up a supermarket bag full of vegetables that are available that week (the amount they take is based on weight). I was there at the farm on the day of their CSA pick up.

They use social marketing, for example, Facebook and Instagram to promote their operation. As well as providing vegetables and meat they also purchase wholesale eggs and other products and sell them to their CSA clients.

FOUR ROOT FARM, CONNECTICUT

This farm involved four people growing certified organic vegetables on their own 2 acre farm. They tend to grow less common vegetables and herbs, for example, Chinese broccoli, fourteen varieties of egg plants, tumeric, lemon grass etc. They use a hybrid marketing model of selling their produce to four farmers markets (the biggest one in New Haven) and running a CSA.

They had 10 CSA shareholders in the last growing season who paid \$500 at the beginning of the growing season and could go to any of the four farmers markets the farm sells at to pick up their weekly food parcel. They estimate about 80% of their revenue comes from farmers markets of which about 50% are repeat customers. They are also set up to sell to people who bring food stamps to the farmers markets.

YALE SUSTAINABLE FOOD PROJECT, CONNECTICUT

I met Mark Bomford, Director of the Yale Sustainable Food Project at the Yale Farm in New Haven. The Yale Farm occupies approximately an acre of land within the Yale University District - sandwiched between surrounding residential housing and university buildings. The Yale Sustainable Food Project use the farm as a way of encouraging conversations - getting students, researchers and academics together to discuss and explore multi-disciplinary knowledge. This can allow the exploration of wider perspectives than singular disciplines of academic research. The farm acts as a way of convening diverse interests and dialogue as Yale does not offer agricultural courses.

Yale students use the farm to develop their leadership skills by hosting and managing volunteers who do most of the manual labour on the farm. They also interact with pre-school and school-aged children who visit the farm. The school children grow vegetables from seed and then at the end of an 8-10 week period they get to eat a meal based on what they have grown. They take kelp from marine farms on the nearby coast and use that back on the farm as an organic fertiliser. The farm sells most of the vegetables at the local farmers market.

The farm is also used to encourage students who may be interested in taking up an international internship looking at agricultural practices and policies in other countries. The Yale Sustainable Food Project is now a programme at Yale. Projects have no on-going certainty or longevity of funding, as opposed to programmes of research, so that is a positive step forward for this initiative.

5TH ANNUAL FARM TO PLATE NETWORK GATHERING

I had the opportunity to attend the 5th Annual Farm to Plate Network Gathering in Killington, Vermont on 29-30 October 2015. The theme of the gathering was "Good Food from Healthy Soil and Clean Water" - this was very appropriate given my fellowship was aimed at examining the nexus between local food system initiatives and environmental sustainability. For more information about Farm to Plate gatherings refer to the planning for the 6th annual gathering scheduled for 20-21 October 2016³¹.

The keynote speaker on Day 1 (29 October 2015) of the 5th Annual Farm to Plate Network Gathering was Ray Archuleta whose presentation was "Farming in Nature's Image: Using Biomimicry to Improve Soil Function for Improving Water Quality". Ray was introduced by Vicky Drew from the Vermont Natural Resources Conservation Service. Vicky described the TMDL (Total Maximum Daily Load) work begin undertaken for Lake Champlain and the aim to reduce phosphorus loading to the lake.

The TMDL is a federally imposed nutrient budget for the lake by the US EPA (Environmental Protection Agency). The EPA has taken over the role of implementing this initiative from state government. The USDA (US Department of Agriculture) is responding to the TMDL challenge by providing new grants and funding commitments to the state of Vermont to assist in further developing and implementing BMPs on farms within the lake catchment.

Vicky described a new initiative called "Vermont Takes Action" - which is a new partnership between the Vermont Natural Resources Conservation Service and the Vermont Agency of Agriculture, Foods and Markets. This initiative will target a group of key catchment farmers and get them to attain a very high level of stewardship. It is a brand new project and is still being developed. Vicky Drew and Chuck Ross, the Secretary of Agriculture for Vermont, are collaborating on this initiative.

Ray Archuleta gave an excellent presentation on soil health and water quality. Ray described the need to build trust through leadership. "Leaders eat last. Leaders make you feel safe. Leaders inspire". Ray stated that plans do not inspire - leaders do. He made the point that plans and policies are needed and are important but they are not the goal. Planners need to have some "soul in the game" - they need to build relationships with the farmers and landowners, as the policies they develop will affect these landowners.

In the afternoon of Day 1 there was session entitled "Reflections on Our Adaptive Network" which was delivered in a news bulletin ("news flash") style format involving various members of the Farm to Plate Network. It was a fun and informative way of learning about the strength of the F2P Network as

various members described the initiatives that a series of "working groups" were undertaken on behalf of the wider network. Some examples initiatives included:

- Slow Money. The general public make small investments to support and encourage local food enterprises. This is basically a variant on the CSA approach (and gets its name from the Slow Food movement).
- Farm Week. Making farms accessible to the public.
- Survey of barriers to independent grocers selling local foods
- Buy Local campaign. Targeting outfitters and consumers with discretionary income regarding food choices.

Ellen Kahler, Executive Director of Farm to Plate, gave a PowerPoint presentation on the economic value of the local food system to the state economy (including employment statistics).

I attended an afternoon Deep Dive Session entitled the "Soil and Water Slam Session". There were a series of presentations discussing the connections between soil health and water quality. It would appear that LFOs (Large Farming Operations) and MFOs (Medium Farming Operations) require a nutrient management plan. The designation LFO or MFO is based on the area (size) of the farm and the number of farm animals (basically, the carrying capacity of the farming system). Small Farming Operations (SMOs) are now being targeted and will need a nutrient plan in the future.

LFOs and MFOs need a permit to farm and they also need a nutrient management plan. They must implement a suite of Accepted Agricultural Practices (AAPs) that are now becoming Required Agricultural Practices (RAPs). SFOs are now being aligned with the same requirements as the medium-large farming operations. In the past, these smaller farms have fallen into a regulatory gap.

In essence, farming does have a level of regulation in the United States and is moving to a higher bar in terms of requiring more BMPs to be adopted on farm. Partly this reflects the Act 64 legislation (Clean Water Act legislation) to improve the water quality of Lake Champlain. There is significant financial support

to assist farmers to comply with BMPs and other RAPs through the provision of federal and state grant programmes (for example, EQUIP - refer to Appendix 2. Poultney Mettowee Natural Resources Conservation District meeting). Examples include cost sharing between the farmers and government agencies to implement BMPs like manure pits, cover crops etc.

In the morning of Day 2 of the gathering (30 October 2015) there was a session entitled "Reflections: Relationship of Soil and Water to Network Groups". During this session there was discussion of "lake friendly farming" as an idea that might finally have come of age. This concept has been discussed in the past but has not yet evolved into a distinct initiative. There was discussion of the challenge around communicating and educating consumers to make food choices (for example, to buy "eco-grown" food) based on values like environmental sustainability.

One suggestion was to get aggregators of food to do that value-based marketing on behalf of farmers, rather than relying on individual, one-off entrepreneurial farming enterprises to carry the burden of this work. But how do you get food processors/aggregators to take on that role? What is the benefit to them financially?

One respondent suggested that it is more about focusing on citizens in general, rather than consumers with discretionary income and ones that make value-based food choices. That is, it is about raising the general level of awareness and food literacy about soil health, water quality and food systems across the general citizenry. This would then become the lever for changes in consumer food choices.

This discussion was followed by a Deep Dive session entitled "Building Connections Between Farm Viability and Water Quality Management". Act 64 - the Vermont Clean Water Bill - is the latest legislative push to clean up Lake Champlain. The Conservation Law Foundation filed a law suit against the EPA due to the lack of compliance with managing the initial TMDL set for the lake. The EPA is now re-writing the TMDL and is partnering with a variety of state agencies to get a revised TMDL in place.

Some see Act 64 as the death of all farming in the catchment. Others see it as an opportunity, for example, through the establishment of a Clean Water Fund to fund farms to undertake BMPs. It is now the responsibility of the Agency of Agriculture, Foods and Markets and the Department of Natural Resources to implement regulations, actions and practices to ensure the lake's Phase 1 Implementation Plan is achieved. For example, the actions required to achieve proposed P budgets for the lake.

Laura DiPietro from the VAAFM gave a presentation entitled "Future Farms - a Vision for Water Quality Compliance". Some of the observations in that presentation include the challenge of engaging with an aging/retiring farming population in Vermont. There are fewer farms but they produce more milk. This is a combination of farm consolidation and better production systems. The number of small to medium size dairy farms (200 to 500 animals) is declining as the number of larger farms (with greater than 500 animals) is increasing.

The average range for small farm environmental "fixes" is between \$50,000 and \$250,000. Considerations that farmers need to analyse when undertaking this work include: retirement plans; current debt load; return on investment; and succession planning. A significant challenge is that smaller family farms are not well positioned for current and future water quality requirements. These farms will require major infrastructure investments, much of which will not be able to be cost-shared between the farmer and the agencies that provide grants for BMPs and conservation practices. There are aging farmers who are not in a position to invest in the farm system changes that will be required to meet future water quality standards.

This creates an interesting tension as smaller farms are amalgamated into larger farming operations. What is the attraction of these infrastructure investments on small farms when corporate entities are simply more interested in the actual land itself as opposed to its environmental improvements? Diversification of small farm economies might be the way to retain a smaller farm and to have the funds to invest in the required agricultural practices. This is where getting a financial premium for producing food

(for example, milk) from small farms that exemplify strong environmental farming practices could be an opportunity. Particularly where those foods are diverted from conventional commodity markets into local value-added businesses.

Fewer but larger farms implies greater visibility and more public scrutiny of farming operations. This will lead to medium and larger farming operations becoming more engaged in the water quality debate, and associated policy development. These farming operations will want to be compliant (and retain their "licence to farm") due to the increased public scrutiny.

Some ideas that were presented in relation to future farms included:

- Herd buy-outs for environmental quality improvements
- Incentives to reduce nutrient impacts
- Easements for water quality protection and enhancement
- Biodigesters for manure from multiple farming operations
- Limitations on growth
- Simplified regulations
- Better planning tools

There was discussion of the Prairie Creek Treatment Train. This is a water quality cleansing concept that involves the integration of alum dosing, constructed wetland, biological filtration and aeration to treat farm water and wastewater.

Tony Kitsos from the University of Vermont Extension team gave a presentation entitled "Farm Financial Considerations and Water Quality Projects". Tony undertakes business and financial planning for farms. For example, EQUIP grants and related water quality initiatives on farms. Tony provided an overview of the realities of farmers borrowing money from lenders on the basis of a highly variable income base. Changing farm profitability is highly dependent on fluctuations in commodity prices. The parallels with the New Zealand farming situation were obvious.

CENTER FOR AN AGRICULTURAL ECONOMY

I met with Sarah Waring at the Center for an Agricultural Economy in Hardwick, Vermont. Sarah was originally employed at the Bureau of Land Management as a social scientist working within a

team of soil scientists and ecologists. She was involved in the early phases of funding for "Working Landscapes". This is a fund for BMPs and conservation grants on farm.

The Vermont Food Venture Center (VFVC) is a business within the Center for an Agricultural Economy. It is a food business incubator. It is a rurally based (in Hardwick) food business incubator as opposed to one based in the city (like Intervale in Burlington). So there is the challenge of attracting a core number of rurally-based food businesses (and associated entrepreneurs) who will use the incubator to grow their businesses.

The VFVC aggregates food at their facility for institutional markets. This is not something an individual farmer could do but is achievable by using a consortia-based approach where resources are pooled together. Colleges and hospitals are the institutions the venture targets. The Center also has a school-based programme to encourage young people into agriculture. It is designed to show young people that they can have a successful career in farming/agriculture.

The Center has a federal mandate to create jobs. In essence it seeks to take food related business concepts (for example food aggregation, processing or distribution) from an initial (incubator) phase to fully fledged and financially sustainable businesses. Sarah described some of the innovative local food products coming out of Vermont. These included Switchel - a local energy drink based on the Vermont rural/farming tradition of drinking maple syrup as a source of energy when farmers were out working on their land. This now extends to maple cider and vinegar products. Yummy Yammy and Vermont Baby (baby foods) are other companies that include a Vermont/organic/local branding component to their products.

In Hardwick there has been a resurgence in the local economy, businesses are growing and there are now more children enrolled in local schools. However, it is difficult to quantify how the Center has created this but it is clear they have contributed to this growth.

BUSINESS TO BUSINESS FARMERS MARKET, COLORADO

I had an opportunity to attend the Colorado Business to Business Farmers Market in Denver on 3 November 2015. It was described as "an exposition of Colorado farmers, ranchers and food & beverage producers, here to stimulate local businesses". This was effectively a trade show with various businesses advertising their food products which included a combination of basic food products (for example, grass fed Colorado beef) and value-added (processed) foods (for example, smoked meat products, sauces, healthy snack ranges, gluten-free product lines, cereals, and alcohol). The only requirement to participate at this event was that the business needed to be Colorado based. In many cases that meant the food/products were also sourced within Colorado (but not necessarily with all businesses present). Other provenance factors, for example, "sustainably produced" were secondary marketing factors.

I asked a number of participants if they could quantify the tangible value from being involved in these types of events. This is a very challenging question to answer for most. It was reminiscent of the same line of enquiry the NZ Landcare Trust pursued when undertaking a cost/benefit analysis of our participation at National Agricultural Fielddays at Mystery Creek. To be honest, a lot of it is intangible - making contacts and connections and building brand profile and recognition. Obviously, in some cases this then leads to new business activity.

Interestingly, there were representatives of institutions who were attending this event as they were mandated to source a portion of their food from local sources. For example, Denver City Council staff who were looking at various opportunities to source Colorado products for their institution. This extended to schools, colleges and other government departments who budgets included a requirement to source a quota of their food supplies from local (Colorado) food suppliers.

DEPARTMENT OF AGRICULTURE, COLORADO

I had a meeting with Wendy White, Marketing Division, Colorado Department of Agriculture, Shaine Knight, member of the Farm to Schools Taskforce, Colorado Department of Agriculture, and Martha Cellins, Colorado State University Extension. Wendy is involved in "Colorado Proud", a state branding campaign, promoting Colorado food. There are approximately 2,200 members in the Colorado Proud programme and there is no fee to join it or to use the logo. This is different from other states who charge a fee for membership to their programmes.

Members include a range of organisations including corporates, schools and restaurants etc. Colorado Proud uses television advertisements, road vehicles with signage and displays at farmers markets. The initiative was established in 1999 and does not receive state or federal funding but relies on various grants to continue its operations.

There is a Food System Advisory Council in Colorado that focuses on food system policy issues. It has limited resources and no real authority to push the food system agenda in the state. Colorado Proud is more of a marketing initiative, but it fits into the broader level strategies of the Food Systems Advisory Council (FSAC) to grow the food economy in Colorado. The FSAC was established at the same time as the Farm to Schools Taskforce. At a regional level there are a whole variety of more local, area-specific food councils.

The Colorado State University and the Department of Education are key drivers of STEM (Science, Technology, Engineering and Mathematics focused education programs). The Colorado Department of Agriculture is collaborating on STEM in an aim to get school children involved in food systems learning, for example, through the Colorado Proud School Meal Day.

In discussion, there appears to be interest in getting beyond "buy local" to "buy eco-grown". This interest in purchasing sustainably produced food is building amongst consumers but right now it is still focused on buying local (Colorado Proud).

Martha Cellins has a socio-economic focus with her extension work at Colorado State University, including business and marketing management. She described the initiative "Colorado Building Farmers and Ranchers", an eight week course designed to get new people into the agriculture sector, by providing expertise and support on business development needs. At the end of eight weeks participants have developed a business plan for their enterprise.