



QUEENSTOWN  
LAKES DISTRICT

# FOOD RESILIENCE REPORT

20

23

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# INTRODUCTION

The John Hopkins Centre for a Liveable Future defines food resilience as a food system “which is able to withstand and recover from disruptions and changes in a way that ensures a sufficient supply of acceptable and accessible food for all”. Our food system has changed vastly in the Queenstown Lakes District (QLD) over the last 150 years, with our first settlers forging an incredibly self-sufficient food system, reliant on minimal support from outside the region.

Fast forward to today’s food system, we are nearly fully reliant on food coming in from outside the region, delivered to our stores by a daily convoy of trucks. Our food system now feels perhaps easier than that of our forebears, but it is highly prone to shocks and disruption. The likelihood of these disruptive events occurring is increasing, and our gradual shift away from local food production over the last 150 years has left us open to the risk of food supply issues.

Climate change is placing unprecedented pressure on the global food system as more frequent severe weather events impact both food production and global supply chains. These risks may take the form of a crisis event or natural disaster, political unrest, supply chain interruption or disruptions to the energy systems that underpin global food production and distribution.

We are also currently experiencing the challenge of the energy - fossil fuel - carbon nexus within our current food system. To comply with the Paris Agreement, we need to heavily reduce the use of fossil fuels in our food system to reach our net zero goal. This will drive a transformational shift to use less fossil fuels in our food production. Our global food production model is so heavily fossil fuel dependant that it is an energy sink rather than a source. We use significantly more fossil fuel calories to grow, make and transport the food, than the calories the food provides us. Our food system is a carbon source, rather than a carbon sink. It is going to need to radically change to adapt to our upcoming challenges.

This means we will need to rely on food closer to home and produced in a more energy and carbon efficient way. The development of a more robust, localised, vibrant food system is an important driver for a wide range of positive environmental, economic, community wellbeing, emissions mitigation and public health benefits. With an impetus like this, Wao and Queenstown Lakes District Council (QLDC) decided to start the groundwork to build up the soil for a resilient food system for tomorrow.

*Julie Blackford - Project Lead  
May 2023*

# THE PROJECT

In August 2020 Wao, with the support and funding of the Queenstown Lakes District Council (QLDC), developed Phase One of the Food Resilience Project to address key actions highlighted in the Queenstown Lakes Climate and Biodiversity Plan 2022-2025 to grow a resilient and low carbon local food system in the Queenstown Lakes District (the district).



## QLDC CLIMATE AND BIODIVERSITY ACTION PLAN - OUTCOME 4

### We grow a resilient and low carbon local food system

- 4.7 Launch a Queenstown Lakes Food Network that brings together community stakeholders to develop a shared vision of a resilient, low carbon and regenerative local food system.
- 4.8  Develop a roadmap of initiatives and funding opportunities to accelerate and scale up community food system projects across the district. These could include:
  - a. Community garden initiatives across all communities in the district.
  - b. Supporting the Pataka Kai movement for community pantries.
  - c. Increasing the commitment to urban edible planting.
  - d. Mapping of fruit and nut foraging sites across the district.
  - e. Supporting community education.
  - f. Building the capacity of our food recovery and community food services network.
  - g. Bringing trail building, conservation, and edible planting together where appropriate.

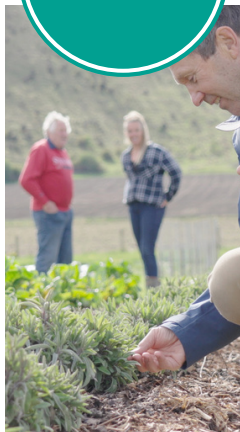


Figure 1. QLDC Climate and Biodiversity plan, page 57 ([5a-climate-and-biodiversity-plan-2022-25.pdf](#) | [qldc.govt.nz](#))

Phase One is a scoping exercise to better understand our local food system. By developing a ‘snapshot’ of our current system, we can better understand the challenges and opportunities we face with the next steps being the development of a more targeted, action based roadmap to a resilient future.





## FOOD RESILIENCE PROJECT | PHASE ONE - KEY OUTCOMES

<b>DEVELOP A STAKEHOLDER REGISTER</b>	The Stakeholders Register provides a comprehensive snapshot of the main actors in our food system currently and includes growers, farmers, retailers, distribution, manufacturers, food security non-profits, food education, food resilience non-profits, food and waste specialists, local government, and public health.
<b>STAKEHOLDER INTERVIEWS</b>	In depth interviews were held with individuals and business representatives from a cross section of sectors within the food system. The interviews provide a deeper understanding of our food flow as well as the current challenges, risks and opportunities our food system players believe we have in our food system.
<b>RESEARCH INTO OUR FOOD HISTORY</b>	Understanding our food history provides insight into previous models used to feed the community, why and how those models have changed as well as potential for future opportunities. We could apply some of this learning to moving towards a more resilient, future food system.
<b>FOOD RESILIENCE SURVEY</b>	The Food Resilience Survey was designed to gather data on how our community is feeding itself today. It provides information on where we buy our food from, how much food we produce ourselves and what our concerns are around food supply. This highlights the risks and challenges in our current food supply system and provides a baseline for future progress.
<b>RESEARCH BEST PRACTICE</b>	Food policy council/ Food resilience network research – by understanding how food policy councils and food resilience networks have been formed elsewhere, and how they run and what initiatives have been successful, we can aim to develop the most suitable model for our own community.
<b>FACILITATE COLLECTIVE ACTION</b>	The Food Resilience Hui, in May 2023, concludes phase one of the Food Resilience Project. It brings together actors in the food system to galvanize action and map out a collective pathway towards a resilient and vibrant food system. The intended outcome of the hui is a collective vision for our food system and the establishment of a food resilience network.
<b>DEVELOP A FOOD MAP</b>	The development of a map provides a digital layering of food related data. The map is a useful tool in building a more resilient future system by presenting variables that impact food resilience such as climate, soil types, highly productive land, stakeholders, zoning, foraging locations etc.

# LEARNING FROM THE PAST

Understanding the history of how we used to feed ourselves may provide insights into how we can do this again. While population is a key factor in how much food we grew, gathered or hunted, this section looks more at the what. It provides a brief overview and is not intended as a complete history. More research into this area could be of interest for the Food Resilience Group and could form part of the Food Map.

The first people known to have used our region for the purpose of food were the early Māori in the 1300's, travelling in from more permanent settlements on the southeast coast of the south island, primarily to hunt Mōa (Cunningham, 2005). This developed into a more seasonal food collection focusing on Ti Kouka (Cabbage Tree), Tuna (Eel), Weka and other fresh water fowl - along with Mōa (Hewitt, 2018).

The first European settlers arrived in 1860, with William Rees and Nicolas von Tunzelmann establishing sheep 'runs' on either side of Lake Wakatipu. Shortly thereafter, two farmhands on the Ree's farm found gold in the area, sparking the first gold rush in 1862. A similar timeline followed for Wānaka, with the establishment of Wānaka Station in 1858, and early settlers farming sheep on 'runs' near Albert Town, followed by gold prospectors arriving in the early 1860's. The gold rush for the region was largely over by 1864 when miners moved on to the West Coast. Chinese miners took up the vacancy to pick over the claims.

Early farmers were largely self-sufficient due to the geological isolation of the region. They relied on the small fruit orchards and vegetable gardens they planted, along with the mutton from their farms. Incoming gold miners found food supply a significant issue and relied heavily on the run holders for sustenance. Food was scarce and expensive (Cunningham, 2005). Chinese miners established fruit trees and small vegetable gardens for their food supply and to stave off scurvy. They grew stone and pip fruit (of which many are still standing today), cabbages, corn, potatoes, peas, gooseberries and strawberries.

Frankton Flats were first surveyed into farms in 1866 and grain was the main crop grown. Local wheat and barley were excellent – apparently fetching prizes on the London Market. By 1870, 500 acres of wheat were grown in the region and a mill was producing 40 tonnes of flour a week. A second mill was opened in 1871 at Hayes Creek, and a third was opened at Mill farm in 1874. A Mill was also in operation in Luggate. In 1891 there were 1760 acres of wheat, 3250 acres of oats and 1000 acres of barley.



Farm life in the shelter of Mt. Earnslaw. 9250 ft.

Grain production was continued on until the turn of the century. Such was grain production here that there were four commercial flour mills milling wheat and oats, the Brunswick Mill at Frankton, the Arrow Mill on Mill Creek, the Wakatipu Mill at Speargrass Flat and the Luggate Mill. At this time, capacity was up to three times that of the national requirement. Distribution became an issue due to the distance and cartage costs as there was no rail to the region. All flour mills closed by 1940 (Borrell, 2011).

After the grain boom, the region turned to dairying between 1912 and 1960. The local dairy factory produced 60 tonnes of cheddar a year – mostly exported. Most farms had a small herd of cows, grew grain and had some sheep. The factory was a co-operative owned by the farmers. It was closed in 1950 (Cunningham, 2005).

Oral histories of the sheep and beef stations in the early 1900's show the level to which they were food self-sufficient. Fruit and vegetables were all grown by the station, dairy was produced from their own cow and butter was made at home. Fruit was eaten fresh, preserved, or dried, not one bit was wasted. Provisions were brought in every six weeks from Donald Reid and Company in Dunedin, this included sugar, tea, rice, sultanas, salt, candles and golden syrup. Oatmeal was grown and milled locally, trout and watercress were gathered from local streams, and cheese was made at the local dairy factory (*oral histories of Kingsley Butler and Alice Mackie*).

Roads began to appear around Queenstown in the 1930's. Before these were built, the main transport route from Queenstown and Wanaka was mainly fluvial via the rivers and lakes. 1947 saw the first electricity in the region. At this same point New Zealand's first commercial ski field was opened at Coronet Peak in 1947, and our future as an international tourist destination was begun.



From the turn of the century there saw a steady supply of small independent grocers, bakers and butchers in Wānaka, Queenstown and Arrowtown helping to supplement the community's diet. The original grocer of Queenstown, which sat where the Mall is now, was built in 1863 and run continually as a grocery store until 1998. Larger supermarkets like Freshchoice began replacing the smaller independent stores as late as 1999. In 2023, the district has one Pak n Save, two (soon to be three) Countdowns, one Freshchoice and three New Worlds.



# HOW WE FEED OURSELVES NOW

The Queenstown Lakes District is home to 39,153 residents (*Stats NZ, 2018*). This number is likely to be higher when the 2023 census data is published. As a tourist destination, we also host up to 33,000 domestic and international tourists on any given day during peak season (*Dataventures Tourism New Zealand Tool, 2023*). The total number of people that need to be fed in the district is approximately 72,000.

In March - April 2023 Wao carried out the Food Resilience Survey looking into how the district sourced its food and what concerns it had about food supply. In total, 761 residents participated in the survey, 59% of these living in the Wānaka Ward and 41% in the Queenstown-Wakatipu Ward. The demographic distribution of participants was largely between 25 to 65+ years old with the majority of participants being in the 35-44 and 45-54 age bracket. Compared to the Census (*ibid*) demographics in the survey were older (median age 49 years) and predominantly female (80% of respondents) more responses were received from the Wānaka Ward than the Queenstown-Wakatipu Ward. Those who replied to the survey where for the most part the main buyers in the household (87%) with females being indicated as the main purchasers.

Respondents were asked to indicate where they sourced their food from over the four weeks prior to filling out the survey. Almost all participants using the supermarket (98%). Smaller food retailers were also frequented by about three quarters of the respondents, either convenience stores (44%) or organic, bulk or whole food stores (34%) and farmers markets (9%). A large number (70%) grew or made some of their food at home. Hunting (11%) and foraging (21%) were also frequent sources of food. As the survey was in peak harvest season, given the seasonal nature of growing hunting and foraging, these figures would likely be lower if the survey was taken at a different time of the year. Of those who responded, 3% replied that they had sourced food from a community food network or food bank.

## Where we get our food from

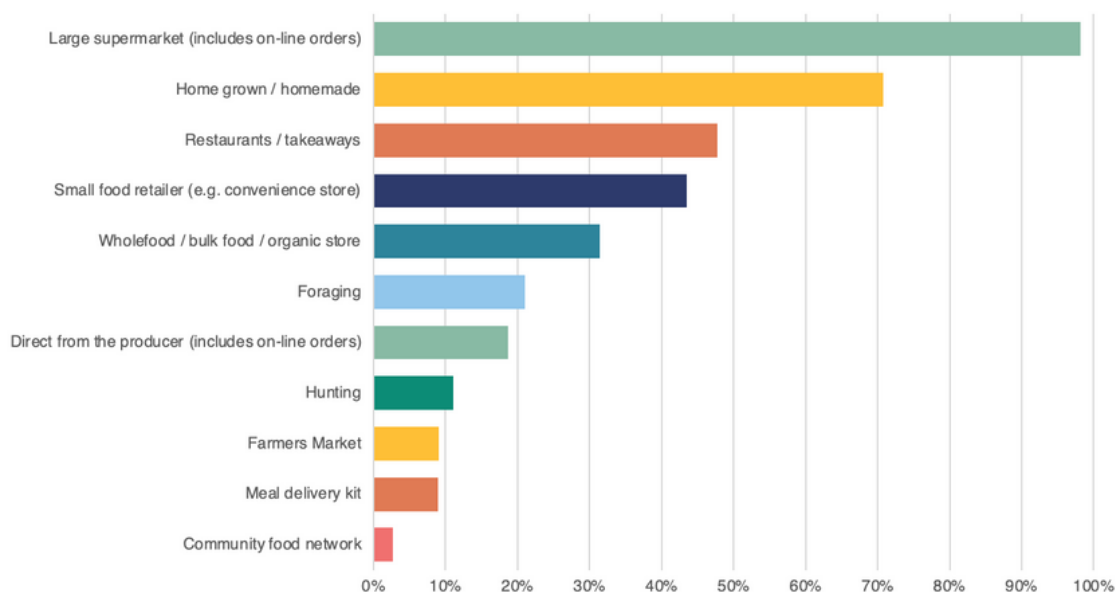


Figure 1. Figure 1 In the last four weeks, what percentage of your household food came from the following?



every  
**21**  
minutes

It's estimated that we would need one Hercules aircraft to land every 21 minutes full of food to provision those in the district in case of a major event cutting road access.

According to the survey results, we are heavily reliant on food sourced from supermarkets, convenience and whole food / organic / bulk food stores (stores). Just under 10% of respondents sourced food uniquely from these stores a further 41% sourced more than 75% of their food from stores. Only 5% source less than 25% of their food from supermarkets with only two respondents replying that they did not go to the supermarket.

We are also fairly good at topping up our pantry with home grown, home made, foraged or hunted food with 85% accessing food from these sources. While in most cases, this is less than 25% of total food supply, 13% respondents sourced up to half of their food from these sources while a further 9% sourced up to three quarters of their food this way.

About 5% of the respondents were sourcing food from community food networks such as food banks, meals on wheels etc. The large majority, this was a top and and made up less than 25% of total household food.

## HOW RESILIENT ARE WE?

How much of our food we get from different sources

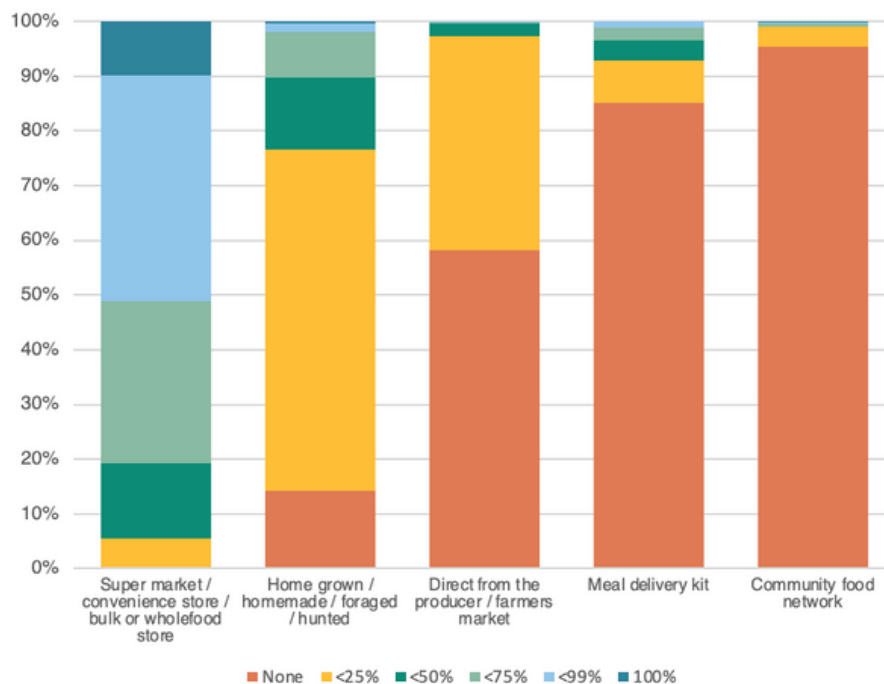


Figure 2. In the last four weeks, what percentage of your household food came from the following?

**95%**

source the majority of their food from supermarkets or stores

**82%**

grow, hunt, forage or make at least some of their own food

## How many of us have access to growing our own food

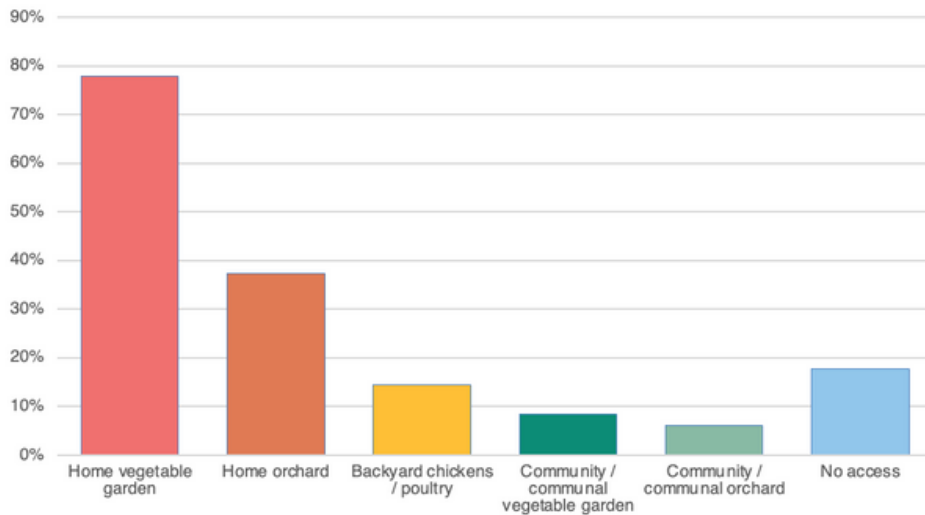


Figure 3. Do you grow or produce food or have access to growing food from any of the above?

A large majority of the population who replied grew at least some of their own food. Just under 80% of respondents grew vegetables at home or had access to a vegetable garden and 38% of respondents produced or had access to an orchard. Chickens were another popular addition to the back yard and a few respondents also replied that they had access to meat from homekill.

**Greatest barrier to growing my own food is "living in a new rental with nowhere set up to grow food, and a lack of knowledge and time to overcome this barrier"**

Community gardens and orchards were also used to source food but less frequently. There may be an opportunity to expand community facilities to grow food as when asked what were the main barriers to growing or making their own food, having enough space came out overwhelmingly on top of the list of challenges. This was followed by time, living in rental accommodation where putting in a vegetable garden is not allowed and finally knowledge of how to grow food. Community facilities, providing education opportunities and more space for those that rent or live in homes with not enough space to grow would overcome these barriers. To a lesser extent, environmental factors such as the alpine climate, pests and access to water were also mentioned as barriers.

## Importance of sourcing food locally

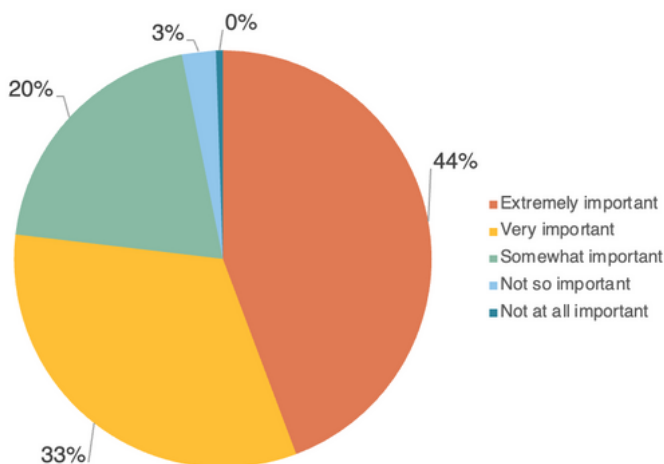


Figure 4. How important is access to local grown / produced food to you?

Overwhelmingly, respondents found that it was very or extremely important to be able to source food locally. Many of the respondents felt that there was a real need for more locally grown produce and meat and a return to seasonal eating habits. There were also comments around the need for more farmers markets and land to set up community gardens.

**"We have to adapt back to a more sustainable seasonal local produce model"**

## How worried are we about our food system?

Respondents were asked to comment on what concerns if any they had about the current food system. Only 4% replied that they had no concerns at all with 96% making comments. The main concerns mentioned were the supply of food (49%) to the district followed by the cost (40%). These two factors were driving purchasing decisions, leading to some having to go without certain foods as they were too expensive impacting on the quality of food they were bringing back into the household. Concerns about food security for the most vulnerable were also raised and it was mentioned by a number of respondents that it was cheaper to buy highly processed foods than to buy quality whole foods and staples. The largest food type that was mentioned was the shortage of eggs, which is not surprising given the regulatory changes to egg production that came into force in early 2023.

Climate change was recognised as a key risk to supply chains, with weather events such as the 2023 cyclone Gabrielle showing how vulnerable the supply chain was as were potential natural disasters, such as earthquakes, and other global shocks. Emissions created by our food system, including through transport and production using fossil fuels was also mentioned. As mentioned in the previous section, localising food production was high on the list of concerns. This was in twofold, first that there was a lack of local food availability and second, that this was a solution to the supply, costs and environmental challenges we are facing.

### WHAT ARE YOU DOING TO INCREASE YOUR FOOD RESILIENCE?

In response to the challenges, the majority of people replied that they are making moves to become more resilient

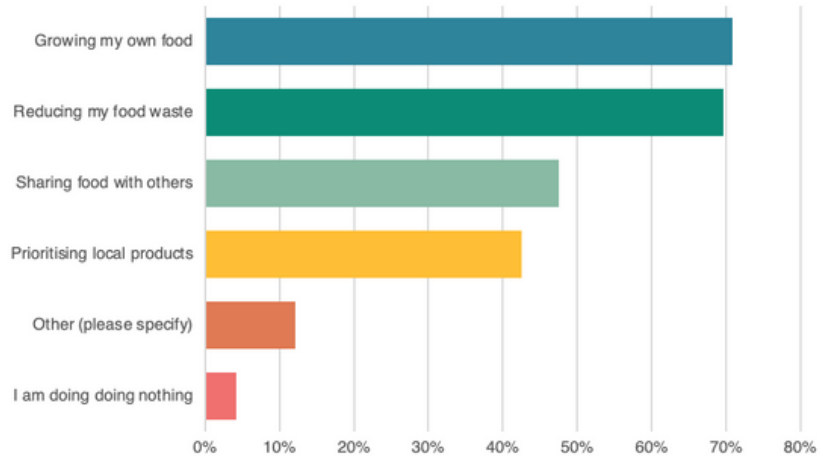


Figure 5. What actions are you taking to increase your food resilience?

## Summary

The Survey has supplied excellent insights into the communities' food purchasing decisions as well as the views on the challenges and opportunities of our current food system. The survey results reveal a heavy reliance on food being transported in from out of the region and sold through our main chain supermarkets. We rely heavily on food coming from outside of the district leaving us vulnerable to both short-term and long-term shocks. There is also real concern that climate events and change, other natural disasters and global shocks will only increase this vulnerability.

What is encouraging is the high number of those in the community that currently grow or have access to sourcing their own food. This also came out in the comments, with those finding rising costs a real challenge looking to see how they can grow or access their own food. One of the opportunities the survey highlighted was the need to strengthen connections between those that know how to grow, hunt or gather in the district's Alpine environment with those who indicated that lack of knowledge was a barrier for them sourcing their own food. There is also a recognition that the current food system is vulnerable and the growing awareness around the need to localise production and distribution to better cater for our local population with nutritional food. Whether this be through growing farmers markets, supporting local production, making more land available for community gardens, there are a lot of ideas in the community as to how we can address these challenges.

# THE DISTRICT

## Our food growing climate

Our alpine environment here in QLD is quite unique within the food bowl which is New Zealand. Our extremes of temperature, altitude and harsh environment favour some food types - like Pinot Noir grapes, stone fruit and wheat - but make many other food items more challenging, or impossible to grow. The prevailing weather comes from the Tasman Sea and the land lies in the rain shadow of the mountains of Fiordland and the Southern Alps. This leads to lower than average rainfall of 600mm annually compared to the rest of New Zealand (Cunningham, 2005).

Thought must be put into soil type, location, microclimates, and sun hours to have success with growing. Our soils are predominantly Brown and Pallic and a little semi-arid, with high presence of rock and stone. Our mountains mean there are large parts of our landscape that are simply unusable for the production of food. While growing on mountain slopes is challenging, our valley floors as a generalisation, are where the most fertile deep soils for growing food are found. Our lakes create microclimates which can soften the harshness of our summers and winters. The prime areas of food production, valley floors and near our lakes, also happen to be the prime areas in which people like to live or stay, leading to a clash between productive land use and urbanisation.

## Climate change

Climatic change is making itself apparent in all regions of New Zealand and our unique alpine climate here in the district is no exception. As this change begins to accelerate it will become in general, warmer, and wetter. However the increasing unpredictability of our weather will mean our food production will vary significantly from year to year. Increased rainfall may result in significant erosion and increased sediment in our waterways, and the resulting soil loss may become an issue for our district (MPI, 2023). The north and east of New Zealand is expected to become drier, and the west and south wetter (Wreford, 2022), potentially resulting in our southern district being relied on more for crop production for the nation's food supply.

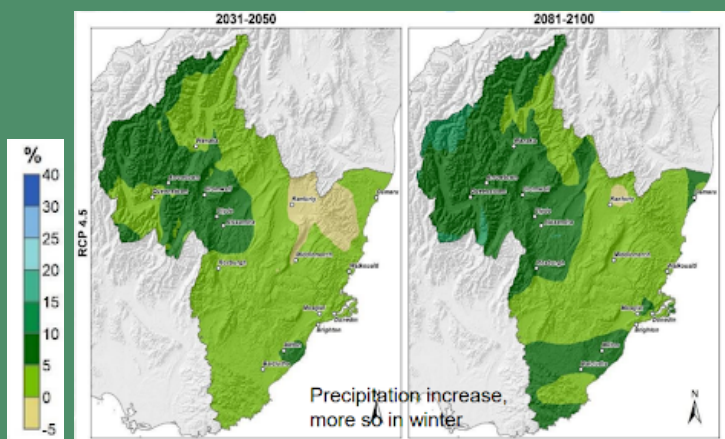


Figure 6. Future Rainfall % Change in Otago Region (Salinger, 2021)

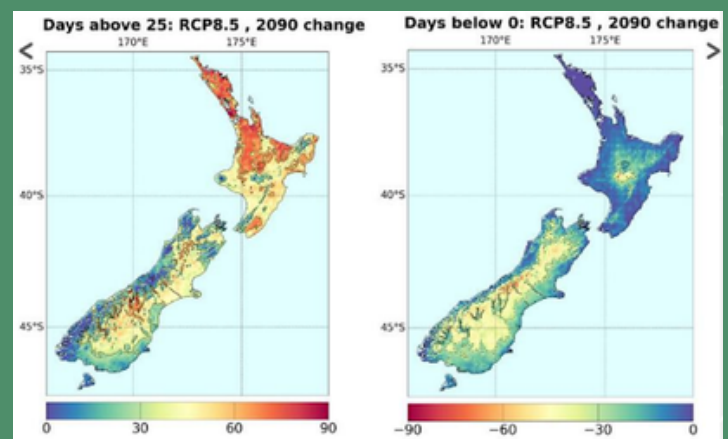


Figure 7. Changes in Temperature Extremes (Salinger, 2021)

## Distribution vulnerability

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Our food distribution system relies almost solely on road freight via the State Highway 8 and the Lindis Pass, Kawarau Gorge, State Highway 6 via the Devils Staircase, and to a lesser extent Haast Pass Highway. The estimation is that our region currently has 750 pallets of food brought in by our roading network in a day. Due to our lack of rail or port, we have a very singular distribution network of food coming in to, or out of, our region. All of these major road systems we are so heavily reliant on are highly vulnerable to natural disasters, particularly slips and earthquakes.

## Earthquakes and other natural disasters

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As a region, our most likely significant natural disaster is an earthquake. Due to our proximity to the alpine fault an AF8 (alpine fault line magnitude 8) is the most significant acute risk we need to consider. While we can't predict earthquakes, scientific research indicates there is a 75% probability of an Alpine Fault earthquake occurring in the next 50 years, and there is a 4 out of 5 chance that it will be a magnitude 8+ event. An event like this would cause cascading hazards which can continue for days, weeks and years after the initial event. These include avalanches and ice slides, rock falls landslides, landslide triggered tsunamis, loss of electricity and loss of telecommunication (AF8, 2023).

Weather related events are also a risk for our region, particularly drought. As many regions within New Zealand have felt the devastating effects of severe rain events, we in the south have had areas in drought. Increasing severe and unpredictable weather may cause severe and prolonged drought in our region and would negatively impact our food production. Intensity of weather systems is likely to increase, so perversely, whilst we worry about drought, intense rain events may also cause significant acute issues with our food production.

## Tourism

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Our district plays host to significant domestic and international tourists, as many as 33000 on any one day during peak season (Dataventures Tourism New Zealand Tool, 2023). When we consider our food system and the ability to make it more resilient, these extra mouths must be factored in. In the event of a natural disaster or crisis, our food system needs to incorporate this number into its response, no small feat given it is nearly double our population.

However, tourism can help provide support for the growth of a localised food system, by extra demand for locally grown food, support for markets gardens, restaurants and food tourism. Of the locally grown and harvested food produced in our region which does stay local, most is sold into our restaurants and cafes, due to tourists demand for local tastes.



# THE LOCAL FOOD SYSTEM

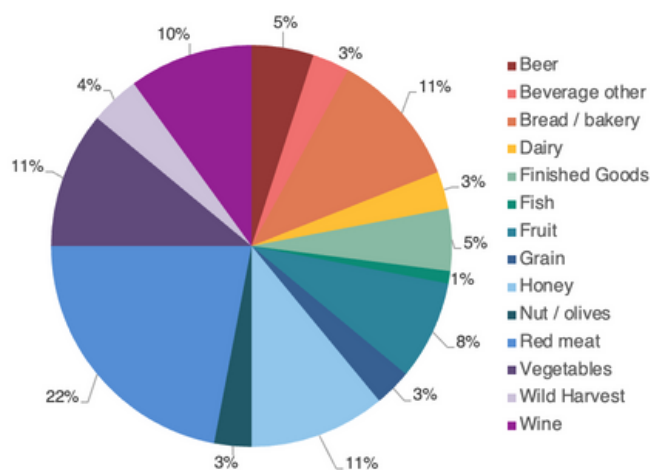
## Local Stakeholders

One of the important outcomes of phase one of the Food Resilience Project was to develop a Stakeholder register in an effort to understand all players in our local food system. It should be noted that this is a dynamic list and will need to be regularly updated, a task that would naturally form part of the Food Resilience Network's remit. The register currently has 132 stakeholders. They have been tagged into the following categories:

- Animal based farmers and producers (includes dairy farmers, honey production, sheep, beef and lamb farming, wild meat and fish harvest)
- Beverage producers (includes wine, beer, spirits and non-alcoholic beverage)
- Bread / bakery
- Fruit and nut growers
- Grain producers
- Vegetable producers (includes vegetable market gardens and mushrooms)
- Community vegetable gardens
- Certified kitchens
- Finished goods producers
- Markets - any which provide food
- Food retailers (includes large chain supermarkets, independent food stores, convenience stores)
- Food security not-for-profits
- Seed libraries
- Education based non profits that deal with anything to do with food.
- Food distributors
- Local govt and public health
- Individuals with a stake holding in our food system

In terms of what we produce in our region, red meat is our largest producer category, followed by honey, wine, and market gardens (note: this is not based on volume of food produced, rather number of producers). Our producers are innovative and passionate, with a strong focus on doing things better. Several of our local producers are forging the way with regenerative agriculture and low emissions production – developing and showcasing new ways of producing food and sharing these new methods with others. We have individuals with strong local knowledge of growing and producing food in our unique climate, and we have others showing us the importance of closing the loop at the other end of the food cycle by heroing food composting and diverting food waste from landfill.

Figure 8. Producer distribution in Queenstown Lakes District (Food Stakeholders Register 2023)



The food largely comes to the district via a range of supermarkets owned by Progressive Enterprises or Woolworths (Pak'n'Save, New World, Fresh Choice, Countdown, and 4 Square). There are also a variety of smaller independent specialty food stores. Visitors are fed largely via the food distribution chains of Kaans and Bidfood who service restaurants and cafes. Supermarkets and food stores hold anywhere between 2 to 8 days' worth of food. Our biggest food storage facilities are the Bidfood storage warehouse, chiller and freezer, and that of the various large supermarkets. At any one point we would have food supply to cover our community and tourists for the maximum of one week.

Outside of the traditional producers and distributors, we have a strong presence of food security not-for-profits including Kiwiharvest, Baskets of Blessings, Mana Tahuna, The Salvation Army, Food for Love, Wanaka Food bank, Happiness House and Kahu Youth. We also have a strong network of organisations working for the betterment and protection of our unique environment including Community Networks, Enviroschools and Garden to Table, Grow Wānaka, Sustainable Queenstown, Wānaka Wastebusters, Wai Wānaka and Wao .

### **Food Map tool development**

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With the voluntary support and expertise of Noemi Holzleg from Environmental Accounting Services, we have developed a framework for an open source map to be used in future work on food resilience. The map uses a geographic information system (GIS) software called QGIS to spatially present a range of variables that influence food resilience in our region. Most of the data is sourced from the Ministry for the Environment's online spatial database and the GrowOtago database. The latter includes information for climate-related data, land use capability classification, and soils data.

These databases draw much of the data from national research bodies such as Landcare Research or NIWA. In addition to this, various locally sourced data has been collated. Note must also be made of the incredible work that has gone into creating the open source Central Otago Foraging Map, which has been managed by the Central Otago Foragers Group. Current layers include:

- Regional climate data (average rainfall and temperature)
- Regional soil types
- Highly productive land types (from national land use classification dataset)
- Current land use (from national LUCAS dataset)
- 2023 Stakeholders' Register
- Council zoning
- Regional foraging locations
- Natural hazard risk areas (including liquefaction, landslide, avalanche, and erosion)

## THE FOOD MAP

How technology can help us make good decisions in a changing climate. Where to grow, what to grow and who is already growing are just some of the possible uses.

Development to date is meant as a starting point to be added to. As more relevant data comes to light, layers can be added to this map. The goal is for this map to be used as a tool for any stakeholder within the food system to be able to make informed decisions, as well as being used to inform policy and planning.

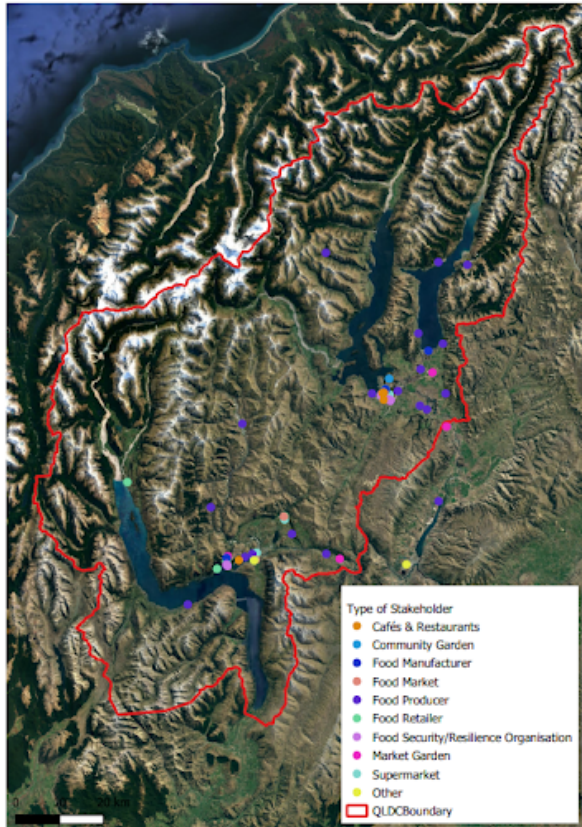


Figure 9. Screen capture of Stakeholder Register data in Food Map 2023

As a working example, we focused on hazelnuts to determine whether there is any potential to grow them in the region. Relevant layers and conditions were selected and then suitable areas where all conditions are met were displayed on the map. For hazelnuts, the following conditions were selected:

- Suitable annual rainfall for growing hazelnut trees (between 600mm and 1200mm)
- Suitable land productivity for tree crops (land use classes 2-6)
- No natural hazard risk (hazards included: avalanche risk, liquefaction susceptibility, erosion risk and landslide risk)
- No urban development (both the LUCAS settlement land as well as the proposed district plan zoning for urban growth boundaries have been excluded from potential hazelnut growing areas)

The map to the right shows in green areas where all these conditions are met and could therefore be suitable for the growth of hazelnut trees.

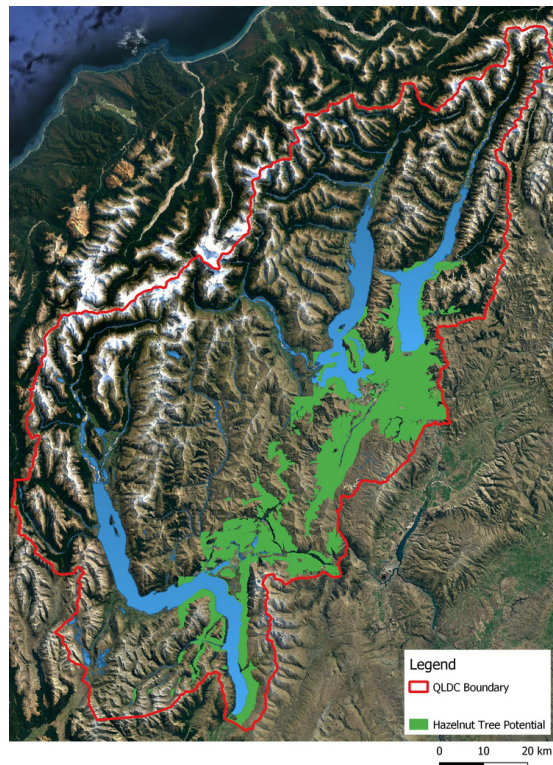


Figure 10. Screen capture of Food Map 2023 use for ideal hazelnut production



# STAKEHOLDER INTERVIEWS

To best understand our food system, we carried out 28 stakeholder interviews, with representation of all sectors. The below section details the methodology used and provides a summary of the main themes that came out of these discussions as well as the perceived risks, strengths and opportunities within the food system.

## Interviews Methodology

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The qualitative research used to garner stakeholders' views on the local food system was carried out between February and May 2023.

The local food system Stakeholder's Register included approximately 170 entities at the time we used it to identify the sample of people we would interview.

We ensured an equal representation between Wakatipu and Upper Clutha representatives, and included organisations, businesses and individuals from each sector. For the producers and the retail sectors we ensured a fair representation of small and large players.

We carried out 28 face-to-face surveys, using between 25 and 29 questions that were adjusted to each sector.

The open-ended questions allowed us to collect information on who we were speaking to, the main purpose and objectives of their business/organisation, their views on our local food system (with main risks, strengths and opportunities), and their thoughts about a local Food Network Group.

Interviews took between 40 minutes and 3 hours to be completed, were carried out by two interviewers in one-on-one conversations in the Queenstown Lakes District between 20 Feb and 30 April 2023, mostly on the premises of the interviewees.

Transcripts were collated for each interview. Some interviews were recorded (Audio) with the sole intent to allow easier transcription of the answers.

The aggregation of the interviews was completed by one person using thematic analysis: identifying patterns and coding responses, which then allowed us to identify recurring themes and give weight to each of them, allowing prioritisation. The themes are presented below, with quotes illustrating each of them.

The main difficulties were:

- obtaining contact details for large producers and supermarket owners/managers.
- Most producers were in their busy season with harvest in full swing, finding it difficult to make time to speak with us.
- Individuals aware of the lack of resiliency of our food system were more interested in speaking with us than those who aren't.



# COMMON THEMES IN INTERVIEWS

1

We are over reliant on bringing food into the district which makes us very vulnerable

"We are completely vulnerable to natural disasters, pandemics. Earthquakes here but also floods elsewhere. All our food comes from north of Tekapo, mainly Nelson, Canterbury plains or North Island"

*Large Producer*

"With most of our food coming from elsewhere, we are very vulnerable to supply chain disruptions. People are unaware of this. We need education to encourage community awareness & involvement."

*Organisation involved with food security*

"Southland and Otago production is 80% milk and red meat, and most of it for export. Very little vegetables and little to no grain"

*Large producer*

"Monocultures makes us fragile. If there was a disaster tomorrow we'd rely on helicopter food drops or we'd be eating milk, sheep and cows."

*Organisation involved with food resilience*

"Queenstown Lakes District is very vulnerable: we are a high population of consumers and low population of producers"

*Food retailer*

"There are 19 major land owners in Wanaka. They all produce meat. How do you get them to grow vegetables for the Wanaka community?"

*Large producer*

2

We do not grow enough produce locally nor have enough diversity in what we do grow across all sectors in the food system

3

Land is so expensive and is being used for urban development and there are concerns about succession for farmers

"Young people don't want to farm food, there is no interest in this and no money in it. I have no one to pass my knowledge on to"

*Small producers*

"Land use needs to be looked at: a lot of productive land goes into development/housing. Cost of land is a problem"

*Food manufacturer*

"We are losing productive land due to development consents being granted"

*Organisation involved with food resilience*



# 4

Local market too costly to get into as is cost and hurdle of compliance

“Selling locally via the supermarkets is an exercise in profit loss, their margins are simply too big”

*Small producer*

“I can’t sell meat locally without having it sent to an abattoir out of the region first due to compliance”

*Large producer*

“There is no way for me to sell my produce to locals and still make money”

*Small producers*

“Too many hoops to jump for compliance, it favours large scale food producers and volume rather than quality/local. It’s also hard for locals to buy local produce. The lack of farmer’s market is a big problem”

*Small producer*

# 5

Modern lifestyle makes it difficult to grow food and there is a risk of losing the knowledge on how to feed ourselves

“This generation has lost the knowledge of how to grow even basic food, and they don’t have the time to learn how again”

*Organisation involved with food security*

“So many of our people rent – they can’t dig up the garden and grow food, even if they wanted too”

*Organisation involved with food security*

“Most consumers are disconnected from our food system, from the practical realities of food. Some have a yearning to be connected”

*Small food retailers*

## RISKS TO THE FOOD SYSTEM

### NATURAL DISASTERS

There is a major concern about natural disasters, in particular earthquakes.

### CLIMATE DRIVEN WEATHER EVENTS

Like the recent floods in Hawkes Bay – this affects us as we rely so heavily outside our region for our food supply.

### PANDEMICS

There is significant worry about the occurrence of another pandemic like Covid.

### UNCONTROLLED TOURISM

This was raised several times as a risk for our food system. While some tourism was seen as a benefit, uncontrolled growth could pose a risk for our food system and its ability to cope with this.

### GROWING FINANCIAL UNVIABILITY OF THE FOOD SYSTEM

Often raised as a concern from several perspectives. From the growers and farmers perspective it was the fact that food prices don’t represent the true cost of food production, and the pressures were meaning it was hard to compete unless at an industrial scale. For those involved with food security, the cost of food increasing was a concern as there is becoming less ‘spare’ food to repurpose. A lot of concern was voiced around our ‘duopoly’ supermarket system.



# STRENGTHS & OPPORTUNITIES

Results of the survey show that the large majority believe locally sourced food is either very or extremely important to us. There were a number of ideas and solutions shared with us during the interview process, which could form part of the road map developed by the Food Resilience Network. Below summarises the main ideas and opportunities followed by the perceived strengths that came up .

- Development of a food Co Op or Food Hub – allowing viable access for farmers, growers, and producers to both selling to local market, and pooling certain resources.
- Development of shared processing facilities – this was mentioned many times. Things like local abattoirs, processing facilities for vegetables (washing, preparing, and packaging), grain milling, dehydration, preserving and community grains silos. *“If we had a local abattoir and a local mill, we would be able to provide the community with local meat and flour. The old Luggate grain mill should be restored and be used for milling locally grown grain”* – (Large producer)
- Development of a/more Farmers Markets – this concept was also raised many times, particularly by players in the Wanaka food system. This was suggested to create a viable route to local market for growers and producers. Many recognised that our tourism would support this.

## 1

We have a highly knowledgeable, passionate and innovative community in the food system

*“We are creating the blueprint to running a zero-carbon orchard, and we want to share this knowledge with other orchardist”*

*Small producers*

*“We are part of a worldwide movement to re-localise and de-industrialise food production”*

*Large producer*

*“We want to pass on all we know about growing food locally, that’s why we do this, because we care about teaching our next generations to grow”*

*Community garden*

*“If we can create a closed model food system in our community, we can show others how to follow suit – that’s why we are doing this”*

*Community compost and retail*

## 2

Tourism can be part of the solution to build a strong local food system

*“Tourism can help fund the growth of a local food system; this benefits our community. Tourists want to see local food and beverage and be a part of it, let’s use this to our advantage”*

*Organisation involved in food resilience*

*“Farmers Markets can be supported by our massive tourist numbers, and can help connect our locals and producers in a way that can make financial sense”*

*Small producer*

*“If we diversified, our food production could be the Upper Clutha’s biggest attraction: domestic food tourism, while at the same time making the community resilient”*

*Large producer*



### 3

We have space and natural resources to grow as do our neighbours

"We used to grow Oats anywhere in Wanaka. It's a good place for cereals, better than Southland or Otago. Here we don't have to dry the grain/cereal!"

*Large producers*

"We have the space to grow a lot of food, and a climate which facilitates awesome food growing over summer and food storage over winter"

*Small producer*

"We have a fantastic natural capital: land, growing season, sunshine hours - lots of opportunity for more local food production"

*Large producer*

### 4

We have an incredible food bowl in our wild spaces and we are able to hunt and forage

"We have a wonderful food resource of edible large natural pests, like deer, pigs and goats. They can feed our community and removing them helps our environment"

*Organisation involved with food security*

"Hunting is important in this district - lots of wild game: deer, goats, rabbits, tahr, pigs, that is underutilized in our food system"

*Small food retailer*

"If people learnt how again, foraging could supplement many meals, I see fruit trees with rotting fruit all the time, nuts going to waste, and edible greens growing completely untouched - these are skills that we could teach to help with food resilience"

*Organisation involved with food resilience*

### 5

We have a community keen to connect to the food system

"We have waiting lists to get a plot - people are wanting to begin to grow their own food, they just need the space to do it"

*Community garden*

"The children get a huge sense of pride and accomplishment from growing their own kai, especially when they get to cook with it"

*Education sector*



# BUILDING LOCAL FOOD RESILIENCE

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## What is a local Food Resilience Network?

In response to increasing concern around the lack of resilience in our food system, many communities have come together to forge responses aiming to strengthen local and regional food systems. Food Resilience Networks (FRN) or Food Policy Councils (FPC) are an example of one such response. For the sake of this report, we will use the terminology Food Resilience Network or FRN. Food Resilience Networks are groups of people which have come together to help develop recommendations and initiatives that support resilience and security within a community's food system. They are a way for a community to begin to develop a stronger system that is prepared for shocks and disruptions, but also to build a more localised and lower emission food system. By forming a network or food council, we can help our community to:

- Prepare for disruptive events by understanding our likely causes and improving our knowledge of how these shocks may manifest and effect our food supply.
- Adapt to human-made challenges to our food system better.
- Understand our unique local food system and develop initiatives within it to build resilience.
- Respond to likely disruptions more effectively by having plans in place that address the particular effects of previously identified risks.
- Build the population's food security – the more resilient a system is, the more food security tends to exist.
- Ensure we represent and engage all parts of our food system to help foster the collaboration needed to anticipate, prepare for, and reduce the burden of potential disruptions.
- Grow a lower emission, more circular food system.

A FRN tends to have a particular area or areas of focus depending on the community they serve. These areas of focus can include anything from food justice and equality, policy change, lower emissions food system, environmental justice, food economy, food security or food resilience.

## How does a Food Resilience Network operate?

There has been a groundswell of community networks with the purpose of either localising food supply or building resilience within a community's food system in recent years. The first known FRN was formed in Knoxville Texas in 1982. Since 2000 there has been a significant increase in these councils across the USA, with there now being over 198 groups in the US alone (*Santo, 2020*). Typically, an effective network would encompass representatives of all parts of a food system. The group would utilise its members' skills to develop projects which support the development of a community's food resilience. (*Growing Healthy Communities, 2013*).

Food resilience groups can help build connections across stakeholders and collaborate to improve health, food access, natural resource protection, economic development, and regenerative agriculture for the community's benefit. Using this cross-sector approach, food councils are best placed to solve broad food system issues and give communities more control over the food they consume. (Community Food Strategies, 2023).

Food Resilience and Food security tend to go hand in hand, and the more resilient a food system is, the more food secure the community tends to be. Preparing for disruption by way of a FRN can be highly effective in food security in the case of a disruption. This is well demonstrated in the John Hopkins Centre for a Liveable Futures 2020 report "*Pivoting Policy, Programs and Partnerships: Food Policy Councils' Responses to the Crises of 2020*" (Santo, 2020). Findings of the report show how communities with an established FRN at the onset of the COVID 19 pandemic were better prepared and supported through the pandemic. This was achieved in several ways including:

- Better systems for emergency food provisioning (and policy changes to support this)
- Pivoting of local food producers to support local community, and vice versa.
- Allowing farmers markets to remain open during the pandemic, supporting local food system.
- providing relief funding for food producers to allow them to continue producing for local market.

**"Because of our FPC, members had food systems networks and logistics in place to hit the ground running for distribution of food to community." Hawaii Good Food Alliance**

It also pointed out that the success of a FRN relies on a good cross section being represented in the network including:

- Growers
- Farmers
- Primary producers
- Manufacturers and processors
- Local government
- Food security non-profits and organisations
- Waste and recycling sector
- Distributors
- Public Health
- Retailers
- Sustainability groups
- Education sector

The FRN can be formed from within councils, or independently but with sanction, support and representation of local body government. The majority of FRN tend to be formed independently (Golzynski, 2020). This independent structure tends to be favoured as it gives better objectivity within the group, particularly when it comes to challenging policy. The structure and governance can be structured in many ways including:

- Independent non profits
- City, Ward, Region, Province, or National scope
- Regional bylaw
- Joint resolutions
- Formed under the umbrella of an existing organisation.

# SUCCESSFUL FOOD RESILIENCE NETWORKS



## New Haven Food Policy Council USA

The New Haven Food Policy Council in Connecticut, USA, is an example of a FPC which sits within a local government. The FPC advocated in 2012 to have a dedicated policy role in city government. The FPC sits within the Health and Human Service department and is funded by city’s general fund. The New Haven FPC focus is on food and environmental justice. It primarily focuses on food policy, targeting regulations at city level, practices within organisations and advocating for legislation at a state and federal level (New Haven Food Policy Division, 2021).

## Sustain, the Australian Food Network

Sustain, the Australian Food Network works at a national level, to help give individuals, communities, councils, and organisations the tools they need to move towards a more sustainable and resilient food system. Sustain was formed in 2014 and was built upon the original FRN group in Melbourne, the group largely consists of food resilience experts and consultants. It is a registered charity and states its objectives as:

- Supporting local governments to adopt and implement policies to protect, improve and promote the public health of their communities.
- Building the capacity of food system stakeholders to adopt and implement diverse changes to protect and enhance the health of all Australians.
- Establishing and co-ordinating the Australian Food Network.
- Facilitating the development of communities of food-system practice.
- Support and publish community-engaged food systems research; and
- Providing food systems advice, consultancy and training services for the promotion and development of healthy and sustainable food systems.

“We sow the seeds of change with Events, Policy Work, Practice and Thought Leadership, Capacity Building and Collective Action” – Sustain.

Sustain is funded by donations from philanthropic foundations, institutional support, and volunteers (Sustain, The Australian Food Network, 2023).



## Edible Canterbury NZ

Edible Canterbury is one of New Zealand longest running FRN's. Formed after the 2010/2011 earthquakes when the need for a more food resilient region was recognised. Originally the movement was about creating a network of organisation with shared goals around food resilience. A charter was developed and signed by numerous organisations in the region – including Christchurch City Council. Edible Canterbury is now a registered charity and has a board of trustees. Edible Canterbury works via three organisations as displayed in this diagram. Edible Canterbury is a registered charitable trust (Edible Canterbury, 2023)



## Bristol Food Policy Council UK

The Bristol Food Policy Council, formed in 2011, was the first FPC to be formed in the UK. This council was formed in response to a report written about the state of Bristol's food system. The council has members from the health system (NHS), public health, and several sustainability and food waste non-profits, a sustainable food systems consultant, a food judge, an economic development representative, a food wholesaler and a council representative. The Bristol FPC have identified their three key principles as:

- Good for people – everyone should have access to information and resources to allow them to grow, buy cook and enjoy good food.
- Good for places – support for food enterprises who promote local jobs and prosperity.
- Good for planet – food should be produced, processed, distributed, and disposed of in ways that benefit nature.



The group meets quarterly and primarily support a secondary organisation Bristol Good Food (Bristol Food Policy Council, 2023). Bristol Good Food is the vehicle for initiatives to be carried out. The initiatives range from a directory of food producers, to developing a charter, to holding events to educate around the key areas of:

- Eating Better – an example being a migrant-led Syrian cooking class.
- Urban Growing – an example being a community gardening session.
- Food Waste – an example being a free community meal put on by FoodCycle (a national non-profit similar to Kiwiharvest)
- Local Food Economy – Bristol street food tour (Bristol Good Food, 2014)

Both the Bristol Food Policy Council and Good Food Bristol are non-profit groups who rely on donations.

# POSSIBLE INITIATIVES

The goal of any FRN is to improve the food system they operate within. As touched on earlier each FRN will have a particular set of goals, priorities, and pathways to improvement dependent upon the community and food systems it serves. Initiatives can include (but not limited to):

- developing a food system directory
- policy change and lobbying
- developing community supported agriculture programs (CSA's)
- development or support of community gardens
- development or support of a farmers markets
- urban farms
- education in schools
- education in food growing practices
- community upskilling
- helping form beneficial partnerships and collaboration
- development of environmental or food hubs
- community planting
- local food processing centres
- food banks
- Helping develop infrastructure for diversifying food transport
- better food waste management and practices
- food business support and incubators
- social connection initiatives
- supporting any existing organisations working in the aforementioned.

The below sections sets out some examples of successful initiatives run elsewhere. These are included to spark ideas and conversations around the possible initiatives that could be run in the district.

## COMMUNITY OR URBAN FARMS

The Oakhill Farm is a community farm and food forest based in Melbourne City. It is supported by Sustain, The Australian Food Network and provides land, plants and training in urban agriculture. The land was transformed from a vicarage into an urban farm in 2012 and the local community was engaged to co-design the space. The farm is run by volunteers and all the produce is shared amongst farmers – excess being donated to local food relief initiatives. There is a focus on educating and upskilling first generation youth farmers. ([Oakhill Food Justice Farm | Sustain, 2023](#))



## COMMUNITY SUPPORTED AGRICULTURE (CSA)

In a CSA local farmers and producers, and local consumers share the costs and output of agriculture, allowing them to collectively plan their food production and consumption in relative independence of markets (*Hinrichs, 2000*). FRN's can be pivotal in orchestrating a community wide CSA which allows community consumers to support and access multiple food suppliers, and in turn allows food producers to support local community. Caerhys Organic Farm operates one such CSA. One of the first CSA's in Wales, Caerhys Organic Farm is located on the Pembrokeshire coast. It was formed in 2010 by a group of people including the farmer and landowner. Initially founding members donated seed and equipment and the CSA has grown from there. Members pay an annual fee upfront and in return get a monthly quota of seasonal fruit, vegetables, honey, and grain. Members are encouraged to volunteer on the farm, but it is not a requirement. The farm gives the opportunity for members to get involved in all aspects of the growing – to enhance their understanding (*Caerhys Organic Community Agriculture, 2019*)



## POLICY

The Baltimore Food Policy Initiative, which sits within the Baltimore City Council (Maryland, USA), has policy change as a key focus of their activities. They have made changes to policy to strive towards a more sustainable and fair local food system. Examples of successful policy changes made include working to update the city's zoning regulations to allow for more urban agriculture projects and updating Baltimore's health code to allow for the raising of chickens, rabbits, goats and bees within the city. An opensource food environment map was also developed in collaboration with the John Hopkins Centre for a Liveable Future. The maps' key purpose was to help inform policy decisions (*City of Baltimore website, 2018*)

## EDUCATION

Without doubt, supporting our children to reconnect with food in any way is beneficial for building our future resilience. Having children learn where their food comes from, how it is grown, and eating nutritious food is the most important step to developing a more resilient food future.

An example of work a FRN can do in this space is the Farm to School Program supported by the Food Policy Council of San Antonio (Texas, USA). The program has three focus's developing school gardens with garden-based learning, incorporating food and nutrition into the educational program, and ensuring the schools (who provide a meal for the children each day) source preferentially from local suppliers. (*Food Policy Council of San Antonio, 2023*).



## FARMERS MARKETS

Farmers Markets have a multitude of benefits to a community and its food resilience. It can offer a simpler and more cost beneficial route to the local market for growers and farmers, it offers the community access to locally produce food, it helps foster a sense of community between participants and customers, and it can create significant attraction to domestic and international tourists. FRNs can play the role of facilitator in developing a farmers market, or can simply support already established farmers markets. An example of this is the work that The Hunter College Food Policy Council of New York City. This Food Policy Council was established in 2014 via the advocacy of residents wanting to reconnect with agriculture and food. The group developed a set of resources which provided a guide and necessary resources for boroughs within the city to start their own farmers markets. The result is New York city now boasts 130 Farmers Markets through its 5 boroughs (*New York City Food Policy, 2021*).

# SUMMARY

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It is the intention following Phase One of the Food Resilience Protect to set in motion the formation of a Food Resilience Network in the district. Through the process of compiling this report and carrying out a district wide Hui on the 22nd May we hope to get a clear understanding from the food system players themselves about what sort of group might best serve our goal of developing a thriving and resilient local food system that both serves our community and is supported by it.

We live in a uniquely beautiful and precious part of Aotearoa. Our isolation and dramatic landscape bring us both great benefits, but also challenges when it comes to our food system. In times past we managed to feed ourselves with a fairly localised food system, which was by nature, a resilient one. As times have changed we have shifted away from this self-reliance to the system we have now, which has little diversity in its supply chain, and therefore significant vulnerability to shocks and crisis. We have become heavily reliant on a roading system to deliver us most of our food, supermarkets to provide us our food and a loss of knowledge around how to provide food for ourselves outside of this supply chain. Compounding this is the significant number of visitors we host throughout the year.

The time has come to begin to build food resilience back into our community, for our own health, sufficiency, economy, and connectedness. We have a food system that is passionate, innovative, and has the ability to form the basis of a thriving localised food system. The formation of a Food Resilience Network is perhaps the best first step we can take to realising the food future we want for ourselves, our community, and our future generations.

**Thank you to everyone who has contributed to this report. In particular we would like to thank the QLDC for funding the project, all of the businesses, organisations and individuals who took time to talk to us or fill out the survey. We have tried to reflect your ideas in this report. If you have any comments or thoughts, please get in touch.**

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