

From Farm to Fork

Project Report 2015

INVESTIGATING THE FOOD SYSTEM TO IMPROVE FOOD SECURITY IN THE EASTERN METROPOLITAN REGION

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From Farm to Fork: Investigating the food system to improve food security in the EMR

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Food insecurity is a growing concern in the Eastern Metropolitan Region (EMR) of Melbourne. There are speculations of an imbalance in the local food system, where an abundance of fruit and vegetables is produced within the EMR, yet food insecurity issues continue to exist. This project aimed to investigate the current supply chain of fruit and vegetables in the EMR, and to use a food systems approach to identify evidence-based, inter-sectorial and multi-strategy intervention options to address food insecurity.

The project lasted eight weeks and involved undertaking a literature review and stakeholder consultation to provide information about the current state of the food system and food insecurity in the EMR. Data was thematically analysed and coded into three main themes: Food Supply, Food Access and Governance.

Findings revealed that:

- Knowledge is lacking concerning the impact of the current food supply chain on food security in the region,
- Key barriers to accessing healthy food relate to nutrition-related knowledge and skills, financial resources and distance and transport to shops, and
- There are several key strengths and challenges in local councils' leadership and capacity to address food insecurity.

Recommendations include:

- Future local research to identify the impacts of the current food system on food security within the EMR
- Food access initiatives moving away from emergency food relief to long term, systemic change approaches, and
- Various ways for local councils to improve on current strengths and address key challenges, such as increased commitment by councils and strengthened regional leadership.



Vision

To promote a healthy, resilient and sustainable community within the Eastern Metropolitan Region (EMR) by achieving food security for all its residents.

Goal

To provide inter-sectorial and multi-strategy intervention options using a food systems approach to address food insecurity in the EMR (particularly the Cities of Boroondara, Manningham, Maroondah and the Shire of Yarra Ranges).

Objective 1

To identify at least three intervention options that address the existing barriers affecting the production, distribution and retail of fresh fruit and vegetables in the Cities of Boroondara, Manningham, Maroondah and the Shire of Yarra Ranges, by May 2015.

Objective 2

To identify at least three intervention options that address the existing barriers affecting vulnerable groups' access to and consumption of fresh fruit and vegetables in the Cities of Boroondara, Manningham, Maroondah and the Shire of Yarra Ranges, by May 2015.

Objective 3

To increase the knowledge and capacity of all staff of OEHCSA, IEPCP and at least 60% of key relevant stakeholders regarding future systems-based intervention options to address food insecurity in the Cities of Boroondara, Manningham, Maroondah and the Shire of Yarra Ranges, by May 2015.



Food Insecurity

Overview of food insecurity

Food security, defined as the 'ability of individuals, households and communities to acquire appropriate and nutritious foods on a regular and reliable basis, using socially acceptable means', is a basic human right and essential for good health [1]. Food security is a complex issue affected by multiple environmental determinants, which can be classified under the two broad headings of 'food supply' and 'food access' [1]. Examples of these determinants include the location and availability of food outlets, as well as the time and financial resources available to purchase and prepare food [1].

Food insecurity occurs when individuals have insufficient food, experience hunger and/or anxiety as a result of running out of food, or when they have to rely on food relief [1]. Food insecurity is associated with various negative health outcomes, including poorer quality of life. People who are food-insecure tend to consume a less varied diet, lower intakes of fruit and vegetables, and are also more likely to experience higher rates of obesity and associated chronic diseases like diabetes, hypertension, and cardiovascular disease [1-16].

Food insecurity in the Eastern Metropolitan Region (EMR)

The EMR is located in Melbourne, Victoria, Australia, and covers both the Inner East and Outer East catchments, comprising seven local government areas:

- Inner East: the City of Manningham, the City of Monash, the City of Boroondara, and the City of Whitehorse.
- Outer East: the Shire of Yarra Ranges, the City of Knox, and the City of Maroondah.

Food insecurity is a priority health issue within the EMR [17-20]. In 2011, the EMR experienced higher rates of food insecurity in a 12-month period (5.2%) compared to Victoria (4.6%) [21]. This report will focus primarily on EMR municipalities where food insecurity has been identified as a growing concern. These include the Shire of Yarra Ranges and the Cities of Maroondah, Boroondara and Manningham [21]. Local statistics show that food insecurity negatively affects EMR residents' health outcomes. In 2011, obesity and chronic disease (e.g. cardiovascular disease and diabetes) were more prevalent in areas of greater disadvantage in the four municipalities, where food insecurity rates are also highest [21-25]. Diet quality in general is also poor, with approximately 49.7% of residents in the four municipalities not meeting fruit and vegetable guidelines [21]. Extreme food insecurity leads to malnutrition and feelings of hunger and anxiety, contributing to poorer physical, mental, social and emotional well-being [2,17,22-26]. Reducing food insecurity and consequentially, negative health outcomes, is therefore a key priority health area within the EMR [27].

Project Aim and Background

The aim of this project is to improve food security in the EMR by improving the supply of fresh fruit and vegetables produced in the Shire of Yarra Ranges, to the rest of the EMR, given that the Yarra Ranges is a food bowl in the region. Indeed, the only municipality with significant commercial agricultural production in the EMR is the Shire of Yarra Ranges, which is known for its viticulture, horticulture and fruit farming [28]. Fruit growing alone is valued at a massive \$83 million [28]. Agriculture is a significant industry for the Yarra Ranges, occupying half of the municipality's rural land and contributing significantly to the municipality's employment sector [28, 29].

A 'broken' food system?

As mentioned previously, food insecurity is still prevalent within the EMR despite the enormity of agricultural production in the Yarra Ranges, with a growing body of evidence pointing to the existence of a 'broken' food system between the local¹ supply and demand of fruit and vegetables in the EMR [30]. A recent saw that fresh produce from the Yarra Ranges is largely transported to wholesale markets for sale in the cities (e.g. Footscray), requiring retailers from the Yarra Ranges to travel all the way to these markets to purchase their supply, before bringing them back to the Yarra Ranges for sale [20]. The rationale behind this is unclear, although large conglomerate corporations may have an impact [31].

There is also speculation that despite the abundance of food growth in the Yarra Ranges, food retailers in the EMR cannot meet their ever-increasing demand for fresh fruit and vegetables [20,30]. It is also not known whether, and how much, fresh produce from the Yarra Ranges is reaching the residents in the EMR, and if this is possibly contributing to food insecurity concerns there [30]. These uncertainties reflect the current lack of explicit and coordinated knowledge of how the local food system works, and how this impacts on food insecurity within the region.

From farm to fork: a food systems approach to food security

Therefore, this project seeks to investigate and understand the food system of the EMR as a whole, and to use a food systems² approach to identify evidence-based, inter-sectorial and multi-strategy intervention options to address the barriers to food security in the EMR. A food systems approach views public health issues as part of the wider food system, considering all the individual sectors of the food system as a whole and the interrelationships between them [32]. Given that food insecurity is a complex and multifactorial issue, a systems approach is arguably the most effective way to design and implement interventions to address food insecurity in a proactive, holistic and sustainable manner [29,32].

¹ In this report, the term 'local' will refer to fruit and vegetables produced only in the Yarra Ranges and distributed to the EMR.

² A food system describes the path that food travels from farm to fork, and comprises food supply (production, processing/packaging, distribution and retail), food access, and waste management [29,32].

Frameworks Underpinning This Project

Action research

The 'action research' approach undertaken in this project was not intentional but developed as the project progressed. 'Action research' is a flexible qualitative research process allowing action (change) and research (understanding) to be achieved at the same time [33,34]. It involves continual evaluation and reflection of new information gathered, which shapes the research design as the project progresses, ultimately generating a more informed response to changing situations [33,34]. This project took a three-stage approach to action research: 'look', where new information and varied viewpoints were received continually from stakeholders throughout the project; 'think', where this information was reflected upon and critically analysed in relation to the project's goals; and 'act', where changes were made in accordance with the new information received [33,35]. This helped incorporate the various viewpoints of stakeholders while simultaneously fine-tuning and focussing the direction of the project as it progressed.

Integrating food security and the food system

This report will use **Figure 1** as a conceptual framework to provide understanding as to how the food system and food security are connected. The term 'food system' used in this report is defined as comprising the food supply chain (production, processing/packaging, distribution and retail), food access and consumption, and waste management (**Figure 1**) [36]. Processing/packaging has not been considered in this report because this sector does not play a significant role in the supply of fresh fruit and vegetables. Additionally, waste management has not been included due to time constraints and it being viewed as a lower priority among stakeholders consulted.

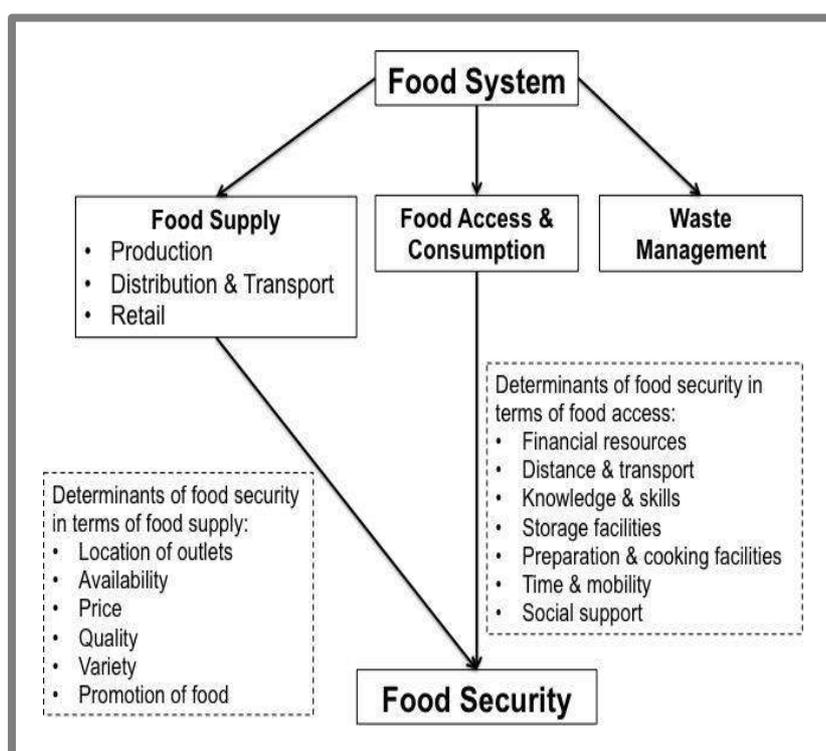


Figure 1: Diagrammatic representation of food security and the food system, adapted from the Department of Agriculture, Fisheries and Forestry (DAFF) and the New South Wales Centre for Public Health Nutrition [1, 36]

Food security is determined by both food supply and food access (**Figure 1**) [1]. The supply of food within a community affects factors such as the price, quality, variety and promotion of fruit and vegetables (**Figure 1**) [1]. Access to food in a community can be affected by factors like distance and transport to shops, financial resources, and knowledge, skills and preferences (**Figure 1**) [1]. These factors, individually or in combination, play a role in determining whether or not individuals and communities are food secure.

Data Collection and Analysis

A generic literature review was first conducted to develop a better general understanding of the food system and food security. With this understanding, consultations were then held with identified stakeholders to examine their perspectives on the state of the food system and food security in the EMR. At the same time, to add to information gathered from stakeholder consultations, a second literature review was conducted to understand food security-related information specific to the EMR (e.g. food security profile of the EMR community, current food security-related policies and programs). The search strategy for the literature review is documented in **Table 1** below. Both published scientific literature and grey literature were included. Altogether, a total of 102 relevant publications were identified. Data from both the consultations and literature review were then used for the analysis and to develop recommendations.

Table 1: Search strategy for literature review

Type of information required	Keywords	Databases consulted
General information on food systems and food insecurity	<p>'Food system', or 'Food supply chain', or 'Food distribution system' and 'Fruit' and 'Vegetables', and 'Australia' or 'Victoria'</p> <p>'Food security', or 'Food insecurity', or 'Food access', and 'Australia' or 'Victoria'</p>	<ul style="list-style-type: none"> ● Scientific literature databases <ul style="list-style-type: none"> ○ Scopus ○ PubMed ● Google scholar search ● Publications recommended by project coordinators ● Snowballing (using references of relevant reports and documents) ● Relevant websites <ul style="list-style-type: none"> ○ Official federal and state government websites ○ NOURISH database
Food security-related information for the EMR community (e.g. food security profile, current policies and programs)	<p>'Food security', or 'food insecurity', and 'policy', and 'programs', and 'Manningham', and 'Boroondara', and 'Maroondah', and 'Yarra Ranges'</p>	<ul style="list-style-type: none"> ● Publications recommended by project co-ordinators ● Snowballing (using references of relevant reports and documents) ● Relevant websites <ul style="list-style-type: none"> ○ Official state government websites ○ Official council websites ○ NOURISH database

Stakeholder consultations

Preliminary stakeholders were identified via referrals from project co-ordinators. Stakeholders consulted were also asked to identify other potential key contacts (snowball sampling method) that could add to the data collection process. These stakeholders were consulted because of their ability to provide in-depth information on the state of food security and the food system in the EMR, and/or have the power to evoke change in the local food system. In all, the following stakeholders were consulted: five staff members from the social planning and economic development departments of the four councils, three staff members from community health services, four fruit growers from the Yarra Ranges, seven independent greengrocers from the four municipalities, one agribusiness officer from an external council, and one independent policy researcher. Qualitative data was collected via semi-structured face-to-face interviews, phone calls and emails with these stakeholders. Approval was sought from stakeholders before each consultation to record interview sessions with an appropriate audio-recording device. There were four main questions for stakeholders, as described below.

Questions for stakeholders

The four questions below served as the basis for the consultations with key stakeholders. These questions were adapted to suit different stakeholders depending on their role in the food system and what information they could contribute to the project.

- What is the current state of food security and the food system in the EMR?
- What are the key challenges to food security in the region, in terms of food access and the local food supply?
- What is currently being done to address food insecurity in the region, in terms of food access and the local food supply?
- What do you hope to see in future that will address the existing challenges to food insecurity in the region?

Analysis of recorded data

Audio recordings of interviews were transcribed verbatim to allow for accurate analysis. Interview transcripts were then reviewed by all authors of the study, ensuring rigour and inter-rater reliability. Transcribed data were then extracted into a data analysis matrix, and, using a thematic analysis approach, coded into three main themes: ***Food Supply, Food Access and Governance***.

Thematic analysis

The theme of ***Food Supply*** was informed only from the stakeholder consultations and not from existing literature, due to limited local (EMR-specific) data relating to this theme. Thus, there was a need to capture new and current information from the stakeholders themselves that would help make

recommendations more relevant and tailored to the local context. The themes of **Food Access** and **Governance** were informed by both the stakeholder consultations and existing literature, because unlike the theme of **Food Supply**, there is already some local data in this area. However, new information relating to these two themes incidentally revealed through stakeholder consultations that were not present in existing literature were included to provide new insight. In all, these findings were used as a basis to provide evidence-based recommendations to improve food security in the EMR. This report is structured according to the three themes, with a separate section for recommendations, as discussed in the next section.

Results and Discussion

Food Supply: The Food Supply Chain and its Relationship to Food Security in the EMR

This section seeks to explore stakeholders' perspectives of the current state of the food supply chain in the EMR and if there are any factors in the production, distribution/transport and retail of fruit and vegetables that may affect the food security of the EMR community. As such, this section was informed primarily by stakeholder consultations, with statements supported by relevant literature where possible.

Overall, some stakeholders have acknowledged the presence of an imbalance in the local food system, where there is an abundance of fruit and vegetables produced within the EMR, yet food insecurity issues in the region continue to exist. As one stakeholder put it, "here we are with food on our doorstep and we cannot have it".

Production of fruit and vegetables in the EMR

The current supply chain of fruit and vegetables in the EMR follows that of an industrialised food system. This type of system emphasises large-scale, mechanised, and capital-intensive production and distribution methods oriented towards meeting global rather than local needs, and is usually dominated by a few large corporations [29, 37]. The vast majority of commercial produce grown in the Yarra Ranges is fruit (berries, apples and stone fruit) due to the unique soil and climate conditions, with minimal vegetables grown for commercial production. Hence, this project will focus on fruit growers as they are the industry primarily supplying the EMR at commercial scale. Fruit farming in the Yarra Ranges is "dominated by large-scale farms that have contracts with supermarkets" (*Council stakeholder*).

Overall, these large fruit farms have increased in number in recent years while smaller farms are declining. This occurrence may reduce overall production and availability of fruit in the region [38-41]. Stakeholders have highlighted a few reasons for this observation. Firstly, large-scale fruit farms in the Yarra Ranges are better equipped with the "necessary infrastructure and technology to allow them to produce large quantities of fruit at lower cost" (*Council stakeholders*). Supermarkets and large wholesalers therefore tend to favour large farms, reducing the available avenues for smaller farms to sell their produce [38].

Secondly, large-scale fruit farms tend to be “more resistant to constantly-changing climate and seasonal conditions than smaller farms” (*Council stakeholder*). This guarantees a consistent and regular supply of produce to suppliers [39-41]. In the Yarra Ranges, one stakeholder mentioned that a more pronounced “El Nino effect in the last two years has resulted in an increase in extreme weather events such as droughts that have adversely affected the production of fruit crops, particularly more so for smaller farms”. Many small-scale fruit farms in the Yarra Ranges are generational family businesses operating with traditional farming methods that may not have yet identified opportunities to diversify and value-add their produce, potentially making their farms less competitive in the industry [38]. Taken together, these factors reduce the ability of small-scale farms to compete with their larger-scale counterparts in an industrialised food system, potentially leading them to leave the industry [38, 39, 42].

While the overall size of fruit farms in the Yarra Ranges is increasing, the absolute number of farms is declining. This phenomenon is characteristic of an industrialised food system where there is monopolisation by large industrial farms [29, 32]. Such changing farm demographics may have an effect on the availability, quality, variety and price of fruit in the EMR, but stakeholders were unable to provide answers to these queries. There is some evidence to suggest that declining agricultural land mass has negative impacts on the viability of smaller-scale farms, but these do not provide an explicit link to food security [42, 43]. Hence, it is unknown to what extent these factors impact on food security in the context of the EMR.

Distribution/transport of fruit and vegetables in the EMR

Inefficient distribution may have impacts on the availability of fruit and thus food security in the region [43,44]. Of all fruit produced in the Yarra Ranges, “more than 50% is distributed within Victoria, with the remaining imported interstate or internationally” (*Council stakeholder*); however there are several barriers that impede the effective distribution of fruit to the EMR that are beyond the control of growers and suppliers. Stakeholders have highlighted a few reasons for this observed trend.

- The supply of fresh fruit from the Yarra Ranges is “volatile and depends on many factors such as market forces (determined predominantly by supermarkets) and seasonal conditions” (*Council stakeholder*) which may lead to an irregular supply of fruit in the EMR and possibly contribute to reduced food security [45-47].
- A large portion of the fruit grown in the Yarra Ranges is taken to a small number of large distant central warehouses, such as the Melbourne Wholesale Markets in Footscray (outside the EMR), only to be returned to the EMR to be sold by local retailers. This phenomenon of increased food miles is also characteristic of an industrialised food system [36]. These unnecessarily long food miles results in “higher prices due to higher transport costs and commission charges, and lower quality (freshness and shelf-life) due to extended transportation time” (*Council stakeholder*).

Evidence in other contexts support the observation that long food miles reduce the quality and increase the price of fruit and vegetables, thereby limiting availability and choice, especially for people living in rural areas [43,44,48-50]. Thus, ineffective distribution coupled with long food miles in the EMR is likely to have a negative effect on the price, quality and availability of fruit and vegetables and consequentially food access and food security in the region [43, 44]. However, there is still limited empirical evidence in the local context to determine if this is true.

Retail of fruit and vegetables in the EMR

A similar situation exists on the other end of the food supply chain. It appears that small independent fruit and vegetable retailers (greengrocers) in the EMR are decreasing in number which may also reduce the availability and access to fruit and vegetables in the region [17,18]. Indeed, there are “not much fruit shops any more...you can count [them] with your [fingers]” (*Council stakeholder*). Stakeholders have pointed out several reasons for this.

- Retailers find it difficult to keep prices competitive due to stifling from supermarkets (*Retail stakeholders*). There are also difficulties in keeping prices stable as small retailers are subject to price controls from wholesalers and price fluctuations from seasonal changes (*Production stakeholder*).
- Many small retailers do not have “systematic and uniformed delivery, ordering and payment systems, causing growers to favour larger retailers (supermarkets or large wholesalers) over them” (*Production stakeholder*). Growers find that it can be “costly to sell to them (small retailers) as they order a significantly smaller volume than larger retailers, which do not compensate for high transportation costs” (*Production stakeholder*). Small greengrocers in rural areas are especially hard hit because of the higher transportation costs to these areas [51].
- Retailers are facing “declining demand from consumers, who prefer to shop at supermarkets” (*Council stakeholder*), reducing their viability further.

These issues are common in industrialised food systems where there is domination of the market by a handful of large corporations [29, 32, 36]. Several studies have shown that having fewer greengrocers in a region limits the ability of individuals to access fruit and vegetables, especially in rural areas, increasing food insecurity [52-54]. There is some local research that have identified the locations of greengrocers in the Outer East (Maroondah, Knox, Yarra Ranges) through Geographical Information Systems (GIS) mapping, but this was done a few years ago and in limited areas [17,18]. Overall, there is still minimal evidence on the impacts of declining numbers of greengrocers on food access and food security in the local context.

Alternative Agri-food Networks (AAFNs)

'Alternative Agri-food Networks (AAFNs)' have also emerged alongside the current food system in the EMR. AAFNs refer to initiatives or networks that shorten the supply chain between producers and consumers [55]. There is strong evidence to show that such local initiatives are not only effective in securing local supply, but also help to improve access to and consumption of fruit and vegetables by bridging the gaps between food and people, thereby improving food security [56-58].

There are AAFNs in all four municipalities including community gardens, farmers markets, box schemes, and food swaps (See Appendix 2)[19,20,22-25]. Council stakeholders also highlighted the recent emergence of new and innovative initiatives connecting growers and retailers, and their potential to be tapped into to improve access to healthy food in the region - including "food cooperatives and food hubs, such as the Southeast Food Hub" (*Council stakeholder*). Such initiatives aim to bring local growers or retailers together to secure and promote local food supply and access in the region [59, 60].

Does the current food system contribute to food insecurity in the EMR?

While stakeholders have illustrated the nature and current trends of the fruit and vegetable supply chain in the EMR, it is uncertain whether, and to what extent, this impacts on food security in the region. Some stakeholders did suggest that food insecurity may be an unintended consequence of an industrialised food system being the dominant mode of production and distribution of fruit and vegetables within the EMR. However, evidence that an industrialised food system negatively affects regional food security is largely limited and conflicting.

The literature generally argues against industrialised food systems whilst promoting localised food systems as desirable alternatives to address food insecurity, but there is a lack of strong empirical evidence to confirm this [61]. There are also many disadvantages of a localised food system which need to be considered (e.g. producing locally may create economic losses owing to not maximising economies of scale) [61], and no reason to prefer one type of food system over another as evidence shows that the benefits or costs of any one food system in a region depends on the unique context, actors and agendas within that system [61]. Ultimately, there is very limited evidence on the effects of an industrialised food system on regional food security, especially in the local context.

**Food Access:
Barriers and
Current Initiatives
to Address Food
Insecurity in the
EMR**

This section seeks to provide information on the most common vulnerable groups in the EMR, their key barriers to accessing healthy food, and current initiatives in place to address food insecurity in the four municipalities. This section was informed by both the literature and stakeholder consultations.

Vulnerable groups in the EMR

According to the Victorian Population Health Survey 2011-12, the prevalence of food insecurity in the EMR is 5.2%, higher than the Victorian average of 4.6% [21]. Various municipal policy documents and stakeholder consultations have identified certain groups as being at increased risk of food insecurity in the EMR [22-25]. **Table 2** provides an overview of these groups.

Table 2: Vulnerable groups in the EMR

Municipalities	% food insecurity	Major groups at risk of food insecurity in EMR
Yarra Ranges	8.7	<ul style="list-style-type: none"> ▪ Residents living in rural or disadvantaged areas (Wesburn, Millgrove, Warburton, Healesville, Yarra Junction) ▪ Residents living in insecure housing ▪ Indigenous communities ▪ Migrants (Burmese)
Maroondah	6.5	<ul style="list-style-type: none"> ▪ People experiencing homelessness and insecure housing ▪ Low-income households ▪ Single-parent families ▪ People with a disability or mental health issues
Manningham	2.9	<ul style="list-style-type: none"> ▪ Individuals with low disposable income unable to match rising costs of living ▪ Low-income households — mortgage and rental stress ▪ Frail elderly ▪ People with a disability or mental health issues ▪ Migrants (Iranian) ▪ Single-parent families
Boroondara	1.8	<ul style="list-style-type: none"> ▪ Asset rich, cash poor residents ▪ Rooming house tenants (insecure housing) ▪ Frail elderly ▪ International students ▪ People with a disability or mental health issues

From **Table 2**, although the prevalence of food insecurity in Boroondara and Manningham is much lower than the Victorian average, it should be noted that previously undiscovered vulnerable groups which do not fall into the traditional definition of ‘food insecure’, such as individuals who are ‘asset rich, cash poor’ and ‘unable to match rising costs of living’, are rapidly surfacing and should not be overlooked.

Key Barriers to Accessing Healthy Food in the EMR

Distance and transport to shops

Physical access to food is determined by distance and transport to shops [19]. Stakeholder consultations and local research have identified limited transport options and great distances to food outlets as key challenges to accessing healthy food in the EMR. There are many food deserts³ in the remote areas of Maroondah and the Yarra Ranges, which have already been identified through GIS mapping in previous research [17,18]. Residents living in these areas often struggle to access healthy food, citing inconvenience as a major barrier [62]. A very low proportion of healthy food to fast food outlets exists in these areas [17-20,22-25], with stakeholders mentioning that there is “nothing (no greengrocers or supermarkets) out there for residents in Park Orchards and Wonga Park” (*Council stakeholder*) in Manningham. In the Yarra Ranges, there is “only one greengrocer in the more rural towns like Healesville” (*Council stakeholder*).

Despite these challenges, local councils in the EMR are beginning to recognise the importance of ensuring good physical access to healthy food in the region, with all four councils attempting to overcome these physical barriers. One of these include the provision of free or subsidised community transport for residents in rural or disadvantaged areas [19,20], such as the community transport service for the frail elderly to get to shops, run by volunteers from Eastern Health in the Yarra Ranges (*Community Health Stakeholder*).

Another current initiative bringing food closer to people include the establishment of AAFNs in rural areas, such as food delivery services and farmers markets [22-25]. However, there are concerns that many of these farmers markets tend to sell “pricier, gourmet items, targeted at higher-income consumers, and are held infrequently and located in inconvenient areas, making access to fruit and vegetables for difficult for them (the vulnerable groups)” (*Council stakeholder*).

³ Food deserts are defined as areas with limited access to healthy food such as fruit and vegetables, due to several factors such as a lack of public and private transport, low availability of food outlets, and great distances from where people live [62].

Financial resources

Financial resources refers to having sufficient money to obtain appropriate foods for good health, and is a key determinant of food security [1]. Consultations and local literature have highlighted a few major challenges in this area [17-20]. Firstly, costs of living, including fruit and vegetable prices, as well as the proportion of income spent on healthy food, have been increasing in recent years [19]. Residents who are unemployed or have low incomes are often the hardest hit, making healthy eating a low priority for these households [1,19,63]. This is because, when disposable income is limited, food is first to be sacrificed [1].

Consultations also indicated that a key challenge is often the perception that healthy food is more expensive than fast food or takeaway foods which may reduce willingness to purchase, as perceived cost is a key factor influencing the desire to purchase healthy food [1,64-66]. There have been general initiatives to provide aid to disadvantaged individuals to cope with the rising costs of living in the EMR to increase individuals' ability to afford food, including Victorian Government financial aid in the form of affordable housing to residents on low incomes (*Council stakeholder*).

Nutrition-related knowledge and skills

Possessing the knowledge to make healthy choices and the skills to prepare nutritious meals are key to improving food security [1, 60, 64]. Some vulnerable groups in the EMR may have a poorer understanding of food and nutrition, leading to trouble in selecting and preparing healthy foods on a limited budget; and may not have the tendency to select healthy food on a regular basis [17-19, 22-25]. To address this challenge, the four municipalities have developed a range of initiatives to improve the nutrition knowledge and skills of residents, including the "Bush Tucker" program in the Yarra Ranges teaches Indigenous members how to plan, grow, cook, harvest and prepare culturally appropriate and healthy food" (*Community Health stakeholder*). There are currently also commitments to improve healthy eating attitudes and practices in local councils' Municipal Public Health and Wellbeing Plans [22-25].

Social Support

Social isolation and lack of support disables many groups of individuals from participating in society, placing them at greater risk of poverty and hence food insecurity [67]. Some community organisations in the EMR have tried to encourage social inclusion through the sharing of meals with their neighbours. For example, the Casserole Club in Boroondara is a meal-sharing project that connects people who like to cook and are willing to share a portion of their home-cooked meal with older neighbours living close by [68].

Food relief and food redistribution systems

Food relief involves providing food and related assistance to tackle hunger in emergency situations [69]. The four municipalities currently have a variety of food relief work being carried out in their communities. These are in the form of community meals, community kitchens, food parcels or vouchers,

home-delivered meals, community transport and community health services (which also provides non-food-related help) [22-25]. All four municipalities also have food redistribution networks where several independent agencies collect and redistribute food to disadvantaged communities. These agencies include but are not limited to Australian Community Logistics, SecondBite, FareShare and Foodbank.

These food relief and redistribution initiatives may have a limited capacity to reach certain groups, especially the 'hidden' disadvantaged as mentioned earlier (e.g. asset rich, cash poor residents who may not fall into the traditional definition of 'food insecure') [70]. There is also evidence to show that although food relief strategies are not long-term, sustainable solutions [70-72], they do provide an essential, on the ground response to provide aid to individuals in need whilst other longer term changes are happening.

Governance: Key Strengths and Challenges to Addressing Food Insecurity in the EMR

This section seeks to describe the current strengths and challenges experienced by local councils in the EMR to address food insecurity in the region, and is informed by both stakeholder consultations and literature.

Overall, stakeholder consultations have highlighted the importance of the councils in directing and enabling effective and sustainable food security work in the region. Evidence also suggests local governments are one of the best sites from which to address food insecurity as they work closely with the community to achieve optimal health and wellbeing, and are able to influence multiple sectors across the municipality [27,73-76]. While there are key strengths in current initiatives to address food insecurity in the EMR, there are also areas where gaps exist or improvements could be made.

Legislation and Policy

A key strength of local councils' approaches to addressing food security is the increasing commitment using an upstream approach of creating supportive environments through policy. In response to the Food For All Program recommendations in 2010, all four municipalities have integrated food security as a priority into high-level policies and plans across various sectors of council, such as the Municipal Public Health and Wellbeing Plan and Economic Development Strategy [22-25,73,77]. Linking food security to policy secures political support and funding and helps to sustain the implementation of food security initiatives in the long term [78-80].

In the same vein, councils are recognising the importance of a multi-sectorial systems approach to food insecurity, by considering not just health-related policies but also policies tied to other sectors. Council stakeholders acknowledging that, for example, "food security can be integrated into land use planning" [81]. Additionally, there is ongoing and active work by councils to develop discrete food security policies for their respective municipalities. A unified food security policy helps coordinate councils' work, keeps the issue on councils' agenda, strengthens partnerships within council and with external stakeholders,

ultimately improving councils' capacity to address the multiple determinants of food insecurity [1,19,74,82-84].

However, a common challenge cited by stakeholders was the fact that there are limits to local government's capacities to address food insecurity (*Independent researcher*). This may be because many laws where food security can be positively influenced, such as urban planning and public transport, are beyond their control [31,74,75]. Additionally, there are some local laws that have an adverse effect on local food production, with multiple stakeholders commenting on "restrictive" local government laws that may discourage local farmers from growing, diversifying and selling their produce (*Independent researcher, Production stakeholder, Council stakeholder*). These regulations may eventually lead to reduced production and thus availability and variety of fresh produce in the EMR [79,85,86].

Leadership and Organisational Capacity

Many councils have displayed leadership by utilising their influences where possible to promote access to and consumption of healthy food. For example, Manningham City Council uses its powers in urban design and renewal to encourage the development of new healthy food outlets and promote the business of existing food outlets in activity centres. Other examples in Victoria include Brimbank City Council introducing new local regulations to allow food to be sold on council land, enabling the Braystone Mobile Fruit and Vegetable Van to park beside a council neighbourhood centre to sell fruit and vegetables to local residents [75].

Manningham City Council has also tried to use a progressive approach, "tapping into existing initiatives where we can to implement food security measures" (*Council stakeholder*) such as establishing business partnerships between local fruit growers and the existing Southeast Food Hub. Identifying and utilising leverage points is an effective way to implement initiatives [87]. Other key strengths include the establishment of partnership and research bodies dedicated to collaborative planning around food security, such as the Nourish Food Fairness Outer East Network and the Inner East Food Think Tank [88,89].

A common issue found across stakeholder consultations was that while there are current commitments and support for food security in the EMR, more could be done as a region to plan, implement, sustain and advocate for food security initiatives as a whole. Evidence indicates that political will and leadership are important factors in creating a supportive environment to enable long-term planning and to secure funding for effective interventions to be implemented and sustained [78,80]. Stakeholders have indicated that individually, local councils are limited in their capacity and need to act collectively as a region if food insecurity is to be addressed (*Council stakeholder, Independent researcher*).

The following recommendations are targeted at local councils and stakeholders involved in the issue of food security in the EMR (e.g. community health services, policy researchers). These recommendations are based on the above findings, as well as informed by both the literature and stakeholder consultations.

Food Supply

Recommendation 1: Build a more complete understanding of the current food system in the EMR and how it impacts on food security, in the local context of the EMR.

Given that this project was the first of its kind to investigate the nature of the fruit and vegetable supply chain in the EMR, further local research to build a more complete picture of the food supply chain and the food system of the EMR as a whole would be beneficial. Additionally, the project findings revealed a lack of understanding on how the current industrialised food system affects food security in the region. More research could therefore be undertaken to determine the potential impacts of the current food system on food security and on the local food economy, within the local context.

Specifically, further investigation could determine the net effects of changing farm demographics (increasing numbers of large corporate farms, declining numbers of small farms) in the Yarra Ranges, and the overall impact of inefficient distribution and long food miles on the availability, price, quality and variety of fruit and vegetables, and on indicators of food access and food security within the EMR.

More investigation could also determine the long-term effects of declining small independent greengrocers in the EMR on the accessibility of

fruit and vegetables in residential areas, particularly in rural areas. An assessment of local conditions and leverage points would assist to better understand how to use this information to improve food access and food security in the region.

A significant limitation of this project was the sole focus on the Yarra Ranges as the source of fresh produce to the EMR. Given that the Yarra Ranges mainly supplies fruits over vegetables on a commercial scale to the EMR, more local research could determine the supply and distribution of fruit and vegetables from other agricultural production sites within the EMR.

Recommendation 2: Tap into Alternative Agri-Food Networks (AAFN) as a potential means to improve food security in the EMR.

Local councils could tap into AAFNs as an avenue to improve food security in the EMR, as there is strong evidence that such initiatives help to improve access to and consumption of fruit and vegetables in local communities [18,20]. Specifically, stakeholders have highlighted that they “would like to see more innovative business enterprises, such as food cooperatives, food clusters and food hubs” (*Council stakeholder*). This could involve developing initiatives that “pull together small independent retailers to create sufficient demand and develop more systematic ordering systems” (*Production*

stakeholder), in order to encourage local growers to supply to them and thus ensure their viability. Such cooperatives have shown to work in other contexts [18,32,82,84,96]. However, this is still a relatively new area in the EMR and additional research would be required to ascertain if these initiatives are viable and sustainable in the local context.

Food Access

Recommendation 1: Improve access to healthy food by addressing local hurdles to get food closer to people and people closer to food, especially for vulnerable communities.

The project findings highlighted that distance and transport to shops are a key challenge, especially for residents in rural and/or disadvantaged areas. While councils are already implementing many initiatives targeted specifically at reducing these barriers, stakeholders have identified the need for more convenient and affordable access to fruit and vegetables.

For example, as mentioned above, farmers markets and other food access initiatives in the EMR are often “boutique initiatives selling pricier, gourmet items targeted at higher-income consumers” (*Council stakeholder*). Evidence suggests that this is a common phenomenon, and can create negative perceptions of such initiatives being unaffordable and inequitable [56,90]. To avoid this problem, the EMR could have more food access initiatives providing access to affordable,

healthy food for the low-income community, which are clearly marketed as such.

For example, the now defunct Mount Evelyn Affordable Food Market was explicitly set up for disadvantaged residents living in the area to have convenient access to fresh fruit and vegetables at lower cost [20]. One way to do this is for local councils or community health services to work with farmer’s markets unions to create criteria for such markets to take place [20].

Recommendation 2: Improve the efficacy and sustainability of nutrition-related education and awareness initiatives.

The project findings indicated that the culture of practicing healthy eating habits may be declining in some residents in the EMR, which may be due to having limited knowledge and practical skills to select and prepare healthy meals [91]. Stakeholders have identified several sustainable ways to deliver nutrition-related education initiatives that can develop residents’ knowledge and skills of healthy eating in the long term.

Firstly, initiatives could be integrated into existing educational programs as part of an overall holistic approach rather than a pure focus on nutrition; given that food and nutrition forms a part of daily life and needs not to be considered in isolation [92]. Programs sustained over the long term as opposed to one-off sessions would also enable and support skill development over time [92]. Additionally, stakeholders have mentioned that such educational programs emphasising practical

aspects of healthy eating, such as where to access healthy food, and how to cook and prepare healthy meals on a limited budget would be useful. This could be delivered through resources such as pictorial booklets and food outlet and public transport directories [75]. A successful case example is that of Brimbank City Council's *Welcome Kit*, which contained fact sheets on how to purchase, store and cook food, a local map to locate fruit and vegetable outlets, and a public transport timetable. This kit was used as a teaching tool as part of English language and healthy eating courses for migrants [75]. Local councils could follow this example by collaborating with other organisations delivering educational programs to residents, such as community centres.

Secondly, schools are an ideal setting to deliver key health and nutrition messages and develop healthy life habits, given that lifestyle habits and behaviours created during the childhood years are likely to continue into adulthood [92]. Introducing nutrition education in schools was also recommended by literature and previous reports, as this helps to develop the culture of healthy eating from an early age [20,92,94].

An example is the Be Active Eat Well program, specifically evaluated in Colac, Victoria [99] which led to successful improvement of children's eating habits (higher fruit and water consumption) through multiple healthy eating initiatives (e.g. healthy breakfast days, healthy lunchbox tip sheets, fruit shop displays).

Local councils could follow suit and collaborate with schools and organisations that support

health and wellbeing initiatives (e.g. Healthy Together Victoria's Achievement Program and Healthy Eating Advisory Service) to develop and implement health promotion programs in pre-schools and primary schools [100]. Eastern Health's 'Crunch and Munch Healthy Lunch' initiative is another successful local initiative changing the culture around healthy eating in primary schools in the Yarra Ranges, and could be replicated in other schools in the region [101].

Recommendation 3: Embrace a longer-term systems approach to address food insecurity in the EMR.

While emergency food relief provides the essential, on the ground response to provide aid to those in need, concurrent longer-term systems approaches are needed to enable a generation of more sustainable interventions that can effectively address food insecurity [71].

Governance

Recommendation 1: Strengthen regional leadership to address food insecurity by strengthening regional food networks, with cross-council and cross-sectorial membership, to guide and enable food security work across the region.

Although councils have made immense progress in their commitment towards food security in recent years with the establishment of inter-council working groups, research bodies and partnerships such as the OEHCSA and IEPCP, consultations suggested more could be done at a regional level to coordinate leadership and

resources to tackle food insecurity as a whole, in the EMR.

Given that many potential action areas to address food insecurity, such as in urban planning and public transport, are beyond local governments' realm of control [31,73-75], stakeholders highlighted the need for councils in the EMR to "act collectively, so as to empower the region to advocate to higher levels of government, and to enable the development of integrated plans for effective and sustainable systems-wide food security measures" (*Independent Researcher*), across all municipalities.

An example of a coordinated regional leadership effort is that of the Healthy Eating Local Policies and Programs (HELPP), an initiative led by Flinders University, to assist local governments in the state to develop and implement healthy eating policies [95]. The initiative provided help and support to local governments by creating a framework that all councils could adapt to create their own food policies. Although the project ended in 2013, work continues with materials, programs and healthy eating policy resources available for any local government or organisation wanting to increase work in this area [95].

Recommendation 2: Improve on key strengths and address current challenges in local governments' capacity to address food insecurity in their municipalities.

Many key strengths have been identified through stakeholder consultations that councils can continue to build upon.

Councils could continue to maximise their various available avenues to promote and support access to and consumption of healthy food in their municipalities where they can. This can be in urban design and renewal, regulatory and fiscal powers, or enforcement [1,73,75,84]. The Food For All Program 2005-10 lists many examples of councils within Victoria, such as Wodonga and Brimbank City Council, that have successfully used their local influences to drive change in food security [75,96]. Actively monitoring and tapping into existing initiatives as a leverage point to address food insecurity could be an option, as rather than reinventing the wheel, local governments can utilise initiatives and resources that have a proven track record [87,97].

Lastly, councils could continue to integrate food security into council policies and plans to ensure longer-term, sustained outcomes [19,74,75,79,83], such as consideration for food security in local laws and regulation relating to production, distribution and retail of fruit and vegetables for example [1,74,75,82,84,98]. One stakeholder suggested reviewing regulatory and fiscal regulations surrounding local agriculture, so as to create a supportive environment for local farmers to grow, diversify and sell their produce, and to be competitive in the local market (*Independent Researcher*).

Opportunities to further improve local council capacity to address food security were identified by stakeholders. This included continued commitment and interest in food security as a priority area on their agenda, which is important for collaborative action across councils to occur.

Evidence shows that reorientation of priorities is needed to create the political will and support for a whole-of-organisation approach to implementing initiatives [78,80]. This could be achieved by harnessing existing and developing new food security coalition/working groups and discrete food security policies to direct food security work, conduct research, allocate resources, and advocate for food security both within and beyond council [1,75,78-80,82,84,102]. The role of a 'champion' could be assigned to direct food security efforts within the organisation [75,82,84,95].

A need was also recognised to identify, establish and strengthen partnerships between councils and key stakeholders to support the development of food security initiatives across all sectors in the system [74,78,80,84,87], as strengthened partnerships, especially with higher levels of government and with health system networks in the region may be a means to access vulnerable groups (*Independent Researcher*); and with landowners to increase access to land for local farming (*Council stakeholder*). Councils can also use existing regional networks such as the OEHCSA and IEPCP to expand partnerships [88,89].

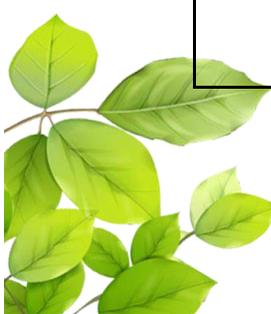
Lastly, given that food security is a complex issue requiring a long time for change to be realised, there is a need for sustained and persistent advocacy, which has found to be effective in driving change [78]. Collectively advocating as a region to higher levels of government could create greater bargaining power to influence areas that are beyond individual councils'

control (*Independent Researcher*). Stakeholders have also called for more advocacy around increased research work for food security in the region.



Summary of recommendations

Food Supply	Food Access	Governance
<p>Build a better and more complete understanding of the current food system in the EMR and how it impacts on food security, in the local context of the EMR.</p> <ul style="list-style-type: none"> ▪ Further investigate the net effects of changing farm demographics, inefficient distribution, and long food miles on the availability, price, quality and variety of fruit and vegetables, and on indicators of food access and food security within the EMR. ▪ Determine the potential long-term effects of declining numbers of small independent greengrocers on the accessibility of fruit and vegetables in residential areas, particularly in rural areas in the EMR. ▪ Conduct further research to build a more complete picture of the food system in the EMR as a whole, including other agricultural production sites beyond the Yarra Ranges, to better understand how to use this information to improve food security in the region. <p>Tap into Alternative Agri-Food Networks as a potential means to improve food security in the EMR.</p> <ul style="list-style-type: none"> ▪ Improve connections between local growers and retailers to increase the supply of, and access to, fruit and vegetables in the EMR. 	<p>Address local hurdles to getting food closer to people and people closer to food, especially for vulnerable communities.</p> <ul style="list-style-type: none"> ▪ Implement more food access initiatives providing convenient, affordable and equitable access to fruit and vegetables for disadvantaged communities. <p>Improve the efficacy and sustainability of nutrition-related education and awareness initiatives.</p> <ul style="list-style-type: none"> ▪ Integrate initiatives into existing educational programs as part of an overall holistic approach. ▪ Emphasize the practical aspects of healthy eating when delivering educational programs. ▪ Start early - schools are an ideal setting to deliver key health and nutrition messages. <p>Embrace a longer-term systems approach to address food insecurity in the EMR.</p> <ul style="list-style-type: none"> ▪ A systems approach provides a proactive and sustained way to effectively address the key determinants of food insecurity. 	<p>Strengthen regional leadership to address food insecurity.</p> <ul style="list-style-type: none"> ▪ Build upon existing regional food networks, with cross-council and cross-sectorial membership, to guide and enable food security work across the region. <p>Improve on local governments' current strengths to address food insecurity in their municipalities.</p> <ul style="list-style-type: none"> ▪ Continue to: (1) Maximise councils' capacities to promote and support healthy food, (2) Tap into existing initiatives, and (3) Integrate food security into policies and plans to ensure longer-term, sustained outcomes. <p>Address current challenges in local government's capacity to tackle food insecurity in their municipalities.</p> <ul style="list-style-type: none"> ▪ Increase awareness and commitment across all sectors of council to prioritize food insecurity on council's agenda and for collaborative action to occur. ▪ Identify, establish and strengthen partnerships between councils and key stakeholders to support the development of food security initiatives across all sectors in the entire system. ▪ Long-term and sustained advocacy as a region to higher levels of government, to create greater bargaining power to influence areas that are beyond individual councils' control.



Food insecurity is a growing concern in the EMR. This project is the first of its kind to take a food systems approach to identifying inter-sectorial and multi-strategy options to address food insecurity in the EMR, with a focus on four of its municipalities (the Shire of Yarra Ranges and the Cities of Manningham, Maroondah and Boroondara). The project involved undertaking a literature review and stakeholder consultation to provide information into the current state of the food system and food insecurity in the EMR.

The results revealed insights into three main themes: the food supply chain, food access, and governance for food security in the region. In terms of food supply, findings revealed that the supply and distribution of fruit and vegetables in the EMR follows an industrialised food system, but knowledge is lacking concerning its impact on food security in the region. For food access, the major vulnerable groups in each of the four municipalities and their key challenges to accessing healthy food were identified and described. These challenges include distance and transport to shops, financial resources, nutrition-related knowledge and skills and social support. Current initiatives were also described and include various policies, programs and initiatives to address the main challenges to food access in these municipalities. Governance for food security was another important theme arising from the data analysis. This section described current strengths and challenges experienced by local councils in the areas of legislation and policy, and in leadership and organisational capacity. Recommendations were then drawn on the basis of these findings, and written in accordance of the three themes.

In terms of food supply, more local research to better understand the current food system and to determine its impacts on food security within the EMR's context would be beneficial. Local councils could also continue to support AAFNs as an avenue to improve local access to fruit and vegetables in the EMR. With regards to food access, three key areas were highlighted, including targeting local food access initiatives to the more vulnerable groups, enhancing the efficacy and sustainability of nutrition-related educational initiatives, and focusing on systemic-changes to address the determinants of food security.

Overall, increased awareness and commitment for food security across all council departments, continued integration of food security issues into policy, and partnerships with relevant stakeholders are advised. Regional leadership is also crucial to create leadership and to empower advocacy to higher government for change to happen.

Limitations of this project

Time constraints and scope of project

This project's overall timeframe of only eight weeks limited its scope. Out of the seven local government areas in the EMR, this project could only focus on four municipalities. The lack of time also resulted in the exclusion of waste management in the food system, with focus being placed on the remaining sectors of the food system that were deemed more important instead.

Lack of responses from stakeholders

A limitation of this project was the representativeness of participants. The total number of stakeholders consulted was fewer than expected, as several stakeholders were either out of office or were unable to hold consultations within the project's timeframe. Additionally, contact was unable to be made with some relevant stakeholders despite numerous attempts. Specifically, there was an under-representation of growers and retailers, and the small sample size may have an impact on the significance of our results and the relevance of our recommendations.

Limited previous exposure

The authors of this study are dietetics students with minimal exposure to the workings of local government. Consequently, significant time was spent meeting with stakeholders and reading documents in this area before data collection and analysis could begin. Also, the lack of knowledge may have resulted in relevant stakeholders incidentally being left out and thus not consulted, affecting the generalisability of the results.



Appendix 1: Stakeholder consultations

List of stakeholders consulted

Stakeholder consulted	Method of consultation	Date consulted
Councils		
Boroondara Council	Meeting	20 April 2015
Yarra Ranges Council	Meeting	8 May 2015
Manningham Council	Meeting	19 May 2015
Maroondah Council	Meeting	30 April 2015
Mornington Peninsula Shire	Phone call	7 May 2015
Non-government organisations		
Inner East Community Health (IECH)	Meeting	20 April 2015
Inspiro	Meeting	23 April 2015
Eastern Health	Phone call	4 May 2015
Social Policy, Research and Facilitation Services	Meeting	11 May 2015
Fruit and Vegetable Growers (Yarra Ranges)		
YV Fresh Produce	Email	4 May 2015
Rayners Orchard	Email	4 May 2015
Sensational Berries	Email	5 May 2015
Fruit and Vegetable Retailers		
Kilsyth Warehouse (Maroondah)	Meeting	12 May 2015
Ringwood Fresh Green Grocer (Maroondah)	Phone call	4 May 2015
Launch Fresh Fruit and Vege (Yarra Ranges)	Phone call	4 May 2015
Village Greens (Organic) (Yarra Ranges)	Phone call	4 May 2015
The Groovy Fruit Shop (Yarra Ranges)	Phone call	4 May 2015
Aumann Family Orchard (Manningham)	Phone call	4 May 2015
Canterbury Fruit Emporium (Boroondara)	Phone call	4 May 2015
Balwyn Fruit Supply (Boroondara)	Phone call	4 May 2015

Appendix 2: Directory of Current Policies and Initiatives in the EMR

Municipality	Current Policies	Current Initiatives <i>(NB: These are based on literature and stakeholder consultations and are not exhaustive)</i>
Yarra Ranges	<p>Council Public Health and Wellbeing Plan 2013-17</p> <p>Green Wedge Plan</p> <p>Food Strategy <i>(in development)</i></p> <p>Inspiro Integrated Health Promotion Plan</p> <p>Eastern Health Integrated Health Promotion Plan</p>	<p>AAFN</p> <ul style="list-style-type: none"> Box schemes/delivery services e.g. Yarra Ranges in a Box (for individuals with a disability) Supermarket home delivery services Community gardens ECOSS <p>Food relief</p> <ul style="list-style-type: none"> Food relief/food support work e.g. Anglicare Community kitchens/cafes Food parcels, drop-in meals Food vouchers <p>Food redistribution</p> <ul style="list-style-type: none"> SecondBite Food banks <p>Community transport</p> <ul style="list-style-type: none"> Free community transport for elderly to help them with shopping
Boroondara	<p>Council Public Health and Wellbeing Plan 2013-17</p> <p>IECHS Integrated Health Promotion Plan 2009-12 - Addresses food insecurity with a focus on social inclusion.</p> <p>Food security commitments in other policies: Disability Access and Inclusion Plan 2013-17</p> <p>Our Low Carbon Future Action Plan 2012-16</p> <p>Preparing for Climate Change Report</p>	<p>AAFN</p> <ul style="list-style-type: none"> Farmers Markets – Boroondara Farmers Markets, Camberwell Fresh Food Market 'Buy local' social enterprise – OurGrubHub Box schemes Food delivery services Food cooperatives Food Swaps – Balwyn Community Centre Food Swap, Hartwell/Burwood Food Swap Community gardens – 9 listed community gardens Gardening groups, gardening support <p>Food redistribution</p> <ul style="list-style-type: none"> SecondBite FareShare FoodBank <p>Food relief</p> <ul style="list-style-type: none"> Community meals (community lunches, cheap eat brochures, social cafe meals, Casserole club) Centre-based meals Home-delivered meals (e.g. meals on wheels) Community kitchens Food parcels <p>Community transport</p> <ul style="list-style-type: none"> Public transport options can be accessed within 500m of supermarkets
Manningham	<p>Public Health and Wellbeing Plan / Healthy City Plan</p> <p>Economic Development Strategy</p> <p>Rural Land Use Strategy (under development)</p>	<p>AAFN</p> <ul style="list-style-type: none"> Community gardens and school gardening programs - in collaboration with Doncare Community Services, excess produce donated to Doncare's foodbank Community education (growing food) - Home Harvest Program Food co-ops (under development) - Establishing partnerships between existing local growers and food

	<p>Disability Access and Inclusion Plan 2013-17</p> <p>Food Security Policy (under development)</p>	<p>hubs e.g. Southeast Food Hub</p> <p>Community transport</p> <ul style="list-style-type: none"> Community buses for frail elderly in retirement villages/homes
Maroondah	<p>Community Wellbeing Plan 2013-17 (Municipal Public Health and Wellbeing Plan)</p>	<p>AAFN</p> <ul style="list-style-type: none"> Community garden (Bayswater) <p>Food redistribution</p> <ul style="list-style-type: none"> Australian Community Logistics SecondBite FoodBank <p>Food relief</p> <ul style="list-style-type: none"> Community meals - Breakfast programs, Community lunches and dinners Food parcels Food vouchers

Appendix 3: Thematic analysis of key stakeholder consultations

Theme	Key Strengths	Key Challenges	Future Recommendations
Governance	<p>Leadership and Organisational Capacity</p> <ul style="list-style-type: none"> Maximising local government powers Opportunistic (piecemeal) approach <p>Legislation and Policy</p> <ul style="list-style-type: none"> Discrete food security policy (still currently under development) across all council departments Health, Social and Economic Development: <ul style="list-style-type: none"> Municipal PHWP (food security is included as a priority health area) Economic Development Strategy (considering it as a means to take a food security spin on business development) Disability Access and Inclusion Plan Environment and Land Use Planning: <ul style="list-style-type: none"> Rural Land Use Strategies (promote food production, processing and retailing in rural land) Green Wedge Management Plan (retain agricultural land) 	<p>Leadership and Organisational Capacity</p> <p>There could be enhanced leadership, support and commitment across, within and between councils in the region to plan, implement, sustain and advocate for food security initiatives (reasons: limited of food security policies, food security coalition/working groups)</p> <p>Legislation and Policy</p> <ul style="list-style-type: none"> Local governments are limited in their capacity to implement sustained change: some laws where food security can be positively influenced are beyond local government control e.g. urban planning and public transport 'Unfriendly' local laws discourage local farmers from growing, diversifying and selling their produce e.g. over- 	<p>Leadership and Organisational Capacity</p> <p>Build on the following strengths:</p> <ul style="list-style-type: none"> Continue to use existing initiatives as a leverage point to implement new food security strategies Continue to maximise local government's various ability to promote and support access to and consumption of healthy food (e.g. Urban design and renewal; Enforcement, Regulatory and fiscal powers) <p>Improve in the following areas:</p> <p>Improve council's capacity to address food insecurity:</p> <ul style="list-style-type: none"> Adopt a whole-of-council approach by increasing awareness, interest and commitment to food security from all sectors of council Enhance existing food security coalitions or working groups to direct food security work, conduct research, allocate resources, and advocate for food security

	<p>Financial and Other Resources</p> <ul style="list-style-type: none"> • Supporting local farmers through reduced council rates (Yarra Ranges) • VicHealth funds 'buy local' initiative by Inspiro 	<p>restrictive/prescriptive rules and regulations, lack of financial support, additional charges/fees/taxes etc</p> <p>Financial and Other Resources</p> <ul style="list-style-type: none"> • There is lower levels of financial, intellectual and entrepreneurial support from the government for local farmers to make their business more profitable 	<p>both within and beyond council</p> <ul style="list-style-type: none"> ■ Assign a champion for food security within council or the food security coalition itself ■ Ensure the sustainability of food security strategies through well-developed plans, organisational capacity development, planning for funding, linking food security to legislation, and consistent monitoring and evaluation of strategies <p>Develop regional leadership:</p> <ul style="list-style-type: none"> ■ Enhance existing regional food coalitions and/or policies, with cross-sectoral membership, to guide and enable food security work across the region <p>Legislation and Policy</p> <p>Address both food security and the local food system</p> <p>Build on the following strengths:</p> <ul style="list-style-type: none"> ○ Continue to develop discrete food security policies ○ Incorporate food security issues into local policies and plans <p>Improve in the following areas:</p> <ul style="list-style-type: none"> ○ Explicit linking of food security to legislation, making it mandatory for governments to enforce it (i.e. a policy with 'teeth') ○ Review local laws to create a supportive environment for local farmers to grow, diversify and sell their produce, and to be competitive in the local market <p>Community Development and Capacity Building</p> <p>Local farmers: Invest in initiatives that can support them to develop skills to make their business more profitable</p> <p>- e.g. farmer training</p>
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			<p>- Next generation farmers grants (Aus)</p> <p>Partnerships and Collaboration</p> <p>Identify, establish and strengthen partnerships between all levels of government, private organisations, industry, commercial businesses, community organisations and the community, to support the planning and implementation of effective food security initiatives</p> <p>Advocacy</p> <p>Advocate collectively to federal government as a region to create greater bargaining power to influence areas (e.g. urban planning and public transport laws) that are beyond the councils' control. Also, advocate for increased research work and initiatives around food insecurity to other councils in the region</p>
Theme	Key Strengths	Key Challenges	Future Recommendations
Food Supply	<p>Alternative Agri-Food Networks (AAFN), Short Food Supply Chains (SFSCs), Local Food Systems (LFS)</p> <ul style="list-style-type: none"> ● Established initiatives: <ul style="list-style-type: none"> ○ Community gardens ○ Farmers markets ○ Community Supported Agriculture - box schemes/delivery services, food swaps, food cooperatives ○ Gardening groups/programs ● New/upcoming initiatives: <ul style="list-style-type: none"> ○ Social enterprise linking local growers and retailers e.g. OurGrubHub ○ Food cooperatives (under research and development) ○ Food hubs e.g. Southeast Food Hub, Casey Food Hub (under research and development) 	<p>Industrialized food system</p> <ul style="list-style-type: none"> ● Negative effects of this on all actors in the food supply chain <p>Challenges in Local Food Production</p> <p>Small and medium local farms are facing difficulties:</p> <ul style="list-style-type: none"> ○ Changes in season, climate and water affecting resilience of local food supply (e.g. Yarra Ranges) ○ Farmers getting older; fixed mindset of farmers and hesitance to learn new methods/skills; younger generation not willing to take over the farming business; skills not passed down (e.g. Aumann's (apple grower)) ○ Threatened by large growers (industrialized food system) ○ Small and medium farms don't have an avenue to sell their produce (they 	<p>Alternative Agri-Food Networks (AAFN), Short Food Supply Chains (SFSCs), Local Food Systems (LFS)</p> <ul style="list-style-type: none"> ● Reduces food miles and connects local growers and consumers - benefits of a localised food system ● Improve the connection between local growers and consumers through food access initiatives that address the key barriers to food access in the municipality <ul style="list-style-type: none"> ○ E.g. mobile markets and improved box schemes/home delivery in the Yarra Ranges, community-supported agriculture ● Ensure that these initiatives are targeted and contextualised to

		<p>don't have the EOS to sell to the local market (dominated by SM)) Can affect price, availability, quality and variety of fruit and vegetables</p> <p>Challenges in Local Food</p> <p>Transport/Distribution Long food supply chain and increased food miles due to the nature of the industrialized food system</p> <ul style="list-style-type: none"> ○ All local food produced goes to a central hub or other distribution centres and before it gets redistributed to retailers (increases food miles - results in food produced locally being distributed out before coming back in again) <p>Distribution of local food is determined by market forces</p> <ul style="list-style-type: none"> ○ Supermarkets are the gatekeepers to determining whether local fruit and vegetables are distributed to the EMR ○ Other factors like seasonality also determines the extent of the distribution <p>Food redistribution systems - limitations:</p> <ul style="list-style-type: none"> ○ Insufficient funding and other resources ○ Reactive rather than proactive approach <p>Challenges Faced by Local Food Retail Outlets Small independent retailers' viability is threatened (numbers are decreasing):</p> <ul style="list-style-type: none"> ○ They do not have organized, systematic, uniform delivery, ordering and payment systems, therefore growers tend to favour large retailers (e.g. supermarkets) over them ○ Growers find costs are too high to distribute to small independent retailers (e.g. transportation, refrigeration costs) ○ Small independent retailers find it difficult to keep prices competitive 	<p>disadvantaged communities by providing convenient, affordable and equitable access to healthy food</p> <ul style="list-style-type: none"> ○ E.g. farmers markets (targeted community, frequency, location, fair prices) <ul style="list-style-type: none"> ● Improve the connection between local growers and retailers by supporting innovative business enterprises e.g. food cooperatives, food clusters, food hubs, improved ordering, delivery and distribution systems - tap on existing initiatives that are already out there e.g. The Greens. There should also be initiatives to pull together retailers so as to create sufficient EOS to compete with supermarkets ● Create an environment supportive of local food systems <ul style="list-style-type: none"> ○ Change local laws to favour local supply and distribution ○ Make local supply and distribution networks more efficient and effective ○ Address current barriers that prevent local retailers from sourcing from local producers ○ Additional research is needed on how local food systems can be established and maintained in the EMR
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		<p>due to various reasons - competition from supermarkets, prices controlled by larger players (wholesale markets), supply factors (seasonality, climate, weather changes), anticipated higher costs of production (wholesale markets moving to Epping)</p> <ul style="list-style-type: none"> ○ Demand for green grocers is decreasing as people prefer to shop at supermarkets <p>Small independent retailers (greengrocers) in rural areas especially, may have reduced quality, variety and availability of fruit and vegetables because of high transportation costs to these areas; there are also fewer of such retail outlets in these areas compared to fast food outlets (e.g. Boroondara, Manningham)</p> <p>In-store management determines the quality (freshness), variety and promotion/marketing strategies of fruit and vegetables - inconsistent among different green grocers</p>	
Food Access	<p>Food Relief and Food Redistribution</p> <ul style="list-style-type: none"> ● Variety of food relief work being done in the community <ul style="list-style-type: none"> ○ Community meals ○ Community kitchens ○ Food parcels, vouchers ○ Home-delivered meals ○ Community transport ○ Community Health Services (also provide help other than food) ● Food Redistribution Systems <ul style="list-style-type: none"> ○ Food distribution networks already established, with several agencies involved in collecting food and then redistributing to 	<p>Food Relief Initiatives/Services</p> <ul style="list-style-type: none"> ● May have limited capacity to reach some groups, especially the 'hidden' disadvantaged (e.g. asset rich cash poor residents) ● An essential service but not a long term sustainable solution (band-aid approach) - need a systems approach to prevention <p>Awareness, Knowledge, Skills, and Preferences</p> <ul style="list-style-type: none"> ● <i>Culture, habits,</i> 	<p>Food Relief and Food Redistribution</p> <ul style="list-style-type: none"> ● Initiate systems approaches to address food security alongside Emergency Food Relief as a solution to food security issues ● Food Redistribution - take a more proactive approach (as mentioned above) <p>Education and Awareness about Healthy Eating Practices, Attitudes and Behaviours</p> <ul style="list-style-type: none"> ● Mass awareness campaigns are not effective because they do not address the practical

	<p>disadvantaged communities:</p> <ul style="list-style-type: none"> ■ Australian Community Logistics ■ SecondBite ■ FareShare ■ FoodBank <p>Awareness, Knowledge, Skills, and Preferences</p> <ul style="list-style-type: none"> ● There are currently many initiatives to develop or enhance: <ul style="list-style-type: none"> ○ Awareness of where/how to procure local, healthy food: directories, apps, maps ○ Nutrition-related knowledge and skills: cooking classes, gardening groups, community gardens, Bush Tucker Program ○ Healthy eating attitudes, preferences, behaviours and practices <p>Distance and Transport to Shops</p> <ul style="list-style-type: none"> ● Generally, local governments help ensure that there is convenient and consistent physical access to food through: <ul style="list-style-type: none"> ○ Appropriate/convenient location of food outlets (e.g. most supermarkets/food outlets are located within 500m of public transport options) ○ Free/subsidised community transport, especially for the elderly <p>Financial Resources</p> <ul style="list-style-type: none"> ● Financial aid to manage/reduce costs of living, allowing a higher proportion of income to be spent on food e.g. rent rebates, tax relief, subsidies <ul style="list-style-type: none"> ○ Affordable housing in Doncaster Hill (Manningham) 	<p><i>attitudes and preferences</i></p> <p>Residents in the EMR may not have the culture to buy local food with ~90% shopping at supermarkets (e.g. Manningham and YRs), prefer aesthetically-pleasing fruit and vegetables, have lost the connection with the source of their food (provenance), Lack of motivation/healthy eating is not a priority especially for vulnerable groups</p> <ul style="list-style-type: none"> ● <i>Awareness</i> - Residents in the EMR may not know the importance of buying/eating local food, and where and how to procure/access local fruit and vegetables ● <i>Nutrition-related knowledge and skills</i> – May be unaware how to select (e.g. reading nutrition labels) and prepare healthy foods <p>Distance and Transport to Shops</p> <ul style="list-style-type: none"> ● Lack of transport options - both public and private transport can be an issue (e.g. Yarra Ranges) ● Great distance to shops, food deserts (e.g. Maroondah, Manningham, YRs) <p>Financial Resources</p> <ul style="list-style-type: none"> ● Increased cost of living, compounded by low disposable income and competing priorities ● Prices of fruit and 	<p>aspects of healthy eating</p> <ul style="list-style-type: none"> ● Not about increasing knowledge but increasing capacity and changing current eating culture/practices <ul style="list-style-type: none"> ○ Resources (farmgate maps, books, directories) to increase knowledge and awareness of where/how to access healthy local produce (e.g. Mornington Peninsula: Provenance brand to promote buying of local produce; Farmgate maps, book and other initiatives to improve awareness and connectivity between residents and local farmers) ○ Long-term, sustained, holistic, educational initiatives (do not just address food) rather than one-off programs (e.g. budgeting skills, cooking and shopping skills) ○ Start with early education and school programs ● Consumer education/awareness is also important because consumers have the power to move the market towards healthy eating and thus create sustainable changes in the food supply
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		<p>vegetables are higher in rural areas and small retail shops (green grocers) - VHFB</p> <ul style="list-style-type: none">● Perceived higher cost of healthy food compared to fast food <p>Social Support</p> <ul style="list-style-type: none">● Social exclusion	
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References

1. Rychetnik L, Webb K, Story L, Katz T. Food security options paper: A food security planning framework: A menu of options for policy and planning interventions [Internet]. 2003 [cited 2015 Mar 25]. Available from: http://sydney.edu.au/science/molecular_bioscience/cphn/pdfs/food_security.pdf
2. VicHealth. Healthy eating – Food security investment plan 2005-2010 [Internet]. 2014 [cited 2009 Mar 25]. Available from: <https://www.vichealth.vic.gov.au/~//media/programsandprojects/healthyeating/foodsecurity/vichealth%20food%20insecurity%20investment%20paper.ashx>
3. Drewnowski A, Specter SE. Poverty and obesity: the role of energy density and energy costs. *Am J Clin Nutr*. 2004 Jan;79(1):6-16.
4. Irala-Estevez JD, Groth M, Johansson L, Oltersdorf U, Prattala R, Martinez-Gonzalez MA. A systematic review of socio-economic differences in food habits in Europe: consumption of fruit and vegetables. *Eur J Clin Nutr*. 2000 Sep;54(9):706-14.
5. Turrell G, Hewitt B, Patterson C, Oldberg B, Gould T. Socioeconomic differences in food purchasing behaviour and suggested implications for diet-related health promotion. *J Hum Nutr Diet*. 2002 Oct;15(5):355-64.
6. Shi L. Sociodemographic characteristics and individual health behaviours. *South Med J*. 1998 Oct;91(10):933-41.
7. Johansson L, Thelle DS, Solvoll K, Bjorneboe G, Drevon CA. Healthy dietary habits in relation to social determinants and lifestyle factors. *Br J Nutr*. 1999 Mar;81(3):211-20.
8. Billson H, Pryer JA, Nichols R. Variation in fruit and vegetable consumption among adults in Britain: An analysis from the dietary and nutritional survey of British adults. *Eur J Clin Nutr*. 1999 Dec;53(12):946-52.
9. Auld GW, Bruhn CM, McNulty J, Bock MA, Gable K, Lauritzen G, et al. Reported adoption of dietary fat and fibre recommendations amongst consumers. *J Am Diet Assoc*. 2000 Jan;100(1):52-8.
10. Burns C. A review of the literature describing the link between poverty, food insecurity and obesity with specific reference to Australia [Internet]. Melbourne VIC: VicHealth; 2004 Apr [cited 2015 Mar 26]. Available from: http://secondbite.org/sites/default/files/A_review_of_the_literature_describing_the_link_between_poverty_food_insecurity_and_obesity_w.pdf
11. Martin KS, Ferris AM. Food insecurity and gender are risk factors for obesity. *J Nutr Educ and Behav*. 2007;39(1):31-6.
12. Drewnowski A, Darmon N. The economics of obesity: dietary energy density and energy cost. *Am J Clin Nutr* [Internet]. 2005 Jul;82(1 Suppl):265S-273S. Available from: <http://ajcn.nutrition.org/content/82/1/265S.long>
13. New Zealand Network Against Food Poverty (NZNAFP). Hidden hunger-food and low income in New Zealand. Wellington: NZNAFP; 2008 [cited 2015 Mar 27]. Available from: http://www.ana.org.nz/sites/default/files/hiddenhunger_1.pdf
14. Townsend MS, Peerson J, Love B, Achterberg C, Murphy SP. Food insecurity is positively related to overweight in women. *J Nutr*. 2001 Jun;131(6):1738-45.
15. Alaimo K, Olson CM, Frongillo EA. Low family income and food insufficiency in relation to overweight in US children: is there a paradox? *Arch Pediatr Adolesc Med*. 2001 Oct;155(10):1161-7.

16. Department of Health. Victorian population health survey 2008: selected findings [Internet]. Melbourne VIC: State Government of Victoria; 2011 Apr [cited 2015 Mar 26]. Available from: <http://www.health.vic.gov.au/healthstatus/survey/vphs2008.htm>
17. Outer East Health & Community Support Alliance. Outer east community food access research project: food security assessment and plans for a way forward [Internet]. Melbourne VIC: Outer East Health & Community Support Alliance; 2008 [cited 2015 Mar 23]. Available from: http://www.oehcsa.org.au/sites/default/files/OEHCSA%20Food%20Project%20%5BVR1%5D_25-5-09_1.pdf
18. Outer East Health & Community Support Alliance, Nourish Food Fairness Outer East. Reassessing food insecurity in Melbourne's outer east [Internet]. Melbourne VIC: Outer East Health & Community Support Alliance; 2011 [cited 2015 Mar 23]. Available from: http://www.oehcsa.org.au/sites/default/files/OEPCP%20ReassessingFoodSecurityReport%5BVR5%5D_16-7-13%20Final_0.pdf
19. Nourish Food Fairness Outer East, Outer East Health & Community Support Alliance. Food for thought: A strategic approach underpinning action on food security in the Yarra Ranges; 2012 [cited 2015 Mar 24]. Executive summary available from: <http://www.oehcsa.org.au/sites/default/files/Microsoft%20Word%20-%20Food%20for%20Thought%20Executive%20summary%20website.pdf>
20. Jansen F et al. Food sensitive planning and urban design project: Towards improving the food sensitivity of urban design in the outer east [Internet]. Nourish food fairness outer east; 2013 [cited 2015 Mar 23]. Available from: <http://www.oehcsa.org.au/library-resources/promoting-wellbeing/nourish/food-sensitive-planning-and-urban-design-project-towar>
21. Department of Health. Victorian population health survey 2011-12, survey findings [Internet]. Melbourne VIC: State Government of Victoria; 2014 Sep [cited 2015 Mar 28]. Available from: [http://docs.health.vic.gov.au/docs/doc/54A0F245895CE914CA257D54001584F7/\\$FILE/Victorian%20Populati on%20Health%20Survey%202011-12%201.pdf](http://docs.health.vic.gov.au/docs/doc/54A0F245895CE914CA257D54001584F7/$FILE/Victorian%20Populati on%20Health%20Survey%202011-12%201.pdf)
22. Yarra Ranges Shire Council. Community consultation report: Yarra Ranges council health and wellbeing strategy 2013-17 [Internet]. Lilydale VIC Yarra Ranges Shire Council [cited 2015 Mar 24]. Available from: http://www.yarraranges.vic.gov.au/files/assets/public/webdocuments/corporate-services/governance/policies-strategies-governance/hwb_strategy_lowres.pdf
23. Manningham City Council. Community consultation report: Manningham healthy city plan 2013-17 [Internet]. Doncaster VIC: Manningham City Council [cited 2015 Mar 25]. Available from: <http://www.manningham.vic.gov.au/municipal-public-health-and-wellbeing-plan>
24. Maroondah City Council. Community consultation report: Maroondah community wellbeing plan 2013-17 [Internet]. Ringwood VIC: Maroondah City Council [cited 2015 Mar 24]. Available from: http://www.maroondah.vic.gov.au/common/files/CommunityHealthServices/Community_Wellbeing_Plan_2013-2017.PDF
25. Boroondara City Council. 2013-17 City of Boroondara public health and wellbeing plan [Internet]. Camberwell VIC: Boroondara City Council [cited 2015 Mar 24]. Available from: http://www.boroondara.vic.gov.au/sitecore/shell/Controls/Rich%20Text%20Editor//-/media/Files/Your%20Council/Local%20laws%20and%20policies/Community/BPHWP_Summary_Version-pdf.pdf
26. Booth S, Smith A. Food security and poverty in Australia - challenges for dietitians. *Aust J Nutr Diet.* 2001;58:150-6
27. Prevention and population health branch, Department of Health. Victorian health and wellbeing plan 2011-2015 [Internet]. Department of Health; Sept 2011 [cited 2015 Mar 24]. Available from: [http://docs.health.vic.gov.au/docs/doc/8532A3E8DAD73048CA2578FE000571F5/\\$FILE/vic-public-health-wellbeing-plan.pdf](http://docs.health.vic.gov.au/docs/doc/8532A3E8DAD73048CA2578FE000571F5/$FILE/vic-public-health-wellbeing-plan.pdf)

28. Yarra Ranges Council. Green wedge management plan [Internet]. Lilydale VIC: Yarra Ranges Council; 2010 Jul. [cited 2015 Mar 23]. Available from: [http://www.yarraranges.vic.gov.au/About-Council/Strategies-policies-and-legislation?dlv_DLV%20Public%20Form=\(pageindex=4\)](http://www.yarraranges.vic.gov.au/About-Council/Strategies-policies-and-legislation?dlv_DLV%20Public%20Form=(pageindex=4))
29. Community Planning and Development Program, LaTrobe University. The Impacts of a Localised Food Supply: What is the Evidence?. Bendigo VIC: LaTrobe University; 2010 Oct.
30. Outer East Health & Community Support Alliance. NOURISH [Internet]. Melbourne VIC: Outer East Health & Community Support Alliance; [cited 2015 Mar 23]. Available from: <http://www.oehcsa.org.au/library-resources/promoting-wellbeing/nourish>
31. Community Planning and Development Program, La Trobe University. Integrating land use planning and community food security: A new agenda for government to deliver on sustainability, economic growth and social justice [Internet]. Melbourne, VIC: La Trobe University; 2009 Oct [cited 2015 Mar 26]. Available from: http://www.vlga.org.au/site/defaultsite/filesystem/documents/land%20use%20planning/int%202009%20oct%208%20vlga%20report%20on%20food%20security_final.pdf
32. Rose NJ. Optimism of will: Food sovereignty as transformative counter hegemony in the 21st Century. [PhD Thesis]. Melbourne, VIC: Deakin University; 2013.
33. O'Brien R. An overview of the methodological approach of action research [Internet]. Toronto ONT: University of Toronto; 2001 [cited 2015 May 21]. Available from: <http://web.net/robrien/papers/arfinal.html>
34. Koshy E, Koshy V, Waterman H. Action research in healthcare [Internet]. London: Sage Publications Ltd; 2010 [cited 2015 May 21]. Available from: http://www.sagepub.com/upm-data/36584_01_Koshy_et_al_Ch_01.pdf
35. Stringer ET. Action research. 3rd ed. London: Sage Publications Ltd; 2007.
36. Australian Government Department of Agriculture, Fisheries and Forestry. Resilience in the Australian food supply chain [Internet]. Canberra ACT: Department of Agriculture, Fisheries and Forestry; 2012 Feb [cited 2015 May 20]. Available from: <http://www.tisn.gov.au/Documents/Resilience%20in%20the%20Australian%20food%20supply%20chain%20-%20PDF%20copy%20for%20web.PDF>
37. Consumers International. The relationship between supermarkets and suppliers: what are the implications for consumers? Summary of the main report [Internet]. London, UK: Consumers International; 2012 Jul. [cited 2015 Mar 23]. Available from: <http://www.consumersinternational.org/media/1035307/summary,%20the%20relationship%20between%20supermarkets%20and%20suppliers.pdf>
38. Dunkley B, Helling A, Sawicki DS. Accessibility versus scale: Examining the tradeoffs in grocery stores. *Journal of Planning, Education and Research*. 2004;23:387-401.
39. Godfray HC, Beddington JR, Crute IR, Haddad L, Lawrence D, Muir JF, et al. Food security: the challenge of feeding 9 billion people. *Science*. 2010 Feb 12;327(5967):812-8.
40. Elbehri A. Biopharming and the food system: Examining the potential benefits and risks. *AgBioForum*. 2005;8(1):18-25.
41. Stewart WM, Dibb DW et al. The contribution of commercial fertiliser nutrients to food production. *Agronomy Journal*. 2005;97(1):1-6.
42. Carey R and McConell K. A resilient fruit and vegetable supply for a healthy Victoria [Internet]. Melbourne VIC: Food Alliance; 2011 [cited 2015 Mar 23]. Available from: <http://www.foodalliance.org.au/wp-content/uploads/2013/10/A-Resilient-Fruit-and-Vegetable-Supply-for-a-Healthy-Victoria.pdf>
43. Dean WR, Sharkey JR. Rural and urban differences in the associations between characteristics of the community food environment and fruit and vegetable intake. *J Nutr Educ Behav*. 2011 Nov;43(6):426-33.

44. Morris P, Neuhauser L, Campbell C. Food security in rural America: a study of the availability and costs of food. *J Nutr Educ.* 1992;24:52s-58s.
45. Round DK. The power of two: Squaring off with Australia's large supermarket chains. *Aust. J of Agricultural and Resource Economics.* 2006 Mar;50(1):51-64.
46. Melchers N, Gomez M, Colagiuri R. Do socio-economic factors influence supermarket content and shoppers' purchases? *Health Promotion J. of Aust.* 2009 Dec;20(3):241-46.
47. Burch D. Supermarket own brands, supply chains and the transformation of the agri-food system. *Int J of Socio of Agriculture and Food.* 2005 Jul;13(1):1-18.
48. AEA Technology. The validity of food miles as an indicator of sustainable development: Final report [Internet]. UK: Department of Environment, Food and Rural Affairs. [Cited 18 May 2015]. Available from: http://library.uniteddiversity.coop/Food/DEFRA_Food_Miles_Report.pdf
49. Saunders C, Hayes P. Airfreight transport of fresh fruits and vegetables: A review of the environmental impact and policy options [Internet]. Geneva: International Trade Centre [Cited 18 May 2015]. Available from: http://www.intracen.org/uploadedFiles/intracenorg/Content/Exporters/Sectors/Fair_trade_and_environmental_exports/Climate_change/Airfreight_Transport_of_Fresh_Fruit_and_Vegetables.pdf
50. Volpe R, Roeger E, Leibtag E. How transportation costs affect fruit and vegetable prices [Internet]. Washington: United States Department of Agriculture; 2013 Nov [cited 2015 May 23]. Available from: www.ers.usda.gov/media/1230835/err160.pdf
51. Havas KA, Watts CS. Food chain: Farm to market. *Encyclopaedia of Agriculture and Food Systems.* 2014;3:137-53.
52. United States Department of Agriculture. Access to affordable and nutritious food: measuring and understanding food deserts and their consequences [Internet]. 2009 Jun [cited 2015 May 23]. Available from: http://www.ers.usda.gov/media/242675/ap036_1_.pdf
53. Larson NI, Story MT, Nelson MC. Neighbourhood environments: disparities in access to healthy foods in the US. *Am J Prev Med.* 2009 Jan;36(1):74-81.
54. Beaulac J, Kristjansson E, Cummins S. A systematic review of food deserts 1966-2007. *Prev Chronic Dis.* 2009 Jul;6(3):A105.
55. Andree P, Dibden J et al. Competitive productivism and Australia's emerging 'Alternative' Agri-food Networks: producing for farmers' markets in Victoria and beyond. *Australian Geographer.* 2010 Sep;41(3):307-22.
56. Project for Public Spaces. Farmers markets as a strategy to improve access to healthy food for low-income families and communities [Internet]. Project for Public Spaces [cited 18 May 2015]. Available from: <http://www.pps.org/wp-content/uploads/2013/02/RWJF-Report.pdf>
57. Aubry C, Keibr L. Shortening food supply chains: a means for maintaining agriculture close to urban areas? The case of French metropolitan area of Paris. *Food Policy.* 2013 Aug;41:85-93.
58. Pretty J. Some benefits and drawbacks of local food systems [Internet]. TVU/Sustain AgriFood Network [cited 22 May 2015]. Available from: http://www.sustainweb.org/pdf/afn_m1_p2.pdf
59. Renting H, Marsden TK, Banks J. Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environment and Planning A.* 2003;35:393-411.
60. Kneafsey M et al. Short food supply chains and local food systems in the EU: A state of play of their socio-economic characteristics [Internet]. European Commission [cited 18 May 2015]. Available from: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=6279>
61. Born B, Purcell M. Avoiding the local trap: Scale and food systems in planning research. *Journal of Planning, Education and Research.* 2006;26:195-207.

62. Coveney J, O'Dwyer LA. Effects of mobility and location on food access. *Health Place*. 15(1):45-55, 2009 Mar.
63. Radermacher H, Feldman S, Bird S. Food security in older australians from different cultural backgrounds. *J Nutr Educ Behav*. 42(5):328-36, 2010 Sep-Oct.
64. Dibsall LA et al. Low-income consumers' attitudes and behaviour towards access, availability and motivation to eat fruit and vegetables. *Public Health Nutr*. 2002;6(2):159-68.
65. Eikenberry N, Smith C. Healthful eating: perceptions, motivations, barriers, and promoters in low-income Minnesota communities. *J Am Diet Assoc*. 2004 Jul;104(7):1158-61.
66. Williams LK, Thornton L, Crawford D, Ball K. Perceived quality and availability of fruit and vegetables are associated with perceptions of fruit and vegetable affordability among socio-economically disadvantaged women. *Public Health Nutr*. 2012 Jul;15(7):1262-7.
67. SecondBite. Food security: what is it? [Internet]. Melbourne, VIC: SecondBite; [cited 2015 May 21]. Available from: http://secondbite.org/sites/default/files/SecondBite%20Fact%20Sheet%20Series_Food%20Insecurity.pdf
68. Torchia R, Telgenkamp R, Ware T. Historical review of food access programs in Boroondara: review of projects conducted by Inner East Community Health (iehealth) for the City of Boroondara, between 2003-2012, along with future recommendations [Student Project]. Inner East Community Health. 2015 Apr [cited 2015 May 21].
69. Australian Government Department of Social Services. Communities and vulnerable people [Internet]. Canberra ACT: Department of Social Services; [updated 2015 May 20; cited 2015 May 21]. Available from: <https://www.dss.gov.au/our-responsibilities/communities-and-vulnerable-people/programs-services/emergency-relief>
70. Caritas Australia. Food: the fundamental right [Internet]. Adelaide SA: Caritas Australia; [cited 2015 May 22]. Available from: <http://www.caritas.org.au/docs/publications-and-reports/food-the-fundamental-right.pdf?sfvrsn=10>
71. Cohen D. Achieving food security in vulnerable populations. *BMJ*. 2005 Oct 1;331(7519):775-7.
72. Cromwell E, Slater R. Food security and social protection [Internet]. London: Department for International Development; 2004 Sep [cited 2015 May 22]. Available from: http://capacity4dev.ec.europa.eu/system/files/file/23/01/2013-_1736/odi_food_security_and_social_protection_2004.pdf
73. Victorian Health Promotion Foundation (VicHealth). Food for All program 2005-10: Evaluation report [Internet]. Melbourne VIC: VicHealth; 2011 Apr [cited 2015 Mar 25]. Available from: <https://www.vichealth.vic.gov.au/media-and-resources/publications/food-for-all-2005-10-program-evaluation-rep>
74. Montague M. Local Government and Food Security An Evidence Review What we know about what works and what might work. Northcote (VIC): Department of Health (VIC); 2011 Sep. 126 p.
75. Victorian Health Promotion Foundation. VicHealth Healthy Eating Program: Ten ways local government can act on food security 2011. [Internet]. Carlton VIC: VicHealth [cited 2015 May 20]. Available from: <https://www.vichealth.vic.gov.au/media-and-resources/publications/food-for-all---resources-for-local-governments>
76. Crosta N. Localizing the MDGs. Local development and MDGs: what role for local governments? Conference framing paper. In: Global Forum on Local Development [Internet]; 2010 Oct 4-6; Kampala, Uganda. New York, NY: United Nations Capital Development Fund (UNCDF); 2010 Oct [cited 2015 May 5]; p. 8-12. Available from: <http://www.uncsd2012.org/content/documents/Localizing%20the%20MDGs%20-%20GFLD%202010%20-Framing%20Paper.pdf>
77. Manningham City Council. Economic development strategy annual report 2013/14 [Internet]. Doncaster VIC: Manningham City Council [cited 2015 Mar 24]. Available from: <http://www.manningham.vic.gov.au/file/3701/download>

78. Baum F. The new public health: An Australian perspective. Melbourne, Australia: Oxford University Press; 1998. 570 p.
79. Wegener J, Raine KD, Hanning RM. Insights into the Government's Role in Food System Policy Making: Improving Access to Healthy, Local Food Alongside Other Priorities. *Int. J. Environ. Res. Public Health* 2012, 9, 4103-4121.
80. Hughes R, Margetts BM. Practical public health nutrition. West Sussex: Wiley-Blackwell; 2011. p. 31-121, 243.
81. Manningham City Council. Manningham planning scheme [Internet]. Victoria: Department of Transport, Planning, and Local Infrastructure [cited 2015 Mar 25]. Available from: http://planningschemes.dpcd.vic.gov.au/schemes/combined-ordinances/Manningham_PS_Ordinance.pdf
82. Hatfield MM. City food policy and programs: lessons harvested from an emerging field [Internet]. Portland, OR: Oregon Bureau of Planning and Sustainability; 2012 Oct [cited 2015 May 5]. Available from: <http://www.portlandoregon.gov/bps/article/416389>
83. National Heart Foundation (NHF). Creating heart healthy communities: working with local government [Internet]. Melbourne, VIC: NHF; 2013 Feb [cited 2015 May 5]. Available from: <http://www.heartfoundation.org.au/SiteCollectionDocuments/HF-Creating-Communities.pdf>
84. Bastian A, Coveney J. Local evidenced-based policy options to improve food security in South Australia: the use of local knowledge in policy development. *Public Health Nutr.* 2012 Aug;15(8):1497-502.
85. Story M, Hamm MW, Wallinga, D. Food systems and public health: Linkages to achieve healthier diets and healthier communities. *J. Hung. Envir. Nutrition* 2009, 4, 219-224.
86. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz, K. Creating healthy food and eating environments: Policy and environmental approaches. *Annu. Rev. Public Health* 2008, 29, 253-272. [Google Scholar] [CrossRef]
87. Savigny DD, Adam T. Systems thinking for health systems strengthening [Internet]. World Health Organisation Alliance for Health Policy and Systems Research; 2009 [cited 2015 May 20]. Available from: http://whqlibdoc.who.int/publications/2009/9789241563895_eng.pdf
88. Outer East Health and Community Support Alliance. Nourish [Internet]. Ringwood VIC: Outer East Health and Community Support Alliance; 2012 [accessed 2015 May 26]. Available from: <http://www.oehcsa.org.au/library-resources/promoting-wellbeing/nourish>
89. Inner East Primary Care Partnership. Prevention and population health [Internet]. Burwood East VIC: Inner East Primary Care Partnership; 2013 [accessed 2015 May 26]. Available from: <http://www.iepcp.org.au/latest-news>
90. Szetho M. Planning for food security Do farmers' markets contribute to food security? [Thesis]. Sydney, NSW: University of New South Wales; 2013.
91. Miller DD, Welch RM. Food system strategies for preventing micronutrient malnutrition [Internet]. Rome: Food and Agriculture Organization of the United Nations; 2013 [cited 2015 May 22]. Available from: http://www.fao.org/fileadmin/templates/esa/Papers_and_documents/WP_13_06_Miller_Welch.pdf
92. Brug J. Determinants of healthy eating: motivation, abilities and environmental opportunities. *Family Practice* 2008; 25: i50-i55
93. Larson NI, Story MT. Food insecurity and weight status among U.S. children and families: a review of the literature. *Am J Prev Med.* 2011 Feb;40(2):166-73
94. Mikkelsen MV, Husby S, Skov LR, Perez-Cueto FJ. A systematic review of types of healthy eating interventions in preschools. *Nutr J.* 2014 Jun 6; 13:56.
95. Flinders University: Department of Nutrition and Dietetics. Healthy eating local policies and programs 2011-2013 [Internet]. [updated 2014 Mar 24; cited 2015 May 20]. Available from: <http://www.flinders.edu.au/sohs/sites/helpp/>

96. Department of Planning and Community Development. Wodonga planning scheme: municipal strategic statement [Internet]. Melbourne, VIC: State Government of Victoria; 2006 [cited 2015 May 5]. Available from: <http://www.dse.vic.gov.au/planningschemes/wodonga/home.html>
97. Australian Strategic Policy Institute. Fighting fire with fire: target audience responses to online anti-violence campaigns [Internet]. Sydney, NSW: Australia-New Zealand Counter-Terrorism Committee; 2006 [cited 2015 May 5]. Available from: https://www.aspi.org.au/publications/fighting-fire-with-fire-target-audience-responses-to-online-anti-violence-campaigns/Fight_fire_short_paper.pdf
98. Pascoe J. Urban planning for physical activity and nutrition: a review of evidence and interventions [Internet]. Brisbane, QLD: Griffith University; 2008 Dec [cited 2015 May 5]. Available from: http://www.griffith.edu.au/_data/assets/pdf_file/0006/110769/urp-rp22-burke-et-al-2008.pdf
99. Swinburn B, Herbert J, Virgo-Milton M, Malakellis M, Moodie M, Mavoa H, et al. Be active eat well: three-year follow-up [Internet]. Geelong: Deakin University; 2012 [cited 2015 May 20]. Available from: <https://www.deakin.edu.au/health/who-obesity/community-based-prevention/Be-Active-Eat-Well-follow-up-final-report.pdf>
100. State Government Victoria Healthy Together Victoria. Healthy eating advisory service and achievement program [Internet]. Carlton VIC: Healthy Together Victoria; [cited 2015 May 20]. Available from: <http://www.achievementprogram.healthytogether.vic.gov.au/>
101. Blackburn J. Yarra Valley Community Health. Health Promotion [Internet]. Healesville VIC: Eastern Health; 2014 [cited 2015 May 26]. Available from: <https://www.easternhealth.org.au/services/item/267-health-promotion>
102. Maribyrnong City Council. Final food security policy 2011-2013 [Internet]. Melbourne VIC: Maribyrnong City Council; 2013 [cited 2015 May 20]. Available from: <http://maribyrnong.vic.gov.au/Files/Attachments/Background Paper - Food Security Final.doc>

