



30 September 2011

Mr Tim Bryant
Committee Secretary
Senate Select Committee on Australia's Food Processing Sector
PO Box 6100
Parliament House
CANBERRA ACT 2600

Dear Mr Bryant

**SUBMISSION TO THE SELECT COMMITTEE'S INQUIRY INTO THE
COMPETITIVENESS AND FUTURE VIABILITY OF AUSTRALIA'S FOOD
PROCESSING SECTOR**

Thank you for the opportunity to provide input to the Committee's inquiry. The Department of Agriculture and Food Western Australia (DAFWA) recently lead a group of Western Australian Government departments to create a submission to the Commonwealth Government's *National Food Plan Issues Paper*. I attach that submission for your Committee's consideration since it is a comprehensive and recent assessment of the issues facing the Western Australian food industry.

In particular, the submission offers a useful analytical approach to policy development that focuses on the vulnerabilities of the sector and accompanying capabilities and risk mitigation of various stakeholders, including Government. This approach aims to guide policy that balances the many competing forces and values in the food system.

Western Australia welcomes the development of Commonwealth Government policy and action to support the competitiveness and viability of the Australian food processing sector. I encourage the Committee to engage with the Western Australian Government through DAFWA to further explore issues and assess practical means of assistance for the sector.

Should you wish any further information or input, please contact Stuart Clarke, Director, Food Industry Development, DAFWA

Yours sincerely

Rob Defane
DIRECTOR GENERAL

Attachment: Submission to the Commonwealth Government's National Food Plan Issues Paper

OFFICE OF THE DIRECTOR GENERAL



23 September 2011

Mr Tim Bryant
Chairman
Committee on Australia's Food Processing Sector
PO Box 2100
Perth WA 6001
WESTERN AUSTRALIA

Dear Mr Bryant

**SUBMISSION TO THE SELECT COMMITTEE'S INQUIRY INTO THE
COMPETITIVENESS AND FUTURE VIABILITY OF AUSTRALIA'S FOOD
PROCESSING SECTOR**

Thank you for the opportunity to provide input to the Committee's inquiry. The Department of Agriculture and Food Western Australia (DAFWA) recently led a group of Western Australian Government departments to create a submission to the Commonwealth Government's national food issue paper. I thank you for your Committee's investigation into it as a comprehensive and recent assessment of the issues facing the broader Australian food industry.

In addition, the submission offers a critical analysis, approach to policy development and the capacity for the sustainability of the sector and accompanying challenges and the industry to various stakeholders, including Government. The approach aims to guide policy and business to many competing forces and values in the food system.

Western Australia welcomes the leadership of Commonwealth Government policy and aims to support the competitiveness and viability of the Australian food processing sector. I encourage the Committee to engage with the Western Australian Government through DAFWA to further explore issues and assess practical means of responses for the sector.

Should you wish any further information or input please contact Stuart Clarke, Director, Food Industry Development, DAFWA on stuart.clarke@dafwa.gov.au or 08 9388 2160.

Yours sincerely,


Stuart Clarke
DIRECTOR GENERAL

Attachment: Submission to the Commonwealth Government's National Food Issue Paper

SUBMISSION TO THE:

National Food Plan Issues Paper 2011

**Departments of the Government of Western
Australia**

**PERTH
24/8/11**

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Executive Summary

This submission has been prepared by departments of the Western Australian Government. Western Australia defines Australian food security as the *ability of all Australians to have access to an available, reliable and affordable supply of safe and nutritious food*. At present Australia is classed as a ‘food secure’ nation as there is adequate access to nutritional food for a majority of Australians¹ within the current economic, social and environmental context.

Food security in Australia is mainly maintained through market channels. However, for some, food security is maintained through services in the social sector that support those unable to afford or access nutritious food. The quantity and quality of local food production is determined by market signals; with any shortfalls of domestic production and/ or inputs imported through national and international trade.

In the future, changing domestic and global environmental, economic and social conditions may undermine Australian food security at a national, household and an individual level. Therefore there is a need to review Australia’s food security status and establish a framework to ensure that the food system is able to consistently provide an available and reliable supply of affordable, safe and nutritious food for all Australians. The construction of a National Food Plan offers the opportunity to achieve undertake this review and institute appropriate changes.

The feedback loop between food security and economic, environmental and social factors means that many interests need to be considered when constructing the National Food Plan. Given the many stakeholders and their respective policy perspectives, the construction of the National Food Plan should aim to reconcile their interests within a defined framework. This submission provides input to the creation of such a framework.

¹ Moir, B. and P. Morris. 2011. ‘Global Food Security: Facts Issues and Implications’, *Science and Economic Insights*. ABARES, Canberra, p.1.

Guiding Principles for the National Food Plan

Western Australia proposes that the National Food Plan must define an Australian Government position for securing the Nation's food as the population increases, the challenges of resource use become more acute and the needs for a healthy and resilient population rise. A National Food Plan should also recognise that food is not simply a means of sustenance but also a large contributor to the Australian economy, an illustration of our culture and indicative of the spirit of giving to those in need.

A National Food Plan should focus on securing the food supply and addressing key stakeholder issues based on a defined value of food to Australia.

A National Food Plan could be a foundation for food strategies in individual States by providing a decision making framework. A national framework should allow individualised State adaption and adoption while setting the rules of engagement across boundaries.

Within the Australian federation, the National Food Plan should set the ground rules for an ideal enabling environment that supports Australia's complex food system. The National Food Plan should also establish the common ground for debates on policies, plans and protocols for the:

- environmental and natural resource base;
- economic enabling environment;
- policy enabling environment; and
- social enabling environment.

The design of the National Food Plan should outline the dominant concerns regarding food security and the strength of the food supply chain. Preferably it would propose a path for tackling these concerns and establish a framework so that food security is ensured on an individual, household, national and international level.

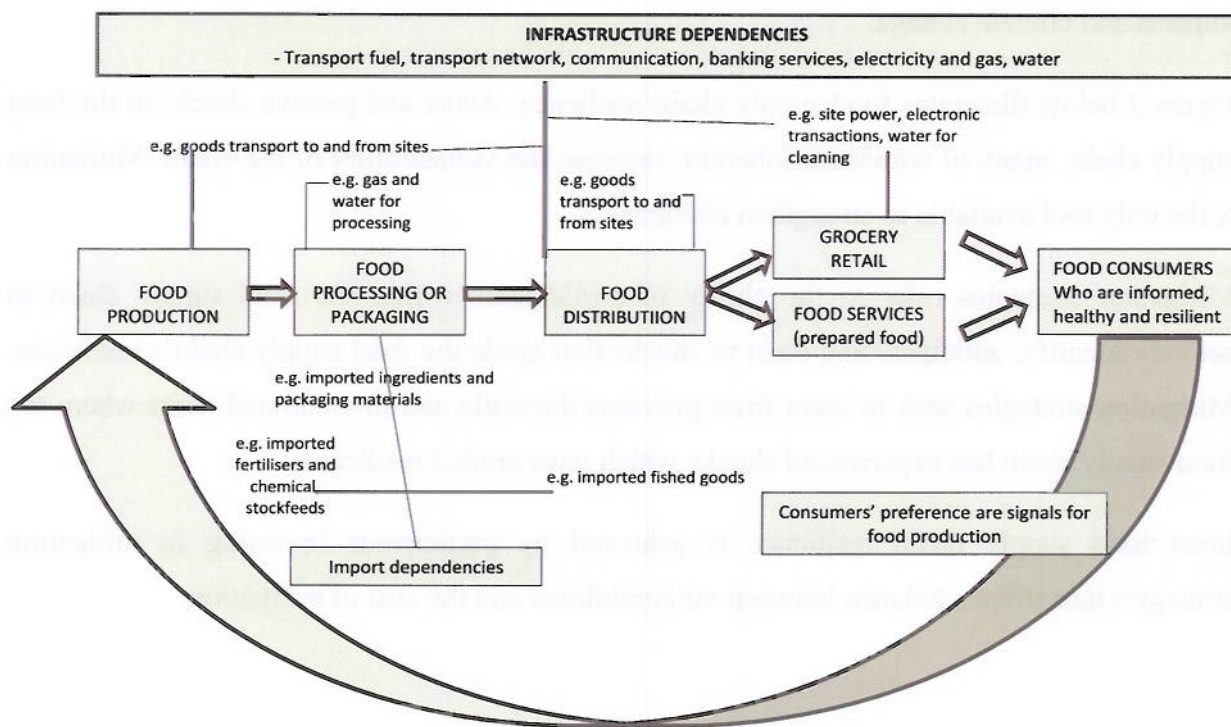
The National Food Plan needs to accommodate Australia's and Western Australia's isolation. This isolation requires the system to have strong contingency strategies for when the food system is unable to cope with shocks such as wide spread pandemics or frequently occurring natural disasters. In cases such as these, Australia's food security would have to be achieved through food imports so as to buy time for the domestic food supply chain to re-establish itself.

Food Security through a Resilient Food Supply Chain

Western Australia proposes that the National Food Plan should aim to achieve food security through a resilient food supply chain. A resilient food supply chain is understood as the supply chain's capacity to return to full functionality when faced with passive and acute shocks².

A supply chain is a series of linkages, each with diverse, independent functions that combine to deliver a product or service from one entity to another. The food supply chain responds to market signals for food production, as illustrated by Figure 1:

Figure 1: Food Supply Chain (*Bartos and Balmford 2010, pp.2*)



In Figure 1, the consumer feedback loop represents the social component of the food system while the traditional food supply chain represents the economic value.

The geographic length of the Australian food supply chain leaves it more vulnerable to shocks. Food supply chain vulnerability is affected by inherent random elements such as

² Bartos, S. and M. Balmford. 2010. *Food Chain Resilience Study*. DAFF, Canberra, p.2

variable harvests and production yields, weather conditions and consumer demand. Furthermore, vulnerability of the food supply chain is increased by the impacts of external occurrences such as regulation and international competition.

The infrastructure upon which the Australian food supply chain depends is vital to its resilience, particularly due to the nature of the Australian food distribution system which relies on distant regional areas for production and a long chain to deliver to populous cities. The shortfalls of this long food supply chain become evident in emergency scenarios such as floods or fires. Past experiences have demonstrated that Australia is well equipped in handling these scenarios, however food security issues may arise when there are multiple, simultaneous and extreme events.

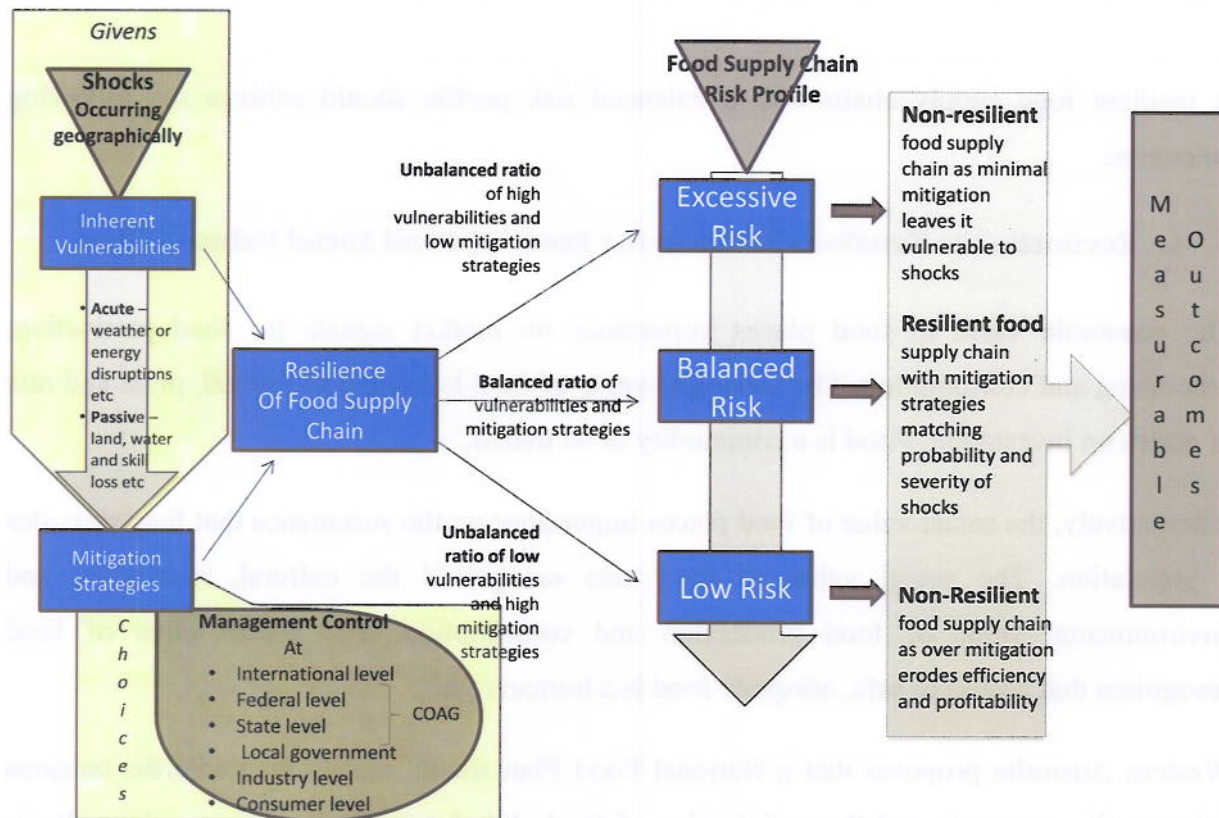
Other vulnerabilities will also become evident when the cumulative effects of passive shocks cause systematic interferences to the Australian food supply chain, such as biosecurity impacts and climate change.

Figure 2 below illustrates food supply chain resilience. Acute and passive shocks to the food supply chain, many of which are inherent, increase the vulnerability of the chain. Mitigation is the only tool available to strengthen resilience.

Mitigation strategies refer to the ability of participants within the food supply chain to actively identify, anticipate and react to shocks that erode the food supply chain's resilience. Mitigation strategies seek to learn from previous domestic and international cases where the food supply chain has experienced shocks which have eroded resilience.

Ideal food supply chain resilience is achieved by participants investing in mitigation strategies that strike a balance between vulnerabilities and the cost of mitigation.

Figure 2: Supply Chain Resilience Framework (Pettit 2008, pp.2; DAFWA Adaption)³



The resilience of a food supply chain is a balance of the implemented mitigation strategies and the vulnerabilities as illustrated by Figure 2. The level of investment in mitigation strategies influences a food supply chain’s risk profile. The food supply chain is exposed to excessive risk if there is an underinvestment in mitigation strategies. Over investment in mitigation strategies results in an unprofitable and government dependant food system. A balanced risk profile establishes a food supply chain that is not vulnerable to excessive risk or constrained by excessive mitigation.

The aim of the National Food Plan should be to achieve a balanced risk profile that provides economic opportunity as well as safe guarding the social value of food.

³ Pettit, T.J. 2008, *Supply Chain Resilience: Development of a conceptual Framework, an Assessment Tool and Implementation Process*, PhD dissertation, Ohio State University, p.2.

Outcomes of a Resilient Food Supply Chain

A resilient food supply chain with a balanced risk profile should achieve the following outcomes:

1. Reconcile the Tensions between the Economic and Social Value of Food

The economic value of food places importance on market signals for food production, processing and consumption. The economic value of food is framed by capital, price and rate of return on investment. Food is a commodity to be traded.

Alternatively, the social value of food places importance on the sustenance that food provides a population. The social value of food also recognised the cultural, nutritional and environmental value of food production and consumption. The social value of food recognises that access to safe, adequate food is a human right⁴.

Western Australia proposes that a National Food Plan should aim to reconcile the tensions between the economic and the social value of food. A balance between these values allows the food system to be responsive to market forces but would also acknowledge that all Australians must be able to access an available, reliable and affordable supply of adequate, safe and nutritious food.

2. Sustainable Food Supply Chain

The security of Australia's food supply is dependent on the sustainability of agriculture and food industries: pre-farm, farm and post-farm, as well as the fishing industry, along the food supply chain. Sustainability within the context of food supply chain resilience does not just refer to environmental sustainability but also economic sustainability. Environmental sustainability refers to the ability to maintain the qualities that are valued in the physical environment⁵. Economic sustainability is defined as the strategies that use resources in a manner that is as efficient as possible so that operations will be viable and profitable in the long term. Economic and environmental sustainability face a diverse range of internal and

⁴ Roetter, R. and H. Van Keule. 2008. *Food Security. Science for Agriculture and Rural Development in Low-Income Countries*. Springer: Dordrecht, p.xxiii.

⁵ Sutton, P. 2004. *A Perspective on Environmental Sustainability? A Paper for the Victorian Commissioner for Environmental Sustainability*. Green Innovations Strategic Institute, Victoria, p.1.

external vulnerabilities at each link within the supply chain⁶ and the subsequent implications throughout the chain.

Environmental sustainability faces vulnerabilities in the natural resource base, factors of production and weather conditions. Climate change and increased input costs of water, energy, fertiliser and carbon as well as decreased quality and quantity of land will continue to force change in the way food production and processing occurs⁷. Common threats to the environmental sustainability of agrifood production within Australia are pests, weeds, diseases, land degradation, the impact of climate change and increasing competition for scarce resources.

Furthermore, the increasing urbanisation and alternative use of fertile land within Australia has resulted in greater reliance on less fertile, more environmentally fragile land. The resource competition is not only for agricultural land but also the traditional pools of labour employed. This competition has especially intensified with a shift in natural, human and capital resource allocation to non-food agricultural crops and mining.

The growth in agricultural productivity is slowing⁸ as these issues become more significant. This is at a time when global consumer demand is projected to increase due to higher incomes and global population growth that require output to dramatically increase⁹.

Western Australia proposes that a National Food Plan should aim to establish an enabling environment within which the agriculture and food industries are able to remain socially, environmentally and economically sustainable. This will ensure a resilient food supply for all Australians. The issue of environmental and economic sustainability requires the food supply chain do be more efficient with fewer resources. The foundation of an enabling environment would require both public and private investment into research and development not only for agricultural productivity but at all stages of the supply chain so that it functions at its most efficient.

⁶ Peck, C. 2004. 'Building a Resilient Supply Chain', *International Journal of Supply Chain Management*, 15(2): p.1

⁷ Campbell, A. 2008. *Sustaining Victorian Food and Farming. The Future Food and Farm Project Background Paper*. Australian Conservation Foundation, Melbourne, p.1.

⁸ ABARE.2011. *Global Food Security: Facts, Issues and Implications. Science and Economic Insights* (1): www.abares.gov.au, p.12.

⁹ ABARE.2011. *Global Food Security: Facts, Issues and Implications. Science and Economic Insights* (1): www.abares.gov.au, p.3.

3. Regional Development

Strong regional development through agriculture and food industries allows for the diversification of Australia's regional economies. Agriculture and food industries have the capacity to foster regional development through job creation, tourism and complementary local businesses.

Regional areas within Australia are more vulnerable to shocks and disadvantage due to their geographical isolation from major cities. Acute shocks such as extreme weather events are more common than in metropolitan areas and the impacts of passive shocks such as climate change, environmental degradation and water scarcity are more prominent. Public and private investment in infrastructure is minimal relative to metropolitan areas, demonstrating the limited capacity of regional areas to mitigate shocks to their economy and environment.

Economically, regional areas tend to present limited opportunities for economic diversification. Their increased vulnerability to environmental shocks and lack of investment in infrastructure has made agricultural production and food processing higher risk. Alternatively many regional areas are turning towards mining for economic development. Focus on non-renewable extraction of natural resources results in a mono-economy that is highly vulnerable to market forces.

Mining generally does not possess the strong income multiplier effect within regional areas compared to agriculture and food industries¹⁰. The drive-in-drive-out [DIDO] or fly-in fly-out [FIFO] nature of much mining work skews the development benefits of mineral and petroleum resource extraction to metropolitan areas when labour returns to their permanent residence.

The Western Australian proposes that a National Food Plan should place strong emphasis on regional development as a key outcome of food supply chain resilience. The agricultural and food industries have strong local linkages implying that the multiplier effects associated would potentially lead to greater regional development. A resilient, regionally supported food chain lessens the impact of extreme weather events and allows a continuing supply of food through seasonal variation and differing weather patterns. Strong regional communities

¹⁰ McKenzie, F. 2009. 'Farm and Mines: A Conflicting or Complimentary Land Use Dilemma in Western Australia?', *Journal for Geography* 4(2), p.120

throughout Australia based on diversified economies are a pre-requisite to a resilient Australian food supply chain.

4. Resilient Population

A resilient population is one that is healthy and has access to safe food¹¹. This responsibility belongs to all interdependent stakeholders along the food supply chain and requires an alignment of scientific, regulatory, social and economic forces to ensure adequate access to safe and nutritious food for all Australians¹².

The availability of nutritious food to the population is necessary for a resilient population but is not sufficient, since people may still make poor food choices. The current generation of non-Indigenous Australians are the first to experience reductions in life expectancy due to ill-health associated with diet¹³. The presence of ‘food deserts’ (areas where nutritious food is not available), cheap imported highly processed food and general lack of exercise has led to rising obesity and its related diseases.

Consumption of nutritious food lacks an incentive, since energy dense foods tend to be cheaper than lower energy, higher nutrient foods¹⁴. Hard economic times, unemployment, recessions and rising food prices, have meant that price is a significant constraint to purchasing nutritious food. The number of grocery outlets is correlated with population density, meaning that the isolation of regional communities increases the price of their food. The lack of fresh food products in these communities makes choosing a nutritious diet difficult to achieve¹⁵.

A resilient population needs access to safe food, with low risk of hazardous levels of toxins, pesticides, contaminants and microbiological pathogens. Consumer awareness of food safety issues and an active expression of their need for accurate and reliable information about

¹¹ Department of Environment, Food and Rural Affairs (2009; updated 2010) *United Kingdom Food Security Assessment: Detailed Analysis*, p.114.

¹² Food and Agriculture Organisation of the United Nations. 2002. *World Food Summit Five Years Later: Safe Food and Nutritious Diet For The Consumer*. FAO, Rome, p.1.

¹³ Campbell, A. 2008. ‘Sustaining Victorian Food and Farming’, *The Future Food and Farm Project Background Paper*. Australian Conservation Foundation, Melbourne, p.vii

¹⁴ Landrigan, T. and C. Pollard. 2011. *Food Access and Cost Survey (FACS) Western Australia 2010*, Australian Bureau of Statistics and Department of Health Western Australia, Perth, p.2.

¹⁵ Landrigan, T. and C. Pollard. 2011. *Food Access and Cost Survey (FACS) Western Australia 2010*. Australian Bureau of Statistics and Department of Health Western Australia, Perth., p.2

nutrition are critical for directing market forces towards fresh and processed foods that make up a healthy diet¹⁶.

High profile media stories, such as e-coli cases, have made the public more aware of food safety and increased the demand for informative food labelling. Consumer demands for food labelling extend to ethical issues about fair trade and animal welfare as well as environmental sustainability. Consumers have increased their interest in the methods and means of food production, which has made this factor more prominent in decisions about the purchase of food.

Western Australia proposed that a National Food Plan should aim to increase the resilience of the Australian population by raising awareness of the linkages between food, nutrition and health. Education and information enables the population to influence the direction of market forces in the production of fresh and processed nutritious food as well as demand for safe and ethical production and processing methods.

5. Import Replacement

Australia produces twice as much food as it consumes¹⁷ but food imports are still paramount to our food supply chain resilience. The current food supply chain is a complex net of local, national and international corporate structures that deliver our current level of food supply chain resilience¹⁸. Subsequently, international supply networks are vital to the Australian food sector as many types of inputs or food are imported¹⁹. International and national trade along the food supply chain are vital to creating an efficient allocation of scarce resources for the production and processing of expensive food.

The income generated from Australian food commodity and product exports pays (in part) for the cheap import of processed foods. The ability to import food and ingredients allows the population to access food at a variety of price points, a choice of food products and access to seasonal produce. However, the balance between food imports and exports needs to be examined so that Australia does not become overly dependent on single suppliers since

¹⁶ Food and Agriculture Organisation of the United Nations. 2002. *World Food Summit Five Years Later: Safe Food and Nutritious Diet for the Consumer*. FAO, Rome, p.2.

¹⁷ ABARE.2011. *Global Food Security: Facts, Issues and Implications. Science and Economic Insights* (1): www.abares.gov.au (Accessed 7th July 2011), p.9.

¹⁸ Department for Environment, Food and Rural Affairs, *United Kingdom Food Security Assessment: 2010 Detailed Analysis*, P.92

¹⁹ Bartos, S. and M. Balmford. 2010. *Food Chain Resilience Study*, DAFF, Canberra, p.6

shocks such as biosecurity or extreme weather events may threaten the resilience of this international link within the Australian food supply chain.

Western Australia proposes that a National Food Plan should consider food supply chain import case scenarios. The risk and impact of acute and passive shocks to the import of food and inputs need to be quantified. Risk analysis of Australian dependence on imports allows stakeholders in the food supply chain to manage and mitigate should disruptions to imported food and inputs occur. State and national quarantine scenario analysis needs to be assessed and contingency plans created.

6. Skilled Workforce

Food supply chain resilience requires a capable and multidisciplinary work force within each link of the chain. However, the Australian agriculture and food industries are subject to labour shortages and structural skill shortages, a problem particularly evident in Western Australia.

Agriculture is experiencing demographic changes as the population ages. The industry is not attracting new, younger entrants due to the perceived volatility in the profitability of the industry and climate as well as the isolated lifestyle associated with Australian regional areas.

The demand for tertiary qualified and other highly skilled labour has increased as the agriculture industry becomes more technologically advanced. However, the number of workers becoming qualified is well below replacement levels. Students that would have previously entered agriculture studies have been drawn into environmental and sustainability qualifications or been drawn into the mining sector.

Agriculture and food industries are also typically lower paying in comparison to the mining industry and subjected to seasonal variability. The wealth generated from mining, replacing agriculture in WA as the dominant contributor to State Domestic Product, has overshadowed the importance of the agriculture industry. The cyclical nature of industries such as mining and agriculture and consequently the cyclical demand for labour implies that Australia should strive towards great labour mobility, where multidisciplinary workforce easily moves between industries subject to demand and at minimal cost.

Western Australia proposes that a National Food Plan should make it a priority to establish a skilled, multidisciplinary workforce that is capable of moving between sectors and within

sectors. Furthermore, the agriculture and food industry requires incentives to attract new labour to sustain its production and increase innovation.

7. Profitability of Food Industries

The variability of profit within agriculture and the low-profit margins within the food processing industry is detrimental to its long-run sustainability. Persistent unprofitability is a realistic threat to Australia's long-term food supply chain resilience since the number and diversity of food businesses is likely to reduce over time.

The number of farms is decreasing but the average farm size is increasing with complementary increases in labour productivity. However, the economies of scale achieved by these larger farm sizes have not been reflected by increases in profitability. It is estimated that the top 50% of gross value agricultural production is produced by the top 10% of Australian farmers whereas the bottom 50% of farmers only produce 10% of the gross value of agricultural production. The profit inequality implies that only one fifth of Australian farmers are generating long-run returns to capital.²⁰

As agricultural profitability is correlated to seasonal variability and the costs of inputs are rising without the associated productivity increases, so producers are not making enough profit to be viable in the long term without extensive subsidies. Consequently farmers are facing rising debt which, when coupled with other environmental, social and economic stresses, is putting farmers at higher risk of elevated stress, depression and suicide²¹.

Food industries face a different set of challenges to their profitability. The industry has to compete with low cost processed imported food that usually have been produced through lower cost inputs of labour and without accounting for the full environmental costs. Cheaper imports are beneficial to the Australian consumer and encourage the food industry to be competitive, however competition creates smaller profit margins. The cost cutting strategies of major Australian supermarket chains in a bid to gain larger market share, serves to further squeeze the profit margins of the agriculture and food industries.

Western Australia proposes that a National Food Plan needs to acknowledge agricultural and food industry profitability as an important indicator to the strength of the Australian food

²⁰ Islam, N. 2009. *The Nature and Economic Performance of Agriculture in Western Australia: An Overview*. DAFWA, Perth, p.5.

²¹ Rose, N. 2010. *Backgrounder to Food Sovereignty and Its Relevance to Australia*. RMIT, Melbourne, p.2.

supply chain. Domestic production and processing can contribute greatly to the resilience of the Australian food supply chain as it allows Australia a degree of autonomy from global markets, contributes to national income through local production and exports and supports many regional areas.

The agriculture and food industry has always been a significant contributor to the Western Australian gross state product with an annual turnover of \$2.7 billion. Western Australian food processing industries made up 1.5% of the annual turnover of the state's manufacturing sector and employ an estimated 12,000 people.

Figure 3: Estimated Value of Western Australia's Food Value Chain 2010



Western Australia produces more food than the West's population can consume, because this is a surplus product for export. Therefore the state reports an equal value of food.

Source: Department of Agriculture and Food, Western Australia (2010). Western Australia's Food Value Chain 2010. Perth: Department of Agriculture and Food, Western Australia.

Western Australian Food Supply Chain Vulnerabilities

Characteristics of the Agriculture and Food Industry in Western Australia

The agriculture and food industry has always been a significant contributor to the Western Australian gross State product ²² with an annual turnover of \$5.7 billion²³. Western Australian food processing businesses make up 14% of the annual turnover of the State's manufacturing sector and employ an estimated 19 500 people²⁴.

Figure 3: Estimated Value of Western Australia's Food Value Chain 2010



Western Australia produces more food than the State's population can consume, however this is specialised product for export. Therefore the State imports an equal value of food²⁵. The

²² McKenzie, F. 2009. 'Farm And Mines: A Conflicting or Complimentary Land Use Dilemma In Western Australia?'. *Journal for Geography* 4(2), p.114.

²³ DAFWA 2011(Unpublished Statistics)

²⁴ DAFWA. 2009. *Plan to Support Food Industry Development 2009-2012*. DAFWA, Perth. p.4

²⁵ DAFWA. 2009. *Plan to Support Food Industry Development 2009-2012*. DAFWA, Perth. p.4

most recent estimates place imports between 60-70% of total food consumed so as to supplement shortfalls in seasonal produce, seafood and processed food (see Appendix 1 for a detailed projection of Western Australia's food needs).

The growth of the agricultural industry in Western Australia over the reporting period 1995/96 to 2005/06 was higher than the rest of the country. However, productivity growth is subjected to volatility and constrained by one of the lowest R,D&E investment rates in Australia²⁶. Furthermore, the food industry has deviated from its long run growth path of 7.8% due to chronic constraints that serve as a disincentive for private investment.

There are persistent issues and shock impacts that threaten the resilience of agriculture and food production in Western Australia. These include past and present government regulation and policies; general lack of scale; geographical isolation; access to suitable land and water; the availability and use of new technology, communication, processing and transport infrastructure that facilitate efficient marketing; business skills; social factors; international tariffs and other trade barriers²⁷.

Persistent issues and acute shocks threaten the resilience of agriculture and food production and therefore food supply chain resilience. The Western Australia agriculture and food industries have the capacity to improve the State's food security status if these issues are managed and the shocks are mitigated.

A National Food Plan, complemented by a State specific food plan, would seek to retain and enhance the local mechanisms for producing, importing and exporting food to give West Australians security of range, value and pricing for all food. Moreover, it would establish a supportive environment that enables a competitive, innovative and resilient local agricultural and food production and processing sector.

Issues Threatening the Resilience of the Western Australian Food Supply Chain

The Department of Agriculture and Food Western Australia has conducted numerous interviews with stakeholders within the food supply chain which has established common concerns regarding agricultural production and food processing within the State.

²⁶ Islam, N. 2009. *The Nature and Economic Performance of Agriculture in Western Australia: An Overview*. DAFWA, Perth. p.4

²⁷ Weinert, A. and R. Rouda. 2009. *Module One Scoping Study: Current and Future Food Demand in Western Australia*. DAFWA, Perth. p.1

Although the issues concerning Western Australia's food security share common ground with those of the rest of Australia, it is important to note that the State's geographic isolation for some key food growing regions and major food processing centres and its structure and type of agricultural production enhances Western Australia's vulnerabilities.

Viewed in isolation, any or each of these vulnerabilities may be dismissed as periodical changes to the market place. Viewed collectively however, these vulnerabilities reflect a slow decline in local food sources to service the food requirements of Western Australia.

Within each link of the food supply chain, common themes have been established as being significant threats to the resilience of the Western Australian food supply. These are:

1. Labour Shortages

- Shortage of unskilled labour due to low unemployment rates in Western Australia.
- Shortage of new skilled entrants into the agriculture and food industries threatens the long-run viability of businesses.
- High costs of recruiting and training new employees.
- High wage and incentives attracting labour into the mining and petroleum industry.
- Migration policy that is not suited to the unskilled labour needs of agriculture and food industries.

At a State level, the Western Australian Government has begun to mitigate the shortage and structural labour issues through work force planning and post-compulsory training. The State Government allocated over \$2 billion of the 2011/12 budget towards the State's labour shortages and skill demands. Department of Training and Workforce Development has outlined plans for engaging underutilised labour pools, changing migration policy and supporting post-compulsory training²⁸.

²⁸ Department of Training and Work Force Development. 2010. *Skilling WA- A Workforce Development Plan for Western Australia*. DTWD, Perth, pp.61-126.

2. Land Access and Allocation

- Lack of land zoning for existing food processing facilities.
- Minimal allocation of land for future new processing sites as modern industrial estate planning does not take into account the large areas and specific needs required by food processing sites.
- Encroachment of industrialised land by urbanisation and displacement of noxious food businesses by other less noxious industry.
- Competition with mining and petroleum industry for agricultural land.
- Perceived threat of foreign investment in agricultural land.
- Lifestyle farming overtaking commercial farming.

At a State level, the Western Australian Government is due to release a State Planning Strategy that will focus on the above concerns. However, the broad focus of this planning strategy means that its effectiveness would benefit from a decision making framework in a National Food Plan.

3. Water

- Water allocations are facing increasing demand.
- Risk that high quality agricultural land may become 'dry' if water allocations are sold through market mechanisms to non-agricultural uses.
- Price of water increasing as cost recovery is implemented.
- Water quality is subject to a number of threats including salinity, acidification, elevated nitrate levels as well as other pollutants.
- Use of recycled water is constrained by health requirements, access to capital, cost and public perception.
- A limited availability and high cost of water is affecting the viability of the food processing.

At a State level, the Western Australian government, through the Department of Water, committed to water reform due to the increased demand and reduced availability of water²⁹. The Western Australian reforms focus on access entitlements, the planning process for setting allocations, water entitlement trading, metering and the scope of water resource management

²⁹ Department of Water. 2007. *Western Australia's Implementation Plan for the National Water Initiative*. DOW, Perth, p.8.

changes³⁰. This reform would benefit from a National Food Plan that recognised the importance of water to the resilience of Australia's food supply chain.

4. Logistics

- High dependence on food and input imports from national and international sources.
- Food distribution centres only stock 48 hours worth of food at any one time.
- High dependence on the Nullarbor rail link which is vulnerable to acute shocks.
- High cost of transportation and minimal large transport routes increases the cost and availability of food outside metropolitan areas.
- The regulation and policy regarding transport infrastructure between States is fragmented and uncoordinated adding both direct and indirect costs to food production and distribution. These costs inhibit productivity and competitiveness of the food supply chain.

At a State level, the Department of Transport and Main Roads WA have outlined a Strategic Plan that responds to these transport issues in Western Australia. A National Food Plan should coordinate a response to cross State border issues.

5. Government Regulation

- Complexity of modern regulation strains the capacity of small to medium sized businesses to comply.
- High direct and indirect costs for food and agricultural companies to comply with regulation.³¹
- Outdated regulation is no longer relevant to the current economic, environmental or social situation.

The Government of Western Australia has made a concerted effort to reduce the regulatory burden, however this effort is not specifically focused on the agriculture and food industries. Regulation of agriculture and food industries requires an assessment to ensure that they are evidence based with minimal unintended consequences and should aim for overall reduction

³⁰ Department of Water. 2007. *Western Australia's Implementation Plan for The National Water Initiative*. DOW, Perth, p.3

³¹ Berg, C. and C. Murn. 2009. *Over-Ruled: How Excessive Regulation and Legislation Is Holding back Western Australia*. Project Western Australia Discussion Paper. Institute of Public Affairs and Mannkal Economic Education Foundation, p.10

in 'red tape'³². A National Food Plan should address these issues as a key government induced vulnerability to food supply chain resilience.

6. Barriers to Trade

- High value of the Australian dollar makes Western Australian agricultural commodities and processed food exports less competitive in international markets.
- Rapidly changing trade policies that make for an uncertain environment such as sudden bans on live exports.
- Agriculture and food protectionist policies of trading partners.

Western Australia continues to investigate new markets for exports and help exporters meet the increasingly high safety and quality standards for food products so that Western Australian exports remain viable on the international market. A National Food Plan should complement State support for international trade.

7. Biosecurity Threats

- Increasing tourism and business travel raises the risks associated with human, plant and animal diseases and pests entering Western Australia.
- Increasing trade of cut flowers, nursery plants and seeds as well as an increase in the aquarium trade all threaten to introduce new diseases into the Western Australian ecosystem that threaten food, agriculture and fishery industries and consequently the environment and the economy.³³

Western Australia, through the Department of Agriculture and Food, has implemented an integrated bio-security system of pre-border, border and post-border risk assessments, monitoring, surveillance and response to minimise the threats to Western Australian agriculture and food production. The Department of Fisheries provides similar biosecurity measures to protect the marine habitat. A National Food Plan should reinforce these biosecurity measures across Australia as they are a significant mitigation tool.

8. Energy Infrastructure

- Restricted reticulation of three phase power.

³² Berg, C. And C. Murn. 2009. *Over-Ruled: How Excessive Regulation and Legislation Is Holding back Western Australia*. Project Western Australia Discussion Paper. Institute of Public Affairs and Mannkal Economic Education Foundation., p.6

³³ Sharma, S. 2010. *Biosecurity in Western Australia*. DAFWA, Perth, p.8

- Restricted reticulation of gas.
- High cost of energy.

These issues restrict the development of agricultural and food industries in Western Australia particularly in regional areas. A National Food Plan should highlight the energy needs for food production and processing as a critical component of food supply chain resilience.

9. Health of the Western Australian Population

- Lack of food literacy and increased demand for convenient food has led to a decreasing consumption of whole foods, fruit and vegetables as well as increased the size of food portions.
- Rising obesity and chronic illness associated with overeating.
- Inaccessible and/or unaffordable healthy food.
- Energy dense foods are cheaper than perishable core foods.
- Indigenous and other vulnerable groups face nutritional challenges compared to the general population.

The Department of Health Western Australian has recognised and addressed these issues in a separate submission. A National Food Plan should address these issues and support State initiatives to mitigate the challenges of food health, nutrition, affordability and access.

10. Property Rights

- Competing land rights (eg. between agriculture, mining and Indigenous).
- Displacement of commercial fishing and loss of fishing grounds to sanctuaries.

The Western Australian Government continues to reform diversification of land tenure and investigate aquatic property rights systems. A National Food Plan should recognise the competition for land resources for commercial or conservation reasons as a vulnerability to food supply chain resilience.

Recommendations for a National Food Plan

Western Australia recommends that *the aim of a National Food Plan should be to achieve a resilient food system that provides equitable outcomes between economic, societal and environmental concerns*. The National Food Plan needs to recognise that the key to food security within Australia is the ability of the food supply chain to mitigate, respond and adapt to passive and acute shocks by:

1. Whole of Government Approach to Food Policy

- The Federal Government to make a statement about the value of food to the Australian community and economy.
 - A National Food Plan should be consistent with a market-based economy, however should also recognise the social value of food.
 - A National Food Plan therefore should also recognise the need for a food system that allows Australians to access healthy, nutritious food, produced in a manner that is sustainable and equitable regardless of geographical or socio-economic position.
- Alignment of Local, State and National regulations for agriculture and food as there is currently a lack of coordination and harmonisation.
 - Regulation and policy should be streamlined so that unnecessary direct and/or indirect costs are not imposed on the agriculture and food industries and do not discourage investment.

2. Research, Innovation and Development

- Consistent with the National R,D&E Framework established under Primary Industries Ministerial Council, establish a R,D&E framework for food supply chain resilience.
 - Assessment of risks to and impact on food supply chain resilience as research priorities.
- Establish a R,D&E funding framework for food industry development within the National Food Science and Nutrition Leaders Forum.

- Develop a strategy for the dissemination and deployment of information and technological advancement for early adoption into the agriculture and food industries.

3. Infrastructure and Competitive Environment

- Timely, easily accessible, approved and low-cost infrastructure needs to be made available to support the value-adding of food.
- Expand regional and outer metropolitan utility distribution networks and fast track local, State and federal government approvals.

4. Improve Long-Term Profitability of the Agriculture and Food Industry

- Encourage transparency within the food-value chain so information is accessible for investment, purchasing and consumption decisions.
- Map key food supply chains for management, process engineering and logistical efficiencies.
- Establish an enabling environment that is conducive to investment for various future scenarios (eg. mining downturn).
- Greater public/private investment in applied R,D&E to improve productivity and efficiency within agricultural and food industries.

5. Assist with Workforce Development

- Recognise and ameliorate industry specific labour needs constraining agriculture and food industries.
- Create strategies to attract post-compulsory educated graduates in agriculture and food industries through fee reduction, scholarships and campaigns.

6. Develop Effective Natural Resource Management Policy to Manage Land Assets, Climate Variability and Biosecurity

- Outline a strategy for appropriate land allocation between primary industries, urban developments and other land pressures that recognises the importance of agricultural land for food supply chain resilience.

- Address concerns about the impacts of water shortages and associated government policy.
- Encourage more efficient use of packaging, increasing recycling rates and minimising the use of water and energy.
- Investigate the interface between climate change and agricultural productivity including mitigation and adaption strategies.

Bibliography

ABARE 2011. *Global Food Security: Facts, Issues and Implications. Science and Economic Insights (1)*: www.abares.gov.au.

Bartos, S. and M. Balmford. 2010. *Food Chain Resilience Study*. DAFF, Canberra.

Berg, C. and C. Murn. 2009. *Over-Ruled: How Excessive Regulation and Legislation Is Holding back Western Australia*. Project. Western Australia, Discussion Paper. Institute of Public Affairs and Mannkal Economic Education Foundation: www.ipa.org.au

Campbell, A. 2008. *Sustaining Victorian Food and Farming*. The Future Food and Farm Project Background Paper. Australian Conservation Foundation, Melbourne.

Christopher, M. and H. Peck. 2004. *Building the Resilient Supply Chain*. International Journal of Logistics Management 15(2).

Department of Environment, Food and Rural Affairs (2009; updated 2010) *United Kingdom Food Security Assessment: Detailed Analysis*.

Department of Food and Agriculture Western Australia. 2009. *Plan to Support Food Industry Development 2009-2012*. DAFWA, Perth.

Department of Food and Agriculture Western Australia. 2009. *Western Australian Farm Input Taskforce 2008 Report*. DAFWA, Perth.

Department of Training and Work Force Development. 2010. *Skilling WA- A Workforce Development Plan for Western Australia*. DTWD, Perth.

Department of Water. 2007. *Western Australia's Implementation Plan for the National Water Initiative*. DOW, Perth.

Estrada-Flores, S., Higgins, A. and Larsen, K. 2009. *Food Distribution System in a Climate-Challenged Future: fruit and vegetables as a case study*. CSIRO, Melbourne

Fawcett, S. E., Magnan, G. M. and McCarter, M. W. 2008. 'Benefits, Barriers, and Bridges to Effective Supply Chain Management'. *Supply Chain Management: An International Journal* 13(1), pp.35-48.

Food and Agriculture Organisation of the United Nations. 2002. *World Food Summit Five Years Later: Safe Food and Nutritious Diet for the Consumer*. FAO, Rome.

Islam, N. 2009. *The Nature and Economic Performance of Agriculture in Western Australia: An Overview*. DAFWA, Perth.

Kliendorker, P. and G. Saad. 2005. *Managing Disruption Risks in Supply Chains*. Production and Operations Management 14(1), pp1-16.

Livesey, F., Frau, I., Oughton, G. and Featherston, C. 2010. *Future Scenarios for the UK food and drink industry*, Institute of Manufacturing, University of Cambridge .

McKenzie, F. 2009. 'Farm and Mines: A Conflicting or Complimentary Land Use Dilemma in Western Australia?', *Journal for Geography* 4(2), pp.113-128.

Moir, B. and P. Morris. 2011. *Global Food Security: Facts Issues and Implications*. Science and Economic Insights. ABARES, Canberra.

NARGA, Accenture Australia Ltd. 2010. *The Challenge to Feed a Growing Nation*, NARGA Canberra

Parfitt, J., Barthel, M. and Macnaughton, S. 2010. *Food Waste within Food Supply Chains: Quantification and Potential for Change to 2050*. Philosophical Transactions of the Royal Society 365.

Peck, C. 2004. 'Building a Resilient Supply Chain', *International Journal of Supply Chain Management* 15(2), pp.1-13.

People's Food Policy. 2011. *Resetting the Table: A People's Food Policy for Canada*.

Pettit, T. J. 2008. *Supply Chain Resilience: Development of a Conceptual Framework, an Assessment Tool and an Implementation Process*. Doctoral Thesis at the Ohio State University, Columbus, USA.

Pitts, K. 2011. *Western Australian Food Security: A Brief Overview from a Food Manufacturing Perspective*. DAFWA. (Unpublished)

Roetter, R. and H. Van Keule.2008. *Food Security. Science for Agriculture and Rural Development in Low-Income Countries*. Springer: Dordrecht.

Rose, N. 2010. *Backgrounder to Food Sovereignty and Its Relevance to Australia*. Food Connect Foundation; Doctoral Candidate, RMIT Globalism Research Centre.

Sharma, S. 2010. *Biosecurity in Western Australia*. DAFWA, Perth.

Sheales, T. and Gunning-Trant, C. 2009. *Global Food Security and Australia*. ABARE report, Canberra.

The Scottish Government. 2009. *Recipe for Success – Scotland's National Food and Drink Policy*.

Thomas, J. F. 2008. *Water Futures for Western Australia 2008-30*. DoW, Perth.

Turrall, H., Burke, J. and Faures, J. M. 2011. *FAO Report – Climate Change, Water and Food Security*.

Ulubasoglu, M., Mallick, D., Wadud, M., Hone, P. and Haszler, H. 2010. *Food Demand Elasticities in Australia*. Ideas, Deakin University, Geelong.

Van Der Vorst, J. G. A. J. and Beulens, A. J. M. 2002. *Identifying sources of uncertainty to generate supply chain redesign strategies*. *International Journal of Physical Distribution & Logistics Management* 32(6).

Weinert, A. And R. Rouda. 2009. *Module One Scoping Study: Current and Future Food Demand in Western Australia*. DAFWA, Perth.

Windsor, D. 2008. *Planning issues for agricultural development and food supply growth in the South West Agricultural Region*. DAFWA, Perth

Appendices

Appendix 1: Summary Of Land and Water Requirements to Meet Western Australia's Food Demand Assuming High Level Population Growth [based on consumption and production data requirements 2008]³⁴

Year	2008		2020		2030		2040		2050		
Product	Total consumed (tonnes)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)
Dairy	526 500	112 812	740 863	156 752	1 028 977	192 122	1 261 156	228 778	1 501 778	267 631	1 756 624
Beef	74 974	1 666 060	10 936 720	2 314 000	15 189 889	2 836 133	18 617 352	3 377 253	22 169 449	3 950 809	25 934 464
Sheep	24 008	460 168	3 151 987	666 900	4 377 760	817 380	5 365 563	973 332	6 389 285	1 138 632	7 474 371
Chicken	82 555	117 936	774 172	163 800	1 075 239	200 760	1 317 857	239 064	1 569 298	279 664	1 835 810
Eggs	27 378	20 539	85 397	28 526	118 607	34 962	145 370	41 633	173 106	48 704	202 504
Pork	55 177	227 015	1 490 203	315 298	2 069 726	386 443	2 536 741	460 174	3 020 739	538 325	3 533 748
Total Animal	790 592	2 624 600	17 179 342	3 645 276	23 860 198	4 467 800	29 244 039	5 320 234	34 823 655	6 223 765	40 737 721
Potatoes	130 572	2 611	21 428	3 627	29 761	4 445	36 476	5 294	43 436	6 193	50 813
Carrots	24 219	505	10 051	701	13 960	859	17 110	1 023	20 375	1 196	23 635
Total Roots and tubers	154 791	3 116	31 479	4 328	43 721	5 304	53 586	6 317	63 811	7 389	74 648
Tomatoes	50 544	842	14 200	1 170	19 722	1 434	24 172	1 708	26 784	1 998	33 672
Onions	18 322	204	1 002	283	1 392	347	1 706	413	2 032	483	2 377
Capsicums	10 530	1 620	29 790	2 250	41 375	2 758	50 710	3 284	60 386	3 842	70 641
Cucumbers	9 094	947	14 516	1 316	20 162	1 613	24 711	1 920	29 426	2 246	34 423
Beans	7 543	3 772	60 686	5 238	84 287	6 420	103 305	7 645	123 015	8 944	143 907
Garlic	4 633	618	3 041	658	4 224	1 052	5 177	1 252	6 165	1 465	7 212
Pumpkins	4 595	230	3 521	319	4 890	391	5 993	466	7 137	545	8348
Eggplant	3 686	279	4 492	368	6 240	475	7 647	566	9 106	662	10653
Mushrooms	3 629	191	2 934	266	4 075	326	4 994	368	5 947	454	6 967
Total Other vegetables	112 776	8 703	134 182	12 088	186 367	14 016	228 415	17 642	271 998	20 639	318 190
Lettuce	14 742	343	6 830	476	9 486	584	11 626	695	13 844	813	16 195
Spinach	2 297	368	2 614	511	3 631	626	4 450	745	5 299	872	6 199
Celery	6 318	74	1 367	103	1 896	127	2 327	151	2 771	176	3 241

³⁴ Department of Agriculture and Food. 2009. Scoping Study: Current And Future Food Demand In Western Australia. DAFWA, Perth.

Year	2008			2020		2030		2040		2050	
Product	Total consumed (tonnes)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)	Land requirement (ha)	Water requirement (ML)
Total Leafy vegetables	23 357	785	10 811	1090	15 015	1337	18 403	1591	21 914	1861	25 635
Cauliflower	6 950	433	2 484	601	3 451	736	4 229	877	5 036	1 026	5 891
Broccoli	5 054	337	1 935	468	2 688	574	3 295	683	3 923	799	4 590
Cabbage	10 530	878	5 760	1 219	8 000	1 494	9 805	1 779	11 676	2 081	13 659
Total Brassicas	22 534	1648	10 179	2 288	14 139	2 804	17 329	3 339	20 635	3 906	24 140
Apples	18 954	379	5 519	527	7 665	645	9 394	768	11 186	899	13 086
Pears	8 003	128	1 962	178	2 725	218	3 340	260	3 977	304	4 653
Total Pome	26 957	507	7 481	705	10 390	863	12 734	1 028	15 163	1 203	17 739
Peach	7 754	222	2 716	308	3 772	377	4 623	449	5 505	525	6 440
Prune/Plum	4 212	281	3 442	390	4 781	478	5 860	569	6 978	668	8 163
Apricots	957	38	587	53	815	65	999	78	1 189	91	1 391
Cherries	2 010	188	3 092	261	4 295	320	5 264	381	6 268	446	7 332
Avocados	3 255	181	1 566	251	2 175	308	2 666	367	3 175	429	3 714
Total Stone	18 188	910	11 403	1 263	15 838	1 548	19 412	1 844	23 115	2 157	27 040
Strawberry	7 467	622	11 858	864	16 469	1 059	20 185	1 261	24 036	1 476	28 119
Orange	68 924	1 723	26 867	2 393	37 315	2 933	45 734	3 493	54 460	4 088	63 709
Lemon	7 562	189	2 948	263	4 094	322	5 018	383	5 976	448	6 990
Mandarin	6 950	174	2 709	241	3 763	296	4 612	352	5 491	412	6 424
Grapefruit	5 265	132	2 052	183	2 850	224	3 494	267	4 160	312	4 867
Lime	2 872	72	1 119	100	1 555	122	1 906	146	2 269	170	2 655
Total Citrus	91 573	2 290	35 695	3 180	49 577	3 897	60 764	4 641	72 356	5 428	84 645
Wine	42 120	4 212	38 727	5 850	53 787	7 170	65 924	8 538	78 502	9 988	91 833

