A brief review

of

Jersey's Food Security

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Contents

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1. Introduction

Background

1.1 We first looked at food security on Jersey in 2011. This review updates our original report and provides options for consideration by the States of Jersey. In conducting this update it has been notable that many of the concerns that we highlighted in 2011 are as relevant now as they were then.

1.2 In 2014 the Jersey Annual Social Survey included a series of questions intended to find the extent to which Jersey residents have concerns over food availability and food affordability. Two thirds of respondents judged that, if food became unavailable for purchase, their households would run out of food in a week or less. Respondents believed that responsibility for ensuring that food was available and affordable sat with the retailers and with government. This report highlights the areas in which actions might be taken to help ensure that Jersey is and remains food-secure.

Food security in the Jersey context

1.3 Food security is a somewhat emotive turn of phrase. It is linked by many people with self-sufficiency. It is political and it is operational. Moreover, it is an issue which has gained the attention of policy makers at global, European and UK levels.

1.4 Within the United Nation's Food and Agriculture Organisation (the FAO) 'food security' has been used in terms of dealing with very immediate threats to populations in the developing world such as poverty, food shortages and starvation. Food security in this sense refers to the ability to make food immediately available and affordable across a given population. The European Union's Directorate General for Agriculture use 'food security' in a somewhat different context; that of ensuring that the EU as a whole maintains through the Common Agricultural Policy the potential to produce food[i]. The UK's Food Security Assessment[ii] addresses a series of perceived threats to the UK's food supply, looking again at availability and affordability but also at the ability of the country to produce food.

1.5 Food security in the Jersey context is perhaps different from all of these, although it does share common factors. Jersey's island status and its high population density provide unique challenges to the availability of food and the ability to produce food and whilst Jersey is relatively wealthy there is a significant part of the population that does not share this wealth, providing challenges to food affordability.

1.6 However, food security is not simply an operational issue. The extent to which people feel that they are food secure has direct bearing on their sense of wellbeing. To borrow a phrase from economists, it increases their overall welfare. This being the case the factors that go together to provide food security also have a social and a political value.

1.7 This review sets out four objectives for food security on Jersey;

- Securing the availability of food
- Securing the affordability of food
- Securing the ability to produce food
- Guarding against supply shocks.

1.8 It is intended that this review should serve three principal purposes, it should:

i. Identify where food security problems are most likely to arise and set out mitigating actions.

ii. Feed into island-wide planning on Jersey's security.

iii. Underpin the developing vision for Jersey's agriculture and for food production on the Island.

1.9 Food security is not only about dealing with the routine and the probable, but it is also about dealing with the years that are not routine and the improbable; it is about the here-and-now but it is just as much about future decades and future generations.

The roles of the States of Jersey and the private sector

1.10 Food production and trade operate in a mixed private-public environment. On the one hand, land is owned and farmed by the private sector, operating in a market which includes (through Protocol 3) the EU. Produce is sold on the Island and exported directly to the UK and France. Private retailers import, distribute and sell foods and other goods. On the other hand, farming and the markets for agricultural and food products are regulated by the States of Jersey, through laws, licensing, taxation and incentives; and through international treaties as regards export trade.

1.11 Such regulation can constrain agriculture, for example to ensure that potentially negative impacts of commercial operations are minimised. On the other hand, they also allow for an element of governmental support to maintain and develop the agriculture and food industries to provide public goods such as environmental management and to stimulate economic development and increase employment. The regulators, through planning laws, may also allow or disallow land to be taken out of agriculture and control certain uses of land within agriculture. Similarly, the operations of processors and retailers and indeed of import/export companies can be further regulated by the States, for example through the licensing of operations.

1.12 An examination of food security must therefore take into account not only the actions of the States of Jersey as regulator, but also the actions of the private sector in their response to regulations and in their response to local, regional and global challenges.

2. Food availability

Reliance on food and farming imports

2.1 The majority of Jersey's food is imported from or through the UK by the major retailers[1] operating on the Island and by a number of wholesalers supplying the catering trade[2] and smaller shops. With regard to every-day staples, Jersey might be considered wholly self-sufficient only for fresh cows' milk and new potatoes.

2.2 There is currently one car-ferry company, Condor, serving Jersey and providing roll-on, roll-off routes to the UK and France and with the ability to take light freight. Condor Logistics also operate a dedicated roll-on, roll off freight ferry twice per day from Portsmouth and the Channel Islands (i.e. serving Guernsey also) and there is a once per week service between Jersey and St Malo.

2.3 Farming on Jersey is also reliant on imported inputs, such as fertilizers and feeds. Channel Island Lines, based in St Helier, operates a regular lift-on, lift-off ferry for bulk materials and containers between the Southampton in the UK and Jersey. Smaller-scale freight services are also operated between St Helier and France. For example, the 'Normandy Trader' ships shellfish to the mainland and back-hauls using an old landing craft; and Rozel Shipping operates a route between St Helier and Granville, Normandy.

2.4 For food imports and chilled containers Ferryspeed provides a twice daily freight service between Portsmouth and Jersey (using the Condor freight ferries) and maintains a 60,000 sq ft warehouse in St Helier. Smaller scale independent warehousing operations also provide storage of ambient, fresh and frozen products for the retail and catering trades.

2.5 Condor operate under a non-exclusive licence governed by a Universal Service Obligation which specifies, for example, that ferry services must provide all year-round provision, for freight and for passengers, both high speed and conventional. Other operators would be allowed to enter the market provided that they offered the same comprehensive service. Condor's Comprehensive Service Review (November 2016) recognised as a key strategic need, 'A ferry service which can provide a 'just in time' service for essential food and other freight deliveries'.

2.6 Figures from each of the three major retailers and from Condor indicate an average of between 21 and 24 temperature controlled 13m containers of groceries being delivered to Jersey each day. Once on Jersey most goods are transported directly to retail outlets, each of which has relatively little warehousing space.

2.7 The low levels of warehousing held by individual retailers would indicate that for ambient-stored products there are 2-21 days' supply in any one retailer, whilst for fresh products there is generally less than 5 days' supply.

2.8 Although the major retailers have adopted a 'just in time delivery' approach, fresh vegetables, meat and bread are typically held in sufficient quantities by individual retailers to cope with minor interruptions to the ferry services. However, retailers have expressed concern that in the event of any public worry over specific shortages it is likely that stocks held would diminish far more quickly. Such an event could

[1] The Co-operative (owned by Channel Islands Cooperative Society Ltd), Waitrose and Sandpiper. Sandpiper operates its own retail stores (Checkers Express and Food Hall) as well as the M&S Jersey and Iceland franchises.
[2] The largest of these, the Cimandis food service operation, was sold by Sandpiper to Bidvest 3663 in 2015.

therefore result in an uneven distribution of foodstuffs between households, so that some would be left in a position of shortage much sooner than would be expected based only on days of supply held by the retailers under normal trading scenarios.

Table 1. Approximate supply of selected foodstuffs held by the major retailers

Foodstuff	Approximate supply
Fresh vegetables	1.5 – 4 days, plus locally grown
Fruit	1.5 – 4 days
Meat	1.5 – 5 days
Fish	1.5 – 5 days
Eggs	1.5 – 7 days, plus locally sourced
Bread	1-4 days
Rice & pasta	2 – 21 days
Frozen goods	3– 21 days

2.9 A number of imported foodstuffs are of particular importance to specific sections of the population. For example, parents of very young children may rely on formula milk and on purchased baby-foods. Similarly, many people are dependent on foods which are gluten-free, or on products labelled as suitable for diabetics. In these cases, food availability has a greater significance because of the reduced substitutability of one food for another.

Agricultural and horticultural food production

2.10 Whilst Jersey exports the majority (by value) of its agricultural production and fisheries catch, it is nevertheless worthwhile examining the extent of that production, and harvest, so as to gauge the potential self-sufficiency of the Island.

2.11 Figures for 2015[iii] provide an indication of the scale of Jersey's agricultural production. In that year 16,562 vergées were planted with potatoes, 2,171 vergées were planted with other fruit and vegetables, and the area of grass was 19,614 vergées. The areas of each crop vary year by year, primarily driven through expectations of export demands. The area of potatoes fell by approximately 12.5% between 2011 and 2015, whilst the area of other fruit and vegetables fell by approximately 4%.

2.12 Data for exports indicates over 29,500 tonnes of potatoes and just under 1,500 tonnes of other vegetables were exported in 2015. Discussions with growers indicate that two of the three major retailers, two thirds of the Island's wholesalers and most of the smaller retailers will stock locally grown fruit and vegetables. Discussions with these retailers indicate that, in peak season, local produce can account for the vast majority of core vegetable and salad sales. Whilst there would appear to be market saturation with these customers, for the current range of fruit and vegetables, growers have indicated that it would be possible to extend the seasons of production and the range of products and to add further value to existing lines, albeit that this would require additional investment and support.

2.13 The predominant livestock on Jersey is the Jersey dairy cow, with the majority of dairy production consumed within the Island. There are in the region of 2,800 Jersey dairy cows and heifers in milk on the

Island, together with over 1,600 replacement heifers. In 2015, 13,886,000 litres of milk were delivered to Jersey Dairy, and a small additional volume was sold directly to the public.

2.14 Egg production has shown a marked increase on Jersey between 2010-2015, with the number of laying hens rising by approximately 50%, from 18,000 to 27,000. Assuming that each hen will produce 312 eggs/year[iv], this equates to an annual egg production on Jersey of 8,424,000.

2.15 Since 2010 there has also been a small herd of Aberdeen Angus x Jersey cattle that are being raised for beef rather than dairy production, although this remains at below 500 head of cattle. Both sheep and pig production also remain at low levels; with a flock size of 1,015 sheep and a herd of just over 432 pigs. The abattoir slaughters beef and dairy cattle, pigs and sheep, and a review[v] in 2016 estimated that approximately 172 tonnes of meat were processed in 2014.

Table 2. Estimated output of the Jersey abattoir

	No. animals	Deadweight (kg)
Jersey cows	517	87,373
Aberdeen Angus	146	33,434
Sheep	449	8,980
Pigs	720	43,200
TOTAL	**1,832**	**172,987**

2.16 A proportion of Jersey's sheep are used for conservation grazing on the north coast, with little need for additional feed inputs. Apart from these sheep, most other livestock production and most vegetable and cereal production is highly dependent on imported fertilisers and feedstuffs. Figures for 2011-2015 indicate an average annual import of 3,500 tonnes of agricultural fertilizers to Jersey, and it is estimated that the dairy industry imports 4,500 tonnes of cattle feed annually.

2.17 The volume of freight shipped from Jersey to the UK is relatively low and there is a marked skew towards imports. The estimated average import cost for bulk products is in the region of £80 per tonne (ferry charges) plus any haulier charge (for time and use of vehicle), so that even if preferential rates can be negotiated there will remain a significant cost to importing animal foodstuffs and fertilizers.

Fisheries and marine resources

2.18 Data from 2011-2015 indicates an annual average catch of 1,272 tonnes of shellfish (predominantly brown crab, lobster, scallop and whelk) and 118 tonnes of wet fish (predominantly skate/ray, dogfish, sea bream and bass) by the Jersey fleet. A further 1,182 tonnes of shellfish are farmed on Jersey, mostly Pacific oyster, but also mussels. The vast majority of landings and of aquaculture production is exported, and some fishermen choose to land their catch directly into France.

2.19 Fisheries access, regulation and management in the Bay of Granville, including both French and Jersey territorial waters, is set out in the Granville Bay Agreement. In addition to this, the Fisheries Management Agreement between the UK and Jersey sets out the relationship between the UK and Jersey as far as fishing in each other's waters is concerned. Within the Granville Bay Agreement, some fishing of Jersey's

waters by French registered vessels is allowed and it is estimated that these land in the region of two-thirds of the brown crab that is caught in Jersey waters.

2.20 Jersey's fisheries are managed with the aim of providing a sustainable harvest and the lobster fishery has Marine Stewardship Council certification. It is thought that the brown crab and spider crab fisheries are all also managed and fished to allow a sustainable harvest; whilst the scallop and whelk fisheries might require tighter controls in order to achieve similar levels of sustainability.

Estimates of self-sufficiency

2.21 A crude estimate of self-sufficiency can be made based on these production figures, and using UK estimates of consumption per person as a guide. This is presented in Table 3.

Table 3. Estimates of self-sufficiency for Jersey's agriculture and fisheries

Product	Jersey's production	Estimated consumption	Self sufficiency
Fresh milk	14 million litres	10.5 million litres	132%
Shell eggs	8 million	10.7 million	75%
Vegetables (fresh)	1,500 tonnes	5,735 tonnes	26%
Potatoes (fresh)	29,500 tonnes	2,344 tonnes	1,258%
Beef, lamb and pork	172 tonnes	4,950 tonnes	< 4%
Wet fish	118 tonnes	873 tonnes	14%

Jersey's food energy requirements

2.22 It is possible to examine the production of food on Jersey on an energy basis i.e. asking how close the Island is to self-sufficiency by food-energy rather than food-volumes or food-prices.

2.23 'Estimated average requirements' are used to determine energy needs. The estimated average requirement for energy is the point at which 50% of the population will require more, and 50% will require less energy for their normal living. Estimated average requirements for energy tend to increase up the age of 15-18 years and to decrease in old age and they are generally higher for males than females. For adults aged 10-50 years the estimated energy requirements are 11.4 MJ and 8.9 MJ for males and females respectively[vi].

2.24 Assuming adult requirements across the population (i.e. ignoring the lower requirements for younger children and higher requirements for older citizens), and assuming equal numbers of males and females, then the total daily energy requirements for Jersey based on a population of 102,700 can be estimated at 1,029,054 MJ per day.

2.25 The energy value[vii] of Jersey's current potato, dairy and egg production is shown in Table 4. From this it is clear that Jersey is not, with its current cropping, wholly self-sufficient on a food energy basis; with these three products providing just 124/365 of Jersey's energy needs.

2.26 It should be noted that this is based on current cropping and methods of production and that small changes could have significant impacts. For example, if the potato crop were left to mature (i.e. shifting from an early potato towards a main crop potato) then the harvest weight would more than double and the total energy-days produced on the Island would cover almost two thirds of a full year.

Table 4. The energy value of Jersey's current agricultural production

Crop	Energy value / year (MJ)	Energy days
Potatoes	88,860,160	86
Milk & milk products	35,731,360	35
Eggs	2,729,376	3
TOTALS	**127,320,896**	**124**

2.27 The production of a *balanced* diet using only home-grown produce may require a review of cropping, of the use of glasshouse crops and of wastage in the food chain. There are no key foodstuffs that the Island is not capable of producing, it is simply that the proportions of each crop would need to be addressed.

Jersey's food infrastructure

2.28 The production and distribution of food on Jersey is dependent on a number of key elements of food infrastructure, including:

- A vegetable packing house at Woodside Farms
- The Jersey Dairy
- The abattoir and knackers yard
- Sorting and packing operations operated by producers of Jersey Royals
- Purification units for processing shellfish before they enter the human food chain, operated by Jersey's aquaculture businesses.
- Landing and loading facilities at Jersey's harbours, e.g. for the import of fertilizers and feed

2.29 In addition, a number of smaller-scale elements of infrastructure, such as artisan bakeries and butcheries, operate at a more local level. Jersey's last plant-scale bakery was closed in 2014, and bread is now made and sold either through the multiple retailers or, to a lower volume, through the smaller, more artisanal bakers. Whilst these all rely on the import to Jersey of raw or part-processed ingredients, it should be noted that these have a greater longevity and are more easily transported than bakery products themselves.

2.30 Individual farm and food businesses rely on a variety of skills, across sectors, in order to operate: including veterinarians and agronomists, slaughter men and dairy technicians, mechanics, drivers, chefs and many others. This human infrastructure is supported through both on and off-Island recruitment and training.

2.31 Given Jersey's reliance on food imports, the most critical element of the Island's food infrastructure is the ferry service operating between the UK and St Helier, together with the associated harbour facilities and warehousing in the capital.

Home grown potential

2.32 Ideally, local producers would compete with imported goods on price as well as quality and local provenance, and so protect the diversity of Jersey grown produce. And ideally, all other things being equal consumers would not hesitate to choose Jersey products over imported alternatives.

2.33 However, there is an implicit assumption in the mind of many consumers that the ethical considerations (including considerations on food security) on their food purchases have been made, on their behalf, by the retailers. We would not expect a supermarket to sell food that has been produced using obviously cruel methods or which has exploited people from developing countries or which has caused significant environmental or wildlife damage. Nor would we expect retailers to act in a way which was damaging to important sectors of our own economy. As such, whilst the role of consumer choice in driving the food security actions of the retailers should not be ignored, it remains the responsibility of business and of the State to ensure that food security is maintained.

2.34 Following from this, we would not expect retailers to act in a way which was damaging to our food security. It can be argued that there is a moral compact between the States of Jersey (on behalf of the Jersey people) and the retailers it licenses to trade; for the States to remove barriers to trade and to ensure that key services are maintained, and for those retailers to behave in a manner which is directly supportive and acting in the long-term interest of home production of fresh produce, bakery products and, albeit on a smaller scale, of protein products. To this end, supporting and acting in the long-term interest of home-production might be thought of as integral to the corporate social responsibility of the retail sector.

2.35 The average weekly household expenditure on food and non-alcoholic beverages on Jersey is £85.80[viii]. Based on the 2011 Census there are 41,600 households on the Island, indicating a total weekly spend of just over £3.5 million. Table 5 details the average household spend on food and non-alcoholic drinks, although it should be noted that the typical 'basket' of shopping does of course vary considerably from household to household.

2.36 Looking at expenditure in greater detail, Table 5 demonstrates that on average 58% of expenditure on food and non-alcoholic drinks is on products which are already (e.g. milk) or might in theory be sourced from Jersey producers. A provisional estimate is that 11% of the supermarket basket of food and non-alcoholic drinks might be sourced from local Channel Islands producers based on the current agricultural production i.e. all of the milk, butter and eggs plus around 50% of the fresh vegetables and potatoes. There is potential to increase sales in fresh vegetables and also in protein products, although these will be constrained by limits to supply including those resulting from seasonal production patterns.

Threats to food availability

2.37 Threats to food imports include: (i) shipping stoppages or restrictions affecting the UK-Jersey roll-on, roll-off ferry, (ii) logistic difficulties within the UK mainland and in the UK's own imports, for example through severe weather events, fuel blockades or fuel shortages, and (iii) trading difficulties of the commercial retailers and wholesalers.

2.38 Threats to the availability of home-produced goods include: (i) shipping stoppages or restrictions affecting the lift-on, lift-off ferries operating routes to and from Jersey, (ii) retailer decisions on stocking home-produced goods, (iii) loss of infrastructure, (iv) livestock and plant diseases, (v) degradation of the

farmed environment, (vi) drought and water shortage, and (vi) commercial decisions relating to production and sales.

Table 5. Weekly household expenditure (£) on food and non-alcoholic drinks, and spend on products that might originate from Jersey

	Average (all households)	**Single parent** (at least one dependent child)	**Couple** (at least one dependent child)	**Pensioner household** (single)	**Pensioner household** (couple)
Total expenditure	**£85.80**	**£76.50**	**£122.70**	**£48.00**	**£90.20**
Of which:					
Bread, other bread and cereals	£6.70	£6.70	£10.60	£3.50	£5.80
Pastry (savoury)	£1.40	£2.10	£2.40	£0.60	£1.10
Beef, pork, lamb and poultry	£8.30	£6.80	£11.30	£4.20	£9.00
Bacon, ham, sausages	£2.70	£2.40	£3.80	£1.50	£3.10
Fish	£5.30	£2.80	£6.10	£3.70	£8.70
Milk	£3.60	£3.70	£5.90	£1.90	£3.70
Cheese and curd	£3.30	£3.00	£4.60	£2.00	£3.30
Other milk products	£3.30	£3.30	£5.10	£0.80	£3.40
Butter	£0.70	£0.40	£0.90	£0.60	£1.10
Eggs	£1.00	£0.60	£1.40	£2.00	£1.10
Fresh vegetables	£7.10	£5.00	£9.50	£4.00	£7.50
Potatoes	£1.20	£0.90	£1.60	£0.70	£1.50
Preserved, processed or dried vegetables	£2.10	£1.80	£2.80	£1.10	£1.80
Processed potatoes	£2.00	£2.90	£3.20	£0.90	£1.50
Water	£0.70	£0.50	£1.00	£0.30	£0.60
Potential spend on Jersey goods	**£49.40**	**£42.90**	**£70.20**	**£27.80**	**£53.20**

Mitigating actions

2.39 Shipping stoppages and restrictions on shipping, whilst unlikely, are nevertheless possible. Relatively short storage days require more frequent deliveries than may have been the case in previous decades and this trend is likely to continue. The reliance on a single major ferry operator for the bulk of the Island's passenger and passenger vehicle trade serves, perhaps counter intuitively, to protect a year-round

service and the economic viability of the shipping route. Similarly, that all three major retailers choose to use a single freight shipping provider serves to protect this service.

2.40 The major retailers operating on Jersey, as well as Condor Ferries, all take actions when shipping delays or stoppages are expected. The retailers will adjust their reserve stocks on lines to a higher level than would normally be held. Condor ferries recognise the importance of this issue, stating in their Comprehensive Service Review (2016) that, 'When there is disruption, goods which are highly time-sensitive are prioritised, whilst seeking to minimise the delay in shipping the remainder of ambient products,' (p.28) and that '… reliance on a 'just in time' freight service creates food resilience issues for the Channel Islands and communications challenges throughout the supply chain. This creates a need for effective communications through the supply chain to support just in time operations,' (p.125).

2.41 Logistic difficulties in the UK (i.e. the major supply route for Jersey's food) cannot be mitigated by the unilateral actions taken by Jersey. However, such difficulties will impact concurrently on the UK and effort would be required to ensure that the needs of the States of Jersey are accounted for within mitigated by actions taken by the UK government.

2.42 That Jersey plays host to three major importing retailers protects against the impacts of trading difficulties within any one of these. That is, should one retailer need to significantly reduce their volumes of trade this would present opportunities for another to exploit this gap in the marketplace and increase their volume of trade within Jersey.

2.43 Actions to protect the availability of home-produced goods include: (i) a range of policies aimed at protecting farming, food and the environment, (ii) economic support for rural businesses to promote and encourage a strong food infrastructure, and (iii) and animal and plant health legislation.

Options to secure the availability of food

2.44 The importance of the major retailers, the Condor ferry service and the Ferryspeed shipping company in providing a continuous supply of quality food to Jersey should not be underestimated. Their needs as regards harbour facilities and storage, as well as what they can offer through their own contingency planning, would ideally be factored into Jersey's wider emergency planning. Similarly, the protection of the food production infrastructure might also be factored in to Island planning and emergency planning.

2.45 It would be feasible to request of the major retailers that they increased their stocks of a small number of specialist foodstuffs (to be decided in discussion with the Department of Health) over the winter months when disruptions to the ferry service may occur, and in response to other interruptions to supply that may be forecast.

2.46 There may be a role for the States of Jersey, with Jersey Consumer Council, retailer representatives and with local producers, to raise the awareness of the food security value of local production (and of buying home-grown) amongst consumers.

2.47 The States of Jersey are significant purchasers of foods; for hospitals, the prison, and schools. The State's procurement policies with regard to sourcing from Jersey producers might therefore be examined and the scope to increase support for home-grown through public sector procurement ascertained.

3. Food affordability

Household income and expenditure

3.1 Jersey is relatively well off, with a GDP per head of £39,700 in 2015, compared for example to a figure of £28,700 in the UK. Despite this, evidence on the distribution of incomes and levels of expenditure indicates that for a proportion of the population food affordability might still be an issue.

3.2 Tables 6 and 7 show the weekly household income and expenditure for different household types on Jersey. Income distributions on the Island are somewhat skewed, so that mean income figures are generally higher than median income figures. The number of households in the first quintile, i.e. those with the lowest 20% of equivalised household incomes, was greatest for pensioner households.

Table 6. Weekly household income (£) by household type

	Average (all households)	**Single parent** (at least one dependent child)	**Couple** (at least one dependent child)	**Pensioner households**
Mean household income before housing costs	£860	£590	£1,190	£580
Median equivalised household income before housing costs	£680	£530	£720	£540
Proportion of the first quintile (lowest 20% of equivalised household incomes)	20%	6%	18%	43%

Table 7. Weekly household expenditure (£) by household type

	Average (all households)	**Single parent** (at least one dependent child)	**Couple** (at least one dependent child)	**Pensioner households** (single)	**Pensioner households** (couple)
Mean weekly household expenditure	£806	£622	£1,143	£412	£747
Of which:					
Food & non-alcoholic drinks	£86	£77	£123	£48	£90
Housing, fuel and power	£216	£203	£345	£90	£108
Transport	£93	£43	£125	£34	£98
Recreation & culture	£82	£51	£107	£39	£93
Miscellaneous goods and services	£76	£79	£115	£57	£72
Food & non-alcoholic drinks as percent of total	10.7%	12.4%	10.8%	11.7%	12.0%

3.3 The proportion spent on food and non-alcoholic drinks is on average, 11% of total expenditure. For lower income household types the proportion is higher, at 14% of total expenditure for those in the lowest gross income quintile.

3.4 Looking behind the average figures for household income, the Jersey Household Income Distribution Survey 2014/15 provides data on households with relatively low income, which is defined as an income that is below 60% of the *median equivalised* household income. In cash terms this is equivalent to a weekly household income of less than £410 before housing costs, or £340 after housing costs are taken into account. Sixteen percent of households were in this category before housing costs were taken into account, and 26% after housing costs were taken into account. One third of these are pensioner households; just under a quarter are working age adults living alone and one fifth are couples living with children.

3.5 This level of income is markedly below the mean weekly expenditure for all housing types except for pensioners living alone, and would be assumed to impact on affordability of food as well as other goods and services.

Food affordability

3.6 The data indicates that those households falling into the relatively low income categories expend a greater proportion of their income on foodstuffs than do higher income categories. To some extent this is a truism: food is a *need* in the very real sense of the word. Figures from the States of Jersey Statistics Unit[ix] indicate that increases in food prices were particularly high in 2008 and again in 2011, but from 2012 these lessened and food price deflation occurred through 2015.

3.7 The Jersey Annual Social Survey (2010) included questions on food affordability. Approximately 5% of respondents reported that they had gone without a cooked main meal every day; 6% indicated that they had gone without eating meat chicken or fish (at least) every second day and 5% reported that their household had gone without either fresh fruit or fresh vegetables over the past twelve months because of a shortage of money.

Prices relative to the UK

3.8 It should be noted that the costs of food on Jersey can be considerably higher than in the UK. For example, comparisons at June 2015[x] indicate that prices on Jersey were in the region of 33% higher than the UK for fresh fruit; 39% higher for fresh vegetables, 17% higher for meat and 12% higher for fish. Price differentials are not consistent across all items within any one category. For example, rump steak was 6% more expensive on Jersey whilst a roasting chicken was 26% more expensive. Comparisons with the UK are relevant since the retailers operating on Jersey, as well as the bulk of freight to the Island, are from the UK; and because the shared use of Sterling as currency.

3.9 Competition between the multiple retailers in the UK is believed to be amongst the fiercest in Europe, driving prices downwards. The smaller population and fewer retailers on Jersey precludes such outright competition. Moreover, two of the three major retailers operating on Jersey are amongst the 'high end' retailers within the UK, typically attracting customers with higher disposable incomes. Lower income customers within the UK would more usually opt to use different retailers with lower price offers and less focus on food assurances and food quality. In recent years these retailers in the UK have come under increased pressure through the rise of the German discounters, Aldi and Lidl, resulting in an overall downward pressure on UK prices.

3.10 Importing to the Island adds further to the costs of foods and staff costs, property values and rental for Jersey retailers are believed to be higher than on the mainland UK. There is also the additional imposition of Goods and Services Tax (GST) at 5% across all foods in Jersey, whereas in the UK food and drink for human consumption is in general zero-rated for VAT purposes, with luxury items (confectionary, alcoholic drinks, snack food and so on) being standard rated at 20%.

Global impacts on food prices

3.11 Events leading up to and during 2008 led to marked increases in food prices across the globe. Consecutive droughts in major grain producing countries had led to a decline in world stocks; supply had lagged behind demand for a number of agricultural products for some years and agricultural input costs (fuel and fertiliser) had increased faster than agricultural prices. Further to this, the dollar decline and trade restrictions limited the supply response of major exporters and bio-energy policies increased demand[xi].

3.12 Since 2012 world markets have to some extent addressed the mis-match between supply and demand. World grain stocks have improved agricultural input prices have fallen. More recently the decline in the value of Sterling against the Euro and the Dollar has begun to erode these improvements in food prices. The forthcoming exit of the UK from the EU may have further impacts, in particular if there is a reversion to WTO Most Favoured Nation tariffs.

Local actions on food affordability

3.13 One way in which foods can be made more affordable is through garden-produce, i.e. 'growing your own'. The Jersey Allotments and Leisure Gardening Association (JALGA) was set up following the publication of the "Allotment Strategy for Jersey" report, prepared by the Working Party under Economic Development Department. The JALGA is able to offer help and advice to landowners and groups wanting to develop their own sites, with the intention that everyone who wants to grow their own produce has the opportunity to do so.

3.14 Other initiatives, involving primary schools, such as the Jersey Farmers Union carrot growing competition and the Genuine Jersey Royal potato growing competition within primary schools introduce children to the notion of growing their own produce which hopefully they will retain throughout their lives.

3.15 The idea of community farms and community supported agriculture (CSA), promoted in many places as a means to get people closer to food production, would not only serve to increase (albeit marginally) food production on Jersey, but coupled with an increased allotment movement it would help to engage he more urban section of the Jersey population and to encourage self-sufficiency on a wider scale. As with the allotment movement, CSA has the potential to make fresh produce more affordable to participants.

Threats to food affordability

3.16 Maintaining a diverse mix of retailers not only ensures an element of price competition but also allows for different *value propositions* to be offered to consumers. Ideally, customers would be able to choose between discounters, middle-ranking and high quality retailers. Jersey, with a relatively small population, may need to accept a narrower choice. Consolidation of the retail sector and the loss of retailers would have potentially detrimental impact. This must be balanced against the economies of scale that larger retailers offer.

3.17 Factors outside the Island's control, such as input costs for global agriculture, can have significant effect on food prices; whilst unemployment and pressure on incomes, in particular for lower paid jobs, has a direct effect on affordability.

Options to secure the affordability of food

3.18 For children from low income households, the impacts of low affordability could be offset to a great extent through school meal provision where this takes place. Similarly, for lower income pensioners there is scope to provide direct support through free or subsidised meals.

3.19 Ensuring competition in the provision of food would usefully remain a key consideration in the licensing of traders. This should include an assessment of affordability across the whole population. Local suppliers should be encouraged and supported in identifying and exploring the market to provide further price competition where this is possible.

3.20 In consultation with the Health Department and Social Services, the Treasury could consider removal of the GST on a core basket of healthy foodstuffs (e.g. fresh fruit and vegetables). This would reduce the costs of food to those who can least afford it, as well as promoting the more healthy and nutritious foods. Whilst many factors influencing price are outside the States' control, manipulation of the GST is one of the few ways in which Jersey can directly address affordability for the less well off.

3.21 Provision to increase the scale of allotments held by Jersey residents could be considered jointly by the Environment and Health Departments, and the Environment Department might usefully investigate and develop a business plan for community farms or community supported agriculture.

4. Maintaining the ability to produce food

Current productivity

4.1 Approximately 53% of Jersey's land, 35,561 vergées, is given over to agricultural production. There are 437 registered holdings of which approximately half are very small (1-10 vergées) and of which 75 claim[3] the SAP and QMP and can be viewed as partially or wholly 'commercial', accounting for 26,669 vergées (73.8%) of the registered agricultural land.

4.2 In addition to agricultural land there are over 10,500 vergées of natural vegetation and an approximate 2,500 vergées of parks, gardens and other urban green land.

4.3 Jersey, as with much of central / southern Europe, is in the advantageous position of being able to harvest two crops per year on much of its land. As such the areas of land given over to crops on an annual basis totals to more than the total agricultural area - as shown in Table 8.

Table 8. Cropping areas on Jersey's agricultural land

Crop	Period	Area (vg)
Potatoes	Jan - May	16,562
Other vegetables	Mar - Aug	2,171
Outdoor flowers	Jan-Dec	868
Grass (at 1st October)	*01 October*	19,614
Forage maize	May - Sep	2,089
Cereals (winter wheat, spring barley)	Nov - Sep	924
Green manure / cover crops	May onwards	3,818
Total		**46,046**

4.4 Grass and forage maize are grown for the dairy sector, and grassland is also used for the equine sector. Cereals are produced on Jersey for animal fodder and straw rather than human consumption. Green manure and cover crops are planted to improve soil nutrients and structure (reducing leaching and run-off and so providing additional environmental benefits) and on Jersey to provide winter grazing for the out-wintered fraction of the dairy herd. Forage maize, spring barley, green manure/cover crops and a proportion of the grassland are planted as second crops following the potato harvest.

4.5 Jersey's field structure is distinctive. In comparison to the UK the fields are smaller, and agricultural holdings are less contiguous or 'ring fenced'. Partly because of the way that land is owned and rented, single farms can comprise of a series of 'pockets' of land rather than a continuous whole. Moreover, because Jersey does not produce a large area of cereal crops, and because the vegetable crops produced are labour-intensive rather than machinery-intensive, there has not been the pressure on farmers to remove field boundaries. Although boundary removal has happened on occasions in the past the Island Plan now ensures that for further removal planning permission will be necessary.

[3] *There is a small number of commercial horticulturalists who do not claim the SAP, typically with very small areas of land*

Limits and threats to productivity

4.6 The ability to produce food is contingent on a number of factors, including land availability, soil type and quality, climate and weather, nutrient inputs, seed stock, and the ability to counter plant and animal disease. Some of these factors may be subject to external change whist others are in the control of Jersey's farm businesses. In particular, soil quality, water use and nutrient inputs can all be managed to 'optimum levels'; or mis-managed with consequent environmental impacts.

4.7 Land available and used for agricultural purposes has remained relatively static for the period 1980 - 2016. Laws are in place controlling the occupation and use of agricultural land and to ensure a viable land bank is retained[xii], and to control the domestication of agricultural land[xiii]. Loss of land to urban expansion has therefore been limited. However, it is worth noting that Jersey has a relatively high population density, at 800 people per km^2, compared to 390 people per km^2 in England. The pressure for land development is therefore considerable.

4.8 Under the Agricultural Land (Control of Sales and Leases) (Jersey) Law 1974 'agricultural land' means land, including land under glass, used or capable of being used for any purpose of agriculture or horticulture, but does not include any dwelling house or outbuilding.

Impacts of land competition

4.9 The pressures on land prices that result from a strong market for a single commodity can have detrimental impacts on the profitability of other sectors. Farming in Jersey, as elsewhere, is restricted by land availability. Approximately two thirds of agricultural land on Jersey is rented, and the rental price has direct bearing on profitability. Between 2006 and 2007 average rental prices on Jersey more than doubled, from £56.40 to £121.10 per vergée; and they rose sharply again between 2012 and 2013.

4.10 These sudden, upward changes in rental values have coincided with significant shifts in the control of land: the first with the introduction to the Island of an additional major producer/packer of Jersey Royal potatoes and the second coincided with this company's subsequent purchase of Jersey's largest vegetable producer, and preceded the sale in 2014 of the Jersey Royal Potato company.

4.11 Looking at longer term data for the amount of land planted with Jersey Royal potatoes there is no clear relationship between rental price and area planted. Nor is there a clear relationship between the harvest value in any one year and rental prices in the following year. Essentially, the sharp changes in rental prices appear to be the effect of larger companies speculating on the long-term future value of Jersey based production; with short term profitability having relatively little effect.

4.12 It can be argued that the increased demand for land on which to plant potatoes will hinder the opportunities for other agricultural sectors to expand. Whilst this will only be the case in those sectors which do not fit with the use of land for the potato crop (i.e. sectors requiring land through the months of January to May) it is nevertheless a key consideration for the future structure of Jersey's agriculture as a whole.

Horse grazing

4.13 As well as loss of land to urban expansion, and the competition for land between different agricultural sectors, land may be taken out of agricultural production to be used for recreational purposes such as horse grazing. There are an estimated 1,500-2,000 horses on Jersey. Grazing requirements do vary according to the numbers of horses kept together, but taking an average requirement of 0.6 ha per horse this would provide an estimated land use of 5,000-6,600 vergées, or approximately 15% of the Island's agricultural land.

4.14 Whilst horse grazing might be assumed to take up a considerable area of Jersey's agricultural land, some account must be taken of the proportion of grassland that is used for hay and fodder production and for grazing as a second crop after potatoes. That is, although land may be used for equine purposes it is not necessarily taken out of food production completely; and the equine sector may provide an income that supports other agricultural businesses.

4.15 Land used for horse grazing is not taken out of the agricultural land-bank, and could of course be returned to food production very quickly should the need arise. The question might be asked as to whether the horse sector is damaging the Island's capability to produce food by reducing the viability of some agricultural sectors and by a reduction in the agricultural skills base, i.e. replacing farmers and the expertise to cultivate crops with landowners holding some small knowledge of pasture management? However, the 2017 Rural Economic Strategy noted that with a relatively high economic value, horse grazing might well be a suitable use for land known to have a high potato cyst nematode population, as a means of resting land whilst maintaining its rental value.

4.16 The relevant question highlighted by the land given over to keeping horses is perhaps this; what balance of crops, livestock and other activities will provide for a *sustainable, diverse and adaptable agricultural sector* capable of providing more food for home-consumption should the need arise?

A note on the agricultural export market

4.17 There is an argument that can be made that the export markets for Jersey produce maintain the capacity for home-production so long as they are fulfilled in a manner that is sustainable i.e. leaving the land in as good or better condition for growing on a year on year basis. This argument may be taken a step further with the assertion that to maintain the potential to produce food land should be maintained in use so that:

- it can be brought into use relatively quickly;
- the infrastructure needed for food production can be made readily available;
- the skills and expertise for efficient food production can be made readily available.

4.18 In this argument, whether land is maintained to support an export market or for home-consumption does not matter; it is the sustainable use of the land and the maintenance of the infrastructure and broad technical skills base that are important. There is of course scope to present the counter argument on at least two of these points. Land may well be brought back into production as quickly from laying fallow as from intensive use; and the skills for efficient food production might be sourced from outside the States of Jersey if this was deemed necessary. However, both land abandonment and allowing the loss of the agriculture infrastructure and skills base might be seen to leave Jersey exposed.

Soil quality

4.19 Poor quality soils in Jersey are mostly confined to sloping poorly drained fields in stream valleys containing natural grassland which are grazed by dairy young stock in the late spring to early autumn months, and comprise an estimated 5% of land area. In addition, light sandy soils and cotils will only grow first crop potatoes followed by a cover crop, because a second commercial crop would be unviable in many years without irrigation. Soil Management Plans are intended to identify those areas of farmland on which erosion and other soil problems are apparent and to state the intended mitigating actions that will be taken to improve soil quality in these areas. Soil Management Plans and nutrient budgeting have been prerequisite to receiving States support payments since 2013.

4.20 Within the 2017 Rural Economic Strategy farmers are being encouraged towards better soil management (amongst other things) through adoption of the LEAF Marque Standard. The elements of this are:

- The business is able to explain how soil management operations are planned and carried out.
- The producer is able to justify and demonstrate that cultivations have minimum environmental impact.
- The business has documented steps to reduce any adverse impacts in their Soil Management Plan.
- The soil management plan map identifies risk areas
- No significant evidence of soil damage such as compaction or erosion.

Fertiliser import, production and use

4.21 Fertiliser use in Jersey is from four sources; organic fertilisers from the dairy herd, processed sewage sludge, green waste compost from La Collette and imported inorganic fertilisers. Estimates of the volumes of fertiliser used in 2015/2016 are provided in Table 9.

Table 9. Estimated fertiliser use, Jersey, 2015/2016

Fertiliser	Weight or volume	Total N	Available N	%
Imported synthetic fertiliser *	3,003 tonnes	704,588 kg	704,588 kg	96.90
Slurry from the dairy herd **	30,377 m^3	@ 6 kg/m^3 = 182,260 kg	@ 0.6 kg/m^3 = 18,226 kg	2.51
Enhanced Treated - Pasteurised Biosolids ***	2,752 m^3	@ 11.3 kg/m^3 = 31,080 kg	@ 0.7 kg/m^3 = 1,915 kg	0.26
Enhanced Treated – Pasteurised Biosolids mixed with agri-compost after storage ***	1,920 m^3	@ 9.0 kg/m^3 = 17,280 kg	@ 0.6 kg/m^3 = 1,087 kg	0.15
Enhanced Treated – Limed Biosolids mixed with agri-compost after storage ***	1,327 m^3	@ 8.8 kg/m^3 = 11,677 kg	@ 0.7 kg/m^3 = 929 kg	0.13
Agri-compost ***	7,411 m^3	@ 3.83 kg/m^3 = 28,376 kg	@ 0.03 kg/m^3 = 237 kg	0.03
Agri-compost Enhanced with gypsum ***	10,080 m^3	@ 2.45 kg/m^3 = 24,726 kg	@ 0.02 kg/m^3 = 167 kg	0.02
TOTAL		**999,987 kg**	**1,167,660 kg**	**100**

** Figures from Department for Environment for 2015 ** based on a dairy herd with 2,970 cows and heifers in milk, housed for a six-month winter period; ** figures from Department for Infrastructure for 2016*

4.22 The application of fertilisers on land such as that seen on Jersey will increase yields by as much as 60%, depending of course on the fertility of the land beforehand. However, fertiliser applied in excess of requirements is not taken up by crops and can cause environmental damage and costs. There is a balance to be struck between maximising yields and minimising environmental impact.

4.23 Nitrogen fertilisers are manufactured for the most part from natural gas using the Haber-Bosch process. There are other means of manufacturing fertiliser (e.g. hydrogen may be obtained by electrolysis) and so even in the very long term there is scope to maintain supplies beyond 'peak gas'. However, in the short term the availability and price of natural gas has a direct impact on fertiliser manufacturing costs; the location of gas fields presents a political risk to production; and the demand for fertilisers is subject to short term peaks following the growth of the economies of major users in the developing world. Western Europe is dependent on imports of both nitrogen and phosphate fertilizers. The balance of phosphate in Europe as a whole is 'very small' and has been forecast to reduce further.[xiv]

4.24 From a farm-economics perspective, fertilisers typically comprise up to 12% of variable costs for early potato production and in the region of 90% of the forage variable costs in dairy production. Jersey farmers pay an estimated £80 per tonne freight costs over and above prices in the UK or France. For these reasons, and because of the volatility that can be seen in fertiliser prices, there is sound economic argument for dairy farmers in particular to optimise their fertiliser use and avoid unnecessary and potentially damaging over-use. However, for potato growers there is less financial incentive, since the benefits of additional yield will often be perceived to outweigh the additional input costs.

Import and production of animal feeds

4.25 Jersey farmers typically import in the region of 5,500 – 6,000 tonnes of livestock feeds (mostly cattle feed for the dairy industry) per year. The Jersey herd is, as a whole, all-year-round calving. Whilst this means that forage utilisation is less efficient than for spring-calving herds, it provides for an even milk supply to the dairy. Furthermore, the fragmented nature of the fields farmed by individual holdings generally means there is insufficient area held around dairy units to graze cows on an extended forage system.

4.26 The widespread use of short-term tenancies and the high rental values paid by potato producers result in dairy producers relying largely on forage produced after the first crop potato harvest. In addition to imported concentrate feeds, cereal crops are grown for use as cattle feed and for their straw and a large area of forage is made into grass and maize silage for winter feed. Cattle are housed from around mid-October through to early March. Housing periods would be shorter (and so dairy farming would have the potential to be more efficient) if land was held in contiguous blocks, allowing movement between grazing and milking and allowing cows extended access to grazing.

Water

4.27 Jersey has a maritime climate with relatively warm but wet winters and drier, warmer summers. Jersey's current cropping takes advantage of the relative warmth and high levels of sunshine early in the year to produce high value, new season potatoes; winter rainfall also allows for strong early season grass growth for the dairy herd and the hotter summers with low rainfall suit the production of forage maize, also for the dairy herd.

4.28 As at February 2017 there were 78 licences[4] for surface water abstraction and 65 licences for groundwater abstraction for agricultural and horticultural purposes, and a further 19 boreholes registered but not licensed for water abstraction. Whilst in some years abstraction is less necessary than others, particularly low levels of rainfall in the spring growing period can have a significant impact on crop production (reducing potato yields by as much as 40%), and prolonged periods of dryness in the summer can also impact on the productivity of vegetable crops.

4.29 Most of Jersey's precipitation is as rainfall during the winter months, and it is during these months that the aquifers fill. A large proportion of rainfall is 'lost' through evapotranspiration, the remainder can be partitioned into streamflow and infiltration. Infiltration, moves down to the water table and this water table flows, by gravity, to emerge as spring-water or to discharge into the sea. It is this infiltrated water that is pumped as groundwater from the boreholes used for both agricultural and domestic purposes; and it is this system that serves as a natural reservoir. In successive dry years groundwater becomes depleted. Following dry winters the conservation and careful use of water through summer months is therefore critical.

4.30 Jersey has six impounding reservoirs which, when full, provide approximately 2.6 Mm^3 of water or 120 days of supply to the Island.

4.31 The pollution of water, e.g. through nitrate leaching and by other means, affects both groundwater and streamflow, both of which will enter these reservoirs. It is recognised that the inappropriate use of fertilisers can lead to the pollution of the Island's drinking waters, resulting in increased costs and disruption of these supplies. Jersey data on the relationship between surface water and groundwater nitrate levels demonstrates the clear linkage between excessive fertiliser application and the consequences for water quality. In effect this fertiliser is paid for twice; once by the farmer so that it can be applied and once by Jersey Water so that it can be removed.

4.32 The Water Management Plan for Jersey (2016) highlights agriculture as a principal source of diffuse nitrate and phosphate pollution on the Island, leading to significant additional treatment costs and threatening the availability of good quality, potable water. Since 2009 the Department of the Environment has been working with farmers through the Diffuse Pollution Project to constrain fertilizer application and measured levels of nitrate are now reported to be reducing. The Rural Economy Strategy 2017 contains further measures to address water pollution arising from agricultural activities, including making financial support for agriculture contingent on Water Code compliance.

Climate change

4.33 Climate change predictions for the Channel Islands have been modelled over series of time periods and for a range of global CO_2 emissions[xv]. Looking over the next thirty years the predictions made at all levels of emissions are that mean winter temperatures will be 1.2°C higher and that mean summer temperatures will be 1.4 - 1.5°C higher. Annual mean precipitation is predicted to remain unchanged, but with increases of 6-7% in mean winter rainfall and decreases of 6-9% in mean summer rainfall.

4.34 The major impacts of climate change on crop production are as follows;

- There will be a longer growing season
- There will be a higher risk of summer droughts

[4] Licences are required wherever abstraction exceeds $15m^3$ in any one 24hr period, whilst borehole use at lower volumes requires only that the borehole is registered.

- Increased storminess may lead to crop damage and soil erosion
- Crop establishment may be hindered by wetter winters
- Crop pests and diseases may increase with warmer, wetter winters

4.35 For livestock farming there are similar impacts;

- A longer growing season and, if water and nitrogen are available, more grass.
- Lower grass productivity during dry summers.
- Pasture use made more difficult by wet ground.
- Soil structure damage through more extreme wet / dry periods

4.36 A 2015 study[xvi] highlighted some of the impacts of 'unpredictable seasonal weather such as rising temperatures, lack of rainfall and longer winters' on Jersey including reduced crop yields, wildfires and water shortages. The effects of droughts, storm damage and erosion can be mitigated to some extent through good farming practice. Similarly, the impacts of a changing climate on grass production may require a shift in how grass is conserved and when cattle are housed, but it should not lead to an overall reduction in productivity.

4.37 The shifting patterns of rainfall towards winter and away from summer precipitation may require a greater degree of management to ensure that agricultural irrigation can continue but the mean annual rainfall is not expected to decrease.

Optimising Jersey's productivity

4.38 Optimisation of production typically considers how yield, profit or farming efficiency can be improved. However, in the longer-term, optimisation might more usefully be viewed in terms of indicators of sustainability such as the reduction of synthetic fertilizer inputs, reduction in the use of herbicides or pesticides, reduction of disease burdens, improvements in soil structure, and matching water use to availability.

Options to secure the ability to produce food

4.39 Land use on Jersey is dynamic and highly responsive to market conditions, with significant areas of land held on short term, informal leases. However, these short term, informal leases make it difficult to guard against any use of the land that might cause unacceptable environmental damage. This is highlighted in the 2017 Rural Economic Strategy, which suggests a move to written leases which 'spell out the expectations and responsibilities of both parties, detailing the environmental and/or management conditions that must be undertaken during occupancy'. Such a move would appear essential if long-term environmental degradation is to be avoided.

4.40 It is beneficial for food security to maintain crop/farm business diversity. To this end the Environment Department might wish to consider what actions it could take should a key sector becomes unviable due to land competition.

4.41 The 2017 Rural Economic Strategy noted that the Agricultural Land Law 1974 allows the Minister to impose conditions on agricultural practices on specific blocks of land but that this could only be done at the time of sale or transfer. The option of extending this power to cover all land, rather than only agricultural land, and to provide for its application at any time, rather than only at the point of sale or transfer, is suggested for further investigation in the Rural Economic Strategy. As with the proposed

move to written leases for agricultural land (see above), the power to impose specific conditions so as to protect agricultural land would appear essential to Jersey's long-term ability to produce food.

4.42 An increasing body of work on soil management is highlighting the importance of soil organic matter for maintaining fertility, combating erosion, and contributing towards carbon-capture. Interventions that increase soil organic matter will have a positive effect on ability to produce crops from land in the long-term, and might usefully be encouraged through the Rural Economic Strategy.

4.43 It may prove beneficial to review water capture, storage, and use across Jersey's agricultural holdings and also more widely; for example, in making sure that new buildings in any sector make use of water capture techniques. The potential for Jersey's agricultural sector to manage a reduction in water use might also be assessed. A carrot-and-stick approach to reducing water use in agriculture may be necessary and options for achieving this could be progressed in collaboration with the major growers.

4.44 Many of the farm assurance schemes required by the major retailers demand levels of environmental care and operational record keeping which in themselves help to drive agricultural efficiency. Notwithstanding, there is a continued need to promote any efficiencies that reduce Jersey's reliance on imported feeds or fertilisers. This would usefully include the wider use of treated sewage sludge produced by TTS. It is noted here that the Rural Economy Strategy 2017 indicates support for businesses investing in precision fertilizer application equipment under the Rural Initiative Scheme.

4.45 Agricultural and environmental research supported by Jersey should be appraised for its contribution to the Island's food security alongside its impact on the sustainability of farming, economic benefits and so on. The appraisal of contribution to food security should include assessments of the impact of the research on food availability, food affordability, the Island's ability to produce food.

4.46 Jersey's Emergency Planning for food should include reference of how agriculture might be supported in the event of a severe restriction on shipping to the Island. In particular, imports of seed and fertiliser for arable farming and of cattle feed for dairy farming will be necessary to maintain productivity at current levels.

5. Food security in an international context

5.1 At a global level the issues of food security are in many cases more immediate than those faced on Jersey, and require a "sea-change" in our thinking about the equitable distribution of resources.

5.2 The FAO define food security as "when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". Whilst food supply can be disrupted for individual countries, particularly in the developing world, by natural or man-made disasters (droughts, floods, overgrazing, wars and so on) there is nevertheless sufficient food produced globally to feed the current global population. The sad fact remains, however, that the distribution of foods across the global population remains uneven.

5.3 The States of Jersey plays its own role in resolving food security challenges overseas. Figures for 2015 indicate a contribution of £10 million through Jersey's overseas aid budget, a significant proportion of which is targeted towards food aid.

Common themes

5.4 It is estimated that the world population will reach nine billion people by 2050 and a number of key themes are apparent from studies have examined whether and how such a population could be fed, including that consumption in the developing world will increase as wealth increases, as will the use of animal products.

5.5 Consumption in the west is often excessively high and could, for many, be reduced without impacting on health, or indeed with a positive impact through reductions in diet-related poor health. Changes in diet e.g. away from animal and towards vegetable products would increase global food availability. Popularised as 'One Planet Living[1]' the reduced and changed consumption patterns demanded of the developed world still require a significant shift in food culture.

5.6 Food wastage, usually in the home, has previously been estimated as 172kg per household per year[xvii]. A significant proportion of this (approximately 60%) is believed to be avoidable and arises from fresh vegetables, salads and bakery products[xviii].

5.7 Land use for agriculture will need to increase, but the extent will depend on diets adopted, technical progress in farming and freedom of trade. Globally, as well as locally, food production and consumption have environmental impacts. At a very basic level land use for agriculture takes away from land left wild, a factor most recently apparent in areas such as South America, where native rainforest has given way to grassland and arable production.

Options

5.8 Jersey is not in the position to increase the area of land given over to agricultural production. However, addressing food wastage holds potential to reduce Jersey's overall food needs. Similarly, the relationships between over-consumption and lower health outcomes provide further opportunities to reduce demand. Promoting public awareness in each of these areas might lead to a small reduction in Jersey's reliance on global food supplies.

6. Guarding against supply shocks

6.1 The price of oil, natural gas and oil and gas products (including fertilisers) has shown considerable volatility over recent years, particularly in the 2008 period when the impact on food prices was marked. Analysis by the European Commission is particularly relevant as regards longer term supply; price hikes may occur for a variety of reasons but changes in the supply side will generally serve to adjust prices to more normal levels[xix].

6.2 Supply shocks for oil and natural gas tend to have political rather than economic roots. As the production of fertilizers is increasingly globalised and consolidated, supply shocks may become more prevalent for this commodity also. The 1973 supply shock to crude oil prices was a political response (to reduce global oil supply) by the Arab members of OPEC to America's support of Israel's occupation of Sinai in the Yom Kippur war. Subsequent, price hikes have resulted from the Iranian revolution and the Arab Spring, as markets responded to predicted reductions in supply.

6.3 Whilst a supply shock for oil would require a greater efficiency of use of Jersey's supplies, the major impact would be on transporting freight to the UK ferry terminals. As such, contingencies would rely on the actions of the UK Government and of the individual retailers supplying Jersey. The impacts of longer term stoppages would require emergency measures to ensure the fair distribution of fuel and prioritisation amongst public, private and commercial users. These measures are provided in the Emergency Powers (Fuel, Electricity and Gas) Act, 1991.

6.4 The impacts of sudden, brief stoppages to shipping are addressed in Chapter 2 (Food Availability). The impacts of longer term stoppages would require emergency measures to ensure the fair distribution of food. These measures are provided in the Emergency Powers (Food) Act, 1991.

6.5 The largest stocks of oil are held in Saudi Arabia, Venezuela, Canada, Iran and Iraq, whilst the four largest stocks of natural gas are held by the Russian Federation, Iran, Qatar and Turkmenistan. Insomuch as the political decision making of all but one of these countries is outside the influence or control of western European politics, the risks of supply shocks remain present.

6.6 European Commission Council Directive 2009/119/EC underpins an obligation by the EU member states to hold oil stocks to the higher of 90 day of average net daily imports or 61 days of average daily inland consumption, providing a cushion against import-supply shocks.

6.7 Research[xx] has demonstrated that the major inefficiencies in food transport occur between the retailer and the consumer. Whilst there is commercial pressure for fuel and transport efficiency up to the point of purchase, beyond this point such commercial pressures cease. As such, if fuel efficiencies are to be gained in relation to Jersey's food consumption then these will come not from retailer actions but from a change by the public in the ways in which they shop; a move to home delivery, to shared transport, and to shopping patterns that make most efficient use of vehicular transport.

Options for guarding against supply shocks

6.8 Reserves of oil are necessary to maintain the agricultural, food processing and distribution and food retail sectors. Jersey might therefore consider following the lead of the EU Member States in ensuring that on-Island storage is sufficient to guard against supply shocks. Whilst 90 days storage may be viewed as excessive, a minimum buffer level appropriate to Jersey could nevertheless be set.

6.9 To address emergency planning for food imports, the States of Jersey might usefully work with retailers and the shipping companies to develop their contingency plans for events that may prevent or disrupt shipping so that the impact of such disruptions can be minimised. This could include, for example, the provision of additional warehousing on a temporary basis and agreements on the prioritisation of freight over private passenger vehicles.

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