



Bridport Food Security Plan

How can the Bridport Local Area increase food security, now and in the future?



Table of Contents

Introduction 3

Scope and aims of the report 5

How much food should the local area produce to sustain the resident and tourist populations? 7

How many local farms and farmers would be needed to meet this demand using sustainable techniques? 13

How can food be processed and distributed in order to provide the local population with healthy and affordable food? 23

How can stakeholders work to achieve this goal? 28

Conclusions 38

Appendices and Calculations 40

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Introduction

Bridport Town Council's [Climate and Ecological Emergency Action Plan 2023-2025](#) acknowledges the disruptive impacts climate change is having on the food and ecological systems that we all depend on. It also recognises the cumulative effects these changes are having on human health, well-being, and the cost of living. The development of a Food Security Plan for the Bridport area is a collective effort to increase understanding of the complex web of interrelated issues and propose a roadmap towards a more sustainable food production and distribution system that will benefit the entire community.

Several key factors inform the formulation of this Food Security Plan:

- **National Significance of Food Security:** Recognising the prominence of food security, it is listed among the critical national infrastructure (CNI) necessary for a country's function and daily life.[1].
- **Challenges Facing the UK Food Sector:** The UK food sector confronts substantial challenges, including energy prices, geopolitical events like the invasion of Ukraine, labour shortages, and trade disruptions, necessitating a reconsideration of current food production and distribution practices [2]. Shocks have been hard to manage, causing shortages and price spikes, particularly for fresh fruit and vegetables [3].

[1] [National Protective Security Authority. \(2023, April 25\). Critical National Infrastructure.](#)

[2] [Environment, Food and Rural Affairs Committee. \(2023\). Food Security \(7\). UK Parliament.](#)

[3] [Sweney, M. \(2022, September 28\). UK food prices soar by record 10.6% as Russia-Ukraine war pushes up costs. The Guardian.](#)

- **Shortening Long-Term Agricultural Prospects:** Over recent decades, soils have become increasingly depleted, pollinators have been lost, and the weather has become increasingly unstable. Under adverse conditions, the reliance on a few staple crops grown in monocultures increases the risk of high losses, such as the 40% decrease in UK wheat yields in 2020 [4].
- **Climate Change Impact on Food Security:** Insights from the Climate Change Committee (CCC) highlight climate change as a disruptor, making it increasingly challenging to ensure the resilience of the UK's food supply. Weather extremes pose risks to crops, livestock, and fisheries globally, with potential damage to farming infrastructure affecting productivity. Over half of the UK's imports come from countries at medium or high risk of climate change impacts [5]. This is already affecting food availability globally, with climatic effects accounting for an increase in food prices of £361 per household in 2022 and 2023 alone [6].



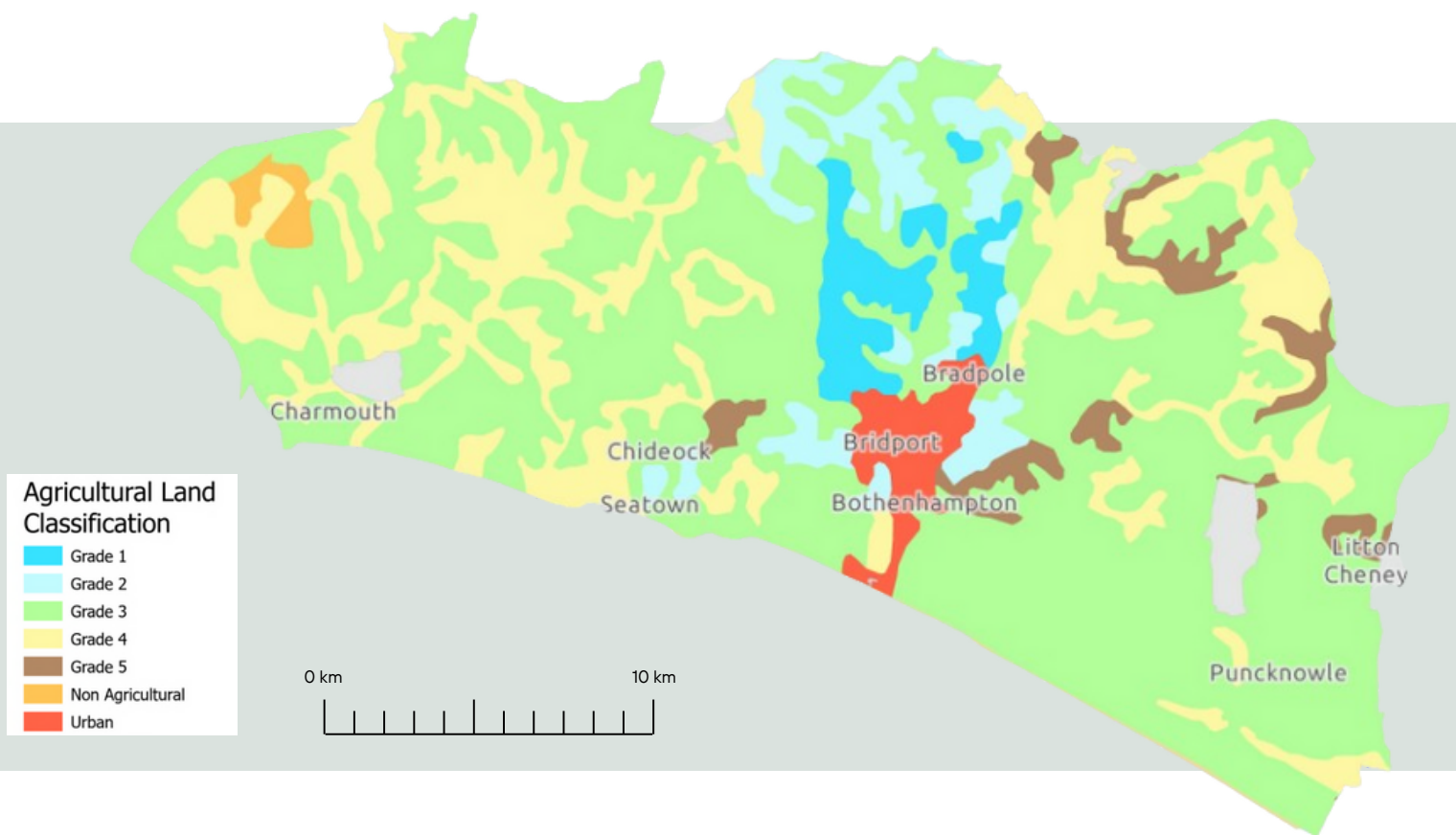
This plan envisions a localised food economy, emphasising agroecological practices and short food supply chains as solutions beneficial to the environment, soil health, consumers, and the economy. It makes the case that aligning food production with ecological harmony would not only mitigate the impact of shocks to the food system but foster healthier outcomes for people and the planet.

The importance of scaling up such initiatives is acknowledged, emphasising the need for a sustainable food system that caters to the diverse needs of society. Currently, significant sections of the community face challenges in accessing nutritious food, primarily due to financial constraints. The growing demand for emergency food provision and the health crisis exacerbated by the prevalence of cheaper, ultra-processed food necessitate a shift toward longer-term, sustainable solutions. This confluence of challenges underscores the need for a resilient and sustainable domestic food supply in the UK. The proposed local food security plan serves as a strategic response, charting a course toward a healthier, more secure, and sustainable food future for the Bridport community.

[4] [Scott, E. \(2022\). Impact of climate change and biodiversity loss on food security.](#)

[5] [Energy & Climate Intelligence Unit. \(2023, November\). Climate impacts on UK food imports. Spotlight on: Climate-vulnerable countries.](#)

[6] [Lloyd, T., McCorristan, S., & Morgan, W. \(2023\). Climate, Fossil Fuels and UK Food Prices: 2023. The Energy & Climate Intelligence Unit.](#)



Scope and aims of the report

Production of this food security plan was commissioned by the Bridport Town Council with support from the Dorset National Landscapes Sustainable Development Fund. It considers the rural area covered by the Bridport Local Area Partnership (BLAP), a network of 14 local parishes that collaborate on issues that require cohesive action on a larger geographic and administrative scale. The area covers just over 18,600 hectares of land, has 29 settlements and 21,780 residents, and is visited by just over 6 million tourists every year staying for around 1.39 days.



The plan addresses the challenge of rising food insecurity in the area, and researches the best way to ensure that there is always a secure, affordable, and healthy food supply for the current and future populations, as well as tourists, in the Bridport local area. It explores how this could be achieved, with steps that can be taken now, soon, and later in the future by consumers, producers, organisations, and local governance.

The plan aims to:

- Determine how much food the Bridport local area should produce to ensure food security for a growing population and tourists.
- Estimate how many farms and farmers would be needed to meet this demand using sustainable techniques.
- Outline ways in which food could be processed and distributed locally in order to increase access to healthy and affordable food while supporting the local economy and reducing environmental damage.
- Suggest how to rebalance prices, availability and marketing so nutritious food is the easiest choice for everyone.
- Determine actions that consumers, producers, organisations, and local governance can take to achieve these goals.



How much food should the local area produce to sustain the resident and tourist populations?

How much food does the current population require?

The plan area has 21,780 residents, with a slightly older population compared to the national average. It also receives approximately 6,082,440 tourists, ranging from those just stopping by to those who stay for extended periods, with an average stay of 1.39 days.

Using UK consumption values collated from several sources, we can calculate that a standard adult aged 20-64 currently consumes around 1.7 kg of food per day, with children and the elderly consuming slightly less. This includes cereals, fruit and vegetables, oils, nuts, sugars, meat, dairy, and eggs, as well as a range of beverages.

Accounting for the age distribution of the population in the local area as well as the tourist burden, total consumption is around 26.9 thousand tonnes of fresh and processed food and drink per year.



How much food would be required if we ate a better diet?

The UK, like many Western countries, faces several dietary challenges, including high consumption of processed and sugary foods, excessive salt intake, low consumption of fruits and vegetables, and rising obesity rates. To bring the average diet more in line with NHS recommendations, it would be ideal to increase the amount of fruit and vegetables consumed to at least 5 portions per day, and to substitute some of the calories provided by sugar and fats with those provided by complex carbohydrates and proteins. In addition, though protein consumption is generally sufficient, a lot is provided via meat, which can cause health issues in excess and is generally a more inefficient use of land than protein from eggs, dairy, and plant-based proteins.

- If we increase the amount of veg we eat by 65%, and the amount of domestic fruit we eat by 25%, this would mean that there would be 6.7 portions of F&V produced per person per day for an average of 5 per day consumed).
- A 33% reduction in consumption of meat and animal products could be achieved while maintaining adequate protein consumption. Doubling consumption of plant-based proteins such as beans and peas instead would make up for lost calories while helping to incorporate a range of amino acids and increasing fibre uptake.
- A 33% reduction in sugars and oils, combined with a shift to healthier oils such as unsaturated fats, would bring diets more in line with NHS recommendations. A 15% increase in cereals consumed would make up the calories lost by eating less oils and sugars, and would increase overall nutrient intake, especially if more of these were whole-grain varieties.

A healthier diet, focused on an increase in vegetable consumption, means that the local population and tourists would require around 26.6 thousand tonnes of food per year.



How much food will be required if the population grows?

In addition, the local area is undergoing several developments, especially around Bridport itself. These developments have the potential to increase the local population and potentially slightly reverse the ageing trend as more families move into the area. It is not possible to exactly predict how demographics will change, but using a population estimate of 24,000 and ensuring at least 2,500 calories are produced for everyone, calculations can err on the side of caution and allow for changes.

A healthy diet that provides 2,500 calories per person would mean that just over 27.9 thousand tonnes of food would be needed to feed a larger population of 24,000 plus tourists.



How much produce is needed to meet food demand?

The Bridport local area requires approximately 27.9 thousand tonnes of food, which includes staple foods such as cereals, fruit and veg, and potatoes, as well as 'luxury' goods such as chocolate and wine. We can calculate how much primary produce is needed to create all this food by using conversion efficiencies. Conversion efficiency is a measure of how many kilos of produce is needed to make a secondary product, e.g. how many kilos of wheat are needed to create products such as bread and pastries, or how much pork is needed to create sausages and chops. This varies from product to product, but we can obtain a rough estimate across a food category by comparing the amount of primary produce that is grown to the amount of secondary or tertiary products that are consumed. Using these figures, we can calculate that to produce 27.9 thousand tonnes of food, just over 40 thousand tonnes of crop production and just over 10 thousand tonnes of animal production would be required. In addition, more cereals, legumes, and oilseeds would need to be grown as animal feed. This amount is also variable, depending on how many animals are needed and how much they are fed. As a rough approximation, current farming practices that raise ruminants (cattle and sheep) on pasture supplemented with grain, and monogastrics (pigs and chickens) on grain would require around 7 thousand tonnes of animal feed and a medium amount of pasture, whereas agroecological methods would require around 6 thousand tonnes of feed and a high amount of pasture, and industrial factory farming techniques would need very little pasture but almost 11 thousand tonnes of feed.

To meet demand for 27.9 thousand tonnes of food, around 56-57 thousand tonnes of primary produce would need to be produced, including 40 thousand tonnes of crop production, 10 thousand tonnes of animal production, and 6-7 thousand tonnes of animal feed production.



How much food can reasonably be produced locally?

At current import levels, we can estimate that around 37 thousand tonnes of this total are grown in the UK, and the rest are imported. However, this does not necessarily mean that these 37 thousand tonnes are produced in the local area. Dorset has always had a strong agricultural background, with over 75% of the land area dedicated to agriculture, but it is particularly strong in cereal and livestock agriculture, and relatively poorer in horticulture [7]. County-level statistics suggest that Dorset produces over double the amount of cereals that it requires and 5 times the amount of pork and dairy, but only a third of fruit and 16% of vegetables [8]. However, the complexities of supply chains likely mean that the majority of this production is shipped elsewhere in the UK for processing and packaging, after which it may return to the local area or may go to supply elsewhere, particularly cities with larger populations and less land area.

In the local area, enough land is already dedicated to agriculture that it would be possible to completely meet local demand and even maintain some exports for cereals (except for rice), dairy, eggs, pork, and poultry, even if farmers switched to sustainable, lower-yielding techniques, all without expanding the farmed area. This would amount to approximately 18 thousand tonnes of cereals, 6.7 thousand tonnes of milk, 303 tonnes of eggs, 628 tonnes of pork, and 867 tonnes of poultry meat. Theoretically, there is also more than enough land to supply 1 thousand tonnes of legumes, 4.5 thousand tonnes of potatoes, 4.5 thousand tonnes of sugar beet, and 482 tonnes of beef, completely meeting demand for these products. Some imports should be maintained but at a lower level for fruit and veg (still 100% of tropical fruit at 100% but only 5% of indigenous-type fruit and veg), oils (imported at 10% to maintain olive oil supply), and fish (also imported at 10% to maintain non-native fish supply). This would require 2.5 thousand tonnes of local fruit and 5.6 thousand tonnes of local veg, just over 2 thousand tonnes of local oilseed production, and 97 tonnes of locally-sourced fish. However, this would require a shift in production from the produce that the region produces in excess (mainly dairy) in favour of an increase in the land area and the number of farms and farmers dedicated to producing these other crops and animal products, and an increase in the number of fishermen and a shift towards local fish varieties.

All together, this would mean around 50 thousand tonnes of produce, or 95% of local demand, could be met by production in the local region by simply shifting production, without an expansion in total farmed area.

[7] Dorset County Council. (2021). Food and drink technical paper.

[8] Department for Environment, Food & Rural Affairs. (2023). Structure of the agricultural industry in England and the UK at June. GOV.UK.

Why do we focus on increasing local production?

Decreasing the length of local supply chains would have myriad benefits, one of the most important being improved public health. Short local supply chains facilitate the delivery of fresh, seasonal produce to communities. Seasonal produce is often more diverse in nutrient content, and due to reduced transit times, fruits and vegetables maintain more of their nutritional integrity, increasing access to vitamin-rich foods that contribute to overall health. Additionally, communities that source locally tend to purchase and consume less heavily processed and packaged foods. This shift encourages a diet centred on whole, minimally processed ingredients, addressing concerns related to diet-related illnesses and fostering healthier eating habits. On the farm, greater biodiversity is required to ensure a year-round supply of fresh food, which supports conservation of local plant varieties and contributes to long-term environmental health. The shorter supply chains also drastically diminish the carbon footprint associated with food transportation, processing, and packaging, as well as bolstering local economies by supporting nearby farmers, producers, and businesses - overall, research suggests that spending at local food outlets supports 3 times more jobs than spending at international retailers. Rekindling the strong local food system that has historically been vibrant in and around Bridport could help to protect the cultural identity of the region while building a stronger connection between communities and their food, preserving local culinary traditions and promoting a sense of pride and identity. This sort of local food system will become central to ensuring food security in an increasingly volatile world, with a robust local economy built on short supply chains helping to withstand disruptions, ensuring the continued availability of essential goods and services.



[Lall, A. \(2022\). How Does the Nutritional Value of Fruits and Vegetables Change Over Time? LIVESTRONG.COM.](#)

[Babey, S. H., Diamant, A. L., Hastert, T. A., Harvey, S., & Al., E. \(2008\). Designed for Disease: The Link Between Local Food Environments and Obesity and Diabetes.](#)

[Benton, T. G., Bieg, C., Harwatt, H., Pudasaini, R., & Wellesley, L. \(2021\). Food system impacts on biodiversity loss. Chatham House.](#)

[Kreier, F. \(2022\). Transporting food generates whopping amounts of carbon dioxide. Nature.](#)

[Campaign to Protect Rural England. \(2012\). From field to fork: The value of England's local food webs. Campaign to Protect Rural England.](#)



How many local farms and farmers would be needed to meet this demand using sustainable techniques?

The previous section concluded that the Bridport local area could ensure a nutritious food supply for its current and future population and tourists by producing around 50 thousand tonnes, 95% of its demand, within the region. This section calculates how many farms and farmers would be needed to meet this food demand using sustainable techniques based on the assumption that in the medium and long-term, industrial agricultural practices will become unviable and too costly, both in environmental and financial terms, to continue.

To calculate the amount of farms and farmers needed to meet local demand, we need to calculate the land area that would need to be used, and then estimate how many individual farms would be best suited to managing this area and how many farmers each farm would require. The area required to grow crops and to hold animals can be calculated fairly easily, using average yields per hectare and average stocking densities per hectare, and adding on around 10% extra area for infrastructure. The number of farms and farmers will depend on the size of each farm and the approach each farm takes to production.



1

Calculate the area required to grow crops using average yields per hectare

2

Calculate the area required for animals using average stocking densities per hectare

3

Estimate how many individual farms would be best suited to managing this area

4

Estimate how many farmers each farm would require

In the UK, the average organic farm size is 85 ha [9]. However, organic crop enterprises have an average size of 19 ha as opposed to 165.1 ha for organic livestock [10]. Similar trends are seen across the EU, with organic horticultural enterprises tending to occupy the smallest spaces, organic arable cropping intermediate, and organic grazing livestock the largest per farm. Employment is highest per hectare on smaller farms, and lower per hectare for larger farms that can rely more on agricultural equipment; it is also higher in crop-related enterprises than for animals, as harvesting and weeding take up more time. There is also variation in farm size depending on methods of retail and distribution, with smaller farms more likely to rely on local distribution as they do not have the volume of output needed to undergo processing and packaging for longer distance transport. Suggestions made hereafter combine a range of farm types and distribution systems.

[9] [EC \(2023\), Organic farming in the EU – A decade of organic growth, January 2023. European Commission, DG Agriculture and Rural Development, Brussels.](#)

[10] [Liebert, J., Benner, R., Bezner Kerr, R. et al. \(2022\). Farm size affects the use of agroecological practices on organic farms in the United States. Nat. Plants 8, 897–905.](#)

Why do we focus on using sustainable farming techniques to meet local food demand?

Unlike conventional industrial farming, sustainable agroecological methods prioritise harmony with nature, steering away from the detrimental impacts associated with intensive agricultural practices towards practices that enhance biodiversity, improve soil health, and minimise the use of synthetic inputs. The shift towards these methods is driven by a recognition that they not only contribute to environmental preservation but also foster long-term health benefits. By avoiding reliance on chemical inputs and promoting natural processes, sustainable agriculture yields produce that is not only safer for consumption but also aligns with the principles of environmental stewardship and ensures that the quality of the agricultural environment is not only conserved but enhanced, ensuring continuity of yields for decades to come. In contrast, industrial agriculture is now facing multiple issues, including increasing input scarcity and cost that is driving up food prices, degrading soil and water quality that is already reducing yields, and decreasing agrobiodiversity amidst a changing climate, which is causing a gradual depression in yields as well as posing a high risk of total crop failure following extreme climatic events. Sustainable agroecological methods offer an alternative, and increasingly more affordable and stable, route to continued food production.



[Eardley, F. \(2022\). Rising cost of agricultural fertiliser and feed: Causes, impacts and government policy.](#)

[Kopittke, P. M., Menzies, N. W., Wang, P., McKenna, B. A., & Lombi, E. \(2019\). Soil and the intensification of agriculture for global food security. Environment International, 132, 105078.](#)

[Bélanger, J., & Pilling, D. \(2019\). The State of the World's Biodiversity for Food and Agriculture 2019. FAO Commission on Genetic Resources for Food and Agriculture Assessments.](#)

[Bezner Kerr, R., Madsen, S., Stüber, M., Liebert, J., Enloe, S., Borghino, N., Parros, P., Mutyambai, D. M., Prudhon, M., & Wezel, A. \(2021\). Can agroecology improve food security and nutrition? A review. Global Food Security, 29, 100540.](#)

Integrated silvopasture and silvoarable systems



Farms that raise grazing livestock as part of a rotation with arable crops and temporary grassland can contribute to both crop and animal production, as rotating between crop production and temporary grassland helps to build soil fertility and reduce disease, while grazing animals of crop leftovers reduces waste and enhances nutrition. The majority of agricultural land area is needed for arable cereals, legume, and oilseeds, and grazing for ruminant livestock, and there are already estimated to be more than 100 farms in the area producing either cereals, or beef, sheep, milk, and dairy products on 11.5 thousand hectares. Combining these production systems to create mixed systems, where around 50% of their area is grazed, and 50% grown as cereals, legumes, and oilseeds, would contribute to increased resilience and circularity in their production. Total demand for land would increase to around 14 thousand hectares, which could be achieved through creating 20 new farms. In the area, demand for orchard fruit and nuts is fairly low, and meeting demand would only require around 150 hectares of land. However, trees are very valuable in providing ecosystem services such as sequestering carbon and supporting biodiversity, so integrating them in pastureland and across arable land is beneficial. Adding extra trees across the landscape could then be used to produce orchard fruit and nuts for export to the rest of the UK or to support further development of the strong cider industry.

Livestock infrastructure requirements are smaller and usually just require shelters, but arable and fruit orchard production require facilities for packing and sorting facility, storage for equipment and supplies. If trees are integrated across the system, harvests are more labour intensive and may require seasonal employment, but the rest of the year labour demand is fairly low.

Demand for cereals, legumes, oilseeds, beef, dairy, lamb, and orchard fruit and nuts could be met through integrated silvopastoral and silvoarable systems. This would increase agricultural demand from 11.5 thousand hectares across approximately 104 farms to 14 thousand hectares across 120 farms. Labour demands would be high given the land area, estimated at around 600 employees.

Small, medium, and large-scale horticulture

In contrast to arable and ruminant production, horticulture in the area is underrepresented and would require significant development to meet demand for vegetables (including potatoes) and the remainder of fruit demand. A range of horticultural enterprises would be able to produce a variety of these crops for local distribution through shops, markets, supermarkets, and public procurement schemes. Larger farms could also produce sugar crops for processing. Having this range of sizes, from community gardens and smaller market gardens to larger farms, would allow for a range of opportunities for those looking to get involved in horticultural production, and would supply a variety of outlets.

Community growing projects can range from Community Supported Agriculture (CSAs) that allow consumers to purchase shares in a local farm in return for a regular delivery of the harvest, to communally organised growing areas where investment can also take the form of labour, with community members helping out with planting, weeding, and harvests. This model provides farmers with upfront capital and a secure outlet for sales, and consumers with a steady supply of fresh, seasonal food. Self-growing projects, such as allotments and urban gardens, allow individuals to plan and grow their own food but usually have some sort of organisational management, making it easier for people to coordinate what to grow and share equipment and harvests. The community aspect of CSAs and community gardens provides myriad benefits for social wellbeing.

The Landworkers' Alliance estimates that having one CSA or communal growing area per village would contribute significantly towards reducing barriers to access to nature and help to reconnect communities with each other and their food. For the BLAP area, this would equate to approximately 32 schemes with a CSA or communal growing area near each settlement and three in and around Bridport. In total, this would only require around 35 hectares of land or 0.2% of the available agricultural area to be set aside for community projects. In these systems, much of the work is done by consumers themselves, avoiding some of the labour shortages commonly encountered by horticultural enterprises around harvest time.





In addition, 10 or so market gardens of around 6 hectares each and 10 larger horticultural farms at around 50 hectares each would be needed to meet demand. Ideally, some of these farms would be situated to the north of Bridport, where the highest grades of land are found. However, it may also be useful to have some further east and west in order to distribute supply. This total of almost 700 hectares would be a large increase compared to the current estimated area of 112 hectares, but proportionally it would only be 4.6% of total agricultural area. The main issue would not be availability of land, but availability of workers, as horticulture is more labour intensive than arable and livestock farming.

The only specialised horticultural farms would need to be vineyards, should the region decide to boost local wine production. There are some existing vineyards in the area, but to meet demand there would need to be cultivation of a wider variety of grape varieties suitable for wine production, which will become more possible as the climate warms. A longer term goal could be to meet half of the area's demand for grapes, which would require around 70 hectares of land.

Demand for vegetables, potatoes, and soft fruit could be met through a range of horticultural systems. This would increase agricultural demand from around 112 hectares and under 35 farms to 770 hectares and 62 farms. Labour demand would be proportionally higher than other farms but overall fairly low at around 260 employees.



Specialist livestock farms



Small-scale pork and/or poultry farms that comply with ethical guidelines can produce eggs and meat sustainably. The manure is also of tremendous use in maintaining nitrogen balance in soils without using artificial fertilisers. However, it can be more difficult to distribute manure as pigs and chickens are less suited to rotation in between productive fields. Nitrogen management is therefore a large issue on many existing pig and poultry farms. By developing a network of these farms which are net exporters of nitrogen and those that require nitrogen inputs - primarily horticulture - a balance can be achieved. There are already approximately 74 specialist pig and poultry farms in Dorset, meaning that we can estimate 5 would be in the local area. These are fairly large and cover almost 100 hectares. Switching to 10 smaller scale free-range outdoor systems where the animals are on pasture would require only 60 hectares to meet demand. Locations could be where existing farms are, or could be determined by proximity to farms that require manure, and to processing facilities that produce feed-appropriate byproducts.

Demand for eggs, pork, and poultry meat could be met through a range of specialised pig and poultry systems. Meeting demand instead of overproducing would decrease agricultural demand from around 100 hectares and 5 farms to 63 hectares across 10 farms. Labour demand would be fairly low at around 40 employees.



Fisheries



Fisheries are very complex and vary significantly in size, primarily depending on size of the fishing vessel. There are already numerous small fishing enterprises along the Dorset coastline, but investing in local fisheries offers could be valuable for employment and the economy. Though land area required is minimal, upgrading local harbour and dock facilities is fundamental to ensuring the efficiency and safety of fishing operations, while establishing or improving cold storage and processing facilities would be beneficial to enhance fish quality and improve market reach. Though the onshore area required to support fishing is small, it can be quite labour intensive, ranging from a few to over 10 employees. Creating these employment opportunities within local fisheries would require comprehensive training programmes to equip individuals with essential skills, including fishing techniques and seafood processing. Diversification into aquaculture initiatives, which has been very beneficial around Portland and Weymouth, could further expand job opportunities in hatcheries, farms, and associated processing facilities, but this would require more investigation to find appropriate areas.



Demand for native fish could be met through expanding local fisheries. This would not change demand for land much, but would increase labour demand to at least 9 boats and 45 local fishermen.

Biodiversity centres

In addition to the farms producing food, it is vitally important to a local food system to have facilities that focus on seed saving and plant propagation, in order to ensure a resilient supply of locally adapted seeds for other farmers in the area. Often, these farms combine growing areas with high quality equipment and storage facilities, and educational spaces where farmers can come to learn. An agroecological hub near Bridport would be ideally placed to support many farmers throughout the region. In addition to the land needed for growing various plant species and their respective varieties, farms may allocate up to 40% of land area for infrastructure for seed cleaning, drying, sorting, and long-term storage, such as drying racks, temperature-controlled storage rooms, and seed vaults designed to preserve seed viability over extended periods. Usually, offices are required for extensive recording, cataloguing, and managing data on seed accessions, then there is also space required for educational programmes, workshops, and public outreach activities. Along with the increased range of activities, there is a higher demand for employment.

One biodiversity centre would probably be sufficient to maintain seed supply and boost education in the Bridport local area, especially when aided by preservation of heritage variety through diverse community cultivation. This would require around 10 hectares and would benefit from employing 5-10 people.



Summary



By calculating how much land is required for crops, livestock, and infrastructure, we can gain a rough idea of how much total area might be required for various types of farm in the BLAP region. By making a rough guess at how many separate enterprises there may be, we can also determine the average land size of each farm and gain a rough estimate of how many employees might be required in the farming industry. Though in practice it is likely to be much more variable, this can help paint a picture of what local food production could look like in the local area, and help to guide recruitment and training efforts.

	Farms (no)	Total area (ha/farm)	Total area (ha)	Labour (no/farm)	Total labour (no)
CSA	32	1.1	35.2	2.0	64.0
Market garden	15	4.4	66.0	6.0	90.0
Larger veg	10	59.0	589.9	10.0	100.0
Arable grazing rotation	120	113.9	13672.7	5.0	600.0
Specialty chickens or pigs	10	6.3	63.0	4.0	40.0
Agroforestry	20	17.2	344.3	4.0	80.0
Vinyards	10	8.0	80.3	4.0	40.0
Fish	9	0.1	1.1	5.0	45.0
Biodiversity centre	3	3.3	9.8	6.0	18.0
TOTAL	229		14862.3		1077.0

In total, to meet most of the demand for local food, the area would require about 15.1 thousand hectares of land, over 220 farms, and over 1000 employees. This is an increase from around 12 thousand hectares, over 100 farms, and over 400 employees that are involved in agriculture at the moment.

How can food be processed and distributed in order to provide the local population with healthy and affordable food?

Development of a local supply chain on a community level is of the utmost importance, as participating in regional food networks can greatly enhance a farm's presence in the local food system and increase availability of a variety of fresh food for consumers. Communally developed and easily accessible infrastructure to support processing and distribution for multiple producers can help to support production and distribution of a variety of goods across the local area. Key processing and distribution methods that should be considered in the area are discussed in this section.



Communal processing facilities

In addition to increasing the number of farms, investing in communal processing facilities may be of use for the region in order to maintain the high variety of processed goods that people are used to.

Vegetables	Cereals	Beverages	Fish
<p>Communal fruit and vegetable processing facilities and equipment could include washing and cleaning stations, sorting and grading machinery, cutting and slicing equipment, blanching and steaming systems, and packaging lines. Depending on the specific crops and community preferences, various products can be made. For legumes like beans and lentils, processing may involve sorting, cleaning, and packaging for consumption. Potatoes can be processed into products such as chips and mash. Other vegetables can be frozen, canned, pickled, or made into vegetable sauces or soups.</p>	<p>Some producers, such as Tamarisk Farm, already provide some amount of local cereals. To expand local bread and flour production investment in larger bakeries and flour mills would be beneficial, as small-scale facilities on individual farms can be cost-prohibitive. This would need industrial ovens, mixers, milling equipment, and storage for grains and flour. In addition, larger scale cereal processing facilities with specialised equipment for dealing with a variety of grains could help to support greater cereal diversity.</p>	<p>To produce juices and alcohol, in addition to the existing local producers, communal facilities with presses, brewing and fermentation equipment, storage tanks, bottling or canning facilities, and cellars for storage would help to increase local beverage production. This could be combined with a tasting room or pub to help promote local products and create a sense of community around craft beverages.</p>	<p>To increase the amount of local catch that is sold and consumed locally, investment in facilities with fish cleaning and filleting stations, seafood cooking and smoking equipment, freezing and cold storage, and packaging lines could help. This would allow fisheries to diversify from fresh sale via fishmongers to add in filleted and portioned fish for retail sale, smoked and cured fish products, seafood soups and stews, frozen fish fillets or seafood mixes, and canned fish products.</p>



By establishing these processing facilities, the area could extend the shelf life of its produce to allow more consumption of non-seasonal produce, as well as creating value-added products that support local food security and economic development.

Oils	Sugar	Meat	Dairy
<p>For oil production, an oilseed processing plant is required, featuring oilseed cleaning and conditioning equipment, oil extraction presses or expellers, refining and filtration machinery, and storage and packaging lines.</p>	<p>For sugar production, the area would need a sugar mill equipped with crushing machinery for sugar beet, juice extraction and purification equipment, evaporation and crystallisation units, and packaging facilities.</p>	<p>Efforts should be made in maintaining the local abattoirs, and increasing access to cutting and processing rooms, refrigeration for meat storage, and packaging facilities. Additionally, the community could explore options for charcuterie and value-added meat products.</p>	<p>There are several small local dairies, but investment in a larger-scale communal dairy processing plant could support more small farmers entering the business. This facility would include pasteurisation and cheese-making equipment, milk storage tanks, and packaging lines. Producing a variety of dairy products like cheese, yoghurt, and butter would add to the value of dairy production.</p>



How much area each occupies and how many employees they are likely to need will be highly dependent on circumstance, but data suggests that 1600 people are employed by the food and drink industry outside of primary production.

Following processing, farms should have access to various options for marketing and distributing food to the local population, which will allow farmers to have multiple income streams, and ensure that different parts of the community all have access to fresh food.

Farmers markets, farm stands, and farm shops

Participating in farmers' markets is a direct and popular way for farms to sell their produce, as evidenced by the ongoing popularity of Bridport Market. Additionally, use of mobile markets, like the Charmouth Dragon, could use trucks or trailers to bring fresh produce to underserved areas or communities with limited access to fresh food if demand was high enough. These markets provide opportunities for face-to-face interactions with customers and the chance to showcase fresh, seasonal products. Farm stands, like Little Oak's "Little Shop" in Wootton Fitzpaine and the "Moo Shed" milk vending machine in Axminster offer a low effort way for farms to sell their products directly to local customers that can be more accessible than a market or shop. These stands are often located at the farm or in strategic locations within the community, and operate without employees on an honesty box or cashless system.



Grocery stores and supermarkets

Farms can partner with existing grocery outlets in the area to supply fresh produce and other products. These collaborations expand market reach and offer a more convenient way for consumers to access produce without changing their existing routines.

Agritourism

Farms can diversify their revenue streams by offering agritourism experiences like farm tours, workshops, and pick-your-own opportunities. These activities provide additional income while educating the public about agriculture. This could be particularly beneficial for farms offering specialty products, such as a local vineyard or orchard.



Box schemes and delivery services

Farms can partner with food delivery services to reach customers' doorsteps, or they can personally offer subscription box services, delivering a curated selection of fresh produce, meats, or specialty items to subscribers' homes regularly. CSAs often offer shares for delivery or pick up at your convenience, meaning they may be more accessible to people that are less able to visit weekly markets.

Farms may also consider developing online platforms for selling their products. Customers can place orders through websites or mobile apps, and farms can arrange delivery or pickup options. Online sales offer convenience and reach a broader customer base. The infrastructure to support online sales systems can be a barrier, but more publicly available systems are expanding access to farmers and consumers.



Public procurement

Partnering with schools, hospitals, and other institutions to supply fresh, locally sourced food can be a reliable market for farms. This supports healthy eating initiatives and fosters community ties. Currently, the BLAP area has multiple schools and a hospital which could source the majority of their food from local producers if demand was high enough.

Restaurants and cafes

Farm-to-table partnerships with restaurants and cafes can be mutually beneficial. These establishments source fresh ingredients directly from local farms, promoting sustainability and showcasing regional flavours. Many restaurants and cafes already source at least some of their produce from local producers.



How can stakeholders work to achieve this goal?

Changing diets

Promoting dietary shifts toward more seasonal produce, reduced sugar and oil consumption, increased fruit and vegetable intake, and less meat consumption in both the local and tourist populations will need to take a multi-faceted approach. In order to increase supply and demand of seasonal produce and fruit and vegetables, and to decrease supply and demand of sugar, oils, and meats, actions taken could include:

Immediate Actions

Support for existing initiatives:

- Increase support for local food cooperatives, food banks, and meal-sharing programmes emphasising seasonal and nutritious foods.
- Support the development of a Community Food Hub, as proposed by Bridport Food Matters, which will run educational programmes and workshops focused on seasonal eating, nutrition, and cooking skills to empower residents to make healthier dietary choices.
- Support and engage further retailers with campaigns such as “Totally Locally Bridport” to encourage more customers to shop with local suppliers.
- Re-establish a framework and funding to extend public procurement programmes, supplying local schools and hospitals with healthier, locally sourced options.

Near-Term Actions

Public awareness campaigns:

- Launch a targeted public awareness campaign through social media, local newspapers, and community events, such as Bridport Food Festival, highlighting the health and environmental benefits of seasonal and plant-based diets.
- Leverage celebrity appearances and special seasonal menus at events to generate excitement and interest in healthier food choices.

Engagement with retailers:

- Encourage local restaurants and food vendors to incorporate more seasonal, plant-based menu options.
- Consider offering incentives or recognition for establishments that prioritise the use of local and sustainable ingredients.

Long-Term Actions

Global trade partnerships:

- Establish direct trade links with regions abroad to sustainably import produce like tropical fruit, addressing local limitations.
- Explore the potential for twinning the Bridport Bioregion regions abroad or areas developing similar programmes, such as Frome, to enhance enthusiasm and attract funding for sustainable production and trade link initiatives.

Policy advocacy:

- Advocate for supportive policies at local and regional levels to create an environment conducive to the long-term promotion of seasonal diverse diets.
- Collaborate with policymakers to integrate health and sustainability considerations into public procurement programmes.

Continued educational programmes:

- Sustain and expand educational programmes on seasonal eating, nutrition, and cooking skills to create a lasting impact on residents' dietary choices and habits.

Why is encouraging seasonal eating important?

Seasonal eating offers a multitude of benefits for individuals and the environment. One of the primary advantages lies in the nutritional richness of seasonal produce. Fruits and vegetables that ripen naturally in a given season are often harvested at their peak, boasting higher nutritional content and flavour. Consuming these foods when they are in season ensures a diverse and well-rounded diet, providing the body with a spectrum of essential vitamins, minerals, and antioxidants.

Beyond individual health, seasonal eating contributes significantly to environmental sustainability. Local, seasonal produce requires less transportation, reducing the carbon footprint associated with food miles. By embracing foods that naturally thrive in a specific season, consumers indirectly support a more resilient and eco-friendly agricultural system. Seasonal eating promotes biodiversity, as it encourages the cultivation of a variety of crops throughout the year, preventing the monoculture patterns that can deplete soil nutrients and make crops more susceptible to pests and diseases.

Moreover, seasonal eating fosters a stronger connection between individuals and their local food systems. It encourages an understanding of the agricultural cycles and creates a sense of community as consumers engage with local farmers and each other through recipe sharing and produce swaps.

Increasing production

In order to increase the number of farms producing locally, there would need to be increased access to land, training, and finance; and there would also need to be increased recruitment of interested individuals.

Immediate Actions

Support for existing initiatives:

- Support existing projects promoting new entrants to farming, such as the Landworkers' Alliance 'farm-start' and 'farm-incubation' projects, locally managed by organisations like Tamar Grow Local.
- Advocate for the uptake of grants and existing schemes promoting agroecological practices, such as the Farming in Protected Landscapes grant and the Sustainable Farming Initiative.

Connecting farmers and land:

- Support existing projects such as Feeding Bridport Direct that aim to:
 - identify publicly owned or unused land for agroecological projects and allocate it to a land trust or similar scheme, to enable farmers committed to sustainable agriculture to lease or buy land at affordable rates.
 - identify individuals interested in entering farming and connect them with resources such as land and training.

Near-Term Actions

Support for new and transitioning farmers:

- Provide grants, subsidies, or low-interest loans to farmers interested in transitioning to agroecological methods to cover the costs of transitioning and implementing sustainable practices.
- Establish advisory services to assist small businesses, including Community Supported Agriculture (CSAs), with start-up challenges such as planning permissions, business planning, and establishing distribution networks and online presence, or to assist farmers with planning the transition towards more sustainable practices.
- Explore community-driven fundraising projects, like "Seeding our Future," to gather funds to support agroecological farming initiatives, potentially through council tax or business tax changes and contributions from interested organisations and individuals.

Horticultural development:

- Create networks that pair experienced horticultural growers with beginners or those looking to expand. Mentorship programs can provide valuable insights and guidance.
- Introduce recognition programs or awards for outstanding achievements in horticultural production to motivate growers and create healthy competition.
- Support creation of demonstration farms or model horticultural plots where best practices are showcased to provide practical learning experiences and inspiration for growers.

Near-Term Actions

Educational programmes:

- Establish educational programmes or workshops on agroecological farming practices in collaboration with local agricultural experts and organisations like Kingston Maurward and Schumacher College.
- Initiate or support farmer-to-farmer networks to facilitate knowledge sharing among agroecological farmers.

Access to accommodation:

- Work on zoning regulations that allow for on-farm residences, enabling farmers to live on the land they cultivate. This can include provisions for farmsteads or living quarters for agricultural workers.
- Set aside areas within agricultural zones for farmer housing to ensure that farmers have access to affordable housing close to their farms.
- Collaborate with housing agencies to provide financial support or subsidies for farmers to access affordable housing. This can include low-interest loans, grants, or partnerships with housing developers.
- Establish community land trusts that specifically focus on providing affordable housing for farmers. This ensures that the land remains dedicated to agricultural use and affordable housing in the long term.

Long-Term Actions

Policy advocacy:

- Develop policies prioritising agroecological practices in local land use planning and zoning regulations.

Continuing education programmes:

- Increase outreach to schools, providing education about routes into farming and sustainable farming methods, fostering an early understanding of agroecology and sustainable food processing.



Increasing affordability and accessibility

The main challenge we confront in the transition to a healthier and more sustainable food system is the need to make nutritious food the most accessible, most compelling, and easiest choice for everyone. Achieving this transformation requires a multi-level approach that addresses pricing structures, availability, and the marketing landscape. Here are key considerations on how we can rebalance these factors:

Immediate Actions	Near-Term Actions
<p>Addressing pricing:</p> <ul style="list-style-type: none"> Initiate targeted subsidies for nutrient-rich foods to enhance their affordability for consumers. This involves providing financial incentives and support to local and sustainable agricultural practices to reduce production costs, subsequently lowering prices for consumers. <p>Increase direct supply:</p> <ul style="list-style-type: none"> Support and promote existing CSA programmes by encouraging consumers to subscribe to seasonal produce shares, promoting a steady supply of fresh, locally sourced food. Encourage sales through direct-to-consumer models, such as farmers' markets, CSAs, and online platforms, which can eliminate intermediaries and make the supply chain more cost-effective. 	<p>Promote local food hubs:</p> <ul style="list-style-type: none"> Develop local food hubs that aggregate produce from multiple farmers, such as the Community Food Hub proposed by Bridport Food Matters, making it convenient for consumers to access a variety of local products in one place. Invest in infrastructure to support these hubs and facilitate distribution. <p>Farmer collaborations:</p> <ul style="list-style-type: none"> Develop regional processing facilities and encourage shared infrastructure, storage space, and equipment to reduce individual farmers' capital investments and operational costs. Support projects such as the proposed Community Food Hub that will allow sharing of resources. <p>Invest in public transport:</p> <ul style="list-style-type: none"> Improve public transport options, ensuring that residents, especially those in isolated areas, can easily reach different food outlets, including farmers' markets and local food hubs.
<h3>Long-Term Actions</h3>	
<p>Business collaborations:</p> <ul style="list-style-type: none"> Establish long-term partnerships between local producers and retailers to ensure a consistent and prominent presence of local products in stores. Create a wholesale network that connects public procurement schemes, restaurants, and retail outlets with local farmers. 	

Supporting local food chains

The report [How Can Bridport Feed Itself](#) by Bridport Food Matters identifies many of the most relevant barriers to local food in the Bridport area, and actions that can be taken to strengthen the local food economy. Actions range from aiding farmers in accessing markets, to making sure consumers can access and afford fresh local food.

Immediate Actions

Market access:

- Encourage and help to establish, promote, and incentivise farmers' markets or CSAs where local producers can directly connect with consumers, promoting fresh and locally processed goods.
- Establish or enhance online platforms that connect local farmers with consumers, facilitating direct sales and home delivery options. Collaborate with existing farmer organisations, such as the Landworkers' Alliance and the National Farmer Union, to allow farmers to link up to existing local food networks.

Financial support:

- Explore creation of a Local Food Infrastructure Fund to support community-led initiatives by cooperatives and individuals, such as opening new businesses or establishing new educational programmes. This can provide immediate grants or low-interest loans to local farmers to invest in processing facilities and distribution infrastructure



Near-Term Actions

Infrastructure development:

- Invest in shared processing facilities that local farmers can utilise, reducing individual financial burdens and enhancing efficiency.
- Establish or strengthen local distribution networks, collaborating with logistics partners to improve the accessibility of local produce in supermarkets and grocery stores.
- Invest in community infrastructure like community gardens, urban orchards, and food forests, that encourage residents to grow their own produce and connect with seasonal foods. Support existing projects aiming to increase community production, such as the [“We Dig No-Dig” project](#).

Educational programmes:

- Provide training programmes for farmers on efficient processing techniques, packaging, and quality control to meet market demands.

Public procurement programmes:

- Implement policies that require town institutions like schools and hospitals to prioritise local food procurement. Set targets for the percentage of locally sourced food in institutional meals.

Long-Term Actions

Policy advocacy:

- Advocate for government incentives and policy frameworks that support local food processing and distribution, making it financially viable for both farmers and businesses.
- Develop land use policies that facilitate the establishment of local processing facilities and distribution centres.
- Review local regulations related to food production, processing, and sales. Identify and push for removal of barriers that may hinder the development of local food systems.

Business collaboration:

- Encourage partnerships between local food producers and retailers, ensuring a consistent and prominent presence of local products in stores. Creation of a wholesale network connecting public procurement schemes, restaurants, and other retail outlets with farmers could help distributors to work with farmers to plan rotations and recipes.

Infrastructure investment:

- Invest in cold storage facilities to extend the shelf life of fresh produce, reducing waste and increasing the availability of local products throughout the year.
- Explore technology solutions, such as online platforms and inventory management systems, to streamline the distribution process and enhance market reach.

Increasing climate resilience

Farms in the area will be increasingly under the threat of unpredictable weather due to climate change. This has been assessed already in the Bridport Area by the [Growing Through Climate Change](#) report by Seeding our Future. A broad overview of strategies that ought to be considered to increase resilience of agriculture include:

Immediate Actions

Support programmes:

- Initiate support programmes for local farmers, providing resources and information on sustainable and climate-resilient farming practices.
- Offer quick-access grants or subsidies for implementing sustainable methods such as cover cropping, reduced tillage, and organic matter addition which improve soil health and water retention.
- Foster networks and partnerships between neighbouring farms and local agricultural organisations to initiate knowledge exchange and begin development of collective responses to climate challenges.



Near-Term Actions

Building biodiversity:

- Encourage farmers to diversify crops to increase resilience to climate variability and reduce the risk of multi-crop failures, as described by [Seeding our Future](#).
- Fund programmes that encourage farmers to the environment on the farm through adding new species of trees throughout the area, and educate farmers on how this can be carried out to moderate temperature and reduce heat stress on crops and animals.
- Provide agricultural extension services to educate farmers on climate-resilient crop choices and best practices.

Water management:

- Implement near-term water management initiatives, including rainwater harvesting, efficient irrigation systems, and strategies to mitigate water runoff.
- Support farmers in adopting water-smart practices, optimising water use for crop production.

Agrochemical reduction:

- Support research into integrated pest management strategies, which focus on biological control methods and reduced pesticide use
- Offer incentives for implementing methods that manage any changing pest and disease dynamics under climate change while preserving beneficial insect populations and reducing soil degradation.
- Collaborate with environmental agencies and farmers to develop networks for manure management and redistribution across the area.

Sustainable distribution:

- Introduce sustainable transportation methods for food distribution, such as electric vehicles or bike deliveries.
- Collaborate with local businesses to implement eco-friendly logistics for transporting local produce.



Long-Term Actions

Regenerative practices:

- Promote and incentivise regenerative agriculture practices in the long term, focusing on building healthy soils, enhancing biodiversity, and sequestering carbon.
- Develop education programmes to train farmers on regenerative techniques that contribute to long-term sustainability.

Green infrastructure development:

- Invest in long-term green infrastructure projects, such as agroforestry and buffer zones, to enhance ecosystem services and climate resilience.
- Collaborate with environmental organisations to create green spaces that benefit both agriculture and biodiversity.

Education and research programmes:

- Establish long-term educational programmes on sustainable farming practices and climate resilience that keep farmers up to date on how to plan planting and harvest times and change other management practices in response to anticipated weather patterns.
- Support ongoing research into local adaptation through biodiversity centres to help identify which varieties best match the specific regional conditions.
- Support research initiatives that explore innovative and climate-smart solutions for local agriculture.

Policy advocacy:

- Advocate for long-term policy changes that integrate sustainability and climate resilience considerations into agricultural practices, land use planning, and food system regulations.
- Collaborate with policymakers to create frameworks that incentivise and reward sustainable practices in the local food system.





Conclusions

Achieving local food security through sustainable farming methods in the Bridport area is a viable and transformative initiative. By shifting towards localised supply chains for staple foods like cereals, beef, dairy, poultry, and eggs, alongside the expansion of local horticultural production, the community can foster resilience and sustainability. This transition aligns with the broader goals of environmental stewardship, health promotion, and economic vitality. However, it will not happen overnight. Key actions across various domains have been summarised in the previous section, categorised into immediate, near-term, and long-term strategies that will allow the area to ease towards a transition over the coming decades.

The most important factors holding the area back from transitioning broadly relate removing barriers to access and removing barriers to supply. For the Bridport local area, the most significant access problems are related to affordability and convenience. The most significant barriers to supply are related to access to land, accommodation, and funding for starting or transitioning to sustainable farming.

Bridport has a very strong local food movement and many generous actors who are willing to dedicate time and effort towards ensuring that everyone in the community can access healthy, nutritious food at a price point they can afford. However, with limited time and funding, there are a few actions that can be taken to kickstart the transition and help move towards multiple goals. These include:

- Increasing fruit & veg consumption
 - Creating targeted campaigns with seasonal menus and other resources.
 - Extending public procurement schemes and establishing healthy menus.
 - Supporting creation of local food hubs with fruit & veg processing and packaging facilities.

- Increasing affordability and convenience
 - Creating wholesale networks and online platforms for farmers and businesses interested in supplying the local area.
 - Establishing links with supermarkets to work with them on setting goals for stocking local produce.
 - Working with producers and retailers to introduce sliding pay scales and subsidised produce boxes.
 - Supporting development of local retail hubs that make it convenient for consumers to access a variety of local products in one place.
- Supporting the transition to sustainable farming
 - Supporting existing community growing projects and exploring the potential for expansion into other areas.
 - Supporting efforts to connect those interested in entering farming, especially horticulture, with available land, resources, and training.
 - Working with nearby colleges and organisations to develop training programmes for farmers on topics including setting up a business, increasing agrobiodiversity, increasing efficiency in production, routes to market, and enhancing climate resilience.

Many actions are already underway and further details of a number of projects can be found, including the the event that laid the foundations for this food security plan at [Food Security For All: It Matters](#). This helped to identify many key actions and stakeholders who will be vital to moving the food security plan forwards.

Establishment of a central steering group who can re-assess progress towards these goals in the coming years, and direct actions of interested organisations and individuals towards where they will be most effective, would be beneficial in optimising efforts and bringing about sustained movement towards securing healthy, affordable food for all. More information can be seen on the Bridport Food Matters and Bridport Town Council websites.



With continued collaborative efforts to increase the uptake of agroecological farming and increase the affordability and accessibility of local food, the Bridport area can begin to chart a course toward a resilient, sustainable, and locally driven food system, safeguarding the well-being of its residents and the vitality of its environment.

Appendices and Calculations

Calculating how much food the population requires

The Bridport Local Area Partnership (BLAP) had a population of 21,780 as of 2021, of which 3,551 are below the age of 20, 10,542 are between 20-64, and 7,688 are over 64.

Tourist burden is not recorded for as small a scale as the BLAP area but is recorded for Dorset. In total in 2016, there were 3,434,000 visitors that stayed for an average of 4.3 nights, and 25,530,000 visitors that just came for a day [11]. This averages to 28,964,000 visitors staying for an average of 1.39 days. Surveys suggest around 21% of these tourists stay in the local area, primarily in Lyme Regis and Bridport [12]. This suggests the area receives proportionally slightly more tourists than the rest of Dorset, since it covers only 18.1% of land area, but this makes sense since the area includes a large section of coastline. Taking 21% of 28,964 thousand gives us 6,082,440 tourists staying for an average of 1.39 days.

Consumption of food broken down by food group is collected by several sources, including the UK's National Diet and Nutrition Survey, Statista, FAOSTAT, AHDB, and DEFRA's Agriculture in the UK, Horticulture Statistics, and Alcohol Bulletin series. By taking the average of these values, we can obtain a more accurate estimate of true consumption ([Table 1](#)).

We can adjust the average daily consumption values for different age groups using percentages derived from the NDNS. Since it is hard to know the age range of tourists, we assume that tourists consume the same diet as a 20–64-year-old ([Table 2](#)).

The total amount of food required is then calculated as the sum of the number of individuals in each age range multiplied by the days they spend in the region multiplied by the daily amount of food consumed by an individual in each age range ([Table 3](#)). In order to calculate the amount of food that would be required following a changed diet, updated daily consumption figures are used to calculate updated demand ([Table 4](#)). Similarly, for an increased population, the number of individuals in each age category is increased proportionally ([Table 5](#)).

[11] [The South West Research Company \(2016\) Tourism in Dorset: An overview of the importance and economic contribution of the visitor economy in Dorset. Dorset LEP.](#)

[12] [National Coastal Tourism Academy. \(2023\). Visit Dorset Consumer Survey.](#)

	Statista [13]	GOV [14]	FAO [15]	NDNS [16]	AVERAGE
	grams/person/day				
Beer	186.3	187.46	154.88	104.06	158.17
Cereals		421.36	352.66	221.32	331.78
Cider	30.63	22.31		8.32	20.42
Fruit, Orchard	37.2	38.82		22.13	32.71
Fruit, Soft	23.35	24.37		13.89	20.54
Fruit, Tropical	105.15	94.4		62.54	87.37
Juice, Orchard				9.53	9.53
Juice, Tropical				33.29	33.29
Legumes	14.5	10.42	21.1	6.89	13.23
Nuts	1			6.3	3.65
Oils, fats, spreads	24.14		42.47	1.85	22.82
Potatoes	91.85		181.45	38.84	104.05
Spirits	5.71	14.86	4.93	5.22	7.68
Sugar	13.28	49.75	66	23.9	38.23
Vegetables	169.78	160.28	237.1	106.08	168.31
Wine	38.28	56.54	55.62	38.63	47.27
Beef		43.51	47.53	26.82	39.29
Milk products	71.28			29.08	50.18
Eggs	14.28	25.06	30.77	20.6	22.68
Fish	21.86		49.07	29.05	33.33
Lamb		11.49	10.79	2.1	8.13
Milk	188.7	244.15	542.79	74.99	262.66
Pork		58.6	65.86	19.74	48.07
Poultry		82.59	89.67	55.82	76.02

TABLE 1: Reported daily consumption of different foods in the UK from different sources.

[13] Statista. (2020-2022). Varying articles.

[14] Department for Environment, Food & Rural Affairs. (2021). Agriculture in the United Kingdom 2020. Department for Environment, Food & Rural Affairs. (2023). Latest horticulture statistics. GOV.UK. HM Revenue & Customs. (2023). Alcohol Bulletin. GOV.UK.

[15] Food and Agriculture Organization of the UN. FAOSTAT Statistical Database.

[16] National Diet and Nutrition Survey. (2021). GOV.UK.

	Demand (grams/person/day)			
	Aged <20	Aged 20-64	Aged 65+	Unknown
Number	3551	10542	7688	6082440
Days fed	365	365	365	1.39
Beer	21	158	136	158
Cereals and products	346	332	303	332
Cider	3	20	18	20
Fruit and products (Orchard)	34	33	45	33
Fruit and products (Soft)	21	21	28	21
Fruit and products (Tropical)	91	87	120	87
Fruit Juice (Orchard)	11	10	4	10
Fruit Juice (Tropical)	38	33	15	33
Legumes	7	13	14	13
Nuts and seeds	1	4	3	4
Oils, fats, spreads	12	23	39	23
Potatoes and products	96	104	90	104
Spirits	0	8	3	8
Sugar and confectionary	32	38	30	38
Vegetables and products	93	168	172	168
Wine	1	47	55	47
Beef and beef dishes	40	39	26	39
Dairy	45	50	53	50
Eggs and products	15	23	20	23
Fish and fish dishes	26	33	50	33
Lamb and lamb dishes	9	8	29	8
Milk	431	263	416	263
Pork and pork dishes	37	48	39	48
Poultry and poultry dishes	60	76	34	76
TOTAL	1471	1639	1741	1639

TABLE 2: Average daily consumption of different foods in the UK, adjusted for age.

	Demand (tonnes/year)				
	Aged <20	Aged 20-64	Aged 65+	Unknown	Total
Number	3551	10542	7688	6082440	
Days fed	365	365	365	1.39	
Beer	27	609	383	1339	2357
Cereals and products	448	1277	851	2808	5384
Cider	4	79	49	173	304
Fruit and products (Orchard)	44	126	126	277	573
Fruit and products (Soft)	28	79	79	174	360
Fruit and products (Tropical)	118	336	337	739	1531
Fruit Juice (Orchard)	14	37	12	81	143
Fruit Juice (Tropical)	49	128	41	282	499
Legumes	9	51	38	112	210
Nuts and seeds	1	14	7	31	54
Oils, fats, spreads	15	88	109	193	406
Potatoes and products	124	400	254	881	1659
Spirits	0	30	8	65	103
Sugar and confectionary	42	147	84	324	596
Vegetables and products	120	648	483	1425	2675
Wine	1	182	154	400	737
Beef and beef dishes	52	151	72	333	608
Dairy	58	193	149	425	825
Eggs and products	20	87	57	192	355
Fish and fish dishes	33	128	141	282	585
Lamb and lamb dishes	12	31	80	69	192
Milk	558	1011	1167	2223	4959
Pork and pork dishes	48	185	110	407	750
Poultry and poultry dishes	78	293	96	643	1110
TOTAL	1906	6308	4886	13876	26976

TABLE 3: Annual consumption of each food group for each age group and in total.

	Demand (tonnes/year)				
	Aged <20	Aged 20-64	Aged 65+	Unknown	Total
Number	3551	10542	7688	6082440	
Days fed	365	365	365	1.39	
Beer	27	609	383	1339	2357
Cereals and products	516	1468	978	3229	6191
Cider	4	79	49	173	304
Fruit and products (Orchard)	55	157	158	346	717
Fruit and products (Soft)	35	99	99	217	450
Fruit and products (Tropical)	118	336	337	739	1531
Fruit Juice (Orchard)	17	46	15	101	179
Fruit Juice (Tropical)	49	128	41	282	499
Legumes	19	102	76	224	420
Nuts and seeds	3	28	14	62	107
Oils, fats, spreads	10	59	73	129	272
Potatoes and products	124	400	254	881	1659
Spirits	0	30	8	65	103
Sugar and confectionary	28	99	56	217	400
Vegetables and products	198	1069	796	2351	4413
Wine	1	182	154	400	737
Beef and beef dishes	35	101	48	223	407
Dairy	39	129	100	285	553
Eggs and products	13	58	38	129	238
Fish and fish dishes	22	86	95	189	392
Lamb and lamb dishes	8	21	54	46	129
Milk	374	677	782	1489	3322
Pork and pork dishes	32	124	74	273	502
Poultry and poultry dishes	52	196	64	431	744
TOTAL	1781	6282	4746	13819	26627

TABLE 4: Annual consumption of each food group for each age group and in total if eating a healthier diet.

	Demand (tonnes/year)				
	Aged <20	Aged 20-64	Aged 65+	Unknown	Total
Number	3913	11616	8472	6082440	
Days fed	365	365	365	1.39	
Beer	30	671	422	1339	2461
Cereals and products	568	1618	1078	3229	6493
Cider	4	87	54	173	318
Fruit and products (Orchard)	61	173	174	346	754
Fruit and products (Soft)	38	109	109	217	474
Fruit and products (Tropical)	130	370	371	739	1612
Fruit Juice (Orchard)	19	51	16	101	187
Fruit Juice (Tropical)	54	141	45	282	522
Legumes	21	112	84	224	440
Nuts and seeds	3	31	16	62	112
Oils, fats, spreads	11	65	81	129	286
Potatoes and products	137	441	280	881	1738
Spirits	0	33	9	65	107
Sugar and confectionary	31	109	62	217	418
Vegetables and products	218	1177	878	2351	4624
Wine	1	200	169	400	771
Beef and beef dishes	39	112	53	223	426
Dairy	43	143	110	285	580
Eggs and products	14	64	42	129	249
Fish and fish dishes	25	95	104	189	413
Lamb and lamb dishes	9	23	59	46	137
Milk	412	746	862	1489	3509
Pork and pork dishes	36	137	81	273	526
Poultry and poultry dishes	58	216	71	431	775
TOTAL	1962	6922	5229	13819	27933

TABLE 5: Annual consumption of each food group for each age group and in total for a larger population eating a healthier diet.

Calculating how much production is needed

Calculating how much primary produce is needed to make secondary and tertiary produce relies on estimation of the conversion efficiency.

$CE = \text{weight of primary produce} \times \text{weight of secondary/tertiary product}$

For example, one kilo of wheat will make between 750-1000 grams of flour depending on whether it is white or wholemeal. 500 grams of flour will produce a 700 - 800 gram loaf of bread depending on how much water and other ingredients are added and then lost during baking. So 1 kg of wheat could produce between 1-1.6 kg of bread, giving us a conversion efficiency of between 0.625 and 1. In contrast, one kilo of apples will only yield around 500 grams of juice, which gives us a conversion efficiency of 2. To estimate conversion efficiency, we can compare the amount of primary produce used in the UK to the total amount of secondary or tertiary products that are consumed by the end user.

	Produced g/p/day	Consumed g/p/day	Conversion efficiency kg/kg
Beer	188.1	158.2	1.189
Cereals	591.7	331.8	1.784
Cider	22.4	20.4	1.5
Fruit, Orchard	39	32.7	1.191
Fruit, Soft	24.5	20.5	1.191
Fruit, Tropical	94.8	87.4	1.085
Juice, Orchard	8.6	9.5	0.9
Juice, Tropical	25.6	33.3	0.769
Legumes	29.2	13.2	2.204
Nuts	3.7	3.7	1
Oils, fats, spreads	206.1	22.8	9.032
Potatoes	210.8	104	2.026
Spirits	6	7.7	0.776
Sugar	462.2	38.2	12.087
Vegetables	182	168.3	1.081
Wine	56.7	47.3	1.2
Beef	44.1	39.3	1.124
Milk products	344.7	50.2	6.868
Eggs	26.6	22.7	1.172
Fish	8.6	33.3	0.258
Lamb	10.4	8.1	1.281
Milk	261.9	262.7	0.997
Pork	57	48.1	1.185
Poultry	84.3	76	1.109

TABLE 6: Conversion efficiency calculated for each food group.

This can then be used to determine how much primary produce is required using the formula $\text{produce} = \text{product} \times \text{conversion efficiency}$.

In addition, animal feed is required to feed the animals used to produce meat, dairy, and eggs, as well as the rest of the animals needed to sustain the population - breeding pairs and flock/herd replacements. The number of animals required can be estimated using a population model. Feed requirements for each individual can be calculated using an energy balance model that accounts for the average nutritional content of grass in the area, and how this typically differs for dairy cattle, beef cattle, and sheep. Total animal requirements for feed, pasture, hay/silage, and housing are then calculated ([Table 7](#)).

	SIMULATED				
	Demand (tonnes)	Numbers	Feed (tonnes)	Silage (tonnes)	Pasture (ha)
Dairy cow	7507	1,611	70	3,731	895
Dairy bull		8	0	9	3
Heifers		421	0	477	152
Calves		1,579	0	1,751	298
Total Dairy Cattle		3,619	70	5,969	1,348
Beef cow	482	1,985	-	2,971	992
Beef bull		29	-	47	13
Heifers		411	-	555	178
Calves		1,945	-	2,554	441
Beef X Dairy		789	0	199	342
Full Beef		1,534	1	576	665
Full Dairy		368	-	50	160
Total Beef Cattle		7,063	1	6,952	2,791
Ewes	177	7,435	6	692	743
Rams		212	9	87	17
Replacement lambs		1,377	55	147	83
Meat lambs		9,925	468	-	397
Total Sheep		18,949	537	926	1,240

	SIMULATED			
	Demand (tonnes)	Numbers	Feed (tonnes)	Housing (ha)
Sows	628	384	423	19
Boars		38	42	1
Replacement pigs		106	9	0
Meat pigs		11,420	1,047	15
Total Pigs		11,949	1,521	36
Meat hens	867	1,889	17	0
Meat roosters		19	0	0
Replacement chicks		636	4	0
Meat chicks		282,675	3,612	11
Meat chicks from egg hens		4,585	47	0
Total Broiler Chickens		289,803	3,681	12
Egg chickens	303	18,363	606	7
Egg breeders		61	2	0
Egg roosters		6	0	0
Egg chicks		4,591	31	2
Total Laying Chickens		23,021	640	9

TABLE 7: Demand for a) ruminant and b) monogastric animal products to meet the total requirements in Table 5 and associated numbers of animals, amount of feed, amount of silage/haylage, area of pasture, and area of housing required to meet this demand using agroecological methods.

We can calculate the total amount of primary produce required by multiplying the demand for secondary product by the conversion efficiency. In most cases, more primary produce is needed than the amount of product, but for some (such as juice) less produce is needed as other ingredients (usually water) are added.

In addition the feed demand for animals from table 7 can be divided into cereal, legume, and oilseed demand using standard feed proportions. Usually, a small amount of feed is composed of supplements and other non-agricultural products, which are not included here.

The amount of local production required can be calculated by repeating this process and subtracting the level of secondary product that will be imported, converting to primary produce and feed demand, and subtracting the level of primary produce that will be imported (Table 9).

	Primary Produce Requirement tonnes/year
Cereals for beer	2968
Cereals	11745
Orchard Fruit for cider	502
Orchard Fruit	1045
Soft Fruit	656
Tropical Fruit	1840
Orchard Fruit for juice	177
Tropical Fruit for juice	467
Legumes	1153
Nuts	112
Oilseeds for oils	2665
Potatoes	4515
Cereals	84
Sugar Beet for sugar	5362
Vegetables	5937
Grapes for wine	1076
Beef	482
Milk for dairy	3998
Eggs	303
Fish	107
Lamb	177
Milk	3509
Pork	628
Poultry	867
TOTAL	50375
Animal cereals	3204
Animal legumes	25
Animal oilseeds	1624
TOTAL inc FEEDS	55229

TABLE 8: Total demand for crop production needed to meet the total demand for food in Table 5 and to feed animals required to meet this demand using agroecological methods.

	Secondary Product Requirement				Primary Produce Requirement			
	Product Imports	Total	Domestic	Imported	Produce imports	Total	Domestic	Imported
	%	tonnes/year			%	tonnes/year		
Beer	5	2461	2338	123	0	2820	2820	0
Cereals	0	6493	6493	0	5.75	11745	11070	675
Cider	0	318	318	0	5	502	477	25
Fruit (Orchard)	0	754	754	0	5	1045	993	52
Fruit (Soft)	0	474	474	0	5	656	623	33
Fruit (Tropical)	0	1612	1612	0	100	1840	0	1840
Fruit Juice (Orchard)	0	187	187	0	5	177	168	9
Fruit Juice (Tropical)	100	522	0	522	100	0	0	0
Legumes	0	440	440	0	0	1153	1153	0
Nuts	0	112	112	0	80	112	22	89
Oil	10	286	258	29	0	2398	2398	0
Potatoes	0	1738	1738	0	0	4515	4515	0
Spirits	5	107	101	5	0	80	80	0
Sugar	15	418	355	63	0	4558	4558	0
Vegetables	0	4624	4624	0	5	5937	5640	297
Wine	50	771	385	385	5	538	511	27
Beef	0	426	426	0	0	482	482	0
Dairy products	20	580	464	116	0	3198	3198	0
Eggs	0	249	249	0	0	303	303	0
Fish	0	413	413	0	10	107	97	11
Lamb	0	137	137	0	0	177	177	0
Milk	0	3509	3509	0	0	3509	3509	0
Pork	0	526	526	0	0	628	628	0
Poultry	0	775	775	0	0	867	867	0
TOTAL		27933	26690	1243		47347	44289	3059
				Animal cereals	0	3200	3200	0
				Animal legumes	0	25	25	0
				Animal oilseeds	0	1622	1622	0
				TOTAL		52194	49136	3059

TABLE 9: Total demand for secondary products broken down into domestic and import product demand, and total crop production needed to meet the domestic demand for food and animal feed, broken down into domestic and imported produce demand. Table shows a reduced level of imports than at current following the suggestions outlined in the document.

Calculating how many farms and farmers are needed to meet demand

Once we have the total production demand, we can translate this into demand for land by using agroecological yields derived from the organic farm management handbook [17].

	Production requirement tonnes	Yield t/ha	Arable	Orchard	Horticulture ha	Pasture	Total
Beer	2820	4.3	656				656
Cereals	11070	4.3	2574				2574
Cider	477	11		43			43
Fruit (Orchard)	993	11		90			90
Fruit (Soft)	623	7.3			85		85
Fruit (Tropical)	0	1.6		0			0
Fruit Juice (Orchard)	168	11		15			15
Fruit Juice (Tropical)	0	1.6		0			0
Legumes	1153	2.7	427				427
Nuts	22	2.9		8			8
Oil	2398	2.7	888				888
Potatoes	4515	25	181				181
Spirits	80	4.3	19				19
Sugar	4558	65	70				70
Vegetables	5640	19.3			292		292
Wine	511	7			73		73
Beef	482	0.1				3636	3636
Dairy products	3198	4				806	806
Eggs	303	32.9				9	9
Fish	97	11.9				1	1
Lamb	177	0.1				1343	1343
Milk	3509	4				884	884
Pork	628	17.4				36	36
Poultry	867	72.2				12	12
TOTAL	44289		4815	156	451	6726	12148
Animal cereals	3200	4.3	744				744
Animal legumes	25	2.7	9				9
Animal oilseeds	1622	2.7	601				601
TOTAL	49136		6169	156	451	6726	13502

TABLE 10: Total demand for local primary production as described in table 8, and concurrent demand for land using average agroecological yields.

To calculate how many farms and farmers would be required, we can roughly apportion areas of this total land requirement to different production strategies as described in the document. We also need to add on a little land for a biodiversity centre.

	Land requirement (ha)				TOTAL
	Arable	Orchard	Horticulture	Pasture	
CSA			32		32
Market garden			60		60
Larger veg	251		286		536
Arable grazing rotation	5918			6512	12430
Specialty chickens or pigs				57	57
Agroforestry		156		156	313
Vinyards			73		73
Fish				1	1
Biodiversity centre	2	2	3		7
TOTAL	6171	158	454	6726	13509

TABLE 11: Total demand for arable, orchard, horticultural, and pasture land divided amongst different production strategies as described in the report.

This can then be divided into a total number of farms using average farm sizes. Labour needs can also be calculated using the standard numbers of workers on a farm of that size.

	Farms (no)	Growing area (ha/farm)	Infrastructure area (ha/farm)	Total area (ha/farm)	Total area (ha)	Labour (no/ha)	Labour (no/farm)	Total labour (no)
CSA	32	1.0	0.1	1.1	35.2	1.8	2.0	64.0
Market garden	15	4.0	0.4	4.4	66.0	1.4	6.0	90.0
Larger veg	10	53.6	5.4	59.0	589.9	0.2	10.0	100.0
Arable grazing rotation	120	103.6	10.4	113.9	13672.7	0.0	5.0	600.0
Specialty chickens or pigs	10	5.7	0.6	6.3	63.0	0.6	4.0	40.0
Agroforestry	20	15.6	1.6	17.2	344.3	0.2	4.0	80.0
Vinyards	10	7.3	0.7	8.0	80.3	0.5	4.0	40.0
Fish	9	0.1	0.0	0.1	1.1	40.9	5.0	45.0
Biodiversity centre	3	2.3	0.9	3.3	9.8	1.8	6.0	18.0
TOTAL	229				14862.3			1077.0

TABLE 12: Total demand for additional infrastructure area and for workers on each farm, and total area and workers required for each farm category and for the area.



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