Food Standards Scotland

For safe food and healthy eating

A Food Surveillance Strategy for Scotland

A model for the collection, recording, analysis and interpretation of information and intelligence relating to the safety and authenticity of the Scottish food chain

Contents

Introduction

Food Standards Scotland's Strategy to 2026[1] sets out a vision for **a safe, healthy and sustainable food environment that benefits and protects the health and well-being of everyone in Scotland**. A priority outcome is Food is Safe and Authentic, and surveillance plays a key role in supporting this by providing a means of verifying the integrity of our food chain and identifying risks. Surveillance also helps to generate the intelligence and insight needed to assess how interventions affect the safety and authenticity of foods placed on the market, and their wider impacts on consumers and the industry.

Having a world-recognised food surveillance system is a long-term ambition for us, reliant on the achievement of a number of challenging inter-dependent objectives:

- An effective horizon scanning capability which allows us to interpret data and evidence from a diverse range of sources (scientific, economic, investigative) to identify trends and emerging risks, and ensure surveillance activities are effectively targeted,

- Access to resilient, co-ordinated and integrated laboratory provision for food and feed testing in Scotland,

- Trusting and productive relationships with partners across Government, the public sector and the food industry, which promote the sharing of data and intelligence,

- Secure digital platforms for recording, analysing, reporting and sharing intelligence,

- Data standards that facilitate the sharing and comparison of FSS data sets and those available from external sources, and

- Data science and analytical capability which allows us to translate data and information into robust and usable intelligence.

Our Food Surveillance Strategy considers:

Why
food surveillance is needed and the rationale for our approach,

What
information needs to be collected,

How
that information should be generated and analysed, and

Who
we need to work with to ensure intelligence is shared effectively and appropriate action is taken.

These considerations have been used to develop the framework for a food surveillance model which will help to underpin our evidence base on food safety and food authenticity and support the delivery of FSS's strategic goals.

Why

The importance of food surveillance in the delivery of FSS strategic objectives

All of our statutory functions and strategic objectives rely on the provision of a comprehensive, robust and up to date evidence base relating to the food and feed supply chain. Food surveillance[2] programmes contribute to this through the gathering of data relating to the safety, compositional standards and authenticity of the Scottish food chain. The analysis and interpretation of this data provides the intelligence which is needed to inform risk assessment, policy development and the targeting of enforcement activity, and therefore enables us to deliver our public health and consumer protection obligations.

Prior to our inception in April 2015, a programme of work was developed by Food Standards Agency in Scotland (FSAS) to address recommendations made, in 2013, by the Scottish Government's expert advisory review of the lessons to be learned from the horsemeat incident, which was led by Professor Jim Scudamore (the Scudamore report)[3]. FSS's Surveillance Strategy is based on the definition of food surveillance provided in the Scudamore report, as highlighted below.

What do we mean by food surveillance?
'the on going systematic collection, collation, analysis and interpretation of accurate information about a defined food or feed with respect to food safety or food standards, closely integrated with timely dissemination of that information to those responsible for control and prevention measures.'

To address the recommendations of the Scudamore report, we committed to developing a food surveillance strategy for Scotland[4]. The starting point was a review commissioned to benchmark the processes in place for undertaking food surveillance in Scotland against internationally recognised systems in other countries ('Benchmarking Review')[5]. This review put forward a number of proposals to assist us in augmenting our existing food surveillance capabilities for food fraud and authenticity, which were also considered to be relevant to food safety. The proposals were used to develop the framework for our surveillance strategy and to identify the areas that we needed to strengthen in order to work towards the vision of the Scudamore report **"to ensure Scotland has a world recognised surveillance system in place".**

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2. For the purposes of this strategy, the term food surveillance will be used to cover food, drink and animal feed
3. https://www.gov.scot/resource/0042/00426914.pdf (webarchive.org.uk)
4. FSS Board Meeting - 16 September 2015 | Food Standards Scotland
5. The comparator countries in the review were Canada, Denmark, Ireland, the Netherlands, New Zealand, Germany and the USA. In depth case studies were conducted for Canada and New Zealand.

What 📋

Evidence required to support the surveillance strategy

Aim and scope of the strategy

This strategy addresses all of the recommendations made in the Scudamore report relating to the development of an effective surveillance system for food safety, food standards and food fraud[6] (presented in Annex). It sets out an overarching framework for surveillance which can be applied to both food and animal feed, and approaches which are relevant to the investigation and assessment of both the safety and authenticity of products, and the identification of fraudulent activity in the food supply chain. **Consumer protection is our key priority and the strategy therefore takes account of products which are produced in Scotland, as well as imported food and feed.**

Our strategy acknowledges the potential for Scotland, as a relatively small country, to develop an internationally recognised surveillance model which aligns with both the size of its population and the nature and scale of its food economy. Scotland's governance arrangements offer a potential strength in terms of the practicalities of working with Local Authorities (LAs) and other bodies with local knowledge and close relationships with communities across the country. **A central plank of the strategy is to make best use of the information collected by FSS and others for the common good.**

Data and information requirements

Our surveillance strategy relies on the on-going collection of a wide variety of data and information sources in order to ensure it provides sufficient coverage of foods produced in Scotland and imported products, and is capable of identifying emerging risks and vulnerabilities across the whole supply chain. It is designed around seven over-arching categories of data and information which will be used either alone or in combination to generate intelligence on risks to the food and feed chain:

1. Scientific data generated through sampling and analysis of the food chain and environment;

2. Official controls and enforcement data on regulatory compliance in the food industry and incidents reported both within and out with the UK;

3. Relevant trends in public health surveillance and epidemiology;

4. Market signals suggesting changes in the food supply chain and consumer purchasing behaviours;

5. Internet and social media analytics;

6. Evidence relating to global issues which have the potential to indirectly impact on the food supply chain including environmental changes, new technologies, or socio-political factors;

7. Intelligence gathered and/or developed by FSS's Scottish Food Crime and Incidents Unit.

Data and information needed to underpin our strategy can be accessed from a wide range of different sources, as shown in the diagram below. Many of these are already available to FSS either directly or through existing partnerships, whilst other sources rely on effective collaborative working arrangements with external stakeholders.

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6. This strategy does not cover dietary surveillance, although data on consumption patterns and the nutritional composition of foods will be used, where appropriate to inform prioritisation and the targeting of surveillance activities.

FOOD SURVEILLANCE STRATEGY

Wheel segments:
- Research and Surveys
- Industry Data
- Internet and Social Media Analytics
- Media Reports
- International Food Alerts
- Market Research
- Consumer Surveys and Citizen Engagement
- FSS and LA Enforcement Data
- Tip Offs, Consumer Complaints and Whistle Blowing
- Environmental Monitoring Data
- Clinical Surveillance Data
- LA Sampling Data

We will map, on an on-going basis, sources of data and information to identify gaps and develop mechanisms for gaining access to relevant evidence streams and the necessary analytical expertise. This will ensure our surveillance activities are capable of providing a fully comprehensive picture of the vulnerabilities that are associated with the food landscape in Scotland.

A key priority for this strategy is to develop new networks and skills which will facilitate access to the wealth of information that is available through the food industry, national and international trade markets, third party research and the media (including social media).

How

Developing a surveillance model for Scotland

Our surveillance model is underpinned by the findings of our 'Benchmarking Review'. This identified that there were five essential components of an effective food surveillance system, which are described below.

	Strategic Planning	To ensure that targeting of surveillance effort is informed by risks identified over **short, medium and long term**.
	Information Gathering	To collect data and information that is comprehensive, timely, reliable, relevant and provides sufficient coverage and insight from relevant supply chains and commodities.
	Laboratory Services	To utilise state of the art, and resilient analytical expertise capable of delivering timely and reliable testing of food samples, and which are integrated into wider surveillance networks.
	Information Management, Analysis and Investigation	To develop systems which enable data and information to be standardised, validated and turned into actionable intelligence.
	Collaboration and Partnership Working	To facilitate the sharing of intelligence and ensure FSS has access to the necessary expertise and knowledge to identify trends and emerging risks.

Strategic Planning

Priority Setting

A structured procedure for setting priorities is the key starting point for the design and implementation of our surveillance strategy. When targeting areas for surveillance it is necessary to give issues appropriate weighting to ensure the interests of Scottish consumers are prioritised. We will use the outputs of research, insight from consumer engagement activities and existing programmes of work such as the Food Crime Annual Strategic Assessment[7], and LA sampling programmes, to generate the evidence needed to ensure surveillance activities are appropriately targeted.

Where the priority setting process identifies potential risks and vulnerabilities to the Scottish food and drink industry, particularly with regard to food crime, we will seek to develop partnership approaches to ensure intelligence sharing and the development of appropriate measures for protecting trade interests.

The integration of priority setting across all areas of FSS business is essential. This will ensure that assessment is based on a comprehensive and up to date understanding of threat, risk and harm, and is sufficiently adaptable to take account of intelligence which identifies emerging risks.

> The strategy will develop a systematic, risk-based approach for setting priorities to ensure that interventions are effectively targeted to the commodities and risks which are of particular concern to consumers and food businesses in Scotland.

Horizon Scanning and Emerging Risks

In order to ensure surveillance activities are prioritised and targeted effectively, it is necessary for us to have structured procedures in place for horizon scanning. This will enable the detection of potential threats, and emerging and future risks to the Scottish food chain.

We have implemented a horizon scanning process which aims to optimise the use of data and information to detect signals that point to vulnerabilities in the food supply chain, and enable the identification of emerging and long-term risks. We work closely with partners including the Food Standards Agency to exchange intelligence, and use publically available and proprietary information networks including Horizon Scan[8], INFOSAN[9] and market research providers, to generate insights needed to inform surveillance activities.

To develop the evidence base needed to support our surveillance model we will:

- continue to strengthen our horizon scanning capabilities by establishing data sharing arrangements with partners across the UK and internationally, and;

- build expertise in the collection, analysis and interpretation of intelligence and insights from diverse sources.

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7. Food crime priorities | Food Standards Scotland The Food Crime Strategic Assessment is published on an annual basis by FSA and FSS and it examines the scale and nature of food crime threats to the UK food industry. FSS also publishes a parallel Scottish Control Strategy which is targeted to the interests of Scotland.

8. HorizonScan (fera.co.uk) Horizon Scan is an online subscription service managed by FERA that provides access to a rapid overview of potential and emerging food safety issues. It collects daily data of food and drink related notifications from a variety of sources enabling real-time searches relating to food recalls and incidents reported worldwide. It also allows searches for commodity-specific references to food safety issues and monitors global food integrity issues.

9. INFOSAN | Food safety and quality | Food and Agriculture Organization of the United Nations (fao.org) INFOSAN is the website of the International Food Safety Authorities Network. It comprises a global network of national food safety authorities, managed jointly by FAO and WHO and includes National authorities of 186 countries worldwide. Through INFOSAN, WHO assists members in managing food safety risks, ensuring rapid sharing of information during food safety emergencies to stop the spread of contaminated food from one country to another. INFOSAN also facilitates the sharing experiences and tested solutions in and between countries in order to optimize future interventions to protect the health of consumers.

Information gathering

Sources of data and information

A wide range of different data and information is needed to support and direct our surveillance strategy, some of which are held by us and others which will be accessed from external partners.

Food sampling provides a key surveillance mechanism for assessing the safety and authenticity of foods placed on the market, and generates valuable evidence to support risk assessment and the targeting of further surveillance and enforcement activities. The use of IT platforms such as the Scottish Food Sampling Database (SFSD)[10] plays a key role in maintaining access to LA food surveillance data. It is a long term goal for this strategy to ensure that the analytical and reporting capabilities of data management tools like SFSD are further developed and integrated with wider intelligence systems held or accessed by us.

The integration of LA sampling activity with our research and survey programmes plays an important role in directing enforcement effort, from which additional information can be collected and used as part of the overall surveillance programme. It has been recognised that the longer-term viability of LA sampling programmes may be at risk due to continued budgetary pressure and it will therefore be necessary to keep this under review. **We will work in collaboration with LAs to develop sustainable sampling models which address our food and feed surveillance needs into the future**. A further aim of this strategy is to develop targeted annual survey programmes aimed at generating statistically robust data needed to address evidence gaps and support risk assessment. **Our survey programmes will be developed as part of the strategic planning process and fully coordinated with relevant research and surveillance activities to ensure sampling effort is targeted to priorities and addresses key evidence gaps**.

> The development of co-ordinated food sampling programmes will continue to play a key role in surveillance activities, taking full account of existing evidence to ensure resources are effectively targeted.

In addition to sampling, valuable intelligence leads for surveillance are also generated through enforcement activity and incident investigation. The Scottish Food Crime and Incidents Unit (SFCIU) has been working with LAs through the Scottish Food Enforcement Liaison Committee's (SFELC's) National Food Crime Advisory Unit to promote the reporting of suspected criminal activity and the sharing of intelligence. SFCIU has also developed improved systems for managing incidents[11] and the recording, analysis and dissemination of intelligence[12] generated by FSS and key partners, which support the targeting of investigations and enforcement approaches. The launch, in 2016, of the Scottish

Food Crime Hotline[13] provided an additional route for channelling whistleblowing and tip-offs into our intelligence systems.

The observational data collected through targeted inspections and audits by LAs and FSS field staff also has an important contribution to make to our surveillance capability. The development of IT platforms that are equipped to collate this information represents a significant opportunity for us to make better use of enforcement data and strengthen our intelligence base. In particular, the development of the Scottish National Database (SND)[14] has provided an invaluable tool for accessing LA data sets and capturing observational

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10. The Scottish Food Sampling Database (SFSD) was developed by the FSA in Scotland in collaboration with Scottish LAs and Public Analysts, as a database for centrally recording, in a consistent format, all of the food and feed sampling information collected cross Scotland, and allows the reporting of trends in microbiological and chemical safety and compositional standards. The database was rolled out across the UK by the FSA in 2005 as the UK Food Surveillance System (UKFSS).
11. FSS has implemented Central Logging of Intelligence Operation (CLIO) for managing incidents. CLIO offers improved real-time recording of investigations undertaken by FSS and partner organisations.
12. MEMEX is an intelligence recording database widely used by public sector agencies.
13. Scottish Food Crime Hotline (tel:0800 028 7926), in partnership with Crimestoppers
14. A new Scottish National Database (SND) is currently being developed which will provide FSS with access to food premises inspection data held by all 32 LAs in Scotland.

intelligence gathered during routine inspections and targeted surveys. When used in combination with the inspection data collected by FSS from meat plants, this stream of information will be of increasing importance as a major high-value source of close-to-real-time intelligence relating to food business compliance across Scotland.

The use of geographic information systems (GIS), enabling the spatial analysis and presentation of data is an important component of the surveillance programme. In the longer term there is potential to explore the value of additional data capture technologies by officers during inspections and investigations, for example, the use of GNSS[15] receivers as a means of linking official control activities and other observational information with GIS systems, and barcode readers to improve product tracking. Distributed Ledger Technology (DLT)[16], such as blockchain, is a further tool with the potential to strengthen surveillance of our food system in a way that enables regulators, businesses and consumers to access information on the whole supply chain from primary production to retail, greatly enhancing transparency and our ability to identify and mitigate risks.

> The development of IT platforms which allow central recording of intelligence, sampling and observational data with linkages to GIS systems will be critical in identifying geographic trends and targeting surveillance activities and investigations.

Data held by the food industry relating to food sampling and traceability has the potential to add significant value to our surveillance strategy, and gaining trust and developing safe spaces for exchanging information and ideas with the food industry will be key to our success. We have already made good progress in establishing information sharing arrangements with a number of major UK food companies through its involvement in the Food Industry Intelligence Network (FIIN)[17], and this is proving to be an invaluable route for exchanging intelligence on food authenticity. It will be necessary to continue to build on these data sharing partnerships with the industry, particularly with Small and Medium-sized Enterprises (SMEs), which dominate the food sector in Scotland.

This strategy also recognises that data and intelligence relating directly to food production is only part of the picture. A key objective is to assess how the monitoring and research activities undertaken by other parts of the Scottish and UK government can be used to identify trends and emerging issues and support the targeting of food chain surveillance and investigations. **This will require us to have a good understanding of the data collected across government and strengthen relationships with the relevant partners. This will facilitate access to the necessary data sets and identify how we can make better use of them to inform our work.**

> As part of this strategy, we will continue to invest in the development of trusting and collaborative relationships across government and with the food industry to facilitate effective data sharing and support strategic planning.

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15. Global Navigation Satellite Systems e.g. GPS, GLONASS, Galileo or Beidou
16. Distributed Ledger Technology: beyond block chain (publishing.service.gov.uk)
17. FIIN currently includes representation from over 40 major UK food companies.

Laboratory Services

Access to resilient, sustainable, high quality laboratory services will be critical to the delivery of effective surveillance, and the maintenance of food science capability will continue to be a priority. Scotland already has well established publically funded laboratory networks for food testing, in addition to world recognised scientific expertise in relation to public health and food safety. However, the fragmented nature of laboratory infrastructure across Scotland, coupled with a lack of investment in public sector food and feed laboratory services, has hampered our ability to optimise analytical capability in key areas such as next generation sequencing and diagnostics for verifying food authenticity. This issue was the subject of a review undertaken by FSS in 2019[18], which identified a number of recommendations for future work that would help to ensure laboratory services in Scotland were aligned with official control and surveillance requirements for food and feed.

For Scotland to build capacity and resilience into its scientific services for food and feed, it will be essential to establish more formalised and centrally co-ordinated surveillance arrangements between the Public Analyst (PA) and NHS laboratory networks and promote joint working with the wider scientific community in Scotland, including Scottish Government research providers and academic researchers. **As part of this strategy, we will provide a leadership and facilitation role to assist in the development of more integrated food laboratory services across Scotland.**

Information management, analysis and investigation

The data and information sources required to support food surveillance activity have been historically managed by a number of separate in-house or proprietary databases across different areas of FSS. It will be important to ensure strategic oversight of the information generated by these systems to facilitate the analysis of trends and emerging issues, and to develop mechanisms for linking this information with external sources of intelligence from proprietary systems or databases held by other government agencies. **A priority for this strategy will be to ensure that the analytical and reporting capabilities of existing FSS data management tools are developed. Wherever possible, these will be integrated with external intelligence systems, to facilitate effective data sharing and identification of emerging risks.**
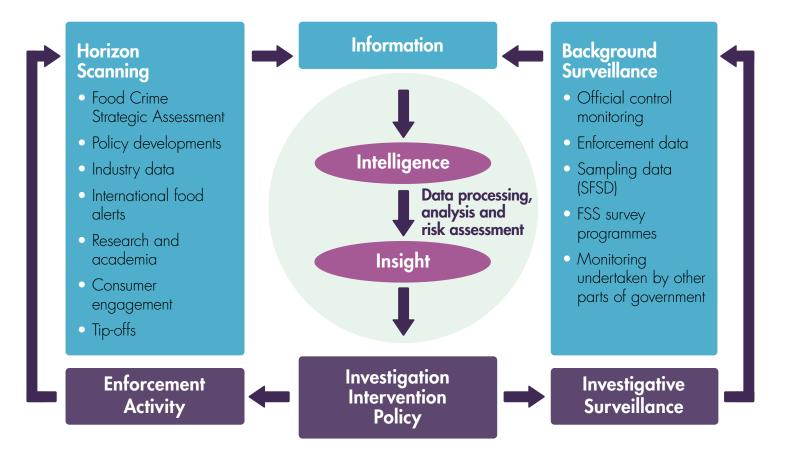
In order to make effective use of the external data and information sources needed to underpin our surveillance strategy, it is necessary to ensure that they are in an appropriate format which will enable us to undertake analysis which allows for linkage and comparison with FSS datasets. **The development of common data standards will be important in supporting effective data sharing and comparison of data held by FSS, industry and other public bodies.**

Structured processes for the collation, management and interpretation of intelligence are required to ensure that the strategy is able to make the most effective use of data and information that is currently available to support and direct surveillance activity. The FSS surveillance model (shown below) is based on the capture of **information** from a defined set of sources as the basis for structured analysis which is capable of generating **intelligence and insight** (through processing, analysis, interpretation and risk assessment) required to establish the need for, and the form of, any further **investigation**.

18. Official_Control_Food_and_Feed_Laboratories_-_Enhancing_Capacity_and_Capability_for_the_Future.pdf (foodstandards.gov.scot)

There is a recursive element to the model that allows the stable streams of incoming information to be supplemented by information gathered during investigations that have been triggered by surveillance outputs.

The model is designed to adapt to short and longer-term changes to take account of changing priorities and new sources of evidence which become available. It will also be important to build a validation process into the model in order to assess its effectiveness in predicting issues and identify where it needs to be adapted and strengthened.

The FSS surveillance model

Horizon Scanning

- Food Crime Strategic Assessment
- Policy developments
- Industry data
- International food alerts
- Research and academia
- Consumer engagement
- Tip-offs

Information

Intelligence

Data processing, analysis and risk assessment

Insight

Background Surveillance

- Official control monitoring
- Enforcement data
- Sampling data (SFSD)
- FSS survey programmes
- Monitoring undertaken by other parts of government

Enforcement Activity

Investigation Intervention Policy
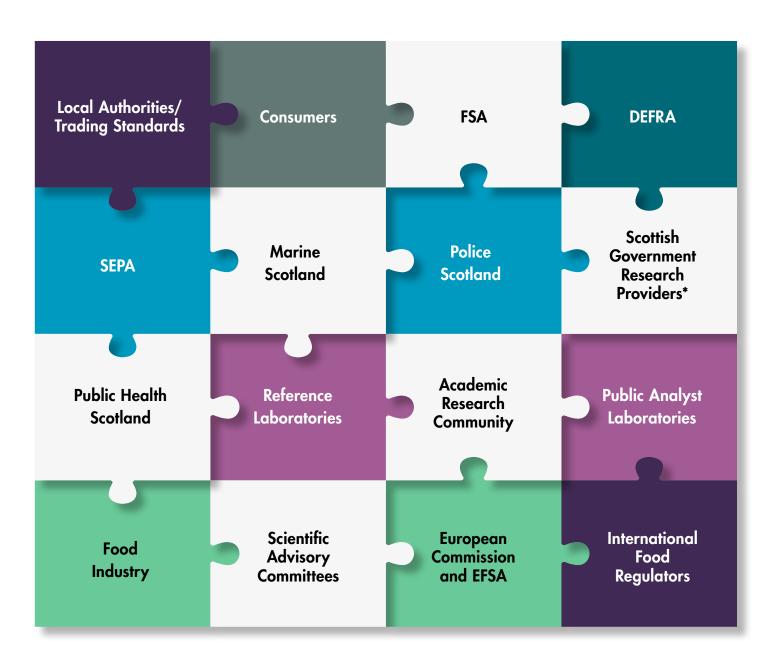
Investigative Surveillance

Who

Collaboration and partnership working

The vision for future food surveillance described by this strategy cannot be delivered by us in isolation. Effective communication and collaboration with external stakeholders is critical to its success. Our existing consumer and industry engagement programmes, and strong working relationships with the UK and international bodies described below are key strengths. **There will be a need to continue to build on these partnerships to support efficient sharing of intelligence and surveillance outputs.**

Local Authorities/ Trading Standards	Consumers	FSA	DEFRA
SEPA	Marine Scotland	Police Scotland	Scottish Government Research Providers*
Public Health Scotland	Reference Laboratories	Academic Research Community	Public Analyst Laboratories
Food Industry	Scientific Advisory Committees	European Commission and EFSA	International Food Regulators

* Main Research Providers (webarchive.org.uk)

Delivering outputs and reviewing prioritised

The success of this strategy is dependent on our ability to produce timely and tangible outputs, and it will therefore be necessary to ensure that it operates according to an established schedule for reporting and review. We will aim to enhance the analysis and reporting of data and intelligence in ways that enable it to be used across the enforcement community to report on performance, promote best practice, and enable inspection and sampling plans to be adapted in real-time to take account of emerging issues. **Reporting arrangements will be incorporated into the strategic planning process based on the outputs of horizon scanning and surveillance activities.**

Whilst it may not always be appropriate to widely publicise our priorities, particularly with regard to food crime, this strategy will review mechanisms for providing wider access to our surveillance outputs in formats which are suitable for consumers and stakeholders. **We will explore new reporting formats for presenting surveillance outputs, including infographics, and the suitability of open data approaches for promoting research and linkages to external data sources that could support horizon scanning.**

Achieving the vision for food surveillance described in this strategy is a cross-cutting and long-term project which will be critical to the effective delivery of all of FSS's business objectives. It will therefore be necessary to manage delivery at a strategic level, and to ensure deliverables are monitored in a structured manner.

We will continue to report on the outputs of this strategy as it is refined and developed and we will regularly evaluate the effectiveness of our surveillance model in line with changing priorities and resources.

Annex | Scudamore recommendations which are relevant to the development of a food surveillance strategy

12. The New Food Body should consider how to improve the use and collation of information across food standards and food safety to ensure Scotland has a world recognised surveillance system in place.

17. The New Food Body should develop annual monitoring programmes for Scotland in collaboration with the LAs covering a diverse range Food Safety and Food Standards issues.

18. The New Food Body could implement additional surveys across a range of foodstuffs, such as the survey on the authenticity of meat products as an example based on risk assessment and general intelligence.

19. The New Food Body should develop a risk assessment strategy for food safety and standards. This should ensure the development of Scottish capacity and expertise in horizon-scanning including economic analysis as well as speculatively looking for potential areas of risk, rather than just following an intelligence-led approach.

23. The Scottish Government and the FSA Scotland should ensure the remaining 3 LAs in Scotland participate fully in the UKFSS.

24. The New Food Body should ensure that LAs in Scotland continue to participate in the UKFSS.

33. FSA Scotland and the Scottish Government must urgently identify the scientific capacity and capability it would require to deliver official controls in the future, so that decisions could be made about what needed to be available in Scotland and what needed to be available elsewhere. This should then be used to inform more strategic investment decisions.

40. FSA Scotland and the New Food Body should determine the sample basis of any surveillance in order to provide statistically significant result.

41. The New Food Body should ensure a co-ordinated sampling programme is in place across Scotland, with local sampling plans complementing Scotland and UK-wide sampling activity.

42. The Scottish Government, the FSA Scotland and the New Food Body should ensure Food Business Operators share the detail and the results of their testing programmes in Scotland with FSA Scotland.

43. FSA Scotland and the New Food Body should ensure that the Scottish Food Enforcement Liaison Committee publishes annual reports of UKFSS information relevant to Scotland within 6 month of the year end and contributes to the identification of priorities for surveillance of food safety and food standards in Scotland.