# Development of a new food surveillance sampling strategy for Scotland

## 1 Purpose of the paper

1.1 This paper aims to inform the Board of our plans to develop a new food sampling strategy as part of a scientifically robust national food surveillance programme. It describes how the new strategy will be delivered to provide a structured framework for collecting data on food safety and standards that will enable FSS to deliver its strategic objectives.

1.2 The Board is asked to:

- Note the challenges associated with the current approach to food sampling in Scotland, and implications for FSS surveillance capability, laboratory services, and enforcement delivery in Scotland;
- Consider and agree the case for a new food sampling strategy as part of a scientifically robust national surveillance programme which can be maintained into the future;
- Confirm the Board is content for the Executive to pursue the proposed approach for delivering this programme as part of our wider plan for mitigating the strategic risk relating to LA delivery.

## 2 Background

2.1 A key theme of FSS's Strategy for 2021-26[1] is the importance of data and evidence in enabling us to address our key objectives to improve Scotland's diet, reduce the impact of foodborne illness, and strengthen regulatory compliance. This is also defined in Goal 3, which includes a commitment to develop our evidence base on food safety and food authenticity through improved horizon scanning and surveillance strategies which are capable of identifying emerging risks. Scientific data generated through food sampling plays an essential role in our surveillance capability. In order to be effective, surveillance sampling needs to be targeted, with a clear strategy and desired outcomes, as well as being financially and operationally maintainable in the medium to long term.

2.2 The generation of data on the safety and standards of food produced and sold in Scotland has previously relied heavily on samples taken by Local Authorities (LAs) and tested by the four Public Analyst (PA) laboratories in Aberdeen, Dundee, Edinburgh and Glasgow. However, this valuable source of evidence has been

[1] Healthy, Safe, Sustainable: Driving Scotland's Food Future (foodstandards.gov.scot)

greatly diminished over the past 20 years due to on-going reductions in LA food sampling budgets.

2.3 Annual LA sampling data shows that the number of samples collected by LAs declined by 35% between 2014 and 2019. In 2020/21, sampling dropped to its lowest recorded level - a total of 2558 samples for the year, which is a reduction of 77% compared to the number taken in 2015. In light of the on-going pressures affecting LA inspection regimes, this reduction in sampling has had a significant impact on our ability to verify, and provide assurance over, the food system.

2.4 In order to address the shortfall in LA sampling, an alternative approach is needed to strengthen the evidence base needed to deliver our Corporate Plan priorities[2], and build a surveillance capability which can be maintained into the future. This paper proposes a nationally co-ordinated, intelligence-led surveillance and sampling programme, which aims to generate data on food safety and standards that will provide assurance for consumers, inform interventions for promoting compliance and support international trade. The proposals for delivering this programme will also enable FSS to achieve its objectives whilst helping to mitigate a key strategic risk related to LA delivery.

2.5 More detailed information on FSS's food surveillance strategy and the basis for a new approach to sampling in Scotland can be found in Annex A.

# 3 Proposals for a new surveillance sampling strategy

3.1 Our proposal aims to develop a more comprehensive, scientifically robust and stable food sampling strategy for Scotland, the key drivers for which may be summarised as follows:

a) FSS requires a food sampling programme that is rigorous, generates comprehensive data on food safety and standards and is capable of responding to a changing regulatory landscape; providing oversight of the Scottish food chain and new or emerging risks to consumers;

b) The need for a well-structured, centrally co-ordinated system for intelligence gathering which can be used by FSS and LAs to inform more effective targeting of enforcement interventions and resources;

c) Operationally, effective surveillance requires a reliable funding system and a clearly defined sampling framework which can be co-ordinated at national level without relying on LA resources;

d) From a scientific perspective, surveillance sampling must support Scotland's national laboratory network in maintaining capacity and capability for services that may need to be mobilised at short notice (e.g. during an incident) or which require the development of new methods.

[2] Corporate_Plan_-_Final.pdf (foodstandards.gov.scot)

3.2 The proposed model consists of four strands of surveillance activity managed and funded by FSS, and will run separately from the verification sampling carried out by LAs as part of their routine inspections. It will take account of wider FSS objectives for developing more efficient approaches for delivering official controls[3] by strengthening the intelligence that is available to the enforcement community, without placing additional burdens on LA budgets.

***Part 1: Non targeted surveillance (the "shopping basket" approach)***

3.3 The first strand of the sampling strategy involves the selection of a variety of commonly consumed food commodities to be sampled from retailers, and analysed for a broad spectrum of chemical and microbiological parameters and nutritional properties such as energy content and levels of salt, fat and sugar. This non-targeted approach has the potential to detect previously unknown or emerging issues pro-actively and provide an overall picture of the safety and standards of foods in the form they are presented to the consumer. Resulting data would link with the outputs of horizon scanning activities and be reported in a format that informs the consumer and provides assurance over the safety and standards of the food chain in Scotland, taking account of both domestically produced and imported products on the market.

3.4 This type of survey is undertaken in a number of countries, and different approaches are applied to the design of sampling methods. These can either be targeted, based on knowledge relating to potential risks and non-conformances that may be associated with particular products, or unbiased, with sampling designed to cover the full range of foods that most commonly feature in the diet of the population. Whilst the first approach would provide information on the occurrence of established or suspected issues, the second has greater potential to pick up previously unknown risks and would provide more realistic data on foods associated with the typical diet.

3.5 In order to identify the optimal approach for developing our shopping basket survey, we are planning to commission, during the summer of 2022, an external review and evaluation of possible sampling designs. We also intend to consult with the industry and retailers to invite views on potential sampling approaches and targets for testing. In light of the scale of planning, sampling and analysis required for this type of survey, we have proposed to commission one project every five years, starting in 2023/24. As part of the planning process, we will also develop a reporting strategy which will enable us to make the findings available to consumers and stakeholders in a timely manner.

[3] As outlined in Goal 2 of the FSS Strategy for 2021-26

***Part 2: Targeted surveillance priorities***

3.6 The second part of the sampling strategy is based on the approach which is already funded by FSS through our annual PA sampling programme (see Annex A). This is a more targeted programme, which tests hypotheses in response to intelligence or emerging hazards identified through horizon scanning. It also helps to underpin enforcement delivery by informing targeted official controls conducted by LAs and the investigation of issues identified through food liaison groups or trends in data recorded in the Scottish Food Sampling Database (SFSD).

3.7 As with the current model, a list of sampling priorities would be drawn up by FSS on an annual basis, with input from other stakeholders, which would identify commodities and specify the hazards to test for. In the short term, the number of samples will remain similar to the status quo (typically around 40 - 60 per commodity), and we would aim to continue to procure samples through PAs and LAs wherever possible. This sampling is intended to provide baseline data on potential risks, but does not allow rigorous statistical analysis. Depending on budget, there may be scope to strengthen this part of the programme in the future, with the possibility of commissioning external parties to undertake additional sampling if LA or PA resources are unable to accommodate this.

***Part 3: Statistical surveys***

3.8 The third component comprises surveys that focus on a single commodity group, with a sample size that enables meaningful statistical analysis on which policy and regulatory decisions can be based. This includes the generation of data to support scientific risk assessment which needs to be undertaken as part of the UK risk analysis process.

3.9 The commodities selected as targets will be driven by the current needs of the organisation and known gaps in our understanding of the risks associated with particular foods. In addition to looking at microbiological or chemical contamination issues in specific commodities, these surveys may also be used to survey the prevalence of allergens, risks associated with particular sectors (e.g. takeaway establishments), and to assess the accuracy of nutritional information on targeted products.

3.10 Due to the scale of sampling and analysis required, we envisage these surveys being undertaken once every two years. They would be designed to generate statistically robust quantitative data on prevalence and information that can be used to assess the risk profile of the product in question and potential consumer exposures.

***Part 4: Import surveillance***

3.11 The fourth element of the strategy aims to support the official control sampling regime that will be required to verify the safety and standards of products imported into Scotland. To date, Scotland has largely relied on import checks carried out by other EU member states or Border Control Posts (BCPs) at ports elsewhere in the

UK. Since leaving the EU, this looks set to change with several ports in Scotland (e.g. Cairnryan and Grangemouth) preparing applications to become BCPs for food imports. As the UK forms trade deals with countries around the world, it is also likely there will be a shift in the countries of origin and commodities that make up our imports. This may result in the introduction of new food products and risks for which we do not have existing data.

3.12 To take account of these changes, our import surveillance programme will involve enhanced sampling of particular foods at the point of entry to Scotland (to support statutory official controls), as well as targeted sampling of imported products at retail. Sample selection will be based on risk, but with a degree of flexibility (as opposed to being pre-determined on an annual basis). This will allow timely reactive sampling of imports based on risk information received via intelligence and horizon scanning activities, including the risk profiling of countries which import food into the UK. In order to ensure this programme takes account of imported products arriving to other parts of the UK it will be designed in collaboration with the FSA and delivered in a co-ordinated manner to maximise coverage and avoid duplication.

## 4 Delivery and costs

4.1 It is proposed that parts two and four (targeted surveillance priorities and imports surveillance) would be delivered through the PA laboratories, with sampling conducted by LA staff wherever possible. This is appropriate due to the experience of the laboratories in conducting this work, and also the need for authorisation to sample across the full range of food premises and BCPs that will be targeted. Parts one and three (the shopping basket and statistical surveys) are significantly larger scale, involving more complex sampling and data handling approaches. Therefore, whilst we would anticipate the PA laboratories having a role in these projects, it may be necessary to tender a third party specialist to support their delivery.

4.2 FSS's sampling budget is currently limited to the work we commission through the PA programme and costs around £150,000 per annum. The budget required for the four part sampling strategy proposed by this paper will naturally be higher due to its widened scope. Actual costs will depend on final decisions on how to implement the sampling strategy but as a guide we have estimated that the whole programme will require an annual budget of approximately £600,000, although this will vary year to year depending on the scheduled activities.

4.3 The budget is likely to be split between the four parts of the programme as follows:

a) **Part 1 (shopping basket):** Due to the number of samples that will be collected and variety of tests performed, this will be the most costly part of the programme, requiring a budget of approximately £1,500,000 over five years. Due to the planning required for this project, it is likely that costs would be weighted across years 3-5, during which the majority of sampling and testing activities would be undertaken.

b) **Part 2 (targeted surveillance priorities):** This part is based on the current PA sampling programme and (at least in the short term), is expected to remain similar to the existing cost of £150,000 annually.

c) **Part 3 (statistical surveys):** The costs of these projects will vary considerably depending on the nature of the product and type of testing required. However, taking previous surveys of this nature as a baseline[4], we have estimated that a budget of £200,000 would cover the costs of a single survey, which we would aim to undertake every two years.

d) **Part 4 (imports surveillance):** Costs associated with this part of the programme are difficult to predict at this stage due to uncertainties around the introduction of new BCPs in Scotland, and the range of products that will need to be sampled. However, as this sampling would aim to supplement existing official controls undertaken by LAs in Scotland and other parts of the UK, we have estimated a baseline cost of around £50,000.

4.4 We have recognised that the effectiveness of this strategy will rely on a stable funding stream beyond the one year budget planning cycle that FSS currently works to. It has therefore been agreed by the Executive that funding for this programme would be ring-fenced over a rolling 3 year period. However it is important to note our intention to build flexibility into the programme, which will enable sample numbers, and budget, to be reviewed annually and adjusted as appropriate.

# 5 Benefits

5.1 This proposal seeks a considerable expansion and investment in FSS's existing food sampling programme which will provide a number of benefits to the organisation. Over the short to medium term it will help to address the on-going reduction in sampling activity in Scotland without placing additional burdens on LAs; providing data to support their environmental health professionals in delivering official controls, and a dedicated funding stream to assist PA laboratories in maintaining the necessary scientific capability.

5.2 Overall, the implementation of a robust sampling framework will generate valuable insights which better align FSS's evidence base with the current challenges affecting our food system; helping us to address the commitments made in our six strategic goals for 2021-26 as outlined below:

- **Goal 1** - By generating data for risk analysis and maintaining laboratory capability and capacity needed to support the delivery of official controls in a changing trade environment;
- **Goal 2** - By supporting the development of evidence based, targeted, regulatory approaches, and a more efficient system for delivering official controls and food chain assurance;

[4] For example: A Microbiological Survey of Minced Beef at Retail in Scotland | Food Standards Scotland, which was published in 2021.

- **Goal 3** - By supporting our research and data science strategies, and enabling us to continually refine the horizon scanning and surveillance capabilities we will need into the future;
- **Goal 4** – By providing a system through which we will be able to monitor the accuracy of food safety, nutritional and allergen information on food labels;
- **Goal 5** – By providing robust data that can be shared with stakeholders and used to influence policy;
- **Goal 6** – By building a current evidence base on the safety, standards and nutritional quality of foods on the market that provides assurance and underpins our advice to consumers.

5.3 An added benefit of this strategy is the value it will contribute to wider Government interests and research programmes. This includes the generation of samples and data which can be contributed to projects being undertaken through Scottish Government's Strategic Research Programme[5], the development of whole genome sequencing (WGS) capability needed to deliver an effective public health microbiology strategy for Scotland[6], and evidence to support the UK action plan for tackling antimicrobial resistance (AMR)[7].

## 6 Communications

6.1 Before taking this proposal forward, we will develop a stakeholder engagement plan to ensure all interested parties (LAs, laboratories, SG, Public Health Scotland and food industry representatives) are aware of our plans. Where appropriate, we will consult key stakeholders on the design of our food sampling plans and approaches for the reporting and handling of results generated through these programmes. An important objective for this strategy is to generate data that can be shared in formats that are understandable, informative, and useable for both stakeholders and consumers.

## 7 Equality Impact Assessment and Fairer Scotland Duty

7.1 In all cases where it is relevant to our objectives, we will ensure that the sampling programmes taken forward in this strategy are designed to take account of the socioeconomic and cultural factors which influence the diets of different population groups in Scotland.

## 8 Conclusion

8.1 Food sampling is integral to FSS's surveillance capability and has a key role to play in generating the evidence needed to underpin policy development, target official controls, and provide assurance to consumers on food safety and standards. This proposal aims to deliver a robust strategy for sampling the food chain in Scotland which will help FSS to meet its statutory obligations, achieve its strategic goals, and

[5] Environment, natural resources and agriculture research: strategy 2022 to 2027 - gov.scot
[6] HPS Website - A Public Health Microbiology Strategy for Scotland
[7] UK_AMR_5_year_national_action_plan.pdf (publishing.service.gov.uk)

keep pace with a changing regulatory, production and consumer landscape into the future.

# 9 Recommendations

9.1 The Board is asked to:

- Note the challenges associated with the current approach to food sampling in Scotland, and implications for FSS surveillance capability, laboratory services, and enforcement delivery in Scotland;

- Consider and agree the case for a new food sampling strategy as part of a scientifically robust national surveillance programme which can be maintained into the future;

- Confirm the Board is content for the Executive to pursue the proposed approach for delivering this programme as part of our wider plan for mitigating the strategic risk relating to LA delivery.

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# Annex A: FSS Food surveillance strategy and the basis for a new approach to sampling in Scotland

*Current status of food sampling in Scotland and its contribution to national surveillance*

FSS published its Food Surveillance Strategy for Scotland in 2017[8,9]. This document describes the data and information that we need to generate intelligence on risks and provide assurance over the safety and standards of our food supply chain.

To date, food surveillance in Scotland has comprised a combination of local, regional and national food sampling projects delivered through collaboration between FSS, Local Authorities (LAs) and the four Public Analyst (PA) laboratories in Aberdeen, Dundee, Edinburgh and Glasgow. Surveillance is recognised as an official control, and effective routine sampling is recognised in the Food Law Code of Practice as an essential part of LA Service Plans[10]. However, food sampling and surveillance activities undertaken by LAs in Scotland have reduced significantly over the past 20 years. An audit report published by FSS in 2020 pointed to inconsistencies in approach, with some LAs lacking any defined food sampling policies and programmes within their service plans[11].

Going back to the early 2000s, sampling was well resourced by LAs, with over 25,000 samples taken in Scotland annually. In addition to their routine official control sampling, LAs delivered a range of surveys, co-ordinated through regional food groups and the Scottish Food Enforcement Liaison Committee (SFELC). Further to this, significant investment was made into the development of our Scottish Food Sampling Database (SFSD; previously known as the UK Food Surveillance System-UKFSS) to enable FSS (then part of the FSA), to collect a national picture of LA food sampling activities. However, mounting resource pressures have significantly reduced the ability of LAs either to visit food businesses for the purposes of taking samples, or to fund PA laboratories to conduct the required testing.

Annual LA sampling data shows that the number of samples collected by LAs declined by 35% between 2014 and 2019 (Figure 1). Over the past 2 years, sample numbers dropped further as a result of the COVID-19 lockdown, which hampered LA inspections and their ability to carry out routine sampling. In 2020/21 sampling dropped to its lowest recorded level - a total of 2558 samples for the year, which is a reduction of 77% compared to the number taken in 2015. Sampling activity has increased again during the current year (2021/22) as the pandemic restrictions have eased, with sample numbers projected to be approximately 3500 based on samples

[8] Food_Standards_Scotland_Food_Surveillance_Strategy_Final.pdf (foodstandards.gov.scot)
[9] Board_meeting_-_Papers_-_08_March_2017_-_Developing_a_strategic_approach_to_food_surveillance.pdf (foodstandards.gov.scot)
[10] The Food Law Code of Practice (Scotland) 2019 (Paragraph 38.1.1) states that effective routine sampling is an essential part of a well-balanced Service Plan and should therefore feature in the enforcement service of all Food Authorities.
[11] Local_Authority_Sampling_Desktop_Audit_Report_(January_2020).pdf (foodstandards.gov.scot)

collected to date. This figure still represents a substantial decrease on pre-pandemic figures and on-going resource pressures on LAs make it unlikely to return to levels recorded 5-10 years ago.

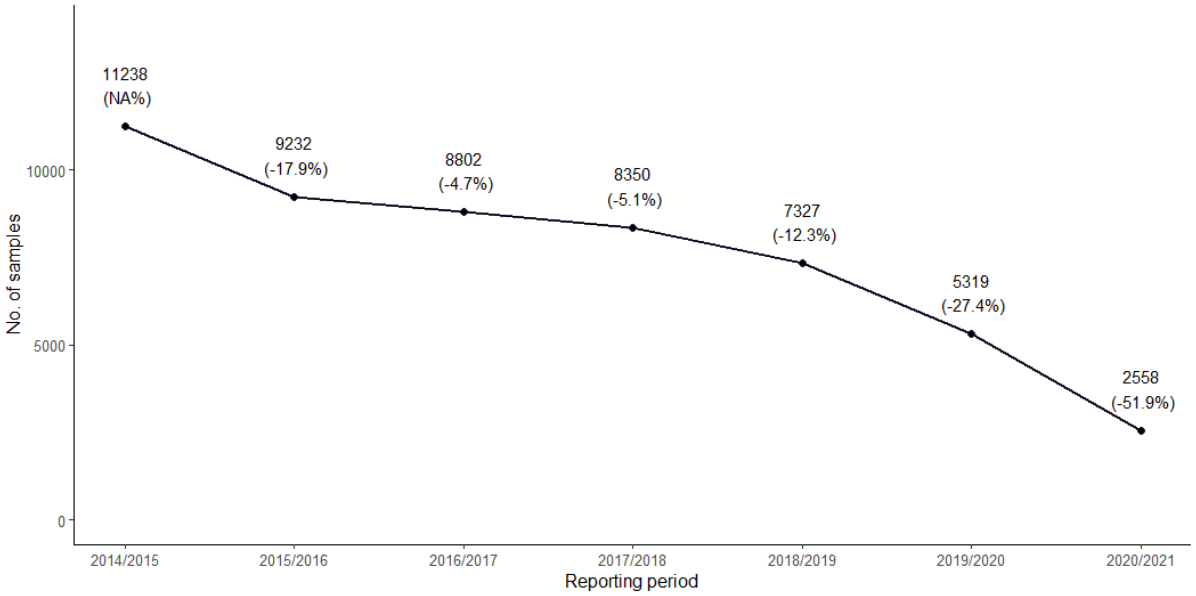


**Figure 1.** Total LA food samples collected each annual sampling period (July to June), 2014-2021. Percentage change from previous year shown in brackets.

As a result of reductions in LA sampling budgets, food surveillance has become increasingly dependent on data generated through FSS research projects and our national sampling programme. This programme has been running since 2015[12] and offers £150,000 in grant funding annually across the four PA laboratories for the sampling and analysis of 12-15 priority areas each year. These priorities are identified through consultation across different FSS business areas, with PAs, LAs, and the FSA, and the review of evidence from incidents, research and horizon scanning activities. The commodities chosen generally cover a wide range of food types and hazards including microbiological and chemical contaminants, and allergens, as well as authenticity issues. FSS is able to analyse the data generated through this programme, alongside the results from LA official control sampling, via SFSD, to generate reports on potential risks and non-compliances. To date, these reports have been circulated to LAs to support their inspection and intervention regimes, but work is underway to develop dashboards from SFSD to enable us to make this data more widely available to stakeholders and consumers (See Annex B).

While the annual PA sampling programme has been a valuable tool in enabling FSS to monitor a range of known and emerging risks, its scope is relatively narrow. In light of the on-going reductions in sampling data sets generated by LAs, there is a need for us to consider how our surveillance capability can be strengthened to provide

[12] Prior to the establishment of FSS, this programme was delivered by the FSA, with annual grant awards made to LAs.

the breadth and scale of evidence that we now require to support FSS's strategic aims in addition to our risk analysis and assurance functions.

We have recognised that our ability to access other sources of data, including published research and the results of sampling undertaken by the food industry, has an important role to play in the development of our surveillance capability. It is therefore our intention to continue to explore opportunities for sharing intelligence with stakeholders as this programme of work develops. However, it is important to note that differences in approaches to sampling, laboratory methods and quality assurance affect the way we are able to use external data sources, and they can only be used to augment, rather than replace, the evidence generated through FSS directed sampling programmes.

*The role of sampling in maintaining provision of official control laboratory services*

In addition to strengthening our evidence base, a stable food sampling framework is critical to the maintenance of our public sector science base for official controls, which is currently reliant on the four PA laboratories. The range of official, accredited testing services provided by these laboratories is not readily available elsewhere in Scotland. Therefore, moving away from the PAs would increase our reliance on laboratories in other parts of the UK and beyond, many of which operate in the private sector. The use of commercial laboratories for official controls can also present risks due to the potential for conflicting interests and market failure. This was previously recognised in reviews of the horsemeat crisis of 2013 which highlighted the importance of public sector laboratory provision in safeguarding national food security and enabling government to respond effectively during major food safety incidents[13].

However, there are significant concerns over the resilience of the current model for delivering public sector laboratory services for food and feed in Scotland. The financial viability of PA laboratories is heavily dependent on the funding they receive from LAs and FSS, and the reduction in sampling activity has placed them in an increasingly insecure position. The continued scaling back of these services is already impacting on the range of official control testing requirements we are able to perform in Scotland. Costs associated with method accreditation and participation in proficiency testing are substantial and the maintenance of capability and expertise relies on the availability of samples. Further to this, the lack of funds needed to support the upgrading of equipment, the implementation of new techniques and staff training programmes has significantly hampered the ability of the PA laboratories to keep pace with scientific advances and emerging risks.

The issues noted above have been recognised for some time and are not unique to Scotland. The role of food sampling in safeguarding laboratory capacity and capability was previously discussed with the FSS Board in November 2019[14], alongside the findings of a review undertaken with the FSA on issues affecting the whole Official

[13] See the Scudamore, and Elliot reports.
[14] Official_Control_Food_and_Feed_Laboratories_-_Enhancing_Capacity_and_Capability_for_the_Future.pdf (foodstandards.gov.scot)

Food and Feed laboratory system across the UK. This review made a number of recommendations, including a more prominent role for FSA and FSS in co-ordinating national surveillance programmes, which we are aiming to address through this proposal. Since that time, FSS has also been engaging with stakeholders on how to achieve a more resilient delivery model for laboratory services in Scotland, and we intend to discuss this with the Board in June 2022. Notwithstanding, it is important to note that regardless of the model for delivering these services, the maintenance of a robust sampling strategy will be critical to its success.

# Annex B : Development of a New Reporting Dashboard for the Scottish Food Sampling Database (SFSD)

The image below shows the landing page for the SFSD Dashboard which is currently under construction. The Dashboard will include interactive filters and search functions allowing the most relevant data to be accessed and visualised. Pages accessed by clicking on the upper tabs will allow more detailed exploration of microbiological, chemical, authenticity and labelling samples.