PFAS Testing Protocol – Informing Report Four by the Independent PFAS Scientific Panel

1. Rationale for Testing

The rationale for PFAS testing in Jersey is grounded in the need to protect public health and the environment, supporting Jersey to understand the levels of PFAS on the broader environment and food chain. The Water Quality and Safety (WQS) Programme is a comprehensive initiative that addresses public concerns about PFAS contamination in the environment and its impact on water quality.

The programme will review and monitor PFAS in the broader environment and food, ensuring that actions are grounded in research and backed by scientific evidence.

The Independent Scientific Advisory Panel, commissioned by the Government, is undertaking Report 4 - PFAS in the Environment in 2025. This report will review global water standards to recommend a regulatory standard for Jersey. The Minister for the Environment plans to introduce this standard within the current government term, with a phased implementation period.

The European Food Safety Authority (EFSA) has established a Tolerable Weekly Intake (TWI) of 4.4 nanograms per kilogram of body weight per week for the sum of four PFAS compounds: PFOS, PFOA, PFNA, and PFHxS.

The PFAS testing programme in Jersey is designed to support the Independent Scientific Advisory Panel in understanding the average PFAS exposure of residents through food, water, and environmental sources

This data will be critical in determining whether current PFAS levels in drinking water are compatible with maintaining exposure below the EFSA TWI threshold. If food contributes significantly to the total PFAS intake, the regulatory standard for PFAS in water may need to be adjusted downward to ensure that total exposure remains within safe limits.

This approach mirrors international best practices, such as those used in Denmark, where water quality standards were derived by working backwards from the TWI, factoring in dietary intake and vulnerable population groups like children.

The WQS Programme will also focus on understanding PFAS in food, water, the marine environment, and waste, to gain a better understanding of PFAS levels and their impacts on public health and the environment.

The panel will ensure comparison with international data to understand how PFAS levels in Jersey compare generally. The testing information will also help to shape Jersey PFAS remediation strategy relating to the historic hotspot contamination at Jersey Airport.

2. Scope of Testing

2.1. Selection of Vegetables for PFAS Testing

Given the known behaviour of long-chain PFAS compounds, such as PFOS and PFOA, which tend to bind strongly to soil and accumulate in the roots and lower parts of plants, the vegetable testing strategy recommended by the panel will prioritise crops that are either root vegetables or grow close to the ground.

Vegetables and fruit grown as crops in Jersey will be tested to ascertain the level of PFAS compound contamination. Additionally, where possible, produce grown in areas of proven increased exposure will be compared to produce grown outside of these areas to determine the effect of the contaminated area on fruit and vegetables grown for consumption.

A range of fresh produce grown as commercial crops will be sampled for PFAS testing. These will include root vegetables such as potatoes and carrots and low growing vegetables such as cauliflower and courgettes. These are more likely to absorb PFAS from contaminated soil or irrigation water due to their proximity to the ground and the nature of their edible parts. A range of commercially grown fruit will also be tested, such as grapes and strawberries.

This targeted approach ensures that testing focuses on the most likely exposure pathways for consumers, supporting accurate dietary exposure assessments.

2.1. Selection of Meat Products for PFAS Testing

Although the production of beef, pork, and offal in Jersey is limited and most meat products are imported, it remains important to test locally produced meat to assess potential PFAS exposure from the environment.

The following meat products are recommended for PFAS testing as the main meat products produced and sold in Jersey.

- **Beef**
- **Pork**
- **Offal** (e.g. liver, kidney)

These products are prioritised because PFAS compounds, especially long-chain variants, are known to bioaccumulate in animal tissues, particularly in liver and kidneys, which are key organs for PFAS retention. Testing offal provides a sensitive indicator of environmental exposure in livestock.

While Jersey's domestic meat production is small, testing local samples will provide reassurance to consumers and help validate whether international data on PFAS levels in meat products applies to Jersey's context. The Independent Scientific Advisory Panel can also draw on comparative data from global studies to contextualise findings.

2.1. Selection of Dairy and Egg Products for PFAS Testing

Milk and eggs are important components of the local diet and can serve as indicators of PFAS transfer through the food chain, particularly where livestock are exposed to contaminated water, feed, or pasture. Jersey Milk is the only milk available in Jersey and is therefore of particular importance.

The following products are recommended for PFAS testing:

- **Milk**
- **Jersey Eggs**

Milk is a key focus because PFAS compounds can be excreted through lactation, and levels in milk may reflect environmental exposure from soil, water, and feed. Testing milk from farms with differing land management practices, particularly those that have or have not applied sewage or water treatment sludge, will help assess the influence of biosolids on PFAS uptake.

Eggs are also relevant, as PFAS can accumulate in poultry exposed through feed or water, and eggs provide a concentrated biological sample for detecting contamination.

Although Jersey's production of these items is relatively small, testing local samples will provide reassurance to consumers and help determine support the Independent Scientific Advisory Panel in building a comprehensive exposure profile for the Island.

2.1. Selection of Marine Environment and Seafood for PFAS Testing

The marine environment is a critical component of Jersey's ecosystem and food chain. PFAS contamination in coastal waters can affect both marine biota and seafood consumed by the public, particularly in areas near known discharge points such as St Ouen's Bay and St Aubin's Bay. Where historic/third party local data is available this will be used in conjunction with any new sampling undertaken by government officers.

The following marine elements are recommended for PFAS testing:

- **Marine**:
    - Sea lettuce and seaweed which may be applied to land
    - Sea foam

- **Seafood**:
    - Crustaceans (e.g. crabs, lobsters)
    - Bivalve molluscs (e.g. oysters, mussels)
    - Fish (including freshwater and low-water)
- **Seawater**:
    - Seawater sampling, with a focus in St Ouen and St Aubin's Bay. Control sites in the North and East of the Island

Marine matter, such as seaweed and sea lettuce, is stationary and absorbent, making them useful indicators of PFAS presence in the marine environment. These samples will help assess ecological exposure.

Seafood testing will prioritise species that are locally harvested, especially those likely to be caught or gathered by amateur fishers. This includes low-water fish and shellfish, which may be consumed. Crustaceans and molluscs are particularly important due to their sediment-dwelling and filter-feeding behaviours, which increase their risk of PFAS accumulation.

Seawater samples will be collected from across the Island, with targeted sampling to support both environmental and food safety assessments.

This integrated approach ensures that marine testing is ecologically representative, dietarily relevant, and aligned with international best practice. It also supports public reassurance and provides essential data for the Independent Scientific Advisory Panel to assess total exposure and inform regulatory decisions.

2.1. Selection of Water Sources for PFAS Testing

Water is a primary exposure pathway for PFAS, and understanding its contribution to overall intake is essential for public health protection and regulatory planning. Jersey's approach to water testing will combine existing data with targeted sampling to build a comprehensive picture of PFAS presence across the Island.

The following water sources testing for PFAS will be undertaken:

- **Drinking Water**:
    - Post-treatment water supplies (existing data)
- **Surface and Rainwater**:
    - Streams entering reservoirs
    - Raw water pre-treatment at treatment plants

    - Rainwater (existing data)

- **Groundwater**:

    - Island-wide boreholes (a representative number of boreholes in each of the Island's water catchment areas)

Jersey Water already publishes extensive annual testing data for the public water supply, including PFAS results. This data will be used by the Independent Scientific Advisory Panel to assess compliance with international standards and to understand the contribution of mains water to overall PFAS exposure.

In addition, private borehole testing, particularly in areas affected by the plume, will be used to assess localised exposure risks. Where data gaps exist, new borehole samples will be collected to ensure island-wide coverage and to establish background PFAS levels in groundwater.

Surface water testing will focus on streams feeding reservoirs and raw water entering treatment plants, helping to identify upstream sources of contamination. Seawater sampling in known discharge areas will support the marine and seafood testing programme.

This integrated approach ensures that water testing is scientifically robust, geographically representative, and aligned to protect public health and inform future regulatory standards for drinking water.

2.1. Selection of Waste Processes and Soil for PFAS Testing

Waste and soil are key environmental reservoirs for PFAS, particularly where biosolids from water and sewage treatment processes have been applied to land. Testing in these areas is essential to understand the potential for PFAS to enter the food chain and water courses and to assess the long-term environmental impact.

The following waste and soil sources will be tested for PFAS:

- **Sewage Sludge**:

    - From sewage treatment works

    - Effluent discharge from sewage works

- **Water Treatment Process**

    - Sludge from water treatment process

    - Effluent from the water treatment process

- **Soil**:

    - Before and after biosolid application to assess PFAS uptake and persistence

    - On control fields with no history of biosolid use, to establish background levels
    - At inert waste sites, to monitor for any leaching or contamination from stored materials
    - From the fields where potato samples have been taken
    - Environmental background soil sample from wild/unfarmed or developed land.
- **Leachate and Surface Water**:
    - Landfill leachate
    - Surface water near landfill sites

3. Methodology

3.1 Analytical Methods

- **PFAS Suite**: Where possible full panel of UK Drinking Water Inspectorate 48 PFAS compounds will be tested for.
- Please note for food sampling it may only be possible to test for the 4 EFSA TWI compounds.
- **Testing Requirements**:
    - Individual PFAS compound concentrations
    - Sum of PFAS compounds
    - Specific quantification of the 4 EFSA TWI compounds
    - Use of existing Jersey Water data, where available
    - New borehole sampling to fill data gaps and establish background levels

3.2 Laboratory and Quality Assurance

- **Accreditation**: Where possible, new testing must be conducted by ISO/IEC 17025-accredited laboratories with demonstrated PFAS testing capability relevant to the sample being taken.
- **Detection Limits**: Laboratories must achieve ultra-trace detection limits:
    - Water: Low ng/L (parts per trillion)

    - Solids/Food: Low ng/kg
    - Lowest detection rate achievable
- **Chain of Custody for New Samples**:
    - Use of PFAS-free sampling equipment (e.g. HDPE or polypropylene containers)
    - Avoidance of fluoropolymer materials (e.g. PTFE, Gore-Tex)
    - Use of appropriate methods and procedures to minimise the possibility of cross-contamination.
    - Use of field and procedural blanks
    - Full documentation of sample handling, transport, receipt and through to results.
- **Cost and Capability Review**:
    - Evaluation of lab turnaround times, capacity, and cost-effectiveness

4 Data Management and Reporting

4.1 Data Aggregation

- Test results will be interpreted alongside existing international studies to provide context and comparability.
- Where appropriate, data from other jurisdictions will be used to benchmark Jersey's results and support evidence-based conclusions.

4.2 Exposure Assessment

- A comprehensive exposure model will be developed by combining PFAS concentrations from:
    - Food (local and imported)
    - Drinking water and private supplies
    - Environmental sources (soil, sludge, marine and freshwater)
- This model will estimate total PFAS intake for Jersey residents and help assess compliance with the European Tolerable Weekly Intake (TWI).

4.3 Interpretation and Reporting

- All test results will be reviewed and interpreted by the Independent PFAS Scientific Advisory Panel as part of Report Four.
- The Government of Jersey (GOJ) will not release individual test results separately.
- Instead, all findings will be published collectively within Report Four to ensure:
    - Scientific interpretation is provided
    - Results are placed in appropriate context
    - Public understanding is supported by expert commentary
    - Public consultation will take place on Report Four late in 2025

Transparency and Scientific Integrity

- This approach ensures that data is not misinterpreted or taken out of context.
- It also aligns with the Government's commitment to evidence-led policy, public transparency, and international best practice in environmental health reporting.