Minutes of public meeting of the PFAS Scientific Advisory Panel on Teams

10:00 on 29 May 2025

Panel Members present:	Dr Steve Hajioff – Independent Chair
	Dr Tony Fletcher – PFAS and Health member
	Professor Ian Cousins – PFAS and Environment member
In attendance:	Standing Observer (Regulation) - Kelly Whitehead - Group Director of Regulation, Infrastructure and Environment Department
	Jake Hurst - Arcadis
	Programme support team from I&E

Welcome:

The Chair welcomed everyone to the Panel meeting and reminded people the meeting was being recorded.

Introductions

The Chair and Panel members introduced themselves.

Dr Steve Hajioff, Independent Panel Chair: A retired Director of Public Health from an area of London with two major international airports and a variety of other environmental hazards and challenges, with 35 years in clinical medicine. An expert on translating science into policy, he has worked with Nice, the Greater London Authority, the EU, WHO and World Bank, several UK government departments and several international governments. Dr Hajioff has also worked extensively in the pharmaceutical industry.

Dr Tony Fletcher, PFAS and Health Panel Member: Environmental Epidemiologist at the London School of Hygiene and Tropical Medicine, working on PFAS since 2006 and member of the panel with experience of epidemiological studies on the health effects of PFAS in contaminated communities in West Virginia in the United States, in the Veneto region, in Italy, and in Ronneby, and is the health expert on the panel.

Professor Ian Cousins, PFAS and Environment Panel Member: A Professor in Environmental Chemistry at Stockholm University, an expert on PFAS, appointed as the environmental expert on this Panel and whose expertise on PFAS is on the sources, transport, fate, and exposure of PFAS.

Kelly Whitehead, Group Director for Regulation in the in the Infrastructure and Environment Department, leading on the Water Quality and Safety Programme, coordinating Government's response.

Declaration of Interests

- No new interests declared.

Minutes and Matters Arising

- Minutes from 23 April 2025 meeting approved as a true and accurate record by the panel
- It was noted that the minutes from 30 April 2025 meeting are delayed because one of the experts consulted hasn't yet confirmed the accuracy of their statements. These will be available in June.
- No matters arising.

Additional Findings Since the Last Meeting

No additional findings to report.

Jake Hurst Introduction

Jake Hurst, the UK PFAS lead at Arcadis. He has a background in chemistry and remediation, with over 15 years of experience in PFAS and more than 20 years in the industry. For the past four years, he has provided technical leadership on a project for the Government of Jersey.

Presentation from Arcadis Representative Jake Hurst

Project Overview & Objectives

Jake Hurst from Arcadis UK introduced the PFAS hydrogeological study, emphasising its significance in addressing long-standing environmental and public health concerns in Jersey. Commissioned by the Government of Jersey, the study aimed to understand the behaviour of PFAS (per- and polyfluoroalkyl substances) in the environment, particularly around Jersey Airport. The objectives included identifying how PFAS moves through groundwater and surface water systems, assessing potential risks to human health and the environment, and supporting the development of safe, long-term water supply strategies. A key goal was also to build public trust through transparent communication and to provide a scientific foundation for future remediation and policy decisions.

Phase 2 Scope of Works

Phase 2 built upon the foundational work of Phase 1, which had compiled and visualised historical data to identify gaps in understanding. In Phase 2, Arcadis conducted four quarterly monitoring campaigns between July 2023 and May 2024, collecting over 230 samples from approximately 30 boreholes and 27 surface water sites. The team used PFAS-specific sampling protocols to avoid contamination and ensure data reliability. Passive samplers were deployed to capture average contamination levels over time. The study focused on two key catchment areas—St. Ouen’s Bay and Pont Marquet—and included the installation of three new boreholes to improve spatial data coverage. The work was conducted in collaboration with Jersey’s Water and Air team, though Arcadis maintained independent oversight and data-led analysis.

Monitoring Results

The monitoring revealed persistent and significant PFAS contamination, particularly beneath the airport’s former fire training ground, where concentrations were up to 1,000 times higher than EU drinking water standards. PFAS “fingerprints” indicated multiple sources, including both PFOS-based and mixed-foam types, suggesting varied historical usage across the airport. Surface water

pathways, especially the Creepy Valley stream and the South SW outfall, were identified as key conduits for PFAS migration into drinking water catchments. Rainfall and potentially airport de-icing activities were found to influence PFAS mobilisation, with passive samplers confirming variability and spikes in contamination following such events.

A distinct PFAS ‘fingerprint’ (determined by analysis of the varying concentration and proportion of PFAS compounds), was identified in groundwater beneath fire training ground. This fingerprint was observed to extend across St Ouens Bay, reaching as far as drinking water abstraction well 692 (A1) and was indicative of predominantly a legacy PFOS-based firefighting foam. The consistency of this fingerprint across multiple suggests a mature plume, where PFAS has had sufficient time to equilibrate and distribute evenly throughout the affected area. However, not all locations showed the same pattern. A different PFAS fingerprint was detected at a borehole within the airport grounds, near a site used for foam spray testing. This alternate fingerprint, which includes a mix of PFOS and fluorotelomer-based foams, was also found in nearby off-site groundwater, suggesting that this secondary plume may have migrated beyond the airport boundary.

Hydrogeological Conceptual Model

Arcadis developed a detailed conceptual model of the subsurface environment to understand PFAS groundwater and PFAS transport mechanisms. Beneath the fire training ground lies approximately 30 meters of unsaturated fractured shale bedrock, which is likely acting as a long-term PFAS source to underlying groundwater. Groundwater flows generally westward, with some influence from Simon’s Sandpit as well as historical pumping by Jersey Water, which may draw some of the flow more south-westerly, toward the Jersey Water wellfield. The model showed that the sand and shale aquifers are hydraulically connected, and groundwater levels are typically higher than surface water levels around La Plat Doue, allowing for potential discharge into streams. In contrast, in Pont Marquet, surface water tends to flow above the groundwater, limiting interaction. This model was critical in identifying how PFAS moves through the environment and where it may pose the greatest risk.

Risk Assessment

The risk assessment updated the conceptual site model and applied a tiered approach with an initial, generic screening stage comparing PFAS concentrations to UK and EU drinking water and environmental standards. Widespread drinking water exceedances were observed, including at Jersey Water abstractions although these abstractions are not currently in use and many affected wells are also not currently used for public supply. Detailed assessment and modelling estimated that PFAS could take 20–60 years to travel and reach stable concentrations (‘steady state’) from the fire training ground to the wellfield and up to 100 years to with respect to the marine environment, depending on the compound. This long travel time underscores the persistence of PFAS and the need for long-term management. In contrast, surface water pathways like the Pont Marquet stream could respond more quickly to remediation. The assessment also considered historical PFAS usage at the fire training ground, including the presence of a containment cell beneath the fire training ground and the impact of rainfall and historical drainage on PFAS mobilisation. Finally, an assessment of PFAS ‘mass flux’ was undertaken which looks at both concentrations and flow to understand which pathways transport the most PFAS mass and are the priority for targeting remediation.

Remediation Options Appraisal

Arcadis conducted a high-level appraisal of potential remediation strategies, aiming to reduce PFAS mass flux and associated risks in a cost-effective and sustainable manner which is acceptable to stakeholders. The appraisal prioritised interventions with the greatest potential benefit, targeting certain high mas flux pathways and areas with the most contamination in a relatively small volume.

Shortlisted options included targeted soil excavation and capping at the fire training ground, in situ flushing of bedrock, and enhanced groundwater pumping and treatment using technologies like activated carbon, ion exchange and foam fractionation. For the broader plume, the (partial) restoration of Simon's Sandpit to redirect groundwater flow were considered. Drinking water treatment was emphasised as a high priority across all scenarios due to the timescales and inherent uncertainties associated with remediation in such as complex system as well as potential future regulatory changes. For Pont Marquet, a phased approach was recommended, starting with measures to reduce PFAS entering drainage such as pipe inspections and cleaning, followed by potential passive stormwater treatment technologies.

Summary of Recommendations

1. Support Government Decision-Making

The findings from the study should directly inform the Government of Jersey's decision-making processes. A structured and transparent framework should be established to evaluate and select the most appropriate remediation options.

2. Establish a Coordinated Implementation Team

A dedicated team and a clear schedule should be set up to manage the next phase of work. This team should include representatives from key stakeholders such as the Government of Jersey, Ports of Jersey, and Jersey Water.

3. Targeted Assessment of Remediation Options

The shortlisted remediation options should undergo further detailed assessment, including cost-benefit analysis and feasibility studies. This will help refine the strategy and ensure that selected interventions are both effective and practical.

4. Address Identified Data Gaps

Several data gaps were identified during the study, particularly in relation to groundwater quality beneath the airport and PFAS migration across the plume in certain areas which couldn't be accesses previously. These gaps should be prioritised and addressed through additional investigations to strengthen the evidence base for decision-making.

5. Develop a Comprehensive Remediation Strategy

A long-term, integrated remediation strategy should be developed. This strategy should balance environmental protection, public health, technical feasibility, and cost-effectiveness. It should also consider the evolving regulatory landscape and public expectations for timely action.

6. Continue Monitoring and Trend Analysis

Ongoing environmental monitoring is essential to track PFAS trends, validate model predictions, and assess the effectiveness of implemented measures. This includes both groundwater and surface water monitoring.

7. Investigate Drinking Water Treatment Options

Regardless of the remediation approach, drinking water treatment should be prioritised. This includes evaluating technologies for PFAS removal, blending strategies, and alternative supply options to ensure safe and secure water for the public.

8. Align Simon Sandpit Plans with Remediation Goals

Any future plans for Simon Sandpit should be reviewed and potentially aligned with the broader remediation strategy, as the site may influence groundwater flow and PFAS transport.

9. Incorporate PFAS Waste and Soil Reuse Guidance

The report includes a dedicated section on PFAS waste management, including waste acceptance criteria and soil reuse options. These should be considered in the development of any remediation or construction activities involving contaminated materials.

Discussion with Panel and Jake Hurst

The discussion began with Jake emphasising the prioritisation of water treatment due to its rapid deployment potential, direct impact on human exposure, and ability to enhance water security. Hurst explained that remediation may take many years and the outcomes are uncertain, especially in large, complex systems like the St Ouen's Bay, and that evolving regulations may necessitate treatment regardless. He highlighted the potential for focused abstraction from the southern wellfield and potentially more rapid benefits from action in the Pont Marquet catchment.

The discussion then turned to the chemical signatures found at the fire training ground, where a dominant PFOS signature was identified, though a mixture of foams, including fluorotelomer-based products, had been used historically. Ian Cousins and Tony Fletcher raised technical questions about PFAS distribution, precursor presence, and the potential for delayed migration of newer compounds. Hurst noted that while some precursors were detected, the system's aerobic nature and lack of hydrocarbon co-contaminants likely facilitated biotransformation, reducing long-term precursor risks. Precursors were observed to diminish with distance from source areas.

The panel explored the modelling approach used, which relied on literature values due to the absence of detectable PFAS in soil samples. The model, calibrated using historic data, accounted for partitioning, dilution, and migration, though Hurst acknowledged its limitations and the need for ongoing monitoring. The discussion also addressed the potential for PFAS retention in the unsaturated zone due to air-water interface interactions, a mechanism flagged in the report. Hurst confirmed that while the model may not fully capture this, empirical data helped calibrate it effectively. The panel discussed the estimated 60–100 year natural attenuation timeframe and the possibility of revising this with intervention. Hurst affirmed that revised modelling could reflect reduced source terms and new equilibrium concentrations.

Further questions addressed potential PFAS contamination in airport infrastructure, with Hurst noting that while not extensively studied, it was flagged for future assessment. Rainfall response patterns suggested possible adsorbed and leachable sources in certain areas. The conversation shifted to regulatory changes, with Hurst confirming that the study considered both long- and short-chain PFAS and was designed to be adaptable to evolving standards, including the DWI's shift to sum-based PFAS metrics. The data collected was comprehensive and digitised for future use. The panel also discussed the limited relevance of ultra-short PFAS like TFA in this context, given their likely sources and low expected impact.

Finally, the panel examined the historical use of firefighting foams, noting that post-2004 containment practices significantly reduced environmental releases. The dominant PFOS signature in the environment reflects earlier, uncontained usage. Hurst clarified that while different foam types were used, their environmental signatures are mixed and not easily separated by location. The hydrogeological boundaries of the catchment areas were confirmed as limiting factors for plume spread, important for assessing population exposure and advising on borehole use. The potential for sea spray aerosol transport of PFAS was discussed, but Hurst indicated that the data did not

suggest significant marine influence on the plume. However, he noted that mass flux into the marine environment could be estimated for future assessments.

Any other business

No other business was raised by the panel.

Date of next meeting

Wednesday 26th June 2025. It will be held 10am - 1pm online.

The Chair thanked everyone for their contributions, those watching the meeting and those offering support throughout the whole process.

A reminder to the public that this meeting has been recorded, and the video will be available online on request by emailing the Regulation Enquiries mailbox on RegulationEnquiries@gov.je. This will take a couple of days to make sure the observers are anonymised.

There being no further business, the meeting was closed.

To note that the Panel can be emailed via PFASpanel@gov.je.

Details of meeting dates and times can be found at PFAS in Jersey (gov.je)