PFAS Hydrogeological Study

Phase 1 Report - Desk Study, Initial Conceptual Site Model and Scope for Further Assessment

Non-Technical Summary

Introduction

The historical use of firefighting foams at Jersey Airport has resulted in detections of Per- and Polyfluoroalkyl Substances (PFAS) in the surface waters and groundwaters within two water catchments on Jersey, causing impacts to drinking water supplies and a perceived public health risk.

In 2021, the Government of Jersey (GoJ) commissioned Arcadis Consulting (UK) Ltd (Arcadis) to undertake a PFAS hydrogeological study and risk assessment within the water catchments of St Ouen's Bay and the upper Pont Marquet.

The overall objective of the study is to further understand the PFAS impacts, including their distribution, fate and transport as well as to assess the potential risks to human health and the environment. In addition, the study will also help identify pragmatic and sustainable risk management options and ensure the safety and future security of drinking water supplies in Jersey.

The objective of this specific Phase 1 assessment and report was to review the existing available data to develop an initial Conceptual Site Model (CSM) that sets out potential pollutant linkages within the two catchments. The initial CSM has been used to define the appropriate next steps to address identified data gaps and will continue to inform the PFAS hydrogeological study and risk assessment as part of Phase 2 of the study.

Study Area Details

The study area was defined by the GoJ as part of previous works. It was also defined as part of the *'Invitation to Tender (ITT) for the Provision of PFAS Hydrogeological Studies Jersey', July 2021* and includes both the St Ouen's Bay and the upper Pont Marquet catchments.

The St Ouen's Bay catchment study area is located to the west of Jersey Airport and the Airport's Fire Training Ground, which sit on a high plateau with steep slopes dropping to the St Ouen's Bay area. The St Ouen's Bay area includes the Jersey Water abstraction borehole field.

The upper Pont Marquet catchment study area includes the upper area of the Pont Marquet stream which starts on the south eastern boundary of Jersey Airport and flows in a southerly and southeast direction to St Aubin where it discharges into the sea in St Aubin's Bay. The study area includes several airport drainage outfalls, a culverted stream from St Peters Village and an aeration pond and reedbed at the head of the stream. PFAS pollution of the St Ouen's and Pont Marquet catchments presents a significant raw water quality challenge which restricts their use by Jersey Water and these sources are currently out of supply.

Data Management and Visualisation

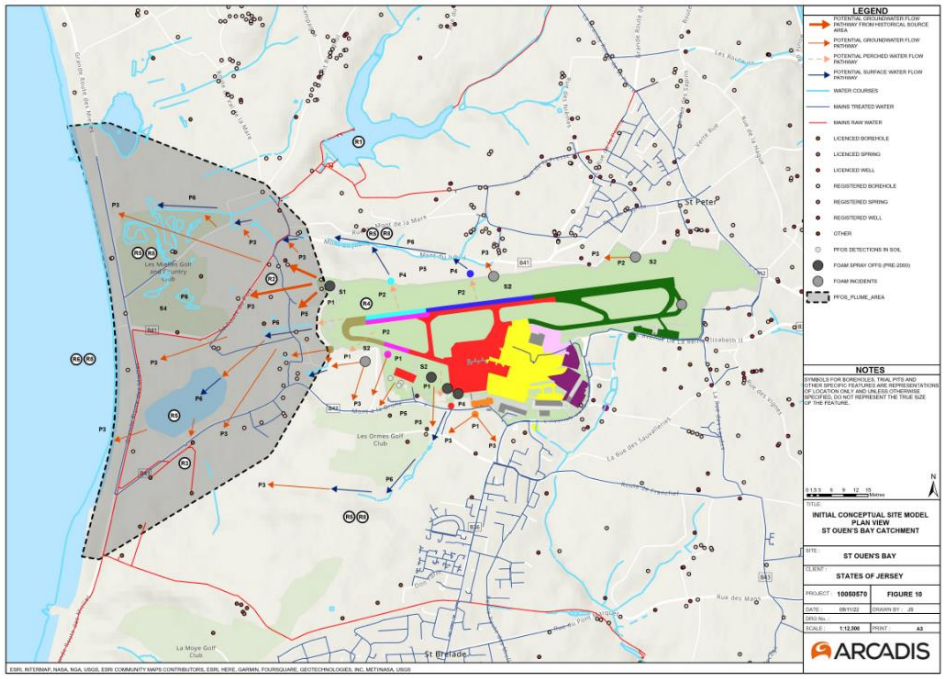
The first task undertaken as part of the Phase 1 assessment was to collate all the available data provided by GoJ relating to PFAS in groundwater and surface water as well as findings from the Jersey Airport investigation works. In addition, biota data from coastal data was also provided. To aid assessment and interpretation the data was collated into a single database and was then inputted into a Geographical Information System (GIS) model to support data review and visualisation of the distribution of PFAS concentrations across the study areas.

Initial Conceptual Site Model (CSM) Development

The aim of a CSM is to provide a description or illustrative representation of relevant site features and the surface and subsurface conditions to understand the extent of identified contaminants of concern and the potential risk they pose to receptors (humans, surface waters, groundwaters and biota). The CSM is an iterative tool that is developed and refined as additional information is obtained. An initial CSM was developed in relation to each of the catchment areas. It identifies the potential active relationships between a 'source', 'pathway' and 'receptor' (SPR) which are known as SPR or pollutant linkages. The CSM supports in identifying data gaps where further information would be beneficial to inform risk assessment and management options.

This initial CSM for this study primarily focusses on the migration of PFAS from the historical firefighting foam use at Jersey Airport (sources) via outfalls, groundwater and surface water (pathways) across the two catchments which have the potential to impact human health via consumption of drinking water (receptors).

The potentially active pollutant linkages were identified and visually depicted with the GIS model with an example output shown adjacent.



These pathways were also qualitatively risk assessed with this Phase 1 report. This was an initial, high-level assessment of potential risk undertaken to prioritise further assessment and did not confirm any actual risks to identified receptors.

Data Gap Assessment & Scope for further Assessment

Based on the development of the initial CSM and a review of the distribution and trends in PFAS concentrations across the St Ouen's Bay and Pont Marquet catchments, a number of locations were identified where additional data would enable greater refinement of the CSM. A summary of these data gaps has been presented within this Phase 1 report.

To provide addition data, a scope for further assessment is currently being reviewed by the GoJ which will form part of the Phase 2 works alongside PFAS hydrogeological study and risk assessment as well as risk management options appraisal.