Australian Government
Department of Infrastructure, Transport, Cities and Regional Development

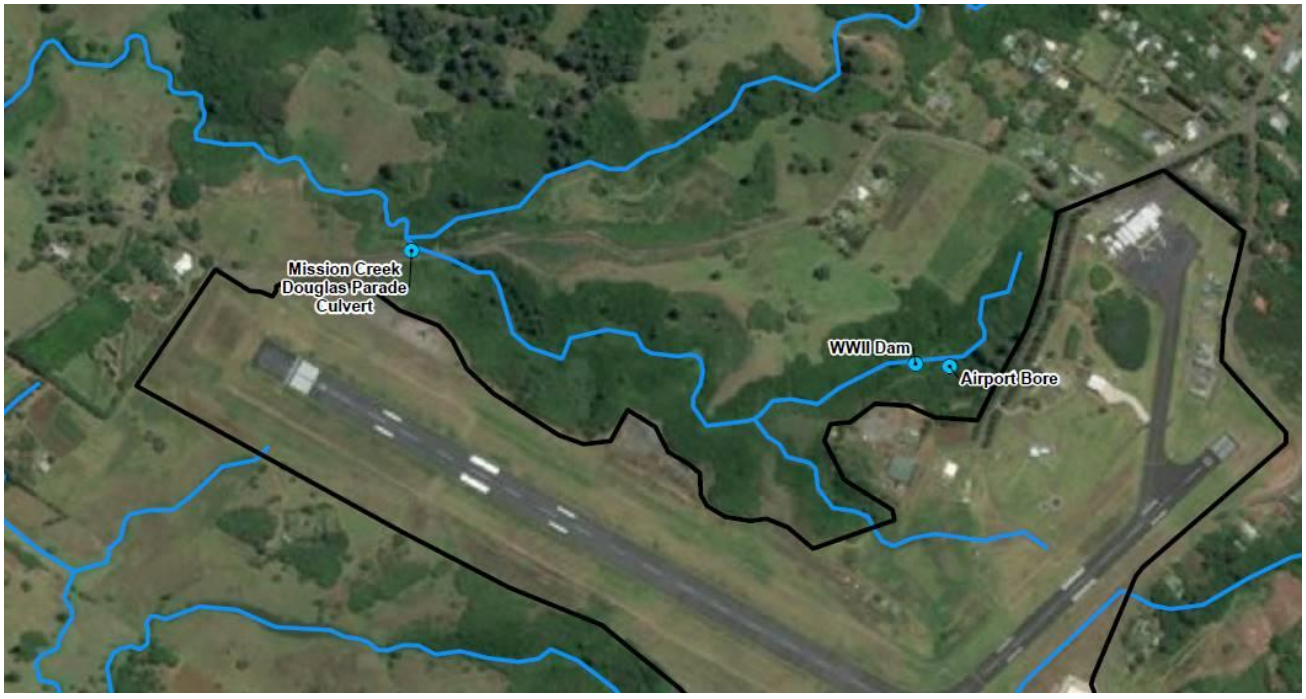
Preliminary test results from initial sample sites PFAS – Norfolk Island Fact Sheet 3

Background

Results from the CSIRO's preliminary screening conducted in November 2019 on Norfolk Island identified elevated levels of per- and poly-fluoroalkyl substances (PFAS) from three test sites on public land. These sites were located within the headwaters of the Mission Creek catchment directly below the aviation fire services training drill ground, adjacent to Norfolk Island International Airport. Water samples were taken from three public locations, the World War II Dam in the headwaters of Mission Creek, the nearby airport groundwater bore and a surface water sample where Mission Creek crosses Douglas Drive.

Please see PFAS – Norfolk Island Fact Sheet for further background information.

Sample locations:



Legend:

- Watercourse
- CSIRO Sample Locations
- Approximate Airport Boundary

Health based guidance values

The Department of Health, Food Standards Australia New Zealand (FSANZ) and the National Medical Research Council (NHMRC) have developed health based guidance values (HBGVs) for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS), which belong to the group of chemicals known as PFAS. These values aim to protect the general community from exposure to PFAS from food, drinking water and recreational water. The guidance values for drinking water and recreational water quality are available in NHMRC's Australian Drinking Water Guidelines (2011) and Guidance on per- and poly-fluoroalkyl substances (PFAS) in recreational water.

HBGVs indicate the amount of a chemical in food or drinking water that a person can consume on a regular basis over a lifetime without any significant risk to health. Both the recreational water and the drinking water guideline values are precautionary and protective of human health. The guideline values include a wide safety margin and are expected to be well below the level at which any negative effects could occur.

It is important to note that as a precaution, it is recommended exposure to PFAS be minimised wherever possible while further research is undertaken on the potential health effects of PFAS exposure. However, PFAS have not been proven to cause disease in humans. To date there is not enough information available to definitively say what, if any, health effects may be caused by exposure to PFAS.

The HBGVs for drinking water quality and recreational water quality for use in site investigations in Australia are:

Health based guidance value	**Total PFOS+ PFHxS (µg/L)**	**PFOA (µg/L)**
Drinking water quality guideline value (µg /L)	0.07	0.56
Recreational water quality guideline value (µg /L)	2.0	10.0
Note: µg = micrograms. One microgram is one millionth of a gram. L = litres.		

Results of preliminary testing on Norfolk Island

The table over the page summarises the test results for the three PFAS compounds that have guidance values – PFOS, PFOA and PFHxS. These results are from preliminary sampling only. Further testing is under way as part of a detailed environmental investigation and results could vary. The higher readings of PFOS and PFHxS are similar to some of the results seen across other sites in Australia (which include residential areas) and appear consistent with the historic use of the legacy firefighting foam as the main source.

Sample location	Sample Results			
	PFOS+ PFHxS (µg/L)	Comparison against applicable guidance values	PFOA (µg/L)	Comparison against applicable guidance values
World War II Dam surface water	20.98 + 15.13 = 36.11	This test result is above HBGVs for drinking water (0.07) and recreational water quality (2.0)	0.90	This test result is above HBGVs for drinking water (0.56), and below for recreational water quality (10.0)
Airport bore groundwater	10.85 + 7.44 = 18.29	This test result is above HBGVs for drinking water (0.07) and recreational water quality (2.0)	0.45	This test result is below HBGVs for drinking water (0.56), and well below recreational water quality (10.0)
Mission Creek surface water	3.76 + 3.34 = 7.1	This test result is above HBGVs for drinking water (0.07) and recreational water quality (2.0)	0.17	This test result is below HBGVs for drinking water (0.56), and recreational water quality (10.0)

The measured concentrations of PFOS+PFHxS are elevated above the guidance values in all three samples, while the concentration of PFOA only marginally exceeds the drinking water guidance value in one sample (from the World War II Dam surface water). The elevated concentrations of PFOS + PFHxS indicate that people who drink or use this water regularly (i.e. every day) over a lifetime could have elevated exposure to PFOS+PFHxS when compared with the precautionary guidance values.

It is emphasised that these concentrations are preliminary results, and were measured in only three sample locations in proximity to the aviation fire services training drill ground (the potential source). Concentrations of PFAS can decrease as they migrate through groundwater and surface water, and concentrations elsewhere in the Mission Creek catchment may be lower than these measured concentrations. Investigations are under way to better understand the extent of these impacts, and the PFAS concentrations in water which people may drink and use (e.g. in domestic bores and water tanks), as described below.

Next steps

The CSIRO's Norfolk Island Water Resource Assessment (NIWRA) project scope was expanded temporarily to ensure further sampling and testing for PFAS commenced as soon as possible in the Mission Creek catchment area. CSIRO conducted testing of a number of properties within the Mission Creek catchment on 21 to 23 December, with a focus on drinking water, specifically taps and tanks on the properties, along with some bores. Those samples have been returned to accredited laboratories for analysis. The Department will be able to provide advice to those properties once results are available, which is expected to be by the end of January 2020.

The Department has engaged environmental consultants Senversa to undertake the detailed environmental investigation to determine the nature and extent of PFAS in the local environment and the potential exposure pathways for people and the environment. Senversa has extensive experience in delivering these complex PFAS investigations for Defence at mainland sites. The investigation findings will inform future action to mitigate risks. Senversa's initial on-Island field work from 13–24 January will involve collection of a range of samples from various locations across Norfolk Island. Testing on private land will only occur with property owners' consent. These samples will then be returned to the mainland for laboratory analysis, after which the results will be analysed and interpreted by Senversa. The interpretation of the data collected through this initial analysis will inform more detailed health advice, while also determining if further investigation is required and, if so, what that would involve. See Norfolk Island PFAS fact sheet 2 for further information.

The data collected from CSIRO's December testing in the Mission Creek catchment will form part of Senversa's island-wide environmental investigation. The CSIRO's NIWRA project has now returned to an exclusive focus on an assessment of hydrology and hydrogeology and options for enhancing the community's water security (see more information here.

Using Mission Creek catchment water for drinking

As consuming water containing above guidance levels of PFAS is not recommended, as a precaution, the Department recommends not drinking water from any underground or creek sources within the Mission Creek catchment around the airport or using bore water taken from that catchment to re-fill rainwater tanks that supply drinking water, until further notice. Alternative water is available to residents in the catchment by contacting the Department's on-Island team on 23315 or NIPFAS@infrastructure.gov.au.

Where can I get more information?

Residents are welcome to contact the Department's on-Island team on 23315 or NIPFAS@infrastructure.gov.au.

https://www.pfas.gov.au/

https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas.htm#pfas

15 January 2020