RAAF Base Edinburgh
Detailed Site Investigation Addendum & Human Health and Ecological Risk Assessment

PFAS Investigation and Management Program

About the Investigation

In October 2016, the Department of Defence commenced a detailed environmental investigation into the nature and extent of per- and poly-fluoroalkyl substances (PFAS) on, and in the vicinity of, RAAF Base Edinburgh (the Base) as a result of the historical use of legacy firefighting foams at the Base. The environmental investigation has now been completed with the publication of the Addendum to the Detailed Site Investigation (DSI) Report and the Human Health and Ecological Risk Assessment (HHERA) Report.

This factsheet outlines the key findings of the reports and outlines the next steps as the site moves into the Management Stage.

These reports are available at:
www.defence.gov.au/environment/pfas/Edinburgh/publications.asp

Addendum to the DSI

In December 2018 Defence completed a Detailed Site Investigation (DSI). The DSI involved an extensive sampling program on and off-base to collect information and better understand how PFAS moves through the environment. An Addendum to the DSI has now been completed.

The objectives of the Addendum to the DSI were to:

- determine how deep PFAS has migrated into the Quaternary Aquifer system (i.e. the Q1, Q2, Q3 and Q4 aquifers);
- further examine the extent of horizontal PFAS migration in off-base shallow aquifers; and
- collect sufficient data to assess potential exposure-risks to people using bore water sourced from the Quaternary Aquifers in the Investigation Area.

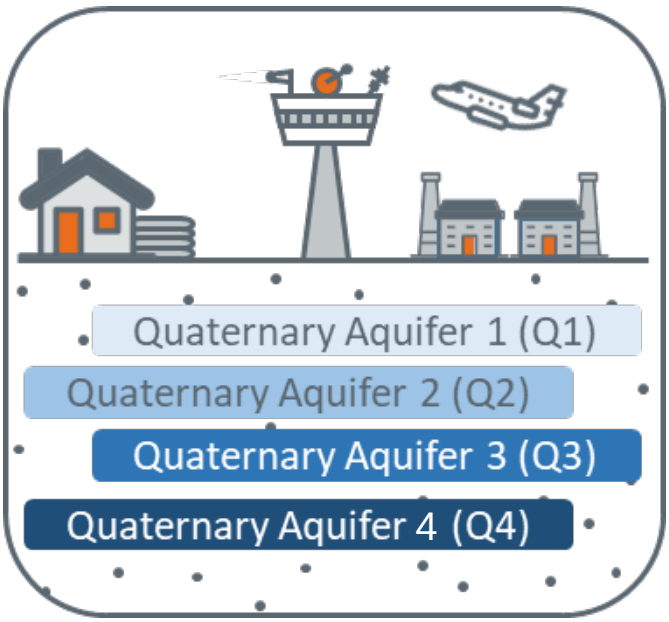
Findings

- PFAS was detected above drinking water guidance values in the Q4 Aquifer beneath the Base; and
- All off-base Q4 Aquifer detections were below drinking water guidance values.

In addition, a better understanding of the extent of horizontal PFAS migration in the shallow Quaternary Aquifers (i.e. the Q1 and to a lesser extent the Q2) was achieved. These results have helped inform the exposure risk assessment completed as part of the HHERA.

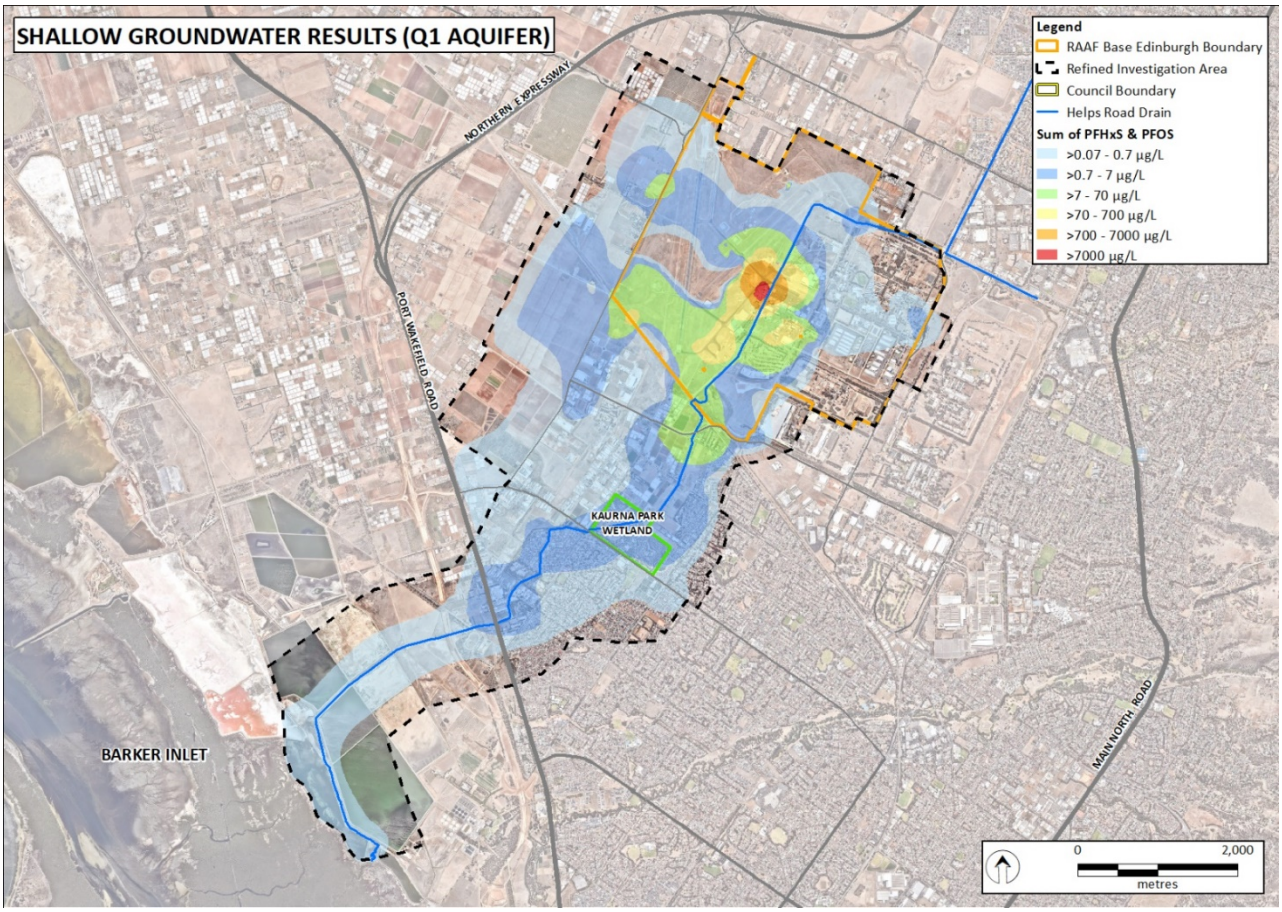
What is the Quaternary Aquifer System?

There are several layers of aquifers in the Edinburgh region. The four aquifers closest to the surface are part of the Quaternary aquifer system. These aquifers are numbered in order of depth as shown in the image (below).



Health and Ecological Risk Assessment

The aim of the Human Health and Ecological Risk Assessment (HHERA) was to better understand the potential PFAS exposures scenarios to people, plants and animals within the Investigation Area, based on data collected during the DSI, DSI Addendum, and a HHERA-specific sampling program.



HHERA Sampling Program

The following sampling was undertaken as part of the HHERA to better understand potential PFAS exposure-risks within the Investigation Area:

- Targeted sampling of licensed Quaternary Aquifer water supply bores.
- Testing of edible aquatic biota (i.e. yabbies and fish) collected from the Kaurna Park Wetland.
- Testing of honey produced for domestic consumption, close to the Investigation Area.
- Targeted soil sampling at the North East Defence Community Centre (located on-base).

How are PFAS exposure risks to people assessed?

Food Standards Australia and New Zealand (FSANZ) have determined how much PFAS a person can be exposed to every day of their lifetime without long-term risk to their health. This is known as the Tolerable Daily Intake (TDI).

Risks to human health are assessed by calculating how much PFAS people are exposed to each day from different scenarios, based on the concentrations of PFAS detected in soil, water, seafood or vegetables. This figure is then compared to the TDI to identify a specific risk rating.

Where exposures are lower than the TDI, the level of exposure risk is considered to be ***low and acceptable***.

Where exposures are higher than the TDI, the level of exposure risk is considered to be ***elevated***. This does not mean that adverse health effects will occur, but action may be required to reduce risk.

Summary of the HHERA Findings

✅ Low and acceptable exposure risk

⚠️ Potentially elevated exposure risk

Exposure scenario	On-base	Off-base	Assessed Exposure Risk
Contact with soil *(e.g. incidental contact during gardening or excavating)*	✅	✅	***On-base:*** *Assessment of exposure-risk is based upon current site operations.* ***Off-base:*** *All soil sampling results were below relevant human health guidance values.*
Contact with surface water and sediment *(e.g. in stormwater drains, Kaurna Park Wetland)*	✅	✅	***On-base:*** *Assessment of exposure-risk is based upon current site operations.* ***Off-base:*** *All sampling results in Kaurna Park Wetland and Helps Road Drain were below relevant human health guidance values.*
Licensed use of Quaternary Aquifer bore water	N / A	✅	*Sampling results from licensed bores or sampling locations adjacent to licensed bores were below human health guidance values for drinking water.*
Unlicensed use of Quaternary Aquifer bore water	N / A	⚠️	*There is a potential for elevated exposure-risks if there are unlicensed bores being used by people who are using the Quaternary groundwater for drinking water or other domestic purposes.*
Users of deeper T1 Tertiary Aquifer bore water	N / A	✅	*There is no evidence of PFAS contamination in the deeper T1 Tertiary aquifer (used by commercial irrigators and market gardeners).*
Consumption of edible water based animals from Kaurna Park Wetland	N / A	⚠️	*The PFAS tolerable daily intake may be exceeded if carp caught from the Kaurna Park Wetland or areas of Helps Road Drain downstream of the Base are consumed.* ***Note: The City of Salisbury already prohibits fishing from the Kaurna Park Wetland.*** *Sampling results for yabbies were below the adopted human health guidance values.*
Consumption of honey produced in the local area	N / A	✅	*Locally produced honey may be consumed. The PFAS compounds of concern were not detected in honey samples taken from properties close to, or within, the Investigation Area.*
Consumption by higher order predators of water based species in the Kaurna Park Wetland	N / A	⚠️	*This exposure-risk primarily relates to the consumption of yabbies and carp by protected migratory bird species. The level of potential exposure-risk does not warrant specific action however the planned Defence management measures will reduce the amount of PFAS migrating to the environment.*

Next steps

The outcomes of the detailed environmental investigation have been used to develop a PFAS Management Area Plan (PMAP) at RAAF Base Edinburgh.

The PMAP recommends actions to manage and reduce the risks of PFAS exposure for the Edinburgh community. The PMAP includes an Ongoing Monitoring Plan which outlines the sampling program that will be undertaken by Defence to monitor and track the PFAS contamination over the coming years.

The PMAP has been released and is publically available on the RAAF Base Edinburgh PFAS website.

Keeping the Community Informed

Defence will continue to keep the community informed on the management of PFAS contamination including the implementation of the PMAP and ongoing monitoring reports. Updates will be provided through the project website, newsletters and factsheets as new information becomes available.

Government Guidance

All detailed environmental investigations are undertaken by experienced environmental services providers in accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (NEPM).

The NEPM was established by Commonwealth legislation and incorporated into the laws of each of the States and Territories to provide a nationally consistent approach in the assessment of site contamination.

Health Advice

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released guidance statements to help assess public health risks when PFAS have been released into the environment. In July 2019, the statements were updated to reflect the most current evidence relating to PFAS.

The Expert Health Panel for PFAS found that although the scientific evidence in humans is limited, reviews and scientific research to date have provided fairly consistent reports of an association with several health effects. The health effects reported in these associations are generally small and within normal ranges for the whole population.

There is also limited to no evidence of human disease or other clinically significant harm resulting from PFAS exposure at this time.

As a precaution, enHealth recommends exposure to PFAS be minimised wherever possible whilst further research is undertaken on the potential health effects of PFAS exposure. If you live or work in a PFAS contaminated area, your state or territory health department can provide you with local advice on how to minimise exposure to PFAS.

Department of Health

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