About the Investigation

In November 2016, Defence commenced a detailed environmental investigation to identify the nature and extent of per- and poly-fluoroalkyl substances (PFAS) on, and in the vicinity of RAAF Base Edinburgh as a result of the historical use of legacy firefighting foams at the Base.

The investigation will identify whether the use of these foams has resulted in PFAS exposure to humans, animals and the environment, and will help develop strategies to minimise exposure, should these be required.

Investigation Timeline

- Community Walk-in Session
  October 2016
- Community Water Use Surveys
  January 2017 (ongoing)
- Preliminary Site Investigation (PSI)
  Completed February 2017
- Community Walk-in Session
  March 2017
- Prepare Draft Sampling Plan
  Completed April 2017
- Detailed Site Investigation (DSI)
  Commenced May 2017
- Community Walk-in Session
  November 2017
- Detailed Site Investigation (DSI)
  Completed December 2018
- Human Health and Ecological Risk Assessment (HHERA)
  Expected first-quarter 2019
- PFAS Management Area Plan (PMAP)
  Expected second-quarter 2019
- Community Walk-in Session
  Expected second-quarter 2019

The first stage of the investigation, the Preliminary Site Investigation, has been completed with outcomes provided to the local community in March 2017.

The second stage of the investigation, the Detailed Site Investigation (DSI), commenced in May 2017 and has now been completed. The DSI involved an extensive sampling program on and off-base to collect information and better understand how PFAS moves through the environment. Testing was undertaken to assess the nature and extent of PFAS contamination originating from the Base.

A detailed report including the sampling results has been prepared and provided to relevant government agencies, regulatory bodies and the local community. This fact sheet presents a summary of the findings of the DSI.

The DSI Report is available to view at www.defence.gov.au/environment/pfas/Edinburgh/.

Summary of the Detailed Site Investigation

The investigation included testing of soil, surface water, underground water (groundwater), sediment, concrete (on-base) and plants. Results were compared to relevant human health and ecological guidance values to help assess potential exposure risks to receptors (e.g. humans and the environment).

Above: Groundwater monitoring well installation
## Key DSI Findings Summary Table

<table>
<thead>
<tr>
<th>Sample Types</th>
<th>On-base Findings</th>
<th>Off-base Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Elevated levels of PFAS detected in soils at former and current fire training areas and an area where firefighting foam concentrate was historically stored.</td>
<td>All results below human health guidance values.</td>
</tr>
<tr>
<td>Groundwater</td>
<td>PFAS detected in the shallow Quaternary Aquifers (Q1, Q2 and Q3 to date).</td>
<td>PFAS detected in the shallow Quaternary Aquifers (Q1, Q2 and Q3 to date) above human health guidance values for drinking water (see Map below). No-one to date has been identified as currently drinking this water. No evidence of contamination in the deeper T1 Tertiary Aquifer (used by commercial irrigators and market gardeners).</td>
</tr>
<tr>
<td>Surface water</td>
<td>PFAS detected in surface water above human health guidance values for recreational waters in a small number of areas within the stormwater drainage network.</td>
<td>Surface water samples only detected low levels of PFAS - all results below human health guidance values. Includes all samples collected from the Kaurna Park Wetland. Some results exceeded ecological guidance values.</td>
</tr>
<tr>
<td>Sediment</td>
<td>Samples from the stormwater drainage network, Helps Road Drain and the Southern Detention Basin only detected low levels of PFAS, below human health guidance values.</td>
<td>Sediment samples within the Helps Road Drain and Kaurna Park Wetland only detected low levels of PFAS, below human health guidance values.</td>
</tr>
</tbody>
</table>

### Key Findings: On-base
PFAS has been detected in soil, surface water and shallow groundwater above human health guidance values. Twelve source areas with elevated levels of PFAS were identified (see map below). Surface water (stormwater) and shallow groundwater were identified as off-site migration pathways.

### Key Findings: Off-base
PFAS concentrations above human health guidance values are limited to shallow groundwater and are present in edible aquatic biota (i.e. fish, yabbies) within the Kaurna Park Wetland.

All samples tested from private properties were below human health guidance values.

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**DSI Sample Collection**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>No. Samples On-base</th>
<th>No. Samples Off-base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>677</td>
<td>42</td>
</tr>
<tr>
<td>Surface water</td>
<td>66</td>
<td>54</td>
</tr>
<tr>
<td>Sediment</td>
<td>61</td>
<td>29</td>
</tr>
<tr>
<td>Pore water</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Groundwater</td>
<td>399</td>
<td>150</td>
</tr>
<tr>
<td>investigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>wells</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Private bores</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>monitoring wells</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Council bores</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Water tanks</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Dams</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Biota - wheat</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Concrete cores</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>1,234</td>
<td>323</td>
</tr>
</tbody>
</table>

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**SHALLOW GROUNDWATER RESULTS (Q1 AQUIFER)**

**Legend**
- **RAM Base Edinburgh boundary**
- **Refined Investigation Area**
- **Groundwater Q1 AQUIFER**
  - Sum of PFHxS & PFOS:
    - $<$0.07 - 0.7 μg/L
    - 0.7 - 7.0 μg/L
    - 7.0 - 70 μg/L
    - 70 - 700 μg/L
    - >700 μg/L

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**ON-BASE SOURCE AREAS**

**Legend**
- **RAM Base Edinburgh boundary**
- **Refined Investigation Area**
- **Source Area**
- **Hills Road Drain**
- **Kaurna Park Wetland**
- **Former Fire Training Area**
- **Former Fire Training Area & Storage Area**
- **Saturated Former Fire Training Area**
- **Dull Trail and AFAT Concentration Storage Area**
- **AFAT Waste Water Storage Bogs**
- **B-line Trail & Former AFFF Concentration Storage Area**
- **Kaurna Park Wetland**

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**Defending Australia and its National Interests**

Next Steps

**Human Health and Ecological Risk Assessment**

A Human Health and Ecological Risk Assessment (HHERA) has now commenced to provide a better understanding of the potential PFAS exposure pathways and exposure risks to people, plants and animals in the Investigation Area.

A sampling program specifically for the HHERA is currently underway to supplement the DSI data, targeting:

- Shallow Quaternary Aquifer water supply bores in the Investigation Area; and
- Edible aquatic biota (i.e. fish and yabbies) from the Kaurna Park Wetland.

Work is also continuing to assess whether groundwater contamination has migrated to the Q4 Aquifer.

Bore owners in the Investigation Area are encouraged to complete a Water Use Survey (available on the website) and contact the Edinburgh Investigation team to discuss bore sampling to provide data for the HHERA.

The HHERA is expected to be completed in the first-quarter of 2019.

**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.

The Department of Health established an Expert Health Panel (the Panel) to advise the Australian Government on the potential health impacts associated with PFAS exposure and identify priority areas for further research.

The Panel’s findings support the previous Environmental Health Standing Committee’s (enHealth) advice in 2016 that there is no consistent evidence that exposure to PFAS causes adverse human health effects. However, because these substances persist in humans and the environment, enHealth recommends that human exposure is minimised as a precaution.

Further information can be found at the Commonwealth Department of Health PFAS webpage and via the community hotline: **Phone: 1800 941 180**

**Keeping the community informed**

The next Community Information Session will be held in the second-quarter of 2019 to discuss the HHERA findings and potential management options in the PMAP. Updates will be provided through the project website, newsletters and factsheets as new information becomes available.

**Contact the Edinburgh Investigation Team**

1800 365 414  

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