



PFAS Investigation and Management Program

Defence is carrying out a national program to review, investigate and implement a comprehensive approach to manage the impacts of PFAS, on and near some of its bases around Australia as a result of the historical use of legacy formulations of firefighting foam.

Environmental investigations are being carried out in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Defence is working with Commonwealth, State and local authorities, as part of these investigations.

From May 2017 to November 2018, Defence carried out an environmental investigation to identify the nature and extent of PFAS contamination on and near RAAF Base Richmond.

There were three stages in the investigation:

Preliminary Site Investigation (May - Aug 2017)

The Preliminary Site Investigation (PSI) consisted of a desktop review, interviews with Defence personnel, and site inspections to identify the use of legacy firefighting foam, potential on-Base sources and pathways of PFAS contamination to people and the environment. The review included understanding the topography, surface water drainage, hydrogeology and land use near the Base. This information was used to establish the 'Study Area' for the investigation.

A Water Use Survey was distributed to residences within the Study Area to better understand how water is being used in the area. There were 178 Water Use Surveys returned during the investigation.

Detailed Site Investigation (Sep 2017 – Jun 2018)

The Detailed Site Investigation (DSI) included sampling and analysing 89 groundwater, 37 surface water, 49 soil and 36 sediment samples within the Study Area, to identify the extent of contamination and the ways in which people and the environment could be exposed to PFAS.



Installation of groundwater monitoring wells

The key findings of the DSI were:

- There is no evidence that groundwater is used for drinking water supply within the Study Area;
- There is limited use of groundwater for watering or irrigating stock within the Study Area;
- There are five areas (on-Base) that have been identified as sources for PFAS contamination. These areas are where legacy firefighting foam was used, handled and stored;
- The main pathway that PFAS moves in the Study Area, is through surface water runoff from the Base to Rickabys Creek and its tributaries; and Bakers Lagoon;
- Surface water samples taken from a tributary of Rickabys Creek and Bakers Lagoon detected PFAS concentrations above the 'Health Based Guidance Values' for recreational water use;
- Surface water samples from the Hawkesbury River detected PFAS concentrations below the Health Based Guidance Values for recreational water use; and
- PFAS concentrations, in a farm dam and drains, close to the Base and Rickabys Creek, were below the Health Based Guidance Values for recreational water use.

What are the Health Based Guidance Values?

Health Based Guidance Values were developed by Food Standards Australia New Zealand. They 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 their health. This is known as the Tolerable Daily Intake (TDI).

Based on the Australian TDI, NSW Health has calculated drinking and recreational water quality values for Investigation purposes.

For more information on the Health Based Guidance Values visit:

www.health.gov.au/internet/main/publishing.nsf/content/ohp-pfas-hbgv.htm





Human Health Risk Assessment (Nov 2017 – Oct 2018)

The Human Health Risk Assessment (HHRA) provided a better understanding of the potential 'exposure-risks' to key groups of people within the Study Area exposed to PFAS in groundwater, surface water, soil, sediment and home-grown produce such as fruit, vegetables, eggs, beef and finfish. A total of 308 samples were collected including groundwater, surface water, soil, sediment, 'biota' (eg. fruit, vegetable, poultry eggs, finfish and grass).

The exposure-risks were calculated using the TDI. Where the exposure-risk was below the TDI, it was a 'low and acceptable exposure-risk' and where the exposure-risk was above the TDI, it was considered to be a 'potentially elevated exposure-risk'.

Assessed Exposure Risk
Low and acceptable exposure risk
<ul style="list-style-type: none"> Unintentionally ingesting, touching or inhaling dust from soil, during outdoor activities Inhaling dust from soil tracked back into the home Unintentionally ingesting or skin contact with water, during outdoor agricultural or horticultural use, maintenance activities or recreational activities Unintentionally ingesting or skin contact with sediment, during outdoor activities Eating home-grown green vegetables irrigated with water containing detectable PFAS, or that have been grown in soil that has been irrigated, or flooded with water containing detectable PFAS Eating finfish from local waterways (e.g. the Hawkesbury River) by recreational fishers who do not live in the Study Area
Potentially elevated exposure risk
<p>People who live in the Study Area and eat large:</p> <ul style="list-style-type: none"> Quantities of finfish caught from local waterways and, either home-grown eggs or home-grown red meat Proportions of home-grown poultry, which eat soil or drink water containing detectable PFAS Proportions of home-grown red meat from cattle, which drink water containing detectable PFAS from Bakers Lagoon and surrounding surface water networks

Ecological Risk Assessment (Nov 2017 – Oct 2018)

The Ecological Risk Assessment (ERA) assessed the potential PFAS exposure-risk to the environment within the Study Area. In total, 286 samples were collected to consider:

- Direct exposure-risks to land and water-based animals and plants (e.g. PFAS in surface water, soil and sediment); and
- Indirect exposure-risks, through PFAS bioaccumulation in land and water-based animals. (e.g. fish-eating birds, land-based animals and birds of prey),

Key findings of the ERA indicate that there is potential for elevated exposure-risk to plants and animals within the Study Area. This is because of:

- Discharge of PFAS impacted surface water from the Base's airfield foam cannon testing area and Sewage Treatment Plant (STP);
- Discharge of PFAS impacted surface water from the Base and Rickabys Drop Zone to Rickabys Creek;
- Discharge of PFAS impacted surface water from the STP on the Base and Rickabys Drop Zone, through an underground pipe to Bakers Lagoon; and
- The bioaccumulation of PFAS in water and land-based animals.

For more information about the investigation, visit: www.defence.gov.au/environment/pfas/Richmond/

Fast Facts



180 Water Use Surveys received



3 community information sessions



211 samples collected for the DSI



302 samples collected for the HHRA



286 samples collected for the ERA





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HERE**

Next Steps

A PFAS Management Area Plan (PMAP) is being developed and will outline activities that Defence will carry out to manage and reduce the risks of PFAS exposure, where required, within the Study Area.

The PMAP will include the review of contamination sources and migration pathways, and evaluate a range of available and practical PFAS management activities for the Base.

As part of the PMAP, an Ongoing Monitoring Plan will also be prepared, which will outline the sampling program to be carried out by Defence, as part of monitoring the PFAS contamination, over the coming years.

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

Statement from Sydney Water

Sydney Water has done an initial review of the November 2018 Defence Health and Ecological Risk Review concerning PFAS chemicals at the RAAF Base at Richmond. We do not think that the report or the monitoring results it contains show an increase in risk to the drinking water supply.

Sydney Water has previously assessed that the risk to the North Richmond Water Filtration Plant (WFP) is low.

The North Richmond Water WFP is located upstream of the RAAF Base at Richmond. While the tide does rise and fall at the North Richmond water filtration plant, it is unlikely that PFAS contamination would move that far upstream.

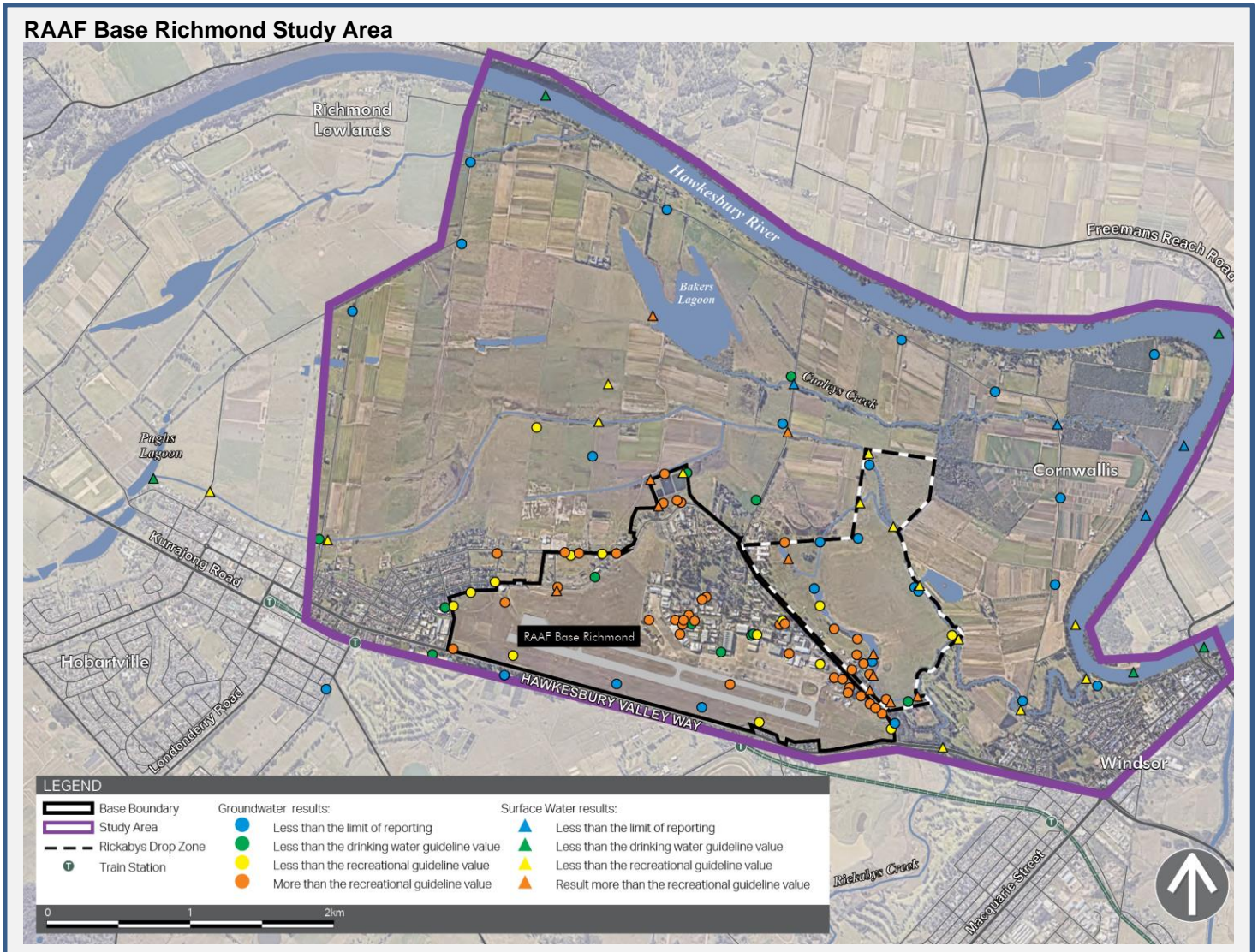
Monitoring by AECOM/Defence showed that only one of the PFAS chemicals was detected in the river at North Richmond, approximately 750 m downstream from the off-take. This was PFOS and it was found on one occasion at the level of 40 ng/L, which is lower than the drinking water guideline value of 70 ng/L (a nanogram is one thousand-millionth of a gram).

The North Richmond WFP has granulated activated carbon as part of its standard treatment process. Granulated activated carbon is one of the most effective treatment barriers available.

NSW Health advises that the public water supply at North Richmond is safe. Sydney Water and NSW Health will continue to review any new information that may come to light. More information can be found at:

www.health.nsw.gov.au/environment/factsheets/Pages/pfos.aspx





Keeping the Community Informed

Defence is committed to regularly updating the community. To date, three community information sessions have been held in September 2017 and June and November 2018.

Updates are provided through the project website, factsheets and newsletters.

For More Information

Call: 1800 789 291 free call (during business hours)

Email: richmond.defence@aecom.com

Visit: www.defence.gov.au/environment/pfas/Richmond

Media enquiries should be directed to Defence Media Operations on (02) 6127 1999 or media@defence.gov.au.

Government Agencies

Defence is cooperating with a number of government agencies:

- Commonwealth Department of Health: 1800 941 180
- NSW Health: 1300 066 055
- NSW Environment Protection Authority: 131 555
- NSW Department of Primary Industries:
 - Fisheries: 1300 550 474
 - Agriculture: 1800 808 095
- NSW Food Authority Helpline: 1300 552 406
- Sydney Water: water.quality@sydneywater.com.au

