



RAAF Base East Sale Environmental Investigation- Preliminary Site Investigation – key findings and next steps

Background to the investigation

The Department of Defence (Defence) has engaged an independent environmental consultant to undertake an environmental investigation into the presence of per- and poly-fluoroalkyl substances (PFAS) on, and in the vicinity of, RAAF Base East Sale (the base).

The investigation is part of Defence's review of a number of its sites around Australia that used legacy fire-fighting foams containing PFAS.

PFAS are a class of manufactured chemicals that were generally present in aqueous film forming foam (AFFF) used extensively worldwide from about the 1970s by both military and civilian authorities due to its effectiveness in extinguishing liquid fuel fires. From 2004, Defence commenced phasing out its use of legacy AFFF across the Defence Estate. The AFFF now used by Defence is a more environmentally safe product.

The PFAS of interest to the investigation are principally perfluorooctane sulfonate (PFOS), and perfluorooctanoic acid (PFOA).

The environmental investigation is being undertaken in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM).

The NEPM process includes:

- preliminary site investigation (PSI)
- detailed site investigation (DSI)
- human health and ecological risk assessment (HHERA) if required

Objective of the investigation

The objective for the environmental investigation is to identify the nature and extent of PFAS in the environment and any potential risks to human health or the environment. The understanding of these potential risks will assist in developing any mitigation strategies to minimise exposure.

Preliminary site investigation

The preliminary site investigation (PSI) commenced in April 2016 and was completed in August 2016.

Some of the objectives of the PSI included:

- understanding site characteristics;
- identifying possible PFAS **sources** both on and off base based on historical AFFF storage, use and disposal; and
- understanding possible migration **pathways** of PFAS to on or off-base **receptors**.

These activities assist our understanding of potential impacts to people and the environment in the Sale area, from the use of legacy AFFF fire-fighting foams.

This also informs the priorities for the next stage of the investigation.

Sources: where and when legacy AFFF was used

Pathways: how PFAS moves in the environment and the possible exposure to people and the environment

Receptors: people and the environment that may possibly be exposed to PFAS



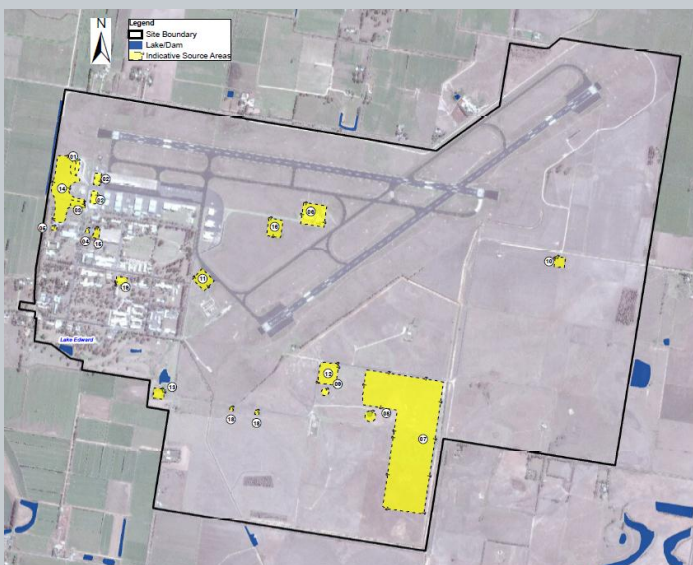


Sources

Based on a review of previous environmental assessments and the site history, several key areas have been identified as the potential primary sources of PFAS resulting from the historical on-site storage, use and disposal of legacy AFFFs.

The key potential source areas identified on site are described as follows and presented in the map below:

- Northwest area – fire truck maintenance areas, AFFF storage, fuelling area and former fire station
- Central/eastern area – historical and current fire station and equipment testing
- Southern area – fire training grounds and waste burial areas
- Central area – AFFF foam and equipment testing

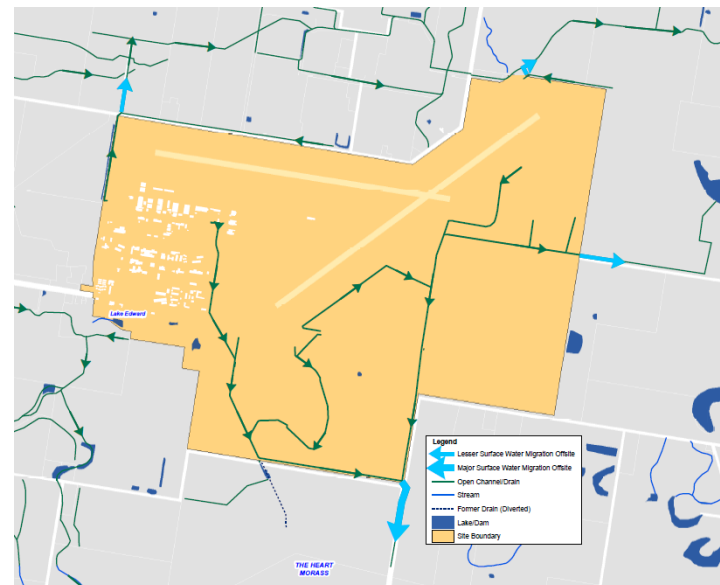


Map of key potential source areas identified at RAAF Base East Sale

Pathways

Primary migration pathways of PFAS are surface water and groundwater.

Previous studies indicate a potential connection between the on-base source areas where PFAS compounds were used and/or stored and the surface water drainage system. The surface water drainage system comprises a network of closed drains as well as open shallow swale drains and deeper earthen drains which capture site surface water and direct it to several discharge points that release water to The Heart Morass, and the irrigation network that ultimately drains to Lake Wellington to the east.



RAAF Base East Sale surface water drainage lines
Groundwater occurs in shallow, intermediate and deeper more permeable zones, separated by low permeability clays. One of the potential pathways to be assessed is the shallow and intermediate systems which flow to the south east and easterly direction.





Receptors

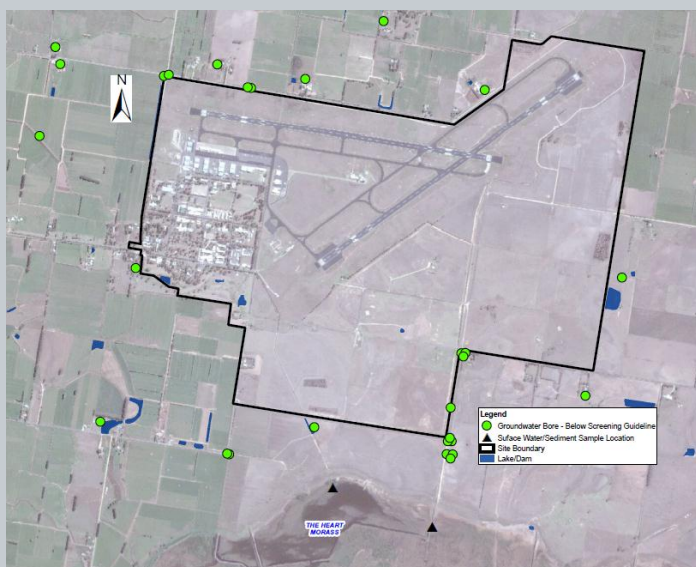
Generally, the main exposure pathway to people is through consuming groundwater. A water use survey completed by 17 local residents indicated that water for human consumption came from rain water (tank) or tanked in. Surface water and groundwater is used for dairy operations, stock watering, irrigation, or outdoor domestic (non-potable) uses. Other receptors will be assessed.

Preliminary Sampling Findings Off base water and sediment

Preliminary offsite sampling was undertaken on 34 private use and public monitoring bores in May and June 2016. Further, a water tank and 4 surface water storages were assessed. The results were as follows:

- 36 samples – PFAS was not detected
- 3 samples – PFAS was detected (below the screening criteria)

Low concentrations of PFOS were detected in water and sediment in drainage lines at The Heart Morass.



Map of off-base bore sample results

On Base Water and Sediment Sampling

Preliminary sampling of existing groundwater monitoring bores, base water supply and drainage lines were undertaken. Low levels of PFAS were reported in the water and sediment of the drainage lines. Elevated levels of PFAS were reported in the groundwater in areas associated with fire truck maintenance, fire fighting training and waste burial areas. Base water supply bore did not report detectable PFAS.

Next steps

Detailed site investigation

The detailed site investigation commenced in September 2016, and includes comprehensive on and off-base sampling to further assess the nature and extent of PFAS on, and in the vicinity of the base. This will include:

- soil samples on base and off-base/site;
- surface water and sediment testing within on-base and off-site drainage channels and water bodies such as The Heart Morass;
- surface water and sediment testing off-base within drainage channels and The Heart Morass and surrounds;
- installing additional shallow and multi-level monitoring bores; and
- biota (grass) sampling.

A detailed report will be prepared and shared with relevant government and regulatory bodies as well as the community. This will also be made available to the public.





Human health and ecological risk assessment

A more detailed assessment to better understand the risk to people and the environment may be undertaken if required.

- The risk assessment will be triggered if results during the investigation exceed guideline values.
- The risk assessment is a detailed, scientific process that may involve further sampling.
- The results of the risk assessment assist with planning for managing risks and remediation.

Health

Defence is not an authority on human health and cannot provide health advice. This is the role of respective Australian Government, State/Territory and local health authorities and practitioners

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released information relating to PFAS and human health. The *Guidance Statements on Per- and Poly-fluoroalkyl Substances* and the *Per- and Poly-Fluoroalkyl Substances Factsheet* may be found on the Australian Government Department of Health's website www.health.gov.au.

Government guidelines

Defence investigations are informed by national guidelines.

enHealth have issued interim guidelines for the assessment and management of PFAS.

The interim values recommended by enHealth will remain in place until Food Standards Australia New Zealand completes an assessment and provides its advice on final human health reference values to the Australian Government Department of Health.

Keeping the community informed

Defence is committed to regularly updating the community throughout the investigation. Updates will be provided through the project website, community information sessions, direct mail and information sheets as new information becomes available.

Contact the Project Team

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