



The Department of Defence (Defence) is finalising a detailed environmental investigation to better understand the extent and levels of per- and poly-fluoroalkyl substances (PFAS) resulting from historical use of fire fighting foams on, and in the vicinity of, the Army Aviation Centre Oakey (AACO).

To date, the investigation has included the completion of a detailed Environmental Site Assessment (ESA); including groundwater modelling, a Human Health Risk Assessment (HHRA) and a Preliminary Ecological Risk Assessment (ERA). Following the completion of these assessments, it was identified that data gaps remained in some portions of the Investigation Area. As a result, further works will be conducted to update and refine the 2016 assessment reports.

The additional works commenced in January 2017 with sampling of surface water, groundwater, soil sediment and biota (flora and fauna, including aquatic), and will continue through to approximately October 2017.

This phase of the investigation will be completed and the reports published in late 2017. The reports will take into consideration any changes in national guidelines which may occur prior to the completion of the investigations.

Offsite PFAS Management Actions

Defence continues to work closely with the Queensland Government and Toowoomba Regional Council to progress management actions offsite.

Drain Maintenance Activities

Following the environmental investigations completed during 2016, Defence understands that the drains exiting the southern boundary of the AACO contain PFAS-impacted sediments that contribute to PFAS detected downstream of Oakey Creek. Defence has commenced discussions with the Toowoomba Regional Council to understand permitting requirements to remove approximately 200mm of PFAS-impacted sediment from the offsite sections of the drains that exit the base and run south to Oakey Creek.

This will assist with improvement of surface water quality in Oakey Creek downstream of the AACO.

Toowoomba Regional Council Town Water Connections

Defence has been working with the Toowoomba Regional Council to identify properties within the township of Oakey that are not connected to the town water supply and the works needed to be undertaken to enable a connection to reticulated town water if possible.

Onsite PFAS Management Actions

Defence will implement a range of management actions on the AACO including Drain Maintenance Activities, Removal of Source Areas and the continuation of Management and Remediation Trials. Some of these actions have already commenced.

Drain Maintenance Activities

Defence is implementing drain maintenance activities on AACO in 2017. Approximately 200mm of sediment from almost two kilometres of drains will be excavated and stockpiled for subsequent treatment. The stockpiled material will be secured in an appropriate area with all necessary bunding and covers to ensure that contamination does not leach from the sediment.

Groundwater Demonstration

Defence is exploring U.S. technology for the installation and trial of a modular groundwater treatment system for a period of six months, while the effectiveness of the plant is demonstrated. If the plant is proven to be effective, Defence will continue its operations on AACO and will seek to acquire further plants to be installed and operated on the AACO. It is anticipated the demonstration plant will be onsite by mid-2017. While the plant is being constructed, Defence is determining where to position the demonstration unit, suitable extraction groundwater wells and potential reuse options for the treated water including reinjection into the aquifer.

Removal of Source Areas

Commencing in mid-2017, Defence will engage a contractor to excavate and, where necessary, demolish the former fire training area and other source areas on AACO. It is anticipated that soil will be excavated and stockpiled for subsequent treatment. The area will then be backfilled with soil which has been classified as free from PFAS and other contamination.





Management and Remediation Trials

Defence continues to monitor the Australian and international industry to ensure it remains up to date on PFAS management and remediation technologies. Defence has undertaken a number of trials over the past 12 months and is continuing to progress those which have demonstrated potential for full scale implementation.

- **Solidification:** Solidification involves mixing a binding agent with affected soil to bind the compounds in a solid block, trapping it in place. Defence conducted solidification trials in 2016 and received the draft report in November 2016. Initial results are favourable, however further analysis is required to determine its viability. Input from the Queensland Department of Environment and Heritage Protection in relation to the application and viability of this method will be sought in March 2017.
- **Stabilisation:** Stabilisation involves mixing particular materials into affected soil to cause a chemical reaction which will ensure PFAS is bound and unable to spread. The aim of the trials was to test stabilising PFAS in soil to limit further migrating in the environment. Defence received preliminary results in late December 2016. Input from Queensland Department of Environment and Heritage Protection in relation to the application and viability of this method will be sought in March 2017.

Defence is aware of the potential for some technologies to hasten the spread of contamination and has adopted a precautionary approach to all trials to ensure this does not occur.

Defence PFAS Uptake Studies:

Plant Uptake Study

Defence is undertaking a Plant Uptake Study to evaluate how different plants uptake PFAS at a range of concentrations from impacted water. Four greenhouses have been designed and constructed at RAAF Base Williamstown and groundwater from within the Oakey Investigation Area is being used in the study. The data from the Plant Uptake Study will be used to update the reports prepared for Oakey.

Seven plant species have been selected based on several factors, including:

- species grown and consumed in the Williamstown and Oakey areas,
- genetic diversity and hardiness,
- hothouse tolerance and compact growing nature,
- use and prevalence as an agricultural crop in Australia,
- consideration of target receptor, and
- precedence or use in previous studies.

The plants include: radishes, beets, rocket, strawberries, alfalfa, cherry tomatoes and cucumbers.

Each greenhouse will contain an identical range of plants which will be irrigated with six different PFAS dosages. Two of the doses comprise PFAS impacted groundwater sourced from residential properties located at Oakey and Williamstown. The plants will be grown in sandy soils obtained from a local nursery.

Chicken and Egg Uptake Study

Defence is also undertaking a study to evaluate PFAS residues in eggs relative to a range of intake rates by chickens. The study will assess PFAS residues in eggs of chickens exposed to a range of PFAS concentrations. It will also investigate the rate that PFAS residues decline in eggs if chickens are provided with a PFAS-free drinking water supply.

The information collected from the studies will be used to refine the HHRA and advice regarding the consumption of home grown produce and eggs from backyard chickens in the Oakey Investigation Area.

Where can I get more information?

Phone: 1800 136 129 freecall (business hours)

Web: <http://www.defence.gov.au/id/Oakey>

Email: defence.oakey.anz@aecom.com

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

enHealth Guidelines

Information regarding the enHealth screening criteria can be located on their website:

<http://www.health.gov.au/internet/main/publishing.nsf/Content/oh-p-pfas.htm>

