



Australian Government  
Department of Defence  
Estate and Infrastructure Group

# Human Health Risk Assessment (HHRA) Sensitivity Assessment Report - 2017

## Army Aviation Centre Oakey (AACO)

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**Chris Birrer**  
**First Assistant Secretary Infrastructure**



## PFAS and AFFF

Aqueous Film Forming Foam (AFFF) is a fire fighting foam used to extinguish liquid fuel fires.

AFFF has been used extensively worldwide, including Australia, since the 1970's by both civilian and military authorities. Legacy formulations contained some PFAS of concern as active ingredients, including:

- PFOS (perfluorooctane sulfonate)
- PFOA (perfluorooctanoic acid)
- PFHxS (perfluorohexane sulfonate)

# History of AFFF Use in Defence



From **1970s**

Defence commenced use of AFFF containing PFOS/PFOA.

In **2003**

Defence and other users became aware that PFOS/PFOA was an emerging persistent organic pollutant.

From **2004**

Defence introduced a new foam and commenced phasing out use of the old foams for both training, and emergencies.

**Currently**

For emergencies, Defence uses a foam that does not contain PFOS and PFOA as active ingredients.

Defence uses a training foam which does not contain PFOS and PFOA.

Foam is captured and disposed of in accordance with current regulations.

# Human Health Risk Assessment (HHRA)

- Human Health Risk Assessment (HHRA) prepared by AECOM and released on 5 September 2016.
- Defence confirmed that the HHRA would be updated based on any changes made to Australian HHRA guidance or when additional data is available.
- Following an update by Food Standards Australia New Zealand (FSANZ) to the Tolerable Daily Intakes (TDI) recommended for use in Australia, AECOM has prepared a HHRA Sensitivity Assessment report.

# Human Health Risk Assessment (HHRA) Sensitivity Assessment

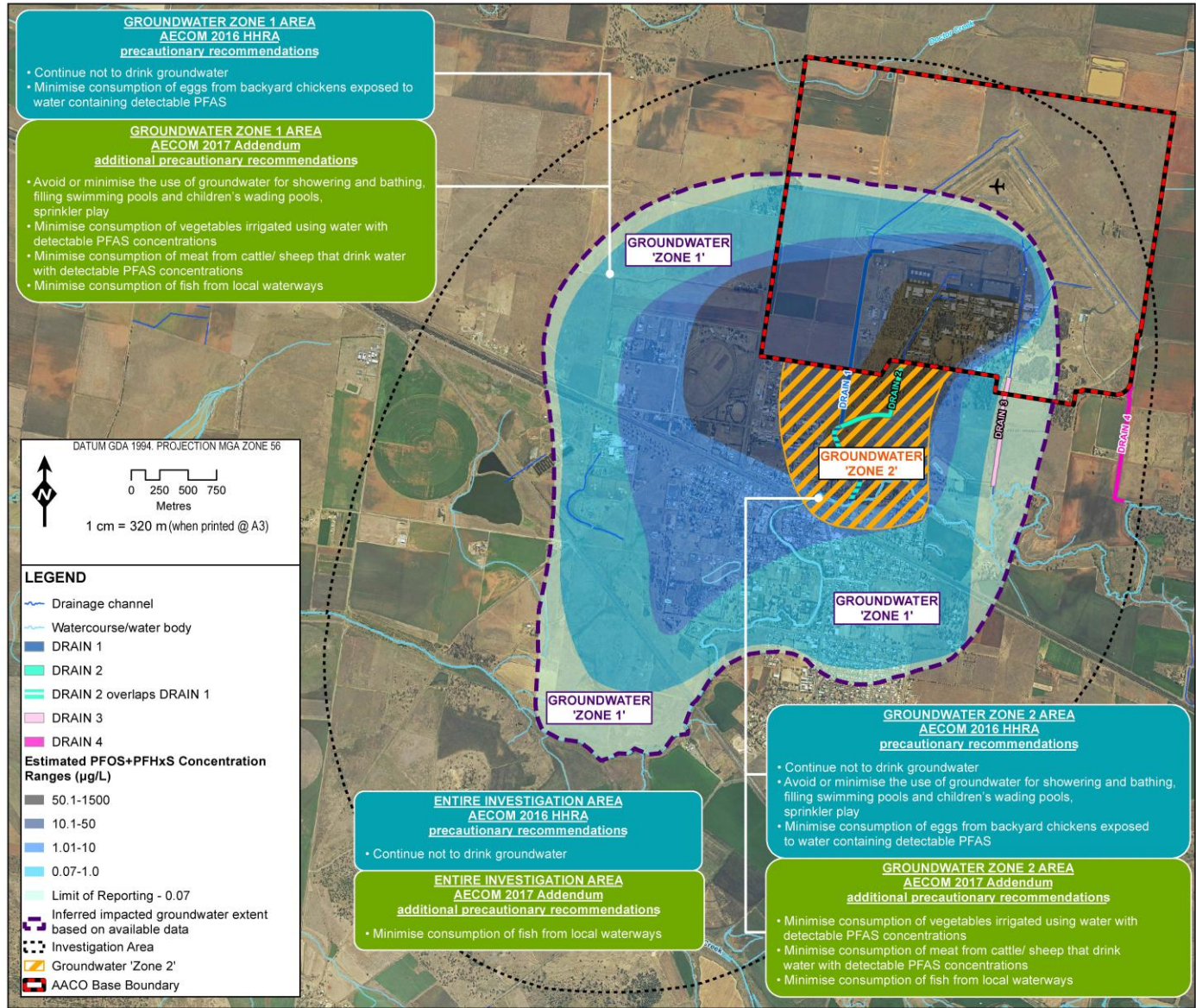
- The Sensitivity Assessment describes how the adoption of the FSANZ TDI affects the conclusions of the 2016 HHRA Report.
- A TDI represents a level of a substance that a person can be exposed to every day of their entire lifetime without appreciable risk to their health. The TDI is based on toxicological studies and incorporates safety factors to account for uncertainty.

# Method of Conducting the Sensitivity Assessment

- Adopt the FSANZ TDI for PFOS, PFHxS & PFOA.
- Evaluate changes in the resulting risk estimates, expressed as a Hazard Index (HI), which is the ratio of a person's estimated long-term average daily intake to the TDI.
- The exposure scenarios used during the sensitivity assessment remained the same as those used during the 2016 HHRA.
  - No updates to the conceptual site model.
- No new data/information incorporated.



## Precautionary Recommendations



# HHRA Sensitivity Assessment

Exposure Pathway	Receptor/ Exposed Community	Potential PFAS Exposures – 2016 HHRA		Potential PFAS Exposures – 2017 Sensitivity Assessment (FSANZ TDI)	
		Upper Exposure	Typical Exposure	Upper Exposure	Typical Exposure
<b>Exposure Pathways - Zone 1</b>					
Incidental ingestion of groundwater as a result of indoor domestic use (excluding drinking groundwater) and outdoor domestic use	Resident	Low & Acceptable	Low & Acceptable	Elevated	Low & Acceptable
Consumption of vegetables irrigated with water containing detectable PFAS or grown in soil that has been irrigated with water containing detectable PFAS	Resident	Low & Acceptable	Low & Acceptable	Elevated	Low & Acceptable
Consumption of meat from sheep or cattle that have consumed water containing detectable PFAS and/or consumed plants that have accumulated PFAS from irrigation water	Commercial Agricultural Worker	Low & Acceptable	Low & Acceptable	Elevated	Low & Acceptable
Consumption of fish from local waterways by recreational fishers	Recreational	Low & Acceptable	Low & Acceptable	Elevated	Low & Acceptable



# HHRA Sensitivity Assessment

Exposure Pathway	Receptor/Exposed Community	Potential PFAS Exposures – 2016 HHRA		Potential PFAS Exposures – 2017 Sensitivity Assessment (FSANZ TDI)	
		Upper Exposure	Typical Exposure	Upper Exposure	Typical Exposure
<b>Exposure Pathways – Zone 2</b>					
Incidental ingestion of groundwater as a result of indoor domestic use (excluding drinking groundwater) and outdoor domestic use	Resident	<b>Elevated</b>	<b>Low &amp; Acceptable</b>	<b>Elevated</b>	<b>Elevated</b>
Consumption of vegetables irrigated with water containing detectable PFAS or grown in soil that has been irrigated with water containing detectable PFAS	Resident	<b>Low &amp; Acceptable</b>	<b>Low &amp; Acceptable</b>	<b>Elevated</b>	<b>Low &amp; Acceptable</b>
Consumption of fish from local waterways by recreational fishers	Recreational	<b>Low &amp; Acceptable</b>	<b>Low &amp; Acceptable</b>	<b>Elevated</b>	<b>Low &amp; Acceptable</b>

# Current Precautionary Recommendations

- Continue not to drink groundwater in the Investigation Area
- Minimise home grown egg consumption in Zone 1 and Zone 2
- Avoid or minimise using groundwater for bathing, showering, swimming, paddling pools and/or sprinkler play in Zone 2 due to incidental ingestion

# Additional Precautionary Recommendations

- Avoid or minimise using groundwater for bathing, showering, swimming, paddling pools and/or sprinkler play in Zone 1 and Zone 2 due to incidental ingestion
- Minimise consumption of the following until additional data can be collected to refine the HHRA:
  - locally caught fish (Investigation Area)
  - home grown vegetables (Zone 1 and Zone 2)
  - home grown red meat (Zone 1 and Zone 2)



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# Next Steps



# Environmental Investigation

A scope of work has been developed to address data gaps and refine the following reports:

- Environmental Site Assessment
- Human Health Risk Assessment
- Preliminary Ecological Risk Assessment

In addition, an ongoing monitoring plan will be developed for PFAS impacted areas off base

# Environmental Investigation

Tasks commenced since January 2017:

- Collection of yabbies and mussels from Oakey Creek.
- Habitat and bird survey.
- Fruit and vegetable PFAS uptake study.
- Chicken egg PFAS uptake study.



# Environmental Investigation

Sampling completed to 29 March 2017:

## Residential sampling

*(completed since November 2016)*

Total number of samples: **121**:

- 13 tank
- 44 bore
- 64 other samples (e.g. soil, sediment, biota, pool water, tap water).

## Environmental Investigation sampling

*(completed since January 2017)*

Total number of environmental samples: **613**

- 434 soil
- 42 surface water
- 19 sediment samples
- 118 groundwater samples

Total number of animal specimens collected: **66**

- 20 yabbies
- 14 prawn/shrimp
- 26 fish
- 2 mussels
- 4 hares

# PFAS Response Management Activities

- Town Water Connections
- Groundwater Treatment Plant (Demonstration Unit)
- Soil Solidification and Soil Stabilisation Trials
- Drain Maintenance and Management Activities
- Removal of Source Areas

## Need More Information?



**Phone:** 1800 136 129 free call  
(Monday to Friday, 8.30am to 5pm)

**Email:**  
[defence.oakey.anz@aecom.com](mailto:defence.oakey.anz@aecom.com)

**Website:**  
<http://www.defence.gov.au/ID/Oakey>

**Mail:**  
Army Aviation Centre Oakey  
Environmental Investigation Project  
C/O AECOM Pty Ltd  
PO Box 1307  
Fortitude Valley Qld 4006

### Community Support:

- Community Wellness Program
- Department of Human Services  
Community Liaison Officer

### Department of Health:

**Phone:** 1800 941 180  
**Email:** [health.PFAS@health.gov.au](mailto:health.PFAS@health.gov.au).

# Questions?



Thank you for your attendance