



Australian Government
Department of Defence
Estate and Infrastructure Group

PFAS Investigation and Management Program



Community Information Session

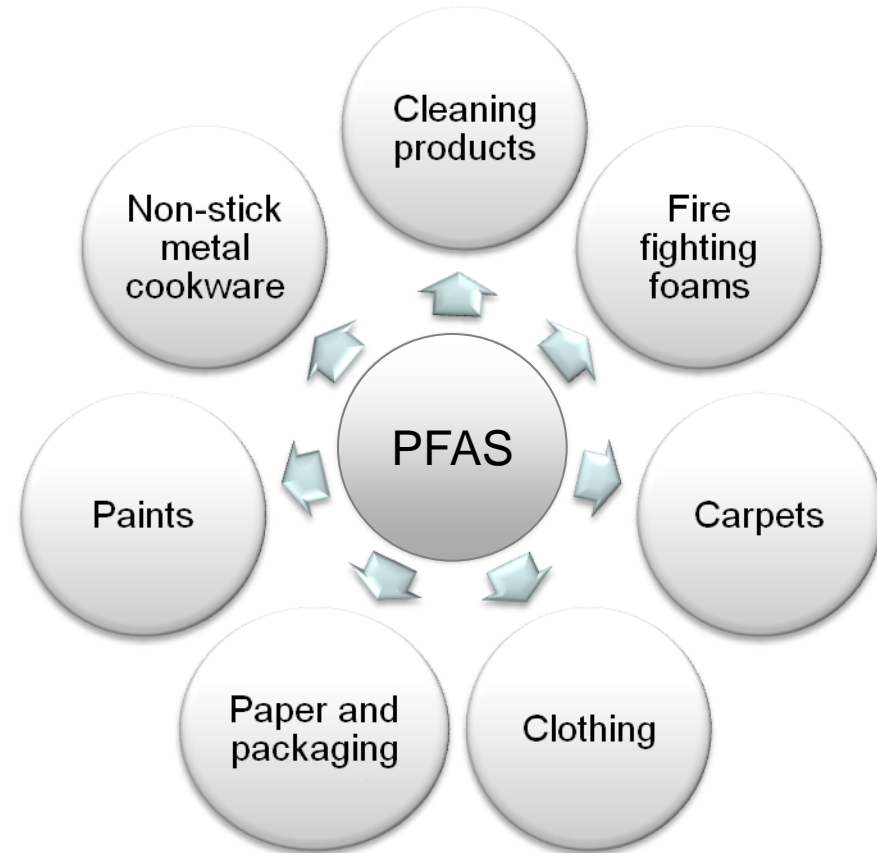
RAAF Base Pearce
Environmental Investigation

5 December 2016
Session #3



What are PFAS?

- Per- and poly-fluoroalkyl substances (PFAS) are a class of manufactured chemicals that have been used since the 1950s to make products that resist heat, stains, grease and water
- PFAS are of concern around the world because they persist in the environment
- Legacy fire fighting foam formulations contained some PFAS of concern as active ingredients, including:
 - PFOS (perfluorooctane sulfonate)
 - PFOA (perfluorooctanoic acid)
 - PFHxS (perfluorohexone sulfonate)



Health

- Public health advice is provided by respective Australian Government, State/Territory and local health authorities and practitioners.
- Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee has issued guidance statements on PFAS
- WA Dept of Health have information on PFAS available on their website

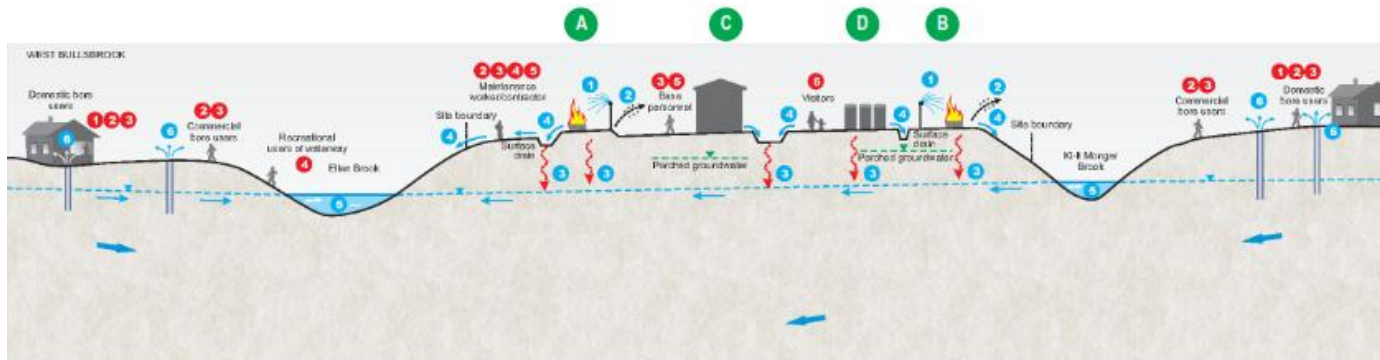
About this investigation

- The environmental investigation in Bullsbrook is being undertaken in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)
 - Preliminary site investigation
 - Detailed site investigation including a human health and ecological risk assessment
- GHD Pty Ltd engaged as specialist environmental consultants to undertake the investigation
- Senversa Pty Ltd engaged to conduct a peer-review/ auditing function

Preliminary Investigation Key Findings

Conceptual Site Model: Receptors – Human

HUMAN RECEPTORS AND EXPOSURE PATHWAYS

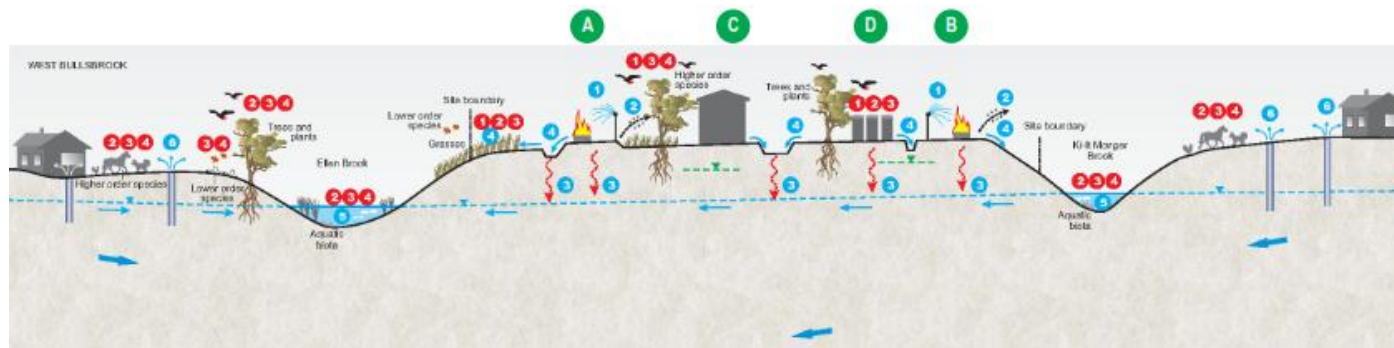


SOURCES	PATHWAYS		RECEPTORS	
	TRANSPORT PATHWAYS	EXPOSURE PATHWAYS	OFF-SITE RECEPTORS	ON-SITE RECEPTORS
Current fire training area A	1 Wind dispersion of AFFF	1 Direct consumption of impacted groundwater and local produce	Domestic bore users 1 2 3	Base personnel 3 5
Former fire training area B	2 Wind erosion of impacted surface soils	2 Direct contact/incidental ingestion of impacted groundwater	Commercial bore users 2 3	Maintenance workers/contractors 2 3 4 5
Hangar 93 and foam disposal pit C	3 Infiltration and leaching from soil and sediments to groundwater	3 Dermal contact/incidental ingestion of impacted soils	Recreational users of waterways 4	Visitors 5
Maintenance area D	4 Leaching from soil sediments to surface runoff	4 Dermal contact/incidental of impacted surface water/sediments		
	5 Migration in surface water bodies	5 Inhalation of dust from impacted soils		
	6 Extraction of groundwater for consumption/irrigation			

Preliminary Investigation Key Findings

Conceptual site model: Receptors – Ecological

ECOLOGICAL RECEPTORS AND EXPOSURE PATHWAYS



SOURCES	PATHWAYS		RECEPTORS	
	TRANSPORT PATHWAYS	EXPOSURE PATHWAYS	OFF-SITE RECEPTORS	ON-SITE RECEPTORS
Current fire training area A	1 Wind dispersion of AFFF	1 Direct contact and uptake of impacts in soil	Plants, trees, grasses 2 3	Plants, trees, grasses 1 2 3
Former fire training area B	2 Wind erosion of impacted surface soils	2 Direct contact and uptake of impacted groundwater	Lower order species e.g. insects 3 4	Lower order species e.g. insects 1 3 4
Hangar 93 and foam disposal pit C	3 Infiltration and leaching from soil and sediments to groundwater	3 Direct contact and uptake of impacted surface water and sediments	Higher order species, including domestic pets and livestock 2 3 4	Higher order species e.g. birds 1 3 4
Maintenance area D	4 Leaching from soil sediments to surface runoff	4 Consumption of flora and fauna already impacted from exposure to contaminated soils, sediment, groundwater and/or surface water	Surface water bodies 1 3 4	Groundwater aquifer 1 3 4
	5 Migration in surface water bodies			
	6 Extraction of groundwater for consumption/irrigation			

Government Guidelines

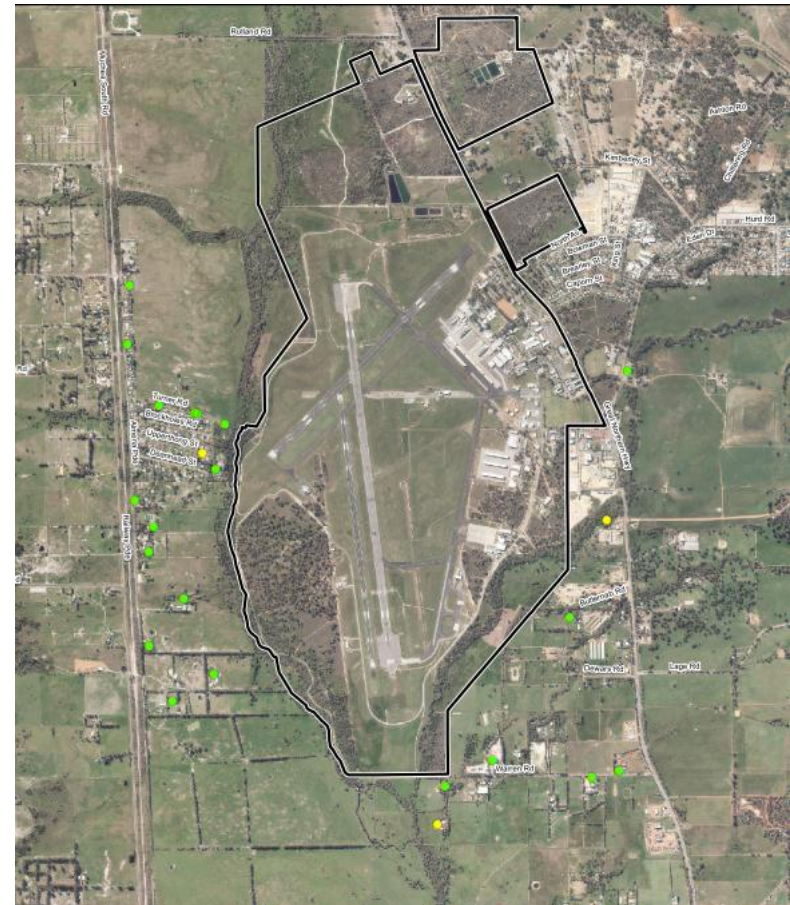
- To inform Defence investigations:
 - Defence Contamination Directive #8
 - Interim screening criteria established by enHealth in June 2016
 - The values were independently reviewed and found to be appropriate and protective of public health
 - The values will remain in place until Food Standards Australia New Zealand completes an assessment and provides its advice on final human health reference values to the Commonwealth Department of Health.

Preliminary sampling results

Groundwater (residential bores)

23 residential bores sampled

- 20 non detects (below the 'limit of reporting')
- 3 detects of PFAS, but all less than Australian guideline values. Concentrations range from:
 - PFOA: no detections
 - PFOS: < LOR - 0.07 µg/L
 - PFHxS: < LOR - 0.19 µg/L
 - PFHxA: < LOR - 0.02 µg/L
- enHealth drinking water values:
 - PFOS + PFHxS – 0.5 µg/L
 - PFOA – 5 µg/L

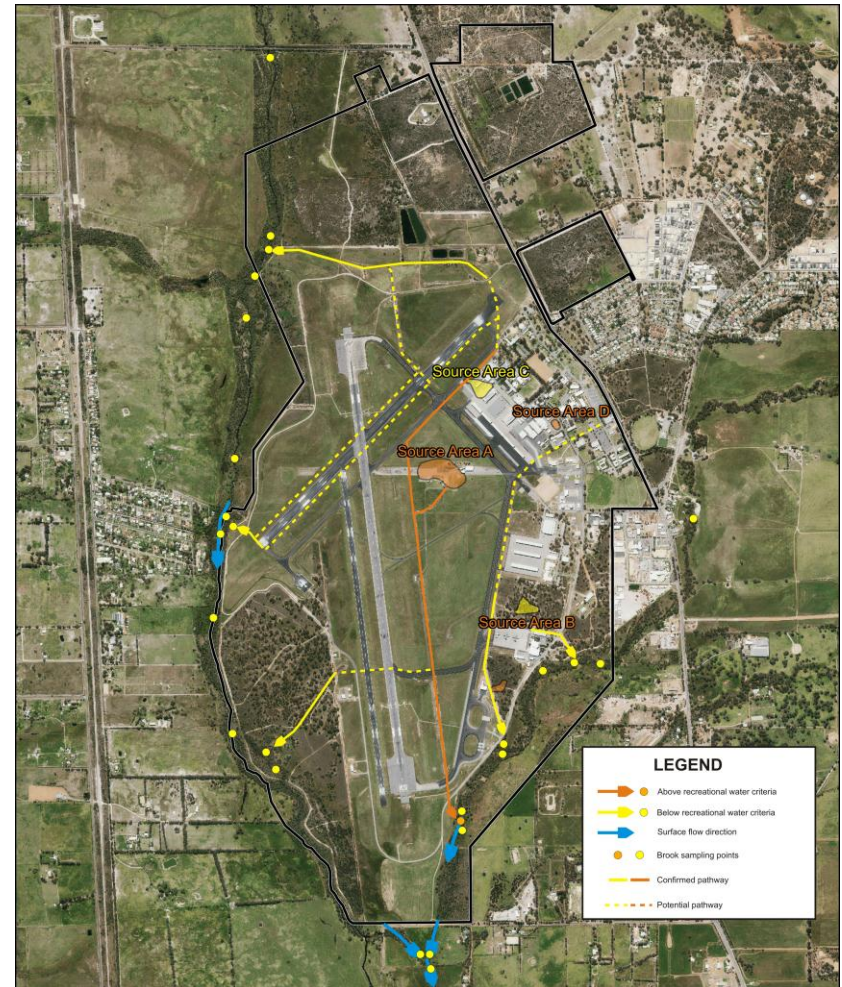


Legend

- No PFAS detected in groundwater (above the laboratory limit of reporting)
- PFAS detected in groundwater below the relevant assessment levels
- PFAS detected in groundwater above the relevant assessment levels
- ▭ Site Boundary

Detailed Site Investigation Update

- Soil concentrations generally below those reported at other Defence bases. One result that exceeded the DER interim guideline value for industrial sites.
- No sediments concentrations exceeded the DER interim guideline value for industrial sites.
- Off-site surface water samples generally less than the adopted recreational screening criterion.
- On-site surface water along main drainage line (north-south) above recreational screening criterion.
- Groundwater concentrations exceeded adopted recreational screening criterion and drinking water criterion in four groundwater samples.



Human Health and Ecological Risk Assessment (HHERA)

- A more detailed assessment to better understand the risk to people and the environment
- The HHERA is a detailed, scientific process and will involve further sampling (on and off-base)
- Selected flora and fauna will be tested including:
 - biota sampling (small fish) from Brooks
 - resident crops and chicken eggs
- Locations of sampling will be determined from information gathered from the DSI and the community on their use of groundwater in the vicinity.
- The results of the HHERA assist with planning for managing risks and remediation

Outline Schedule

Detailed Investigation Works

- Scoping and Planning: Complete in August 2016
- Field Works and Analysis: September 2016 – February 2017
- Reporting of Results: May 2017

Human Health and Ecological Risk Assessment

- Requirement confirmed: October 2016
- Scoping and Planning: November – December 2016
- Field Works and Analysis: December 2016 – March 2017
- Reporting of Results: July 2017

Ongoing
community
consultation



Need more information?



- **Defence wants to keep you informed**

- Phone: 1800 987 614
- Email: bullsbrook.defence@ghd.com
- Website: www.defence.gov.au/id/pearce
- Post: PO Box 3106 Perth WA 6832

- Additional information sessions will be held during the course of the project
- General information about the national Defence program can be found at: www.defence.gov.au/ID/PFOSPFOA/