

Williamtown RAAF Base contamination - FAQs

These FAQs have been developed by NSW Government agencies and are updated and revised frequently as new information is received. If you are looking for specific information in this document, please click one of the subject links below:

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INVESTIGATION FAQs

1. What are the chemicals involved?

PFAS (per- and poly-fluorinated alkyl substances) are a group of manufactured chemicals that have been used as fire retardants, water proofers and stain resistsants since the 1950s in a range of common household products and specialty applications. This includes non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; and some types of fire-fighting foam.

Perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS) are three of the main PFAS of concern that were historically used in fire-fighting foams. They were used at RAAF Williamtown in fire-fighting training and operations prior to a change in Defence policy in the early 2000s.

Until recently, this group of chemicals was known as “perfluorinated chemicals”, or “PFCs”. The name change helps to avoid confusion with another group of chemicals that is relevant to climate change, which are also known as “PFCs”.

2. What is the Investigation Area?

The [Investigation Area](#) was determined through consultation between the EPA, Expert Panel, Hunter Water, and DPI. The Investigation Area is based on surface water drainage patterns and groundwater flow directions in the region and preliminary surface water and ground water PFAS concentrations.

The below map (*updated 21 Oct 2015*) highlights the area under investigation for potential groundwater contamination and the affected adjacent fisheries.



3. Will the Investigation Area be changed?

Defence's recent reports have confirmed that the Investigation Area, established by the NSW Government in October 2015, is appropriate, and therefore will remain unchanged. As more information is collected over time, it might be possible to refine the precautionary advice and where it applies. Human health will continue to be best protected by following NSW Government precautionary advice.

4. How long will this contamination last for?

Some level of contamination is likely to remain in the environment for many years. Human health will continue to be best protected by following NSW Government precautionary advice.

HHRA FAQs

5. What are the findings of the Human Health Risk Assessment and the Environmental Site Assessment reports?

On 9 August 2016, the Department of Defence released a Human Health Risk Assessment (HHRA) report and Environmental Site Assessment (ESA) report.

The HHRA examines possible pathways for human health exposure to PFAS arising from contamination at the Williamstown RAAF Base. This includes possible exposure through water such as drinking and swimming, and through food consumption such as meat, eggs, fruit & vegetables. The report aims to provide the NSW Government and Expert Panel with the information needed to review and refine the precautionary advice and extent of the Investigation Area that was established in October 2015.

The ESA looks at where the contamination is and how the contamination is moving through the environment.

The Expert Panel and the NSW Government conducted a review of the two reports and confirmed that the precautionary advice and Investigation Area identified in October 2015 will remain in place, with further updates to the precautionary advice following the recent release of the FSANZ PFAS guidelines – see [FSANZ and updated precautionary advice FAQs](#) below.

Following the review of these reports, the EPA has written to Defence outlining data gaps and requesting additional testing be undertaken so conclusive advice about the long term exposure and health risks from PFAS can be provided to the community.

ENHEALTH GUIDELINES FAQs

6. Independent review of the enHealth Guidelines

On 9 September 2016 the Commonwealth Department of Health released the findings of the Federal Government commissioned independent review into national exposure interim guidelines for per- and poly-fluoroalkyl substances (PFAS).

The review found that adoption of European human health reference standards (toxicity levels) for PFAS in drinking and recreational water was “appropriate and is protective of public health”.

Following this review, the NSW Government confirmed that dietary, health and behavioural precautionary advice remains in place for residents in the Williamstown Investigation Area.

These interim guidelines have been replaced by the Food Safety Australia and New Zealand (FSANZ) guidelines for Tolerable Daily Intake (TDI) and Food Guidance for per-and poly-fluoroalkyl substances (PFAS) – see below.

FSANZ & UPDATED PRECAUTIONARY ADVICE FAQs

7. What are the FSANZ guidelines?

On 3 April 2017, the Commonwealth Department of Health released the Food Standards Australia and New Zealand (FSANZ) guidelines for Tolerable Daily Intake (TDI) and Food Guidance for per- and poly-fluoroalkyl substances (PFAS).

This process is part of the usual practice of establishing food standards in Australia, and determines the safe level (tolerable daily intake or TDI) at which people can consume food or water with PFOS or PFOA levels.

8. What is the difference between the previous interim enHealth guidelines and the updated FSANZ guidelines?

The FSANZ review has endorsed lower values than the interim enHealth guidelines that were recommended by the Commonwealth enHealth in 2016 - see table below.

Agency	PFOS	PFOA
enHealth 2016	150	1500
FSANZ 2017	20	160

Table 1. TDI values for PFOS and PFOA. All values are in nanogram/kg body weight/day.

The FSANZ changes build on the precautionary approach adopted by the NSW Government. The lower values increase the significant margin of human health protection that were already built into the enHealth guidelines.

9. Why are the FSANZ guidelines different from the interim enHealth guidelines?

The reasons for the changes in guideline values includes a different methodology in calculating the levels.

Animal studies are often used to consider what levels of a chemical may lead to adverse human health effects. Uncertainty factors are routinely applied to these values in recognition that these substances may act differently in animals as compared to humans.

The original interim value from enHealth used established default factors to models how these substances move through animals and humans. The FSANZ value used a different, more conservative technique to account for this uncertainty. The FSANZ values are lower, primarily because of the different estimation of this uncertainty.

It is important to note that these changes increase the significant margin of human health protection already built into the enHealth guidelines. They further support the precautionary approach taken by the NSW Government despite the lack of consistent evidence of any human health effects related to PFAS exposure.

Further information about the guidelines should be directed to the Commonwealth Department of Health.

10. What advice is being given to residents in the area?

The NSW Government is recommending that residents from the Williamtown community living inside the Investigation Area continue to follow precautionary advice to minimise their exposure to PFAS chemicals originating from the Williamtown RAAF Base.

Following release of the FSANZ guidelines, general advice to residents to minimise their exposure to PFAS, pending further information becoming available, includes:

- Do not use groundwater, bore water or surface water for drinking or cooking.

- Avoid swallowing groundwater or surface water when bathing, showering, swimming and paddling.
- It is safe to drink water from the reticulated supply (town water).
- Avoid eating home grown food produced using contaminated water, including home slaughtered meat, eggs, milk, poultry, fruit and vegetables.
- Moderate intake of, and seek further advice, regarding home produce that was grown within the area but was not produced with contaminated water.*
- People who personally source and eat fish and seafood from a body of water where the water is contaminated, such as fishers and local residents, should moderate the number of servings of individual species.**

* In the Williamstown area, it may be difficult to ensure produce is not exposed to PFAS migrating from the Williamstown RAAF Base. Cultivation techniques such as raised garden beds watered with reticulated water may be appropriate. Seek further advice from the NSW EPA.

** People who personally source and eat fish and seafood from the Hunter River Estuary, Fullerton Cove and Tilligerry Creek, such as fishers and local residents, should limit the number of servings of individual species (see table). Sourcing seafood from a variety of locations including the ocean and waterways outside these areas will assist in minimising exposure. Seafood for sale remains safe to eat.

Recommended maximum intake based on eating a single species caught from the Hunter River Estuary, Fullerton Cove and Tilligerry Creek

Number of serves	Children – 2 to 6 year old		All other age groups	
	Fish	Crustacea	Fish	Crustacea
<0.5 serves total per week		School Prawns* Blue Swimmer Crab		
0.5 serves total per week	Dusky Flathead Luderick Mulloway	Mud Crab		Blue Swimmer Crab
1 serves total per week	Sea Mullet Silver Biddy Sand Whiting		Dusky Flathead Luderick Mulloway	School Prawns Mud Crab
Up to 4 serves total per week	Yellowfin Bream		Sea Mullet Silver Biddy	
Up to 8 serves total per week			Sand Whiting Yellowfin Bream	

* If recreational fishers capture School Prawn from the Hunter River, it is recommended that they follow the advice above.

NB:

- This table lists the number of serves of a single species that can be eaten each week to result in an exposure to half of the health based guideline value.
- Serving size = 150 grams
- Species specific information is for when a single species of fish is eaten per week. Eating multiple species would result in a greater exposure.

11. How has the precautionary advice changed?

The key changes in the precautionary advice include:

- Previous advice to “*moderate consumption of fruit and vegetables, meat and poultry produced in the advisory area while further work and analysis is undertaken*” has been superseded by the following:
 - “*Avoid eating home grown food produced using contaminated water, including home slaughtered meat, eggs, milk, poultry, fruit and vegetables.*”
 - “*Moderate intake of, and seek further advice, regarding home produce that was grown within the area but was not produced with contaminated water.*”
- Changes to the species specific dietary table for fish consumption including a reduction in the number of serves for children and adults for some species of fish.
- Commercial fisheries will remain open. In addition, the previous advice below has been removed.
 - “*A restriction will be placed on dusky flathead in the Hunter River for Commercial fishers only, while recreational fishers are advised to release any dusky flathead caught.*”

12. Why has this advice changed?

The tolerable daily intake has been altered by FSANZ and has therefore been lowered for the calculations regarding home grown produce and seafood.

In addition, the fishing restrictions on Dusky Flathead has been lifted. Additional data has been obtained on concentrations in Dusky Flathead, and when considered in the context of the different sources of fish contributing to the supply chain, exposure to PFAS from Dusky Flathead is similar to other species and it is considered special advice is not required.

13. Will the guidelines change again as more research is done on these chemicals?

Guidelines can only ever reflect the most current validated scientific knowledge. The guidelines may need to be updated or refined over time as new information and data become available.

Regardless of the guideline values, human health in Williamstown is best protected by avoiding or reducing exposure through the precautionary approach recommended by the NSW Government.

14. Is breast milk safe? Can I breastfeed my baby?

There are significant health benefits from breast feeding and these benefits far outweigh any potential health risks to an infant from any PFOS or PFOA transferred through breast milk. Hence, it is not recommend that mothers living in or around the investigation area cease breast feeding .

15. Is it safe to inhale dust, even if I work/live in a dusty environment?

The inhalation of dust as a result of indoor and outdoor activities (from soil irrigated by PFAS impacted groundwater or flooded by PFAS impacted surface water) is considered negligible as an exposure pathway that could impact human health in the Williamstown Investigation Area.

More information on PFAS and dust is available at www.epa.nsw.gov.au/resources/epa/Foam-chemical-contamination-in-waterway.pdf

HEALTH FAQs

16. What are the potential health impacts from PFAS?

There is no consistent evidence of any human health effects related to PFAS exposure however impacts have been found in laboratory animals. Additionally, because human health effects cannot be excluded, and these chemicals take a long time to break down in humans and the environment, the NSW Government is being very cautious.

Much of the research on humans has been done with people who were exposed to relatively high levels of PFAS through their work. Workers involved in the manufacture or use of PFAS usually have higher blood PFAS levels than the general public. Studies on PFAS workers have looked for effects on cholesterol levels, male hormones, heart disease, liver changes and other effects, including cancer. These studies have not consistently shown that PFAS exposure is linked to health problems.

The existing limited studies on PFHxS suggest that this chemical can cause effects in laboratory test animals similar to the effects caused by PFOS. However, based on available studies, PFHxS appears to be less potent in animal studies than PFOS.

17. Is there a test to determine any health effects?

There is no test to determine if you are likely to have any health effects from exposure to PFAS. There are no medical conditions that have been proven to be causally associated with PFAS exposure in humans.

18. When can I get my blood tested?

The Federal Government is funding a voluntary blood testing program. Questions about the program should be directed to the Department of Defence. Further information about the program is also available at

[www.health.gov.au/internet/main/publishing.nsf/Content/1BD420CE5651940ACA2580790004DF7D/\\$File/FAQ-Blood-testing-advice-consumers.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/1BD420CE5651940ACA2580790004DF7D/$File/FAQ-Blood-testing-advice-consumers.pdf)

19. What is a TDI?

A TDI or Tolerable Daily Intake is the amount of a substance which a person, based on the best available evidence, can be exposed to per day over a lifetime, without appreciable health risk.

For PFAS such as PFOS and PFOA, exceeding the TDI does not necessarily mean health effects will occur, because in calculating the TDI value, a number of large safety factors have already been put in to add extra protection to people.

Given that PFAS are persistent for a long time in the environment and the human body, it is important to reduce exposure wherever practicable, even if the TDI is not exceeded. The NSW Government's precautionary guidelines aim to minimise the community's exposure to these substances.

20. What should I do if I think I have exceeded the TDI?

Exceeding the TDI for PFAS does not mean that you are going to develop a health problem, as it is not predictive of disease for an individual person. It does indicate that you are probably

consuming an undesirable concentration of PFOS or PFOA. Consuming these chemicals at these concentrations over a very long period is not advised.

It is important to note that there is no consistent evidence that exposure to PFAS causes adverse human health effects even at concentrations higher than those likely to occur within Australian communities.

The NSW Government precautionary guidelines aim to minimise the community's exposure to these substances.

21. Should I seek medical advice if I believe I am over the TDI?

Your general practitioner is best placed to assess your individual medical needs, and health checks and management should be undertaken in line with normal medical practice.

It is important to note that there is no consistent evidence that exposure to PFAS causes adverse human health effects even at concentrations higher than those likely to occur within Australian communities.

There is no test that can tell you if your exposure to PFAS will lead to any health outcomes. Blood tests to determine the level of PFAS in your blood have no current value in informing clinical management, including diagnosis, treatment or prognosis. There is also no accepted clinical treatment to reduce levels of PFAS in your body.

Human health will continue to be best protected by following NSW Government precautionary advice.

22. Where can I get mental health support?

The NSW Government has established a dedicated support line for anyone with concerns about the contamination. Residents can access free support through the Fern Bay Medical Centre, 111 Nelson Bay Rd, Fern Bay. Appointments can be made by calling 0417 494 576 (Monday to Friday from 8am to 4pm). A GP referral is not necessary.

After hours, the Hunter New England Mental Health contact centre is available 24/7 on 1800 011 511. For more information visit www.hnehealth.nsw.gov.au/News/Pages/MR16-04.aspx.

WATER FAQS

23. Can I safely drink water or prepare food with water from my bore?

No. As a precautionary measure, the NSW Government is advising that people within the Investigation Area should not drink or prepare food from private water bores, or water from dams, ponds, creeks or drains. Town water is safe to use.

NSW Health recommends that residents should not use their bores as a source of drinking water, as there may also be other hazards in bores, other than PFAS.

24. Is it safe to shower with groundwater from my bore?

Skin contact is fine, however the HHRA reinforces that the drinking or consumption of groundwater is a major exposure pathway for contamination and highlights that incidental swallowing, particularly by children, should be avoided when showering and bathing in groundwater.

People should use town water to shower where available.

25. Is it safe for me or my children to swim in creeks and dams?

Skin contact is fine, however the HHRA reinforces that the drinking or consumption of ground and surface water is a major exposure pathway for contamination and highlights that incidental swallowing, particularly by children, should be avoided when swimming in groundwater. There may also be other hazards in creeks and dams, other than PFAS.

26. Is it safe to swim in pools filled with groundwater or play under sprinklers from groundwater?

People should not use groundwater to fill swimming pools in the Investigation Area as incidental ingestion (swallowing) may inadvertently occur. This is particularly important for children. People should use reticulated or tank water to fill pools, where available.

27. What if I don't have access to the town water supply?

The NSW Government is funding a program to connect properties inside the Investigation Area to reticulated water. Hunter Water is currently in the process of connecting 165 properties in the Investigation Area.

The Department of Defence is providing bottled water for residents without a town water connection. If you don't have a town water supply connection and you rely solely on bore water, please contact the Department of Defence on **1800 011 443**.

28. What if I am not sure if my water is bore or town supply?

If you are unsure about whether or not you are connected to the town water supply, please contact Hunter Water on **1300 657 657**.

29. Is the Government conducting further testing of bores and drains?

Yes – the Department of Defence will be conducting ongoing testing of ground water bores and surface waters in the area.

30. What will the Government do with the information it collects on bore water use?

Information is being collected by the Department of Defence for the purpose of investigating potential groundwater contamination and understanding groundwater use patterns in the Investigation Area. This information is not being collected for regulatory or billing purposes, and will not be provided to other agencies beyond the extent required to enable the provision of expert advice to assist with the management and response to relevant groundwater contamination concerns.

31. Will I be charged a licence or administration fee for my groundwater bore if I ask for testing?

Land holders are advised to have correct approvals in place for all bores, and where applicable, licences for the extraction of water, should it be used for purposes other than domestic and stock. Registering your bore assists the management of groundwater, and enables relevant information

to be provided to owners in a timely manner. The cost of a basic landholder rights bore application is currently \$241.83.

PRODUCE & LIVESTOCK FAQs

32. Can I eat my home grown fruit and vegetables?

The Expert Panel has advised that because home grown produce can be readily available and consumed in significant quantities, residents in the Williamstown area should avoid their consumption of home grown fruit and vegetables, while further work and analysis is undertaken by Defence.

In addition, the Expert Panel has advised that it may be difficult to ensure home grown food is not exposed to PFAS contaminated water even where reticulated water is used for watering. This is due to frequent flooding and interconnection between surface waters and ground water migrating from the Williamstown RAAF Base.

Cultivation techniques such as raised garden beds watered with reticulated water may be appropriate, however residents should seek further advice from the EPA.

33. Can I sell my fruit and vegetables from the Investigation Area?

Yes. There are no restrictions on selling produce grown in the Investigation Area.

34. Is it safe to eat eggs from local chickens?

Avoid eating eggs produced in the Investigation Area.

35. Is it safe to drink home produced milk from cows and goats?

Avoid drinking milk from cows or goats produced in the Investigation Area.

36. How do I dispose of eggs or milk that are sourced from within the Investigation Area?

It is recommended that eggs and milk are disposed of through your usual general waste bins. These bins have a red lid in the Port Stephens Council area.

37. Is it safe to eat meat from poultry and livestock from the Investigation Area?

Modelling suggests there may be increased exposure associated with meat and poultry for residents using contaminated water who have easy access to their home grown produce and consume significant quantities over long periods of time.

The Expert Panel has advised that residents in the Williamstown area should avoid or moderate their consumption of home-produced meat and poultry, based on contaminated water use, while further work and analysis is undertaken by Defence.

38. Can I sell my agricultural livestock?

Yes. There are no movement restrictions or quarantines imposed on livestock from the Investigation Area.

39. Will my animals be harmed by drinking water from my bore, creek or dam in the Investigation Area?

There are no proven adverse animal welfare effects from drinking this water. However, as a precaution, if you have an alternative water supply, then this should be used.

There are many causes of ill health in animals. If your animal is unwell, you should ask your veterinarian to investigate.

FISHERIES FAQS

40. Reopening of fisheries at Tilligerry Creek and Fullerton Cove

Fishing closures in Tilligerry Creek and Fullerton Cove were lifted on Saturday 1 October 2016. It is now safe to eat locally caught fish, prawns and oysters and the public can be confident that seafood for sale caught in the local area is safe to eat. People who personally source and eat fish and seafood from the Hunter River Estuary, Fullerton Cove and Tilligerry Creek, such as fishers and local residents, should limit the number of servings of individual species.

Sourcing seafood from a variety of locations including the ocean and waterways outside these areas will assist in minimising exposure. Seafood for sale remains safe to eat.

Since the release of the FSANZ report, the fishing restrictions on Dusky Flathead have been lifted. Additional data has been obtained on concentrations in Dusky Flathead, and when considered in the context of the different sources of fish contributing to the supply chain,, exposure to PFAS from Dusky Flathead is similar to other species and it is considered special advice is not required.

41. Can I fish in the Fullerton Cove and upper Tilligerry Creek areas?

Yes. DPI Fisheries lifted the fishing closures in these areas on 1 October 2016. These areas were previously closed to commercial and recreational fishing as a precautionary measure to limit the risk of PFAS exposure but are reopening after results from sampling of prawns, fish and oysters concluded that while there was some presence of PFAS in some seafood, it was at levels that provide minimal risk to the majority of consumers.

42. Can I eat fish, prawns or oysters from the Investigation Area?

Yes. It is safe to eat fish, prawns and oysters caught in the local area and the public can be confident that seafood for sale that has been caught in the local area is safe to eat.

People who personally source and eat large amounts of fish and seafood from the Hunter River Estuary, Fullerton Cove and Tilligerry Creek, such as fishers and local residents, should limit the number of servings of individual species. This information is available in the table below.

Sourcing seafood from a variety of locations including the ocean and waterways outside these areas will assist in minimising exposure. Seafood for sale remains safe to eat.

Recommended maximum intake based on eating a single species caught from the Hunter River Estuary, Fullerton Cove and Tilligerry Creek	Children – 2 to 6 year old		All other age groups	
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<0.5 serves total per week		School Prawns* Blue Swimmer Crab		
0.5 serves total per week	Dusky Flathead Luderick Mulloway	Mud Crab		Blue Swimmer Crab
1 serves total per week	Sea Mullet Silver Biddy Sand Whiting		Dusky Flathead Luderick Mulloway	School Prawns Mud Crab
Up to 4 serves total per week	Yellowfin Bream		Sea Mullet Silver Biddy	
Up to 8 serves total per week			Sand Whiting Yellowfin Bream	

* If recreational fishers capture School Prawn from the Hunter River, it is recommended that they follow the advice above.

NB:

- This table lists the number of serves of a single species that can be eaten each week to result in an exposure to half of the health based guideline value.
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INVESTIGATION PROGRESS FAQs

43. What is the NSW Government doing about the contamination issue at Williamtown?

Ensuring a multi-agency response

The NSW Environment Protection Authority (EPA) is leading the NSW Government's response to the contamination issue at Williamtown. Other NSW agencies involved in the work include NSW Health, the Department of Premier and Cabinet, NSW Department of Primary Industries (DPI), NSW Food Authority and Hunter Water.

Establishment of the Expert Panel

The NSW Government has established an Expert Panel Chaired by the NSW Chief Scientist & Engineer, Mary O'Kane, to provide expert advice to the EPA. The Expert Panel's members include NSW Health, NSW Department of Primary Industries, NSW Food Authority, Hunter Water and independent experts in hydrology and toxicology.

Commitment to working with the community

Parliamentary Secretary for the Hunter Scot McDonald is overseeing the Community Reference Group (CRG) which is acting on behalf of the Williamtown community and formally engaging with and providing input to the Expert Panel. In addition to community members, representatives from the Department of Defence and NSW Government agencies attend CRG meetings.

44. Why can't the EPA make Defence clean up the PFAS contamination?

The Williamstown RAAF Base contamination differs from most other contaminated sites in NSW in that the EPA, as a State authority, has no regulatory powers over the Commonwealth Department of Defence. This limits the EPA's ability to direct Defence's actions and response times. However the EPA continues to seek a commitment from Defence to pursue and implement solutions to minimise discharges of PFAS contaminants migrating from the RAAF Base, so that the PFAS chemicals are prevented from flowing through Williamstown's waterways.

The NSW Government has written to Defence outlining expectations that further working to containment and remediation options proceed as a priority.

45. When will more fish, eggs, fruit and vegetable testing be done?

The NSW Government understands that the Department of Defence is undertaking a data gap investigation including more sampling in the region to help better inform the HHRA.

46. What remediation work will be done to stop contamination leaving the base?

The NSW Government understands that Defence has commenced building a water filtration plant to reduce the amount of contaminated water leaving the RAAF Base. Further remediation technology is also being trialled by Defence.

The NSW Government has written to Defence outlining expectations that further work into containment and remediation options proceed as a priority.

NSW GOVERNMENT CONTACT DETAILS

For more information, please contact:

- NSW Environment Line on **131 555**
- NSW Food Authority Helpline on **1300 552 406**
- HNE Support on **1800 011 511**
- HNE Public Health Unit on **1300 066 055**
- DPI Fisheries on **4982 1232**
- Hunter Water on **1300 657 657**

FEDERAL GOVERNMENT CONTACT DETAILS

For more information, please contact:

- Department of Defence on **1800 011 443**
- Department of Health on **1800 020 103**