

Janet Cumming

From: David Larkings
Sent: Friday, 15 June 2018 2:47 PM
To: Sophie Dwyer; Janet Cumming; Tenille Fort
Subject: FW: PFAS Amberley
Attachments: 20180615 PFAS Amberley.pdf

Our Department has issued a media release on the fish at Amberley. A copy is attached.

From: Bruce Morton
Sent: Friday, 15 June 2018 2:38 PM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: FW: PFAS Amberley

Bruce Morton

Director Public and Environmental Health | Community and Rural | Public Health Unit
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 Goonda Community Health Service | 81 Queens Road GOODNA QLD 4300

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From: Mark Strong
Sent: Friday, 15 June 2018 2:19 PM
To: Bruce Morton <Bruce.Morton@health.qld.gov.au>; Kerrie Freeman <Kerrie.Freeman@health.qld.gov.au>;
 Melinda Parcell <Melinda.Parcell@health.qld.gov.au>
Cc: Marnie Ludgate <Marnie.Ludgate@health.qld.gov.au>
Subject: RE: PFAS Amberley

Thanks Bruce - the decision to release from QH corporate came about this morning following departmental discussion at senior levels between QH and Premier's. I'd imagine that CHO remains doing the roles you have outlined. It may be worth checking back in with them about those follow-up activities.

The attached has just come out as a media statement (2:17pm).

Mark Strong

Senior Director | Communications and Engagement | Strategy, Planning and Engagement

West Moreton Health

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From: Bruce Morton**Sent:** Friday, 15 June 2018 2:13 PM**To:** Mark Strong <Mark.Strong2@health.qld.gov.au>; Kerrie Freeman <Kerrie.Freeman@health.qld.gov.au>; Melinda Parcell <Melinda.Parcell@health.qld.gov.au>**Cc:** Marnie Ludgate <Marnie.Ludgate@health.qld.gov.au>**Subject:** RE: PFAS Amberley

Thanks Mark. The last advice I received (yesterday) from CHO Division officers was that QH has provided advice to Department of Defence (DoD), attached, and the DoD is expected to undertake the public release and media. A holding statement was being prepared by QH Corporate Comms while waiting for DoD. CHO Division was updating the FAQs and other information (for GPs) about this matter. The Public Health Unit is to be the source to distribute the information to local networks.

It appears that DoD have not acted as expected by the Qld Government and they have undertaken this release.

Also the PHU has provided advice to the DoD via the CHO Division about the Purga Elders & Descendants Aboriginal Corporation, 587 Ipswich Boonah Rd, Purga as a key group the DoD should be advising and consulting with as a possible user of the Creek and Bremer River.

Bruce Morton

Director Public and Environmental Health | Community and Rural | Public Health Unit

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From: Mark Strong
Sent: Friday, 15 June 2018 1:37 PM
To: Kerrie Freeman <Kerrie.Freeman@health.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>;
Melinda Parcell <Melinda.Parcell@health.qld.gov.au>
Cc: Marnie Ludgate <Marnie.Ludgate@health.qld.gov.au>
Subject: FW: PFAS Amberley

For information, the attached will be issued from Queensland Health to media at 2:15

Mark Strong

Senior Director | Communications and Engagement | Strategy, Planning and Engagement

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From: Laura Verney
Sent: Friday, 15 June 2018 1:24 PM
To: Mark Strong <Mark.Strong2@health.qld.gov.au>
Cc: news <news@health.qld.gov.au>
Subject: PFAS Amberley

Hi Mark,

I'll give you a call about this now.

Thanks,
Laura



Laura Verney
Team Leader, Reactive Media
Integrated Communication Branch, **Department of Health**
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RTI RELEASE

Media statement



15 June 2018

Warning regarding consumption of fish caught near Amberley

Please attribute this statement to a Queensland Health spokesperson:

Fish caught in Warrill Creek and the Bremer River near Amberley should not be eaten following Department of Defence PFAS testing.

The Department of Defence provided results to Queensland Health of preliminary testing it had done of perch, mullet and eel caught in the area that showed high levels of the chemical and consequently, possible elevated health risks for people who eat the fish over a long period of time.

Queensland Health has provided Department of Defence with recommendations so that it could notify the public and undertake further testing.

As an interim precaution, until Department of Defence can carry out further testing, people should not eat fish caught within this locality.

As the polluter, Department of Defence has primary responsibility of notifying the public about the issue.

Queensland Health has provided Department of Defence a range of health related information, but people who have eaten fish infrequently from the area should not expect to have elevated levels of PFAS.

All further enquiries, including about the locations, nature and possible cause of the contamination, should be directed to Department of Defence.

General information on PFAS is available here:

<https://www.qld.gov.au/environment/pollution/management/investigation-pfas>

ENDS

David Larkings

From: David Larkings
Sent: Friday, 15 June 2018 4:25 PM
To: Victoria Chalmers
Cc: Sophie Dwyer; Tenille Fort
Subject: Urgent: PFAS in fish at RAAF Base Amberley
Attachments: 20180615 PFAS Amberley.pdf; QH Q&As Amberley PFAS in fish v15-6-18.docx

Hi Victoria

Elevated concentrations of PFAS has been detected in preliminary samples of fish from Warrill Creek and the Bremer River near RAAF Base Amberley.

Queensland Health has issued a media release advising the public to not consume fish caught in the area while the matter is being investigated. A copy is attached.

As requested, please find attached a copy of the draft Question and Answer document that has been prepared. We will send a copy of the cleared draft when available.

Regards
David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

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Department of Health

Media statement

**Queensland
Government**

15 June 2018

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ENDS

Queensland Health Question and Answer – RAAF Base Amberley preliminary fish results

15 June 2018

Distribution: Queensland Government only

Question	Answer
When did Queensland Health become aware of the issue?	As a part of the Human Health Risk Assessment being conducted by the Department of Defence, sampling of a small number of edible fish (eel, catfish and mullet) were caught between 9 and 17 April 2018 from the Bremer River and Warrill Creek. The samples were tested for PFAS and the results provided to Queensland Health for advice on risks to human health.
Is it safe to eat seafood caught near RAAF Base Amberley?	Queensland Health recommends fish caught in Warrill Creek and the Bremer River near Amberley should not be eaten following Department of Defence PFAS testing. The recommendation to not consume the fish is precautionary while further investigations are conducted. The samples were taken as part of the ongoing Human Health and Ecological Risk Assessment at RAAF Base Amberley, seafood in the Bremer River and Warrill Creek.
I have eaten fish from the Bremer River or Warrill Creek in the past. Am I at risk?	If you have occasionally consumed fish from the Bremer River or Warrill Creek in the past, you should not be concerned for your health. National guidelines for exposure to PFAS are based on how much PFAS a person can safely take in via food, water and other sources over their lifetime. Consuming more than the recommended daily or weekly maximum amounts occasionally or for short periods should not result in adverse health effects. Given the levels of PFAS currently known to be present, you would need to have consumed a serve (150 for adults or 75 g for children) of fish from the Bremer River or Warrill Creek at least weekly for many years to be concerned for your health.
What areas of the Bremer River or Warrill Creek are affected?	The area under investigation is shown on the map in Attachment 1.
I am still concerned about my health. Where can I go for more advice.	If you are concerned about your health or that of family members, you should consult your GP or call 13 HEALTH (13 43 25 84)—from within Queensland.
What species of fish were tested?	Fillets from 11 fish harvested from the Bremer River and Warrill Creek between 9 and 17 April 2018 were tested for PFAS. The fish were caught in 7 different locations across the investigation area (See map in Attachment 1). The fish included mullet, catfish, eel and a perch.

	<p>The fish sample test results were provided to Queensland Health to assess. Only the concentrations of PFAS in fillets of mullet, catfish and eel were included in the health assessment.</p> <p>Other samples of whole fish and fish liver were excluded because they are not normally consumed. A single sample of perch was also excluded because it may have not been representative of other fish.</p>
<p>What were the fish test results?</p>	<p>An assessment by Queensland Health of the fish sample test results identified elevated concentrations of perfluorooctane sulfonate (PFOS) and perfluorohexane sulfonate (PFHxS). The assessment was limited to these two types of PFAS within edible portions of the fish.</p> <p>Based on the concentration of PFAS in the fish sampled, a single serve of serve (150 g for adults, 75 g for children) of fish each week caught in the investigation area would place a person above their tolerable weekly intake of PFAS, which is based on the estimated amount that can safely be consumed over a lifetime.</p> <p>Queensland Health recommends the public to not consume all species of fish caught in the Bremer River or Warrill Creek near RAAF Base Amberley. The recommendation to not consume the fish is precautionary while further investigations are conducted.</p> <p>In addition the concentration of PFOS summed with PHFxS exceeded the trigger points for investigation recommended by Food Standards Australia New Zealand.</p>
<p>When will I be able to eat fish from the Bremer River and Warrill Creek again?</p>	<p>It is too early in the investigation to say.</p> <p>The advice not to consume fish from the Bremer River and Warrill Creek is based on preliminary testing results, and further investigations are needed.</p> <p>The Department of Defence have advised further investigations will be carried out, including tests of other species of more popular edible fish.</p> <p>The Department of Defence aims to complete the Human Health and Ecological Risk Assessment by the end of September 2018.</p> <p>Fishing can continue on a catch and release basis.</p>
<p>How will recreational fishers and the wider community be informed?</p>	<p>The Queensland Government PFAS website now has information on the fish from the Bremer River and Warrill Creek. It is at: https://www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley.</p> <p>The Department of Defence will be erecting signage around the investigation area to alert fishers not to consume the fish.</p>

	The Defence webpage RAAF Base Amberley PFAS Investigation webpage: http://www.defence.gov.au/environment/pfas/Amberley/
What if someone doesn't read this advice or see the signs, and eats contaminated fish?	Infrequent consumption of fish from the Bremer River and Warrill Creek would not make a significant contribution to a person's overall exposure to PFAS. The advice not to consume the fish is precautionary.
What about possible levels of PFAS in fish that migrate upstream and downstream?	The preliminary fish samples were taken from Warrill Creek and the Bremer River near RAAF Base Amberley because they are likely to have higher concentrations of PFAS. It is too early to say if fish outside the investigation area are also contaminated and to what extent. The Department of Defence will further consider the need to expand the investigation area when they obtain further fish samples as part of their human health risk assessment.
Is commercial fishing impacted?	There is no known commercial fishing along the Bremer River or Warrill Creek in the investigation area.
What is PFAS?	Per- and poly- fluoroalkyl substances, also known as 'PFAS', are a large group of manufactured chemicals. PFAS are also known as perfluorinated chemicals (PFCs). This group of chemicals includes perfluorooctanesulfonic acid (PFOS) and the related chemicals perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS). PFAS have been used since the 1950s in a range of common household products and in some specialty applications. These include in the manufacture of non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; some industrial processes; and in some types of fire-fighting foam
Why are these chemical being phased out?	The manufacture and use of some PFAS are being discontinued or limited through international agreements and voluntary actions by manufacturers primarily because of their persistence in the environment, rather than because of any established health effects. PFAS break down very slowly in the environment under naturally occurring conditions. Because of this, they tend to accumulate in the food chain and in human tissue. The international scientific community has identified this characteristic as undesirable because of the potential for unforeseen effects resulting from accumulating levels, and the difficulty in removing these chemicals from the environment once they are released.
How are people exposed to PFAS?	PFAS are found at very low levels in the blood of the general population all over the world. The general public are exposed to small amounts of PFAS in everyday life through exposure to dust, indoor and outdoor air, food, water and contact with consumer products that contain these chemicals.

	<p>For most people, food is thought to be the major source of exposure.</p> <p>Treated carpets and floors treated with waxes and sealants that contain PFAS can be an important source of exposure for babies and infants.</p> <p>PFAS may be readily absorbed through the gut and are not metabolised or broken down in the body. These chemicals are only very slowly eliminated from the body. Studies have shown that Australians have small amounts of PFAS in their blood. PFAS can also be found in urine and breast milk.</p> <p>People who work in industries that use PFAS, or use products containing these chemicals, may be exposed to higher levels than the general public.</p> <p>Where larger quantities of PFAS have been released into the environment, communities located near those sites may be exposed to higher levels than the general public.</p> <p>It is important to understand how people living near contaminated areas may come into contact with PFAS so that exposure may be minimised.</p> <p>Examining in detail the pathways through which people could be exposed to these chemicals may be one method used to determine potential exposure in these communities.</p>
<p>What are the health risks associated with PFAS?</p>	<p>In May 2018, an independent expert panel – commissioned by the Commonwealth Government – released a report finding there was little or no evidence that exposure to PFAS causes adverse human health effects.</p> <p>However, laboratory tests show that the chemicals can accumulate or build-up in people, animals and the environment over time, so the best course of action is to minimise exposure.</p> <p>Health authorities have taken a precautionary approach in providing health advice and setting guidelines for how much PFAS a person can be safely exposed to over their lifetime. These health criteria were developed in April 2017 by the Commonwealth Department of Health in collaboration with Food Standards Australia New Zealand (FSANZ).</p> <p>More information on PFAS is available at https://www.qld.gov.au/environment/pollution/management/investigation-pfas/about.</p> <p>Queensland Health has prepared a fact sheet (PDF, 95KB) with information about PFAS and health risks.</p>
<p>Further information on health risks</p>	<p>The results of studies looking at possible medical or health effects of PFAS are inconclusive.</p> <p>Some studies observed a possible positive association between health effects and PFAS exposure and other studies showed no effect or a negative association.</p>

	<p>The mixed nature of the findings in human studies means no firm conclusions can be made for the health effects of PFAS.</p> <p>Nevertheless, because the elimination of PFAS from the human body is slow, there is a risk that continued exposure to PFAS could result in adverse health effects due to accumulation of the chemicals in the body over time.</p> <p>The general precautionary advice is that people living in or near an area that has been identified as having been contaminated with PFAS should take steps to limit their exposure to these chemicals.</p> <p>The potential effects of exposure to PFAS to human health continue to be studied. These studies involve laboratory animal studies, as well as occupationally exposed workers (i.e. manufacturing workers), residents in communities with higher exposure and studies of the general population in the USA and other countries.</p> <p>Adverse health effects have been demonstrated in animal studies, but at much higher exposure levels than are found in people. However, the results of these animal studies and how they apply to humans is not always clear.</p> <p>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.</p>
<p>Should I get a blood test?</p>	<p>You can ask your GP for a blood test, but it is important to know the limitations of blood testing. Health authorities do not recommend blood testing, because it won't help your GP give you specific advice in relation to PFAS, and only has value in terms of comparing your PFAS exposure to an average Australian.</p> <p>Additional information</p> <p>All Australians are expected to have detectable levels of PFAS in their blood. A broad range of levels would be expected in all communities due to background exposures. Blood levels are not predictive of health problems in individuals. There is no consistent evidence of PFAS resulting in health impacts, therefore levels considered higher than the Australian general population may have no clinical relevance to the individual. For this reason, a "minimal risk" level also does not exist in Australia.</p> <p>A PFAS blood test will only tell you the current level of PFAS in an individual's blood. PFAS blood test cannot tell you when exposure occurred, nor is it possible to determine the source of PFAS found in an individual's blood.</p> <p>The blood level will usually reflect cumulative exposure over an extended period. It takes a very long time for levels of these chemicals to reduce in humans, with the levels of some people taking two to nine years to reduce by half if there is no ongoing exposure. This means that levels in the blood now may reflect exposure from years</p>

	<p>ago, not necessarily recent exposure. For these reasons, it is considered that there is no value in frequent blood monitoring.</p> <p>It is important to note that PFAS blood test does not measure the blood level precisely. Tests taken from the same person at the same time show variability as a result of the test methodology. Also, the same level in two different individuals may not mean the same level of exposure, as the absorption, distribution, metabolism, and elimination chemicals may differ from person to person.</p>
<p>Is PFAS exposure linked to cancer?</p>	<p>There is no conclusive evidence that exposure to PFAS causes cancer in humans.</p> <p>Some studies have shown a possible link between prostate, kidney, and testicular cancers in workers involved in the manufacture of PFAS. In these studies other potential cancer-causing factors such as smoking were not considered. There are also some studies that have not shown a link between cancers and PFAS exposure.</p> <p>Studies in rats have shown an increase in some types of thyroid cancer. The results are inconsistent, as rates of cancer only increased with one level of exposure. Higher and lower levels of exposure did not increase cancer in the rats.</p>
<p>Does PFAS exposure affect cholesterol levels?</p>	<p>Studies on possible links between PFAS exposure and increased blood cholesterol levels are inconclusive.</p> <p>A number of studies show a possible link between PFAS exposure and increased blood cholesterol. Because of the design of the studies, it can't be determined if PFAS causes the increased blood cholesterol changes or if other factors are involved, such as diet.</p>
<p>Does PFAS exposure affect the immune system?</p>	<p>Studies on the possible effects of PFAS exposure on the immune system are inconclusive.</p> <p>Some studies in animals show that immune problems may be associated with PFAS exposure. Other studies show that there isn't an effect.</p> <p>Some organisations are saying that PFAS is presumed to be an immune hazard to humans based on these animal studies. In studies that do show an effect on the immune system in certain people, there is no evidence that these people get more infections.</p> <p>One study has shown that there is a possible link between PFAS and ulcerative colitis, but no other autoimmune disease. The evidence so far does not show any link between PFAS and autoimmune problems.</p>
<p>Are there people more susceptible to issues caused by these PFAS chemicals – e.g. babies, elderly?</p>	<p><u>Pregnancy</u> – There is currently no consistent evidence that exposure to PFAS causes poor outcomes in pregnant women or their babies.</p> <p>Current evidence does not support PFAS being a major cause of pregnancy-induced hypertension, pre-eclampsia or other pregnancy complications. There are some studies that show a lower birth weight in babies born to mothers with higher levels of PFAS in their blood. However, the reported decreases are mostly small and within the normal range for birth weight. Because of the design of these studies, it is not possible to know if PFAS causes</p>

	<p>this change or if other factors are involved. There are also some studies that have not shown a link between a lower birth weight and PFAS exposure during pregnancy.</p> <p><u>Breastfeeding</u> – While some PFAS have been detected in breast milk, the proven health benefits associated with breastfeeding far outweigh any potential health risk to an infant from the transfer of PFAS through breast milk.</p> <p>Breastfeeding mothers living in or around sites contaminated with PFAS do not need to stop breastfeeding.</p>
I'm pregnant, will this affect my unborn child?	<p>There is currently no consistent evidence that exposure to PFAS causes poor outcomes in pregnant women or their babies.</p> <p>Current evidence does not support PFAS being a major cause of pregnancy-induced hypertension, pre-eclampsia or other pregnancy complications. There are some studies that show a lower birth weight in babies born to mothers with higher levels of PFAS in their blood. However, the reported decreases are mostly small and within the normal range for birth weight. Because of the design of these studies, it is not possible to know if PFAS causes this change or if other factors are involved. There are also some studies that have not shown a link between a lower birth weight and PFAS exposure during pregnancy.</p>
Should I continue to breastfeed?	<p>Yes. While some PFAS have been detected in breast milk, the proven health benefits associated with breastfeeding outweigh any potential health risk to an infant from the transfer of PFAS through breast milk.</p>
How long does PFAS stay in the body?	<p>The time it takes for PFAS to be excreted from the body is the same for adults and children. In humans, studies suggest that the half-life of PFAS could range from two to nine years.</p> <p>There is no practical treatment available to lower levels of PFAS in the blood.</p>
Would PFAS exposure make me/my children sick?	<p>There are no identified immediate or short-term health effects of exposure to PFAS.</p> <p>Whether PFAS causes health problems in people, including children, due to longer-term exposures is currently unknown.</p> <p>Based on current available evidence the potential for adverse health effects cannot be excluded. Also, because the elimination of PFAS from the human body is slow, there is a risk that continued exposure to PFAS could result in adverse health effects due to accumulation of the chemicals in the body over time. As a precaution, people living in or near an area that has been identified as having been contaminated with PFAS should take steps to limit their exposure to these chemicals.</p>
Can PFAS cause behavioural issues in children?	<p>The results of studies looking at possible effects of PFAS on children's behaviour are inconclusive.</p> <p>The results of studies looking at possible effects of PFAS on children's behaviour are inconsistent, with some studies observing a possible positive association between neurodevelopment and attention and other studies showing no effect or a negative association. The mixed nature of the findings in human studies means no firm conclusions can be made for the effects of PFAS on behaviour.</p>

Should I continue to donate blood?	<p>The Australian Red Cross Blood Service does not have a specific deferral for PFAS and does not recommend donors undergo blood testing for the purpose of donating blood.</p> <p>More information is available from the Australian Red Cross Blood Service fact sheet, available at: http://www.donateblood.com.au/sites/default/files/FAQsDonor%28PFOA-PFOS%29.pdf</p>
Further information	<p>The Queensland Government PFAS website now has information on the fish from the Bremer River and Warrill Creek: https://www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley.</p> <p>The Defence webpage RAAF Base Amberley PFAS Investigation webpage: http://www.defence.gov.au/environment/pfas/Amberley/</p> <p>Information on PFAS in Queensland can be found at: https://www.qld.gov.au/environment/pollution/management/investigation-pfas</p> <p>The Australian Government PFAS information website can be found at: http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas.htm.</p>
Telephone contacts:	<p>RAAF Base Amberley general enquiries: 1800 817 751</p> <p>Queensland Health, West Moreton Public Health Unit: (07) 3818 4700 (Switch board)</p>
Media enquiries	<p>All further enquiries, including about the locations, nature and possible cause of the contamination, should be directed to Department of Defence.</p> <p>Defence media contacts:</p> <p>Telephone: (02) 6127 1999</p> <p>Email: media@defence.gov.au</p>

Version 15/6/18 4:00pm

RAAF Base Amberley Human Health Risk Assessment Investigation Area



David Larkings

From: David Larkings
Sent: Friday, 15 June 2018 4:54 PM
To: Victoria Chalmers
Subject: RE: Urgent: PFAS in fish at RAAF Base Amberley
Attachments: QH Q&As Amberley PFAS in fish v15-6-18v2.docx

Hi Victoria

Thank you.

Please find attached the cleared version of the Q&A document. The revised version has v2 at the end of the file name.

The only changes was the removal of the first sentence in the answer for 'Should I get a blood test'.

Regards
 David



David Larkings

Advanced Environmental Health Officer
 Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

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From: Victoria Chalmers
Sent: Friday, 15 June 2018 4:40 PM
To: David Larkings <David.Larkings@health.qld.gov.au>
Cc: Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Tenille Fort <Tenille.Fort@health.qld.gov.au>
Subject: RE: Urgent: PFAS in fish at RAAF Base Amberley

Thank you David

I'll progressing getting scripting, etc in place in the event we receive calls over the weekend.

Regards
 Victoria



Victoria Chalmers

Executive Director

Health Contact Centre
Health Support Queensland, **Department of Health**

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From: David Larkings
Sent: Friday, 15 June 2018 4:25 PM
To: Victoria Chalmers
Cc: Sophie Dwyer; Tenille Fort
Subject: Urgent: PFAS in fish at RAAF Base Amberley

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Regards
David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

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Queensland Health Question and Answer – RAAF Base Amberley preliminary fish results

15 June 2018 v2

Distribution: Queensland Government only

Question	Answer
When did Queensland Health become aware of the issue?	As a part of the Human Health Risk Assessment being conducted by the Department of Defence, sampling of a small number of edible fish (eel, catfish and mullet) were caught between 9 and 17 April 2018 from the Bremer River and Warrill Creek. The samples were tested for PFAS and the results provided to Queensland Health for advice on risks to human health.
Is it safe to eat seafood caught near RAAF Base Amberley?	Queensland Health recommends fish caught in Warrill Creek and the Bremer River near Amberley should not be eaten following Department of Defence PFAS testing. The recommendation to not consume the fish is precautionary while further investigations are conducted. The samples were taken as part of the ongoing Human Health and Ecological Risk Assessment at RAAF Base Amberley, seafood in the Bremer River and Warrill Creek.
I have eaten fish from the Bremer River or Warrill Creek in the past. Am I at risk?	If you have occasionally consumed fish from the Bremer River or Warrill Creek in the past, you should not be concerned for your health. National guidelines for exposure to PFAS are based on how much PFAS a person can safely take in via food, water and other sources over their lifetime. Consuming more than the recommended daily or weekly maximum amounts occasionally or for short periods should not result in adverse health effects. Given the levels of PFAS currently known to be present, you would need to have consumed a serve (150 for adults or 75 g for children) of fish from the Bremer River or Warrill Creek at least weekly for many years to be concerned for your health.
What areas of the Bremer River or Warrill Creek are affected?	The area under investigation is shown on the map in Attachment 1.
I am still concerned about my health. Where can I go for more advice.	If you are concerned about your health or that of family members, you should consult your GP or call 13 HEALTH (13 43 25 84)—from within Queensland.
What species of fish were tested?	Fillets from 11 fish harvested from the Bremer River and Warrill Creek between 9 and 17 April 2018 were tested for PFAS. The fish were caught in 7 different locations across the investigation area (See map in Attachment 1). The fish included mullet, catfish, eel and a perch.

	<p>The fish sample test results were provided to Queensland Health to assess. Only the concentrations of PFAS in fillets of mullet, catfish and eel were included in the health assessment.</p> <p>Other samples of whole fish and fish liver were excluded because they are not normally consumed. A single sample of perch was also excluded because it may have not been representative of other fish.</p>
<p>What were the fish test results?</p>	<p>An assessment by Queensland Health of the fish sample test results identified elevated concentrations of perfluorooctane sulfonate (PFOS) and perfluorohexane sulfonate (PFHxS). The assessment was limited to these two types of PFAS within edible portions of the fish.</p> <p>Based on the concentration of PFAS in the fish sampled, a single serve of serve (150 g for adults, 75 g for children) of fish each week caught in the investigation area would place a person above their tolerable weekly intake of PFAS, which is based on the estimated amount that can safely be consumed over a lifetime.</p> <p>Queensland Health recommends the public to not consume all species of fish caught in the Bremer River or Warrill Creek near RAAF Base Amberley. The recommendation to not consume the fish is precautionary while further investigations are conducted.</p> <p>In addition the concentration of PFOS summed with PHFxS exceeded the trigger points for investigation recommended by Food Standards Australia New Zealand.</p>
<p>When will I be able to eat fish from the Bremer River and Warrill Creek again?</p>	<p>It is too early in the investigation to say.</p> <p>The advice not to consume fish from the Bremer River and Warrill Creek is based on preliminary testing results, and further investigations are needed.</p> <p>The Department of Defence have advised further investigations will be carried out, including tests of other species of more popular edible fish.</p> <p>The Department of Defence aims to complete the Human Health and Ecological Risk Assessment by the end of September 2018.</p> <p>Fishing can continue on a catch and release basis.</p>
<p>How will recreational fishers and the wider community be informed?</p>	<p>The Queensland Government PFAS website now has information on the fish from the Bremer River and Warrill Creek. It is at: https://www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley.</p> <p>The Department of Defence will be erecting signage around the investigation area to alert fishers not to consume the fish.</p>

	The Defence webpage RAAF Base Amberley PFAS Investigation webpage: http://www.defence.gov.au/environment/pfas/Amberley/
What if someone doesn't read this advice or see the signs, and eats contaminated fish?	Infrequent consumption of fish from the Bremer River and Warrill Creek would not make a significant contribution to a person's overall exposure to PFAS. The advice not to consume the fish is precautionary.
What about possible levels of PFAS in fish that migrate upstream and downstream?	The preliminary fish samples were taken from Warrill Creek and the Bremer River near RAAF Base Amberley because they are likely to have higher concentrations of PFAS. It is too early to say if fish outside the investigation area are also contaminated and to what extent. The Department of Defence will further consider the need to expand the investigation area when they obtain further fish samples as part of their human health risk assessment.
Is commercial fishing impacted?	There is no known commercial fishing along the Bremer River or Warrill Creek in the investigation area.
What is PFAS?	Per- and poly- fluoroalkyl substances, also known as 'PFAS', are a large group of manufactured chemicals. PFAS are also known as perfluorinated chemicals (PFCs). This group of chemicals includes perfluorooctanesulfonic acid (PFOS) and the related chemicals perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS). PFAS have been used since the 1950s in a range of common household products and in some specialty applications. These include in the manufacture of non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; some industrial processes; and in some types of fire-fighting foam
Why are these chemical being phased out?	The manufacture and use of some PFAS are being discontinued or limited through international agreements and voluntary actions by manufacturers primarily because of their persistence in the environment, rather than because of any established health effects. PFAS break down very slowly in the environment under naturally occurring conditions. Because of this, they tend to accumulate in the food chain and in human tissue. The international scientific community has identified this characteristic as undesirable because of the potential for unforeseen effects resulting from accumulating levels, and the difficulty in removing these chemicals from the environment once they are released.
How are people exposed to PFAS?	PFAS are found at very low levels in the blood of the general population all over the world. The general public are exposed to small amounts of PFAS in everyday life through exposure to dust, indoor and outdoor air, food, water and contact with consumer products that contain these chemicals.

	<p>For most people, food is thought to be the major source of exposure.</p> <p>Treated carpets and floors treated with waxes and sealants that contain PFAS can be an important source of exposure for babies and infants.</p> <p>PFAS may be readily absorbed through the gut and are not metabolised or broken down in the body. These chemicals are only very slowly eliminated from the body. Studies have shown that Australians have small amounts of PFAS in their blood. PFAS can also be found in urine and breast milk.</p> <p>People who work in industries that use PFAS, or use products containing these chemicals, may be exposed to higher levels than the general public.</p> <p>Where larger quantities of PFAS have been released into the environment, communities located near those sites may be exposed to higher levels than the general public.</p> <p>It is important to understand how people living near contaminated areas may come into contact with PFAS so that exposure may be minimised.</p> <p>Examining in detail the pathways through which people could be exposed to these chemicals may be one method used to determine potential exposure in these communities.</p>
<p>What are the health risks associated with PFAS?</p>	<p>In May 2018, an independent expert panel – commissioned by the Commonwealth Government – released a report finding there was little or no evidence that exposure to PFAS causes adverse human health effects.</p> <p>However, laboratory tests show that the chemicals can accumulate or build-up in people, animals and the environment over time, so the best course of action is to minimise exposure.</p> <p>Health authorities have taken a precautionary approach in providing health advice and setting guidelines for how much PFAS a person can be safely exposed to over their lifetime. These health criteria were developed in April 2017 by the Commonwealth Department of Health in collaboration with Food Standards Australia New Zealand (FSANZ).</p> <p>More information on PFAS is available at https://www.qld.gov.au/environment/pollution/management/investigation-pfas/about.</p> <p>Queensland Health has prepared a fact sheet (PDF, 95KB) with information about PFAS and health risks.</p>
<p>Further information on health risks</p>	<p>The results of studies looking at possible medical or health effects of PFAS are inconclusive.</p> <p>Some studies observed a possible positive association between health effects and PFAS exposure and other studies showed no effect or a negative association.</p>

	<p>The mixed nature of the findings in human studies means no firm conclusions can be made for the health effects of PFAS.</p> <p>Nevertheless, because the elimination of PFAS from the human body is slow, there is a risk that continued exposure to PFAS could result in adverse health effects due to accumulation of the chemicals in the body over time.</p> <p>The general precautionary advice is that people living in or near an area that has been identified as having been contaminated with PFAS should take steps to limit their exposure to these chemicals.</p> <p>The potential effects of exposure to PFAS to human health continue to be studied. These studies involve laboratory animal studies, as well as occupationally exposed workers (i.e. manufacturing workers), residents in communities with higher exposure and studies of the general population in the USA and other countries.</p> <p>Adverse health effects have been demonstrated in animal studies, but at much higher exposure levels than are found in people. However, the results of these animal studies and how they apply to humans is not always clear.</p> <p>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.</p>
<p>Should I get a blood test?</p>	<p>Health authorities do not recommend blood testing, because it won't help your GP give you specific advice in relation to PFAS, and only has value in terms of comparing your PFAS exposure to an average Australian.</p> <p>Additional information</p> <p>All Australians are expected to have detectable levels of PFAS in their blood. A broad range of levels would be expected in all communities due to background exposures. Blood levels are not predictive of health problems in individuals. There is no consistent evidence of PFAS resulting in health impacts, therefore levels considered higher than the Australian general population may have no clinical relevance to the individual. For this reason, a "minimal risk" level also does not exist in Australia.</p> <p>A PFAS blood test will only tell you the current level of PFAS in an individual's blood. PFAS blood test cannot tell you when exposure occurred, nor is it possible to determine the source of PFAS found in an individual's blood.</p> <p>The blood level will usually reflect cumulative exposure over an extended period. It takes a very long time for levels of these chemicals to reduce in humans, with the levels of some people taking two to nine years to reduce by half if there is no ongoing exposure. This means that levels in the blood now may reflect exposure from years ago, not necessarily recent exposure. For these reasons, it is considered that there is no value in frequent blood monitoring.</p>

	<p>It is important to note that PFAS blood test does not measure the blood level precisely. Tests taken from the same person at the same time show variability as a result of the test methodology. Also, the same level in two different individuals may not mean the same level of exposure, as the absorption, distribution, metabolism, and elimination chemicals may differ from person to person.</p>
<p>Is PFAS exposure linked to cancer?</p>	<p>There is no conclusive evidence that exposure to PFAS causes cancer in humans.</p> <p>Some studies have shown a possible link between prostate, kidney, and testicular cancers in workers involved in the manufacture of PFAS. In these studies other potential cancer-causing factors such as smoking were not considered. There are also some studies that have not shown a link between cancers and PFAS exposure.</p> <p>Studies in rats have shown an increase in some types of thyroid cancer. The results are inconsistent, as rates of cancer only increased with one level of exposure. Higher and lower levels of exposure did not increase cancer in the rats.</p>
<p>Does PFAS exposure affect cholesterol levels?</p>	<p>Studies on possible links between PFAS exposure and increased blood cholesterol levels are inconclusive.</p> <p>A number of studies show a possible link between PFAS exposure and increased blood cholesterol. Because of the design of the studies, it can't be determined if PFAS causes the increased blood cholesterol changes or if other factors are involved, such as diet.</p>
<p>Does PFAS exposure affect the immune system?</p>	<p>Studies on the possible effects of PFAS exposure on the immune system are inconclusive.</p> <p>Some studies in animals show that immune problems may be associated with PFAS exposure. Other studies show that there isn't an effect.</p> <p>Some organisations are saying that PFAS is presumed to be an immune hazard to humans based on these animal studies. In studies that do show an effect on the immune system in certain people, there is no evidence that these people get more infections.</p> <p>One study has shown that there is a possible link between PFAS and ulcerative colitis, but no other autoimmune disease. The evidence so far does not show any link between PFAS and autoimmune problems.</p>
<p>Are there people more susceptible to issues caused by these PFAS chemicals – e.g. babies, elderly?</p>	<p><u>Pregnancy</u> – There is currently no consistent evidence that exposure to PFAS causes poor outcomes in pregnant women or their babies.</p> <p>Current evidence does not support PFAS being a major cause of pregnancy-induced hypertension, pre-eclampsia or other pregnancy complications. There are some studies that show a lower birth weight in babies born to mothers with higher levels of PFAS in their blood. However, the reported decreases are mostly small and within the normal range for birth weight. Because of the design of these studies, it is not possible to know if PFAS causes this change or if other factors are involved. There are also some studies that have not shown a link between a lower birth weight and PFAS exposure during pregnancy.</p>

	<p>Breastfeeding – While some PFAS have been detected in breast milk, the proven health benefits associated with breastfeeding far outweigh any potential health risk to an infant from the transfer of PFAS through breast milk.</p> <p>Breastfeeding mothers living in or around sites contaminated with PFAS do not need to stop breastfeeding.</p>
I'm pregnant, will this affect my unborn child?	<p>There is currently no consistent evidence that exposure to PFAS causes poor outcomes in pregnant women or their babies.</p> <p>Current evidence does not support PFAS being a major cause of pregnancy-induced hypertension, pre-eclampsia or other pregnancy complications. There are some studies that show a lower birth weight in babies born to mothers with higher levels of PFAS in their blood. However, the reported decreases are mostly small and within the normal range for birth weight. Because of the design of these studies, it is not possible to know if PFAS causes this change or if other factors are involved. There are also some studies that have not shown a link between a lower birth weight and PFAS exposure during pregnancy.</p>
Should I continue to breastfeed?	Yes. While some PFAS have been detected in breast milk, the proven health benefits associated with breastfeeding outweigh any potential health risk to an infant from the transfer of PFAS through breast milk.
How long does PFAS stay in the body?	<p>The time it takes for PFAS to be excreted from the body is the same for adults and children. In humans, studies suggest that the half-life of PFAS could range from two to nine years.</p> <p>There is no practical treatment available to lower levels of PFAS in the blood.</p>
Would PFAS exposure make me/my children sick?	<p>There are no identified immediate or short-term health effects of exposure to PFAS.</p> <p>Whether PFAS causes health problems in people, including children, due to longer-term exposures is currently unknown.</p> <p>Based on current available evidence the potential for adverse health effects cannot be excluded. Also, because the elimination of PFAS from the human body is slow, there is a risk that continued exposure to PFAS could result in adverse health effects due to accumulation of the chemicals in the body over time. As a precaution, people living in or near an area that has been identified as having been contaminated with PFAS should take steps to limit their exposure to these chemicals.</p>
Can PFAS cause behavioural issues in children?	<p>The results of studies looking at possible effects of PFAS on children's behaviour are inconclusive.</p> <p>The results of studies looking at possible effects of PFAS on children's behaviour are inconsistent, with some studies observing a possible positive association between neurodevelopment and attention and other studies showing no effect or a negative association. The mixed nature of the findings in human studies means no firm conclusions can be made for the effects of PFAS on behaviour.</p>
Should I continue to donate blood?	The Australian Red Cross Blood Service does not have a specific deferral for PFAS and does not recommend donors undergo blood testing for the purpose of donating blood.

	<p>More information is available from the Australian Red Cross Blood Service fact sheet, available at: http://www.donateblood.com.au/sites/default/files/FAQsDonor%28PFOA-PFOS%29.pdf</p>
Further information	<p>The Queensland Government PFAS website now has information on the fish from the Bremer River and Warrill Creek: https://www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley.</p> <p>The Defence webpage RAAF Base Amberley PFAS Investigation webpage: http://www.defence.gov.au/environment/pfas/Amberley/</p> <p>Information on PFAS in Queensland can be found at: https://www.qld.gov.au/environment/pollution/management/investigation-pfas</p> <p>The Australian Government PFAS information website can be found at: http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas.htm.</p>
Telephone contacts:	<p>RAAF Base Amberley general enquiries: 1800 817 751</p> <p>Queensland Health, West Moreton Public Health Unit: (07) 3818 4700 (Switch board)</p>
Media enquiries	<p>All further enquiries, including about the locations, nature and possible cause of the contamination, should be directed to Department of Defence.</p> <p>Defence media contacts:</p> <p>Telephone: (02) 6127 1999</p> <p>Email: media@defence.gov.au</p>

Version 15/6/18 4:45pm

RAAF Base Amberley Human Health Risk Assessment Investigation Area



Janet Cumming

From: David Larkings
Sent: Friday, 15 June 2018 5:14 PM
To: Janet Cumming
Subject: FW: Info regrading PFAS/ PFCs - RAAF Base Amberley
Attachments: Information for Clinicians - April 2018.pdf; pfas-fact-sheet general.pdf; QH Q&As Amberley PFAS in fish v15-6-18v2.docx

Hi Janet

FYI. Thanks for your help with some of this stuff lately.

Cheers
 David

From: David Larkings
Sent: Friday, 15 June 2018 5:02 PM
To: Bruce Morton <Bruce.Morton@health.qld.gov.au>; Ramu Beesabathini <Ramu.Beesabathini@health.qld.gov.au>; Catherine A Quagliotto <Catherine.Quagliotto@health.qld.gov.au>; Ranil Appuhamy <Ranil.Appuhamy@health.qld.gov.au>
Cc: Penny Hutchinson <Penny.Hutchinson@health.qld.gov.au>; Mark Strong <Mark.Strong2@health.qld.gov.au>; PFAS <PFAS@health.qld.gov.au>; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Tenille Fort <Tenille.Fort@health.qld.gov.au>
Subject: RE: Info regrading PFAS/ PFCs - RAAF Base Amberley

Dear All

Further to Bruce's email, please find attached an information sheet for clinicians on PFAS, and another fact sheet for the public on PFAS.

Also attached is the approved version of the Q&A document. The revised version has v2 at the end of the file name. The only changes was the removal of the first sentence in the answer for 'Should I get a blood test?'

Defence are developing a brochure and a question and answer sheet for the public on PFAS, but they do not yet appear to be available. I assume they will post them on their RAAF Base Amberley PFAS Investigation webpage <http://www.defence.gov.au/environment/pfas/Amberley/>.

The Health Contact Centre (13HEALTH) is currently preparing information for their call centre based on the Q&A document.

We were not intending to update the information for clinicians. I understand Dr Huxley did this recently. The Q&A is aimed at answering public enquiries, but does include some information relevant to doctors.

Regards
 David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]

a: PO Box 2368 Fortitude Valley BC QLD 4006

w: [Queensland Health](#) | **e:** david.larkings@health.qld.gov.au



Queensland's health vision | By 2026 Queenslanders will be among the healthiest people in the world.

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: Bruce Morton

Sent: Friday, 15 June 2018 4:09 PM

To: Ramu Beesabathini <Ramu.Beesabathini@health.qld.gov.au>; Catherine A Quagliotto <Catherine.Quagliotto@health.qld.gov.au>; Ranil Appuhamy <Ranil.Appuhamy@health.qld.gov.au>

Cc: Penny Hutchinson <Penny.Hutchinson@health.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Mark Strong <Mark.Strong2@health.qld.gov.au>

Subject: Re: Info regrading PFAS/ PFCs - RAAF Base Amberley

Hello All (and Penny who is on call PHP this weekend)

As you know the Qld Government decided to issue a media release (attached) about this matter. Also the Queensland Government PFAS website now has information on the fish from the Bremer River and Warrill Creek. It is at:

<https://www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley>.

General Information about PFAS and DoD investigations can be found at the DoD webpage:

<http://www.defence.gov.au/Environment/PFAS/>

And Commonwealth DoH webpage:

[http://www.health.gov.au/internet/main/publishing.nsf/Content/C9734ED6BE238EC0CA2581BD00052C03/\\$File/su-mmary-panels-findings.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/C9734ED6BE238EC0CA2581BD00052C03/$File/su-mmary-panels-findings.pdf)

The Department of Defence contact number for RAAF Base Amberley is 1800 817 751. If any callers (including media) about the investigations, where sampling, risk area, who is being advised, distribution to refer them to DoD.

Generally, the DoD preliminary sampling results have been identified to be above health trigger investigation levels and as a precaution we are providing health advice to not eat fish in the area while further testing by DoD is being undertaken. If health concerns (eating more than 1 serve of caught fish a week) from the sampling area (Warrill Creek adjacent to site and Bremer river around Brassall), see their GP or call 13 Health.

David Larkins, DoH is updating the Q and A for internal use and attached is the draft he has provided. The DoH will do an update advice for GPs

Also attached is the QH letter to DoD about sampling results.

I am waiting for advice from WMHHS Comms about media contacts and will advise when received.

I will be the main contact and can be contacted on Mobile [REDACTED]. The on call EH number is [REDACTED] and the on call PHP is PA Switch 3176 2111 and ask for the Public Health Physician On call.

I will provide further information as available.

Bruce Morton

Director Public and Environmental Health | Community and Rural | Public Health Unit

West Moreton Health

Goonda Community Health Service | 81 Queens Road GOODNA QLD 4300

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West Moreton Health acknowledges the Jagera, Yuggera and Ugarapul people,
Traditional Owners of the land, and pays respect to Elders past, present and emerging.

Per- and poly- fluoroalkyl substances (PFASs): information for clinicians

Introduction

The purpose of this information is to provide guidance to aid clinicians with patient consultations on perfluoroalkyl and polyfluoroalkyl substances (PFAS).

Key Points

The most significant exposure route for residents living in areas adjacent to sites identified as being contaminated with PFAS is the consumption of contaminated groundwater.

Health effects are not expected from exposure to these chemicals but the potential for adverse health effects cannot be excluded. As a precaution, people living in or near an area that has been identified as having been contaminated with PFASs should take steps to limit their exposure to these chemicals.

What are PFASs?

PFAS, sometimes known as PFCs, are a large group of manufactured chemicals that do not occur naturally in the environment. This group of chemicals includes perfluorooctanesulfonic acid (PFOS) and the related chemicals perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS).

PFASs have been used since the 1950s in a range of common household products and in some specialty applications. These include in the manufacture of non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; some industrial processes; and in some types of fire-fighting foam.

PFAS are extremely persistent in the environment and resistant to typical environmental degradation processes. Some long-chain PFAS bioaccumulate in animals and can enter the human food chain.

Are there any health effects linked to PFASs in humans?

The potential effects of exposure to PFASs on human health continue to be studied. These studies involve laboratory animal studies, as well as occupationally exposed workers (i.e. manufacturing workers), residents in communities with higher exposure and studies of the general population in the USA and other countries.

The findings of studies in humans and animals are inconsistent and inconclusive but suggest that certain PFAS may affect a variety of possible endpoints. Studies on animals with exposure levels much higher than levels found in people, have shown effects including lower body weight, changes to cholesterol and triglycerides, liver effects, reproductive effects and immunological effects.

The results of these animal studies and how they apply to humans is not always clear.

Much of the research on humans has been conducted with people who were exposed to relatively high levels of PFASs through their work. 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.

Whether PFASs cause health problems in humans is currently unknown, but on current evidence the potential for adverse health effects cannot be excluded. Also, because the elimination of PFASs from the human body is slow there is a risk that continued exposure to PFASs could result in adverse health effects due to accumulation of the chemicals in the body over time. As a precaution, people living in or near an area that has been identified as having been contaminated with PFASs should take steps to limit their exposure to these chemicals.

Table 1: Overview of Major Human Studies Findings

Cholesterol	<p>Some epidemiological studies demonstrated statistically significant associations between serum PFOA and PFOS levels and total cholesterol in workers exposed to PFAS, and residents of communities with high levels of PFOA in the drinking water, when compared to population norms.</p> <p>Other studies have found no association between PFAS exposures and the total cholesterol levels.</p>
Uric acid	<p>Several studies have evaluated the possible association between serum PFOA and serum PFOS levels and elevated uric acid levels.</p> <p>Significant associations were found between serum PFOA and uric acid levels at all evaluated exposure levels.</p>
Liver effects	<p>A number of human studies have used liver enzymes as biomarkers of possible liver effects. In occupational studies, no associations between liver enzymes and serum PFOA or PFOS levels were consistently found. A study of highly exposed residents demonstrated significant associations but the increase in liver enzymes was small and not considered to be biologically significant.</p>
Cancer	<p>The International Agency for Research on Cancer (IARC) has classified PFOA as possibly carcinogenic and US EPA has concluded that both PFOA and PFOS are possibly carcinogenic to humans.</p> <p>Some studies have found increases in prostate, kidney, and testicular cancers in workers exposed to PFAS and people living near a PFOA facility.</p> <p>Findings from other studies report otherwise and most studies did not control for other potential factors including heavy smoking. Additional research is needed to clarify if there is an association.</p>

What are the potential PFAS exposure risks to fetuses and children?

Recent research evaluating possible health effects to fetuses from PFAS exposures have shown that developing fetuses can be exposed to PFAS when umbilical cord blood from their mothers crosses the placenta during pregnancy. It is important to note that different PFAS have varying levels of permeability to the placental barrier.

Multiple studies have reported an association between elevated maternal blood and cord blood concentrations of PFAS (primarily PFOS and PFOA) and decreased birth weight. Studies have also observed decreased birth weight with prenatal exposures to PFOS. The association between maternal PFAS level and decreased birth weight is not statistically significant across all studies. Additional studies replicating these results and correlating to clinical outcome are warranted to better define and strengthen the observed association.

Newborns can be exposed to PFAS through breast milk. Older children may be exposed to PFAS through food and water, similar to adults. In addition, young children have a higher risk of exposure to PFAS from carpet cleaners and similar products, largely due to time spent lying and crawling on floors in their early years.

What are the main sources of exposure to PFAS?

For the general population, ingestion of PFAS is considered the major human exposure pathway. Individuals can also be exposed by breathing air that contains dust contaminated with PFAS (from soil,

carpets, upholstery, clothing, etc.), or from certain fabric sprays containing this substance. Dermal exposure is a minor exposure pathway as dermal absorption is limited.

The major types of human exposure sources for PFAS include:

- Drinking contaminated water.
- Ingesting food contaminated with PFAS, such as certain types of fish and shellfish.

How can people reduce the risk of exposure to PFASs?

In areas where contamination of water (for example in underground, springs, water bores, dams, ponds or creeks) has been identified human exposure can be minimised by:

- not drinking the water or using it to prepare food
- not consuming food products (for example, eggs, milk, meat, fish, fruit or vegetables) grown or produced using, or in, contaminated water
- avoiding or minimising the use of the water for sprinkler play by children or to fill swimming pools or paddling pools due to the possibility of unintentionally drinking the water.

If people are concerned about use of contaminated water, an alternative water source, if available, may be considered for poultry and use on home grown crops.

What are PFAS levels in the Australian population?

Most people in Australia and in other industrialized countries have measurable amounts of PFAS in their blood. Assessment of background levels of PFAS in the Australian community can be undertaken by pooled blood testing. The background levels of three commonly identified PFAS in human blood from a study by Toms et al* on data collected in 2010/2011 were:

PFAS	Frequency of detection	Mean (ng/ml)	Standard Deviation (ng/ml)	Range (ng/ml)
PFOS	100%	10.2	3.7	4.4 – 17.4
PFHxS	100%	3.3	1.0	1.4 – 5.4
PFOA	100%	4.5	0.8	3.1 – 6.5

*Toms L, Thompson J, Rotander A, Hobson P, Clafat A, Kato K, Ye X, Broomhall S, Harden F and Mueller J. Decline in perfluorooctane sulfonate and perfluorooctanoate serum concentrations in an Australian population from 2002 to 2011. *Environment International*. 71(2014) 74-80.

Adverse effects in workers exposed to high level of PFOS have not been reported at serum concentrations below 2000ng/L.

Blood testing

The following points may assist in counselling patients trying to decide whether to undertake a blood test.

Blood tests are not recommended to determine whether any medical condition is attributable to exposure to PFASs and have no current value in informing clinical management, including diagnosis, treatment or prognosis in terms of increased risk of particular conditions over time.

Blood testing may however provide information on whether an individual has been exposed to a higher level of these chemicals than the rest of the Australian population.

It takes a very long time for levels of these chemicals to reduce in humans, with the levels of some taking two to nine years to reduce by half if there is no ongoing exposure. This means that levels in the blood now may reflect exposure from years ago, not necessarily recent exposure. For these reasons, it is considered that there is no value in frequent blood monitoring.

Links to further information:

[Queensland Government Perfluorinated Chemical Site Contamination Webpage](#)

[Australian Government PFAS Information Webpage](#)

Information to aid in the response to patient's questions

Question	Key Message	Supporting Information
<p>Could my health problems be caused by PFAS exposure?</p>	<p>There is no consistent evidence linking exposure to PFAS with adverse human health effects.</p> <p>There is inconsistent evidence linking PFOA and PFOS exposure with elevated cholesterol, elevated uric acid and liver effects (as indicated by altered liver enzymes).</p> <p>Health effects can be caused by many different factors, and there is no way to know if PFAS exposure has caused a health problem or made it worse.</p>	<p>Whether PFASs cause health problems in humans is currently unknown, but on current evidence the potential for adverse health effects cannot be excluded.</p> <p>Research is ongoing and not all health outcomes have been adequately studied.</p> <p>PFOA has an IARC classification of class 2B – possibly carcinogenic to humans.</p>
<p>Are there future health problems that might occur because of PFAS exposure?</p>	<p>There is no information available that predicts future health effects after exposure to PFAS.</p>	<p>Studies in humans and animals are inconsistent and inconclusive but on current evidence the potential for adverse health effects cannot be excluded.</p>
<p>Should I get a blood test for PFAS?</p>	<p>If you choose to have your blood tested, it will tell you the level of each PFAS assessed in your blood. The blood test will not provide information about whether any medical condition is attributable to exposure to PFAS and has no current value in informing clinical management, including diagnosis, treatment or prognosis in terms of increased risk of particular conditions over time.</p>	<p>There is currently no established PFAS blood level at which a health effect is known to occur nor is there a level that predicts health problems.</p> <p>Most people in Australia will have measureable amounts of PFAS in their blood.</p>
<p>What do my PFAS blood tests results mean?</p>	<p>The blood test for PFAS can only tell us the levels of specific PFAS in your body at the time you were tested. The blood tests results cannot be interpreted and used in patient care. The blood test results cannot predict or rule-out the development of future problems related to a suspected exposure.</p>	<p>There is currently no established PFAS blood level at which a health effect is known nor is there a level that is clearly associated with past or future health problems. The individual patient blood concentration can only be compared to the average background blood concentration levels for different PFAS measured in the Australian population.</p> <p>A patient's PFAS concentrations can only tell the patients if their blood levels are within range of Australian background levels or if their levels are high or low compared to the national background averages.</p>

<p>How will exposure to PFAS affect my pregnancy?</p>	<p>In some studies exposure to PFAS before pregnancy has been associated with pregnancy-induced hypertension and pre-eclampsia, though this finding is inconsistent.</p> <p>Monitoring blood pressure closely is done for all pregnant women. There is no need for additional blood pressure measurements as a result of PFAS exposure.</p>	<p>Health effects associated with PFAS are not specific and can be caused by many other factors.</p> <p>Pregnancy induced hypertension occurs in many pregnancies and the specific aetiology is often unknown.</p>
<p>Is it safe for me to breastfeed my baby?</p>	<p>Breastfeeding is associated with numerous health benefits for infants and mothers.</p> <p>The science on the health effects of PFAS for mothers and babies is evolving. However, given the scientific understanding at this time, the benefits of breastfeeding outweigh those of not breastfeeding.</p>	<p>Extensive research has documented the broad and compelling advantages of breastfeeding for infants, mothers, families, and society. Some of the many benefits include immunologic advantages, lower obesity rates, and greater cognitive development for the infant as well as a variety of health advantages for the lactating mother.</p> <p>Even though a number of environmental pollutants readily pass to the infant through human milk, the advantages of breastfeeding continue to greatly outweigh the potential risks in nearly every circumstance.</p> <p>No environmental contaminant, except in situations of acute poisoning, has been found to cause more harm to infants than does lack of breastfeeding</p> <p>At the same time, breastfeeding mothers should be aided and advised on how to reduce their exposure to pollution in the environment</p>
<p>There are high levels of PFAS in my water. What should I do?</p>	<p>You can reduce exposure by using an alternative water source for drinking, food preparation, cooking, brushing teeth or any activity that might result in ingestion of water.</p>	<p>There needs to be additional research to establish levels of health risk, but patients may want to reduce exposures by using an alternative water source for drinking, food preparation, cooking, brushing teeth or any activity that might result in ingestion of water.</p> <p>Normal processes of improving home water quality do not remove any of the PFAS. Most home water filters and boiling water will not remove PFAS from a drinking water source.</p>

Per- and poly- fluoroalkyl substances (PFAS) Factsheet

What are per- and poly- fluoroalkyl substances?

Per- and poly- fluoroalkyl substances, also known as 'PFAS', are a large group of manufactured chemicals. PFAS are also known as perfluorinated chemicals (PFCs). This group of chemicals includes perfluorooctanesulfonic acid (PFOS) and the related chemicals perfluorooctanoic acid (PFOA) and perfluorohexanesulfonic acid (PFHxS).

PFAS have been used since the 1950s in a range of common household products and in some specialty applications. These include in the manufacture of non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; some industrial processes; and in some types of fire-fighting foam.

Why are these chemicals being phased out?

The manufacture and use of some PFAS are being discontinued or limited through international agreements and voluntary actions by manufacturers primarily because of their persistence in the environment, rather than because of any established health effects. PFAS break down very slowly in the environment under naturally occurring conditions. Because of this, they tend to accumulate in the food chain and in human tissue. The international scientific community has identified this characteristic as undesirable because of the potential for unforeseen effects resulting from accumulating levels, and the difficulty in removing these chemicals from the environment once they are released.

How are people exposed to PFAS?

PFAS are found at very low levels in the blood of the general population all over the world. The general public are exposed to small amounts of PFAS in everyday life through exposure to dust, indoor and outdoor air, food, water and contact with consumer products that contain these chemicals. For most people, food is thought to be the major source of exposure. Treated carpets and floors treated with waxes and sealants that contain PFAS can be an important source of exposure for babies and infants.

PFAS may be readily absorbed through the gut and are not metabolised or broken down in the body. These chemicals are only very slowly eliminated from the body. Studies have shown that Australians have small amounts of PFAS in their blood. PFAS can also be found in urine and breast milk.

People who work in industries that use PFAS, or use products containing these chemicals, may be exposed to higher levels than the general public.

Where larger quantities of PFAS have been released into the environment, communities located near those sites may be exposed to higher levels than the general public. It is important to understand how people living near contaminated areas may come into contact with PFAS so that exposure may be minimised. This could include by examining in detail the pathways through which people could be exposed to these chemicals may be one method used to determine potential exposure in these communities.

Are there any health effects linked to PFAS in humans?

The potential effects of exposure to PFAS to human health continue to be studied. These studies involve laboratory animal studies, as well as occupationally exposed workers (i.e. manufacturing workers), residents in communities with higher exposure and studies of the general population in the USA and other countries.

Adverse health effects have been demonstrated in animal studies, but at much higher exposure levels than are found in people. However, the results of these animal studies and how they apply to humans is not always clear.

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.

Whether PFAS cause health problems in humans is currently unknown, but on current evidence the potential for adverse health effects cannot be excluded. Also, because the elimination of PFAS from the human body is slow, there is a risk that continued exposure to PFAS could result in adverse health effects due to accumulation of the chemicals in the body over time. As a precaution, people living in or near an area that has been identified as having been contaminated with PFAS should take steps to limit their exposure to these chemicals.

What is the evidence telling us so far?

A number of health conditions have been highlighted for further research based on the evidence so far. These conditions have been mentioned by international health agencies as being possibly linked to PFAS exposure. The following questions provide a brief explanation of the evidence available on some of these health conditions.

Does PFAS exposure affect cholesterol levels?

A number of studies show a possible link between PFAS exposure and increased blood cholesterol. Because of the design of the studies, it can't be determined if PFAS causes the increased blood cholesterol changes or if other factors are involved, such as diet.

Does PFAS exposure cause cancer?

There is no conclusive evidence that exposure to PFAS causes cancer in humans. Some studies have shown a possible link between prostate, kidney, and testicular cancers in workers involved in the manufacture of PFAS. In these studies other potential cancer-causing factors such as smoking were not considered. There are also some studies that have not shown a link between cancers and PFAS exposure.

Studies in rats have shown an increase in some types of thyroid cancer. The results are inconsistent, as rates of cancer only increased with one level of exposure. Higher and lower levels of exposure did not increase cancer in the rats.

Does PFAS exposure affect the immune system?

Some studies in animals show that immune problems may be associated with PFAS exposure. Other studies show that there isn't an effect. Some organisations are saying that PFAS is presumed to be an immune hazard to humans based on these animal studies. In studies that do show an effect on the immune system in certain people, there is no evidence that these people get more infections.

One study has shown that there is a possible link between PFAS and ulcerative colitis, but no other autoimmune disease. The evidence so far does not show any link between PFAS and autoimmune problems.

Does PFAS exposure cause problems during pregnancy?

There is currently no consistent evidence that exposure to PFAS causes poor outcomes in pregnant women or their babies. There are some studies that show a lower birth weight in babies born to mothers with higher levels of PFAS in their blood. Because of the design of these studies, it is not possible to know if PFAS causes this change or if other factors are involved. There are also some studies that have not shown a link between a lower birth weight and PFAS exposure during pregnancy.

How can I reduce my exposure to PFAS?

PFOS and PFOA are being withdrawn from service at commercial and industrial premises, and similar products are being phased out and replaced with more sustainable alternatives. However, PFAS chemicals may be present in the environment due to historic use or release from pre-treated articles imported into Australia.

The available data from the 24th Australian Total Diet Survey suggests that dietary exposure to PFAS from the general food supply is likely to be low as the majority of samples in studies reported in Australia and elsewhere did not detect these chemicals in testing.

If you live in or near a contaminated area, advice will be provided to your community on possible exposure. The advice will include information on how you may be exposed, and what actions you can take to reduce your exposure. This advice will be specific to the particular site, and information provided to communities in other areas may not apply to you. The extent of contamination, the movement of the chemicals in the environment, and likely routes of exposure will be different at different sites.

In areas where contamination of water (for example in underground springs, water bores, dams, ponds or creeks) has been identified, human exposure can be minimised by:

- not drinking the water or using it to prepare food
- not consuming food products (for example, eggs, milk, meat, fish, fruit or vegetables) grown or produced using, or in, contaminated water
- avoiding or minimising the use of the water for showering/bathing, sprinklers or to fill swimming pools or paddling pools due to the possibility of unintentionally drinking the water.

If people are concerned about use of contaminated water, an alternative water source, if available, may be considered for poultry and use on homegrown crops.

Should I continue to breastfeed?

Yes. While some PFAS have been detected in breast milk, the proven health benefits associated with breastfeeding outweigh any potential health risk to an infant from the transfer of PFAS through breast milk. Breastfeeding mothers living in or around sites contaminated with PFAS do not need to stop breastfeeding.

How long does it take for PFAS to leave my system?

The time it takes for PFAS to be excreted from the body is the same for adults and children. In humans, studies suggest that the half-life of PFAS could range from two to nine years.

Should I get my blood tested?

Blood tests are not recommended to determine whether any medical condition is attributable to exposure to PFAS and have no current value in informing clinical management, including diagnosis, treatment or prognosis, in terms of increased risk of particular conditions over time.

Blood testing will provide information on whether you have been exposed to a higher level of these chemicals than the rest of the Australian population.

It takes a very long time for levels of these chemicals to reduce in humans, with the levels of some people taking three to eight years to reduce by half if there is no ongoing exposure. This means that levels in the blood now may reflect exposure from years ago, not necessarily recent exposure. For these reasons, it is considered that there is no value in frequent blood monitoring.

Anyone concerned about their own health or that of family members should talk to their GP or call 13HEALTH (13 43 25 84).

David Larkings

From: David Larkings
Sent: Friday, 15 June 2018 5:15 PM
To: PFAS
Subject: FW: PFAS Amberley
Attachments: 20180615 PFAS Amberley.pdf

From: Bruce Morton
Sent: Friday, 15 June 2018 2:38 PM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: FW: PFAS Amberley

Bruce Morton

Director Public and Environmental Health | Community and Rural | Public Health Unit
West Moreton Health
 Goonda Community Health Service | 81 Queens Road GOODNA QLD 4300

07 38184700 | [REDACTED]
Bruce.Morton@health.qld.gov.au
www.westmoreton.health.qld.gov.au



*West Moreton Health acknowledges the Jagera, Yuggera and Ugarapul people,
 Traditional Owners of the land, and pays respect to Elders past, present and emerging.*

From: Mark Strong
Sent: Friday, 15 June 2018 2:19 PM
To: Bruce Morton <Bruce.Morton@health.qld.gov.au>; Kerrie Freeman <Kerrie.Freeman@health.qld.gov.au>;
 Melinda Parcell <Melinda.Parcell@health.qld.gov.au>
Cc: Marnie Ludgate <Marnie.Ludgate@health.qld.gov.au>
Subject: RE: PFAS Amberley

Thanks Bruce - the decision to release from QH corporate came about this morning following departmental discussion at senior levels between QH and Premier's. I'd imagine that CHO remains doing the roles you have outlined. It may be worth checking back in with them about those follow-up activities.

The attached has just come out as a media statement (2:17pm).

Mark Strong

Senior Director | Communications and Engagement | Strategy, Planning and Engagement

West Moreton Health

Ipswich City Plaza | Bell Street Ipswich QLD Post 4305

07 3413 5675 | [REDACTED]

mark.strong2@health.qld.gov.auwww.westmoreton.health.qld.gov.au

*West Moreton Health acknowledges the Jagera, Yuggera and Ugarapul people,
Traditional Owners of the land, and pays respect to Elders past, present and emerging.*

From: Bruce Morton**Sent:** Friday, 15 June 2018 2:13 PM**To:** Mark Strong <Mark.Strong2@health.qld.gov.au>; Kerrie Freeman <Kerrie.Freeman@health.qld.gov.au>;Melinda Parcell <Melinda.Parcell@health.qld.gov.au>**Cc:** Marnie Ludgate <Marnie.Ludgate@health.qld.gov.au>**Subject:** RE: PFAS Amberley

Thanks Mark. The last advice I received (yesterday) from CHO Division officers was that QH has provided advice to Department of Defence (DoD), attached, and the DoD is expected to undertake the public release and media. A holding statement was being prepared by QH Corporate Comms while waiting for DoD. CHO Division was updating the FAQs and other information (for GPs) about this matter. The Public Health Unit is to be the source to distribute the information to local networks.

It appears that DoD have not acted as expected by the Qld Government and they have undertaken this release.

Also the PHU has provided advice to the DoD via the CHO Division about the Purga Elders & Descendants Aboriginal Corporation, 587 Ipswich Boonah Rd, Purga as a key group the DoD should be advising and consulting with as a possible user of the Creek and Bremer River.

Bruce Morton

Director Public and Environmental Health | Community and Rural | Public Health Unit

West Moreton Health

Goonda Community Health Service | 81 Queens Road GOODNA QLD 4300

07 38184700 | [REDACTED]

Bruce.Morton@health.qld.gov.auwww.westmoreton.health.qld.gov.au

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From: Mark Strong
Sent: Friday, 15 June 2018 1:37 PM
To: Kerrie Freeman <Kerrie.Freeman@health.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>;
Melinda Parcell <Melinda.Parcell@health.qld.gov.au>
Cc: Marnie Ludgate <Marnie.Ludgate@health.qld.gov.au>
Subject: FW: PFAS Amberley

For information, the attached will be issued from Queensland Health to media at 2:15

Mark Strong
Senior Director | Communications and Engagement | Strategy, Planning and Engagement
West Moreton Health
Ipswich City Plaza | Bell Street Ipswich QLD Post 4305

07 3413 5675 | [REDACTED]
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www.westmoreton.health.qld.gov.au



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From: Laura Verney
Sent: Friday, 15 June 2018 1:24 PM
To: Mark Strong <Mark.Strong2@health.qld.gov.au>
Cc: news <news@health.qld.gov.au>
Subject: PFAS Amberley

Hi Mark,

I'll give you a call about this now.

Thanks,
Laura



Laura Verney
Team Leader, Reactive Media
Integrated Communication Branch, **Department of Health**
p: 07 3708 5378 | **m:** [REDACTED]
a: Level 3, 33 Charlotte St, Brisbane, QLD 4000
w: Queensland Health | **e:** laura.verney@health.qld.gov.au



Queensland's health vision | By 2026 Queenslanders will be among the healthiest people in the world.

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

RTI RELEASE

Department of Health

Media statement

**Queensland
Government**

15 June 2018

Warning regarding consumption of fish caught near Amberley

Please attribute this statement to a Queensland Health spokesperson:

Fish caught in Warrill Creek and the Bremer River near Amberley should not be eaten following Department of Defence PFAS testing.

The Department of Defence provided results to Queensland Health of preliminary testing it had done of perch, mullet and eel caught in the area that showed high levels of the chemical and consequently, possible elevated health risks for people who eat the fish over a long period of time.

Queensland Health has provided Department of Defence with recommendations so that it could notify the public and undertake further testing.

As an interim precaution, until Department of Defence can carry out further testing, people should not eat fish caught within this locality.

As the polluter, Department of Defence has primary responsibility of notifying the public about the issue.

Queensland Health has provided Department of Defence a range of health related information, but people who have eaten fish infrequently from the area should not expect to have elevated levels of PFAS.

All further enquiries, including about the locations, nature and possible cause of the contamination, should be directed to Department of Defence.

General information on PFAS is available here:

<https://www.qld.gov.au/environment/pollution/management/investigation-pfas>

ENDS

Janet Cumming

From: news
Sent: Monday, 18 June 2018 1:15 PM
To: Janet Cumming
Subject: Media enquiry: Amberley PFAS - swimming:
Attachments: image001.png; image002.png; image003.png; image004.png; image005.png

Hi Janet,

FYI.

Thanks,
 Glenn

Glenn McDougall
 Senior Media Advisor
 Strategic Communications | Department of Health
 p: 07 3708 5377 | m: [REDACTED]

From: Andrea Grant
Sent: Monday, 18 June 2018 12:27 PM
To: Glenn McDougall <Glenn.McDougall@health.qld.gov.au>; news <news@health.qld.gov.au>
Subject: Fwd: QT follow up questions

Glenn, can you help?

Sent from my iPhone

Begin forwarded message:

From: Mark Strong <Mark.Strong2@health.qld.gov.au>
Date: 18 June 2018 at 12:11:57 pm AEST
To: Robert Hoge <Robert.Hoge@health.qld.gov.au>, Andrea Grant <Andrea.Grant@health.qld.gov.au>
Cc: Bruce Morton <Bruce.Morton@health.qld.gov.au>
Subject: QT follow up questions

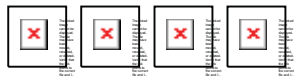
Hi – as mentioned Helen Spelitis rang with a follow-up question re PFAS. She has spoken with an environmental expert who has suggested that the health warnings re PFAS at Amberley should be more stringent, and specifically ban swimming. I have let her know that I'd pass on the query and the response was likely to be a QH one. Looking to run this tomorrow – 2pm deadline if possible.

Thanks team – appreciate it.

Mark Strong
 Senior Director | Communications and Engagement | Strategy, Planning and Engagement
West Moreton Health
 Ipswich City Plaza | Bell Street Ipswich QLD Post 4305

07 3413 5675 | [REDACTED]

mark.strong2@health.qld.gov.au
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RTI RELEASED

Myra Thompson

From: Suzanne Huxley
Sent: Monday, 18 June 2018 2:35 PM
To: simone.ventura@ehp.qld.gov.au
Cc: Sophie Dwyer
Subject: FW: QT follow up questions
Attachments: 2018-06-18 Queensland Times PFAS online story.docx

Categories: CC'd

Hi Simone

This is the request we are responding to for your info.

Thanks

Suzanne

From: Glenn McDougall
Sent: Monday, 18 June 2018 2:17 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: FW: QT follow up questions

Hi Suzanne – meant to say welcome back! Here's the enquiry- - pretty vague. Also it seems that the Queensland Times is talking to an "expert" on this story – could be our old mate or someone similar.

I've also attached their previous story for reference.

They have a story up online as of 2 years ago (behind the paywall) with the headline: *Expert slams PFAS warning at city's rivers as 'inadequate' - Defence to test more "popular" fish species*

Glenn McDougall
p: 07 3708 5377 | m: [REDACTED]

From: Andrea Grant
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Subject: QT follow up questions

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Thanks team – appreciate it.

Mark Strong

Senior Director | Communications and Engagement | Strategy, Planning and Engagement

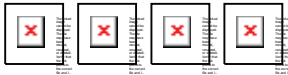
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RTI RELEASE

PFAS INVESTIGATION: Ipswich waterways under microscope



by [Helen Spelitis](#)

18th Jun 2018 11:45 AM

Subscriber only

FISH caught in Ipswich waterways will be put under the microscope as the investigation into contamination around the RAAF Amberley Base continues, amid criticism residents are not being adequately warned about potential exposure.

Last week it was revealed fish caught in the Bremer River and Warrill Creek were found to contain high levels of chemicals, known as PFAS, used in fire fighting foam.

Residents were advised not to eat the fish.

Now, the Defence Department has confirmed it will carry out further testing on more "popular" fish species caught in the catchments, as part of an environmental investigation.

Residents in the impacted area should also expect to receive an information flyer in their letter box, Defence says.

But an environmental expert has called on the authorities to place signs along the waterways, warning people of the potential health risks saying a short-term letter box drop is "inadequate".

Dr Bill Freeland, former head of the Northern Territory's environmental agency, said clear signage advising against eating anything caught in the river should be erected.

He also believes residents should be warned against swimming in, or drinking, the water.

"There is no excuse for there not appearing to be any signage on those waterways, indicating the recorded presence of high levels of PFAS" Dr Freeland said, acknowledging that little data was available.

"While Defence has not provided data on contamination in fish and other aquatic life, there should be signage including a warning that consumption of fish and other aquatic life - for example - yabbies and mussels - from these waterways is inadvisable."

In April, investigators examining the potential impact of contamination from the use of PFAS chemicals at RAAF Amberley Base took samples of mullet, catfish and eel, caught in the Bremer River and Warrill Creek.

Preliminary test results found high levels of PFAS chemicals and the results were passed onto Queensland Health, which then issued a public health warning.

A Defence spokesperson told the QT further testing and analysis would be carried out during "the Human Health Risk Assessment (HHRA) being undertaken as part of the environmental investigation."

"This testing will include tests of other species of more popular edible fish in the area," the spokesperson said.

"Defence is committed to regularly updating the community throughout the investigation and will be letter box dropping all residents in the Investigation Area detailing this precautionary advice and updating the community on further sampling to be conducted in the process of finalising the HHRA.

"This is precautionary advice, based on preliminary test results, and we will keep the community and recreational fishers updated as the investigation progresses."

LINK: <https://www.qt.com.au/news/pfas-investigation-ipswich-waterways-under-microsc/3444868/>

Janet Cumming

From: Suzanne Huxley
Sent: Monday, 18 June 2018 3:23 PM
To: Janet Cumming; David Larkings
Subject: FW: QT follow up questions

FYI

From: Suzanne Huxley
Sent: Monday, 18 June 2018 3:06 PM
To: Glenn McDougall <Glenn.McDougall@health.qld.gov.au>
Cc: Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>
Subject: RE: QT follow up questions

Hi Glenn

The contractors for Defence are in the process of preparing the HHRA for the area and risk of recreational water contact based on the most recent results of creek water would be expected to be included in that risk assessment. It would be our expectation that if during the preparation of the HHRA an issue is identified with respect to concerns about recreational use of the rivers near the base that Health would be formally advised of this by DoD. This is how we became aware of the issue with seafood.

Could you could write your response to the media in that vein?

Thanks

Suzanne

From: Glenn McDougall
Sent: Monday, 18 June 2018 2:17 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: FW: QT follow up questions

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Glenn McDougall
p: 07 3708 5377 | m: [REDACTED]

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Thanks team – appreciate it.

Mark Strong

Senior Director | Communications and Engagement | Strategy, Planning and Engagement

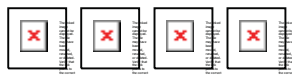
West Moreton Health

Ipswich City Plaza | Bell Street Ipswich QLD Post 4305

07 3413 5675 | 

mark.strong2@health.qld.gov.au

www.westmoreton.health.qld.gov.au



West Moreton Health acknowledges the Jagera, Yuggera and Ugarapul people, Traditional Owners of the land, and pays respect to Elders past, present and emerging.

From: [Suzanne Huxley](#)
To: [Glenn McDougall](#)
Subject: RE: Fishing Signs [SEC=UNCLASSIFIED]
Date: Tuesday, 19 June 2018 11:40:00 AM
Attachments: [image001.png](#)
[image002.png](#)

As discussed

From: KIND Peter K [mailto:Peter.Kind@daf.qld.gov.au]
Sent: Tuesday, 19 June 2018 10:00 AM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; WATTS Richard J <Richard.Watts@daf.qld.gov.au>; CONNOR Andrew <Andrew.Connor@des.qld.gov.au>
Cc: James Stewart <james.stewart@premiers.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>
Subject: RE: Fishing Signs [SEC=UNCLASSIFIED]

Hi Folks – agree that some of the fish (notably mullet & Australian bass) are migratory and will move annually between the freshwater and the estuary. Eels tend to spend much of their adult life in freshwater before returning to the sea to spawn. Freshwater catfish have quite small home ranges in freshwater.

As these fish move downstream they will begin to mix with more estuarine species like bream and threadfin, (which are more palatable and probably more likely to be consumed) and as you say hopefully less affected by contamination from the base. We clearly still need samples from further downstream to provide evidence based advice. We also can't discount the possibility of alternate sources of contamination of the Bremer as it runs through Ipswich and surrounding suburbs.

Peter

From: Suzanne Huxley [mailto:Suzanne.Huxley@health.qld.gov.au]
Sent: Tuesday, 19 June 2018 9:48 AM
To: KIND Peter K <Peter.Kind@daf.qld.gov.au>; WATTS Richard J <Richard.Watts@daf.qld.gov.au>; CONNOR Andrew <Andrew.Connor@des.qld.gov.au>
Cc: James Stewart <james.stewart@premiers.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>
Subject: RE: Fishing Signs [SEC=UNCLASSIFIED]

Hi Peter (and everyone)

In relation to the fishing advisory for the Bremer and Warrill Creek what are your thoughts on the signage? The local Council are arranging the signage with assistance on advice from the local PHU.

While fish migrate, so it is possible that some of the more affected species may be caught down stream, I would have thought that there would be 2 forms of dilution – one there would be expected to be less PFAS in the water and 2 the affected fish population would be “diluted” by the unaffected fish population such that the totally dietary PFAS would be lower if consuming fish from the lower Bremer.

In addition the standard advice about consuming fish from a variety of sources/sites, not exceeding the fish consumption levels which are protective for mercury and also not eating fish offal would also stand.

Regards

Suzanne

From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]

Sent: Tuesday, 19 June 2018 8:59 AM

To: Bruce Morton <Bruce.Morton@health.qld.gov.au>

Cc: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>

Subject: FW: Fishing Signs [SEC=UNCLASSIFIED]

Good morning Bruce,

Just an FYI that this might come your way today.

My understanding is that the advice on the QH website states that “At this time, it is recommended that you do not consume fish caught in the Bremer River or Warrill Creek near RAAF Base Amberley, until further testing takes place”. This would mean signs within the investigation area are applicable.

However, we know that fish migrate.

At any rate, you’ll likely get a call around this today.

Thanks Bruce.

Kind regards,
James.

James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



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Australia's campaign to stop violence against women

From: Kaye Cavanagh [<mailto:Kaye.Cavanagh@ipswich.qld.gov.au>]

Sent: Tuesday, 19 June 2018 8:46 AM

To: Leriche, Michael MR <michael.leriche@defence.gov.au>

Cc: PFAS Comms <pfas.comms@defence.gov.au>; McLachlan, James MR

<james.mclachlan@defence.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; McLeod,

Luke MR 1 <luke.mcleod1@defence.gov.au>; Lymburner, Amanda MS

<amanda.lymburner@defence.gov.au>

Subject: RE: Fishing Signs [SEC=UNCLASSIFIED]

Hi Mick

Thank you for forwarding the draft sign. Before I get back to the Councillor, I thought I would pre-empt her question regarding the catch of fish at other locations along the Bremer River, particularly still within

the town reach. Is there discussion with Queensland Health around this, and the messaging of fish consumption overall? We can install the sign at locations outside the investigation zone, but seeking your thoughts on the message to the community.

Thanks

Kaye



Kaye Cavanagh | Sport, Recreation and Natural Resources Manager
Works, Parks and Recreation Department

T | 3810 6666

Confidential Communication | [Email Disclaimer](#)

From: Leriche, Michael MR [<mailto:michael.leriche@defence.gov.au>]
Sent: Monday, 18 June 2018 5:23 PM
To: Kaye Cavanagh <Kaye.Cavanagh@ipswich.qld.gov.au>
Cc: PFAS Comms <pfas.comms@defence.gov.au>; McLachlan, James MR <james.mclachlan@defence.gov.au>; 'James Stewart' <james.stewart@premiers.qld.gov.au>; McLeod, Luke MR 1 <luke.mcleod1@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>
Subject: Fishing Signs [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Kaye

As per our phone conversation regarding Council wanting to put up signs at fishing spots, attached is the draft signage graphic for your consideration.

Defence can provide a high resolution artwork version for printing following Council obtaining clearance from Qld Dept. of Health for the signage. James Stewart (Qld DPC) has provided the following contact within the local public health unit for the Council to speak to about signage / any health advice.

Bruce Morton

Director Public and Environmental Health | Community and Rural | Public Health Unit

West Moreton Health

Goonda Community Health Service | 81 Queens Road GOODNA QLD 4300

07 38184700 | 
Bruce.Morton@health.qld.gov.au

Happy to assist with any queries or issues.

Cheers

Mick

Mick Le Riche

Project Director
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group

M: [REDACTED]

E: michael.leriche@defence.gov.au

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From: [Suzanne Huxley](#)
To: [Bruce Morton](#)
Subject: FW: Signage
Date: Tuesday, 19 June 2018 12:49:00 PM
Attachments: [image001.png](#)
[QLD GOV feedback on warning signage \(LMC Cleared\).docx](#)
[QLD GOV Feedback on Amberley newsletter with advice - updated \(LMC Cleared\) \(002\).docx](#)
[image002.png](#)
[image004.png](#)
[image005.png](#)
[image007.png](#)
[image008.png](#)

Hi Bruce

As per the below email, Defence was provided with the attached approved signage last week. It looks like they are working with Council to have the signage erected, and as per the attached the area where fishing is restricted is quite evident.

Cheers

Suzanne

From: James Stewart [mailto:james.stewart@premiers.qld.gov.au]
Sent: Tuesday, 19 June 2018 12:24 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: Signage

Hi Suzanne,

This was provided to Defence last Friday.

In this email we provided Defence with an updated and approved version of signage. We also spoke to Defence about this and reiterated our expectation for them to undertake this work as soon as possible.

Thanks,
James.

From: Justin Carpenter
Sent: Friday, 15 June 2018 10:30 AM
To: McLeod, Luke MR 1 <luke.mcleod1@defence.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; 'Sophie.Dwyer@health.qld.gov.au' <Sophie.Dwyer@health.qld.gov.au>; 'Andrew.Connor@des.qld.gov.au' <Andrew.Connor@des.qld.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; Ben Armstrong <Ben.Armstrong@premiers.qld.gov.au>; Grzeskowiak, Steven MR <steven.grzeskowiak@defence.gov.au>; Matthew Rigby <matthew.rigby@premiers.qld.gov.au>
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

Hello Luke

Thank you for the opportunity to provide feedback on your communications material.

The Queensland Government does not give the Department of Defence permission to use any form of

Queensland Government branding in your communications material. To that end, the proposed sign must not have a Queensland Government logo (header and footer) and the content must instead refer to Defence's website and phone number.

The sign content should also be simple and along the following lines:

(Defence branding)

WARNING

Elevated levels of PFAS chemicals have been detected in the Bremer River and Warrill Creek.

As a precaution, you should not eat fish caught in the area (see map).

Catch and release fishing may continue.

For more information, visit (defence site) or call (Cth Health ph number)

(map)

See attached.

No significant changes to the newsletter are proposed but reference to the most recent health advice is suggested (see attached).

My concerns regarding the timeliness of this work remain as do Defence's reluctance to undertake more proactive and timely engagement with media in relation to this new information.

Regards.

Justin Carpenter

Acting Executive Director

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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From: McLeod, Luke MR 1 [<mailto:luke.mcleod1@defence.gov.au>]

Sent: Thursday, 14 June 2018 6:59 PM

To: Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>

Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; 'Sophie.Dwyer@health.qld.gov.au' <Sophie.Dwyer@health.qld.gov.au>; 'Andrew.Connor@des.qld.gov.au' <Andrew.Connor@des.qld.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; Ben Armstrong <Ben.Armstrong@premiers.qld.gov.au>; Grzeskowiak, Steven MR <steven.grzeskowiak@defence.gov.au>; Matthew Rigby <matthew.rigby@premiers.qld.gov.au>

Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

For-Official-Use-Only

Thanks Justin, I have just sent yourself and Sophie cleared versions of the newsletter and signage we would intend to issue.

As a clarification we are not intending to do the letterbox drop at the end of next week rather we will seek to do the letterbox drop as quickly as possible and believe that it would be completed by no later than the end of next week noting the logistics involved in publishing, printing and distributing the documents across the investigation area.

As advised in the email I have just sent we would intend to post the signage and publish the newsletter on our website immediately once finalised.

Regards

Luke McLeod

AS PFAS Investigation & Management
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group

M:

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From: Justin Carpenter [<mailto:justin.carpenter@premiers.qld.gov.au>]
Sent: Thursday, 14 June 2018 6:55 PM
To: McLeod, Luke MR 1; PFAS Comms
Cc: McLachlan, James MR; Lymburner, Amanda MS; 'Sophie.Dwyer@health.qld.gov.au'; 'Andrew.Connor@des.qld.gov.au'; James Stewart; Ben Armstrong; Matthew Rigby
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

Hello Luke

Thanks for the update earlier.

I understand that you are finalising your newsletter and web content but, as mentioned (and as committed), attached are the revised versions of the first set of documents I provided to you (last night) – following input from relevant agencies.

I must also reiterate that it is disappointing both that Defence remains unwilling to issue a media release as a means for promptly informing the community about this matter, as well as the plan to undertake the letterbox drop at the end of next week – which is too late.

Regards

Justin Carpenter
Acting Executive Director
Environment Policy

Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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From: Justin Carpenter
Sent: Thursday, 14 June 2018 8:35 AM
To: 'McLeod, Luke MR 1' <luke.mcleod1@defence.gov.au>; 'PFAS Comms' <pfas.comms@defence.gov.au>
Cc: 'McLachlan, James MR' <james.mclachlan@defence.gov.au>; 'Lymburner, Amanda MS' <amanda.lymburner@defence.gov.au>; 'Sophie.Dwyer@health.qld.gov.au' <Sophie.Dwyer@health.qld.gov.au>; 'Andrew.Connor@des.qld.gov.au' <Andrew.Connor@des.qld.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; Ben Armstrong <Ben.Armstrong@premiers.qld.gov.au>; Matthew Rigby <matthew.rigby@premiers.qld.gov.au>
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

Hello Luke,

Following on from my email yesterday please find attached our review of the original documents provided by the Department of Defence.

Please note that it is still our preference for Defence to use the documents provided in my earlier email in place of this older content. The reason for this is that those provided in the below email are directed to a more appropriate audience, and have been tailored to be fit for purpose for both web content and a letter box drop (as advised by Defence).

However, if you do intend to use the original content at a later date then please find attached our review for your consideration.

Kind regards,

Justin Carpenter

Acting Executive Director

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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From: Justin Carpenter
Sent: Wednesday, 13 June 2018 6:39 PM
To: 'McLeod, Luke MR 1' <luke.mcleod1@defence.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; 'Sophie.Dwyer@health.qld.gov.au' <Sophie.Dwyer@health.qld.gov.au>; 'Andrew.Connor@des.qld.gov.au' <Andrew.Connor@des.qld.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; Ben Armstrong <Ben.Armstrong@premiers.qld.gov.au>; Matthew Rigby <matthew.rigby@premiers.qld.gov.au>
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

Hello Luke

Thanks for this.

Attached are our suggestions for:

1. Factsheet – letterbox drop in local area, copy on the website, and if there's a spot at boat ramps to put some hard copies
2. Web content / FAQs – just web content written in their FAQ style, and easily added as a new 'Seafood' tab to <http://www.defence.gov.au/environment/pfas/Amberley/FAQs.asp>

I still need to confirm some aspects of this content across government (and will do so early tomorrow) but, as it is a significant rework, I thought I'd forward this on now to test the waters and keep things moving.

As you know our preference is for Defence put out media release and in regards to Queensland collaborating on this I can confirm that Health are still very happy to provide health advice or be cited (as per the attached e.g. "DoD recommend, on the basis for QH advice, to..."). I would appreciate Defence's further consideration of this proposal.

I will get back to you in regard to signage but expect that Defence will soon have a plan for this. How it is branded is, I think, a matter for Defence.

Additionally, I too appreciate your efforts to work collaboratively to provide advice to the community, and your recognition that this advice should be timely and credible.

Regards

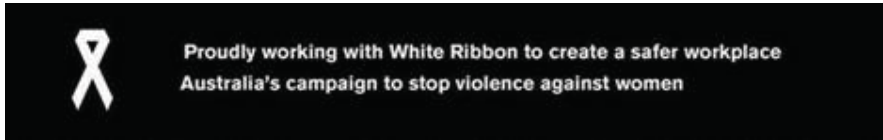
Justin Carpenter

Acting Executive Director

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



From: McLeod, Luke MR 1 [<mailto:luke.mcleod1@defence.gov.au>]
Sent: Wednesday, 13 June 2018 6:02 PM
To: Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; 'Sophie.Dwyer@health.qld.gov.au' <Sophie.Dwyer@health.qld.gov.au>; 'Andrew.Connor@des.qld.gov.au' <Andrew.Connor@des.qld.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; Ben Armstrong <Ben.Armstrong@premiers.qld.gov.au>
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

For-Official-Use-Only

Justin,

Apologies for delay in responding to your email. As discussed Defence would intend to release the Fact Sheet (pdf document) and also the FAQs in a couple of ways. Upon reflection we would intend to issue a Fact Sheet and FAQ, via a letterbox drop to all residents and businesses within the investigation area. This would be complemented with the digital release of this information via the Defence PFAS website (www.defence.gov.au/environment/pfas). We have done this in a range of contexts across several site investigations to advise the community directly about investigations outcomes/findings/updates etc.

With regards to signage it would obviously be important that any non-local recreational fishers are similarly advised of the precautionary advice issued to not eat any fish caught in the river/creek. We would appreciate any advice you can provide which would facilitate this signage being erected in a manner consistent with normal practice. I can confirm that I will approve to fund signage erected to advise the community. I would however need to obtain departmental approval for any Defence-branded signage.

Thank you for your understanding on this matter and continuing to work collaboratively with Defence to ensure that the community is provided with timely and credible advice.

Regards

Luke McLeod
 AS PFAS Investigation & Management
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group

M: [REDACTED]

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From: Justin Carpenter [<mailto:justin.carpenter@premiers.qld.gov.au>]
Sent: Wednesday, 13 June 2018 3:39 PM
To: PFAS Comms
Cc: McLachlan, James MR; McLeod, Luke MR 1; Lymburner, Amanda MS; Sophie.Dwyer@health.qld.gov.au; Andrew.Connor@des.qld.gov.au; James Stewart; Ben Armstrong
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

Hello all

Just checking to see if these points can be clarified: documents provided (purpose) and other being produced – including draft media release for comment and web content, as well as an incite into the overall plan/timeframes.

Regards

Justin Carpenter

Acting Executive Director

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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From: Justin Carpenter
Sent: Wednesday, 13 June 2018 11:23 AM
To: 'PFAS Comms' <pfas.comms@defence.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; McLeod, Luke MR 1 <luke.mcleod1@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; 'Sophie.Dwyer@health.qld.gov.au' <Sophie.Dwyer@health.qld.gov.au>; 'Andrew.Connor@des.qld.gov.au' <Andrew.Connor@des.qld.gov.au>
Subject: RE: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

Thanks for this Courtney

We are reviewing and will provide comment ASAP.

Just to clarify – the pdf document will form part of a fact sheet ? Is there web content that is being prepared (other than the Q&As)?

Luke – following from our teleconference, and to re-iterate, we expect that Defence will lead active media on this and would like to provide comment on content as it is being prepared. This will, I hope,

also help with our shared efforts to clarify roles and responsibilities.

Regards

Justin Carpenter

Acting Executive Director

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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From: Parkinson, Courtney MISS [<mailto:courtney.parkinson@defence.gov.au>] **On Behalf Of** PFAS Comms
Sent: Wednesday, 13 June 2018 9:16 AM
To: Justin Carpenter <justin.carpenter@premiers.qld.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; McLeod, Luke MR 1 <luke.mcleod1@defence.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>
Subject: For review - draft factsheet and FAQs [DLM=For-Official-Use-Only]

For-Official-Use-Only

Good morning Justin,

Please find attached draft materials for review prior to the meeting this morning.

Many thanks,

Courtney Parkinson

A/Assistant Director – PFAS Communications
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | **Estate & Infrastructure Group**
M: [REDACTED] **E:** courtney.parkinson@defence.gov.au

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DEFENCE BRANDING

WARNING

Elevated levels of PFAS chemicals have been detected in the Bremer River and Warrill Creek.

As a precaution, you should not eat fish caught in the area (see map) until further testing takes place.

Catch and release fishing may continue.

For more information visit

<http://www.defence.gov.au/environment/pfas/Amberley/Default.asp>

or call 1800 817 751





Australian Government
Department of Defence

Investigation Update

In March 2017, Defence commenced a detailed environmental investigation at RAAF Base Amberley and the surrounding area to identify the nature and extent of per- and poly-fluoroalkyl substances (PFAS) in the environment and any potential exposure pathways to humans, plants and animals. This newsletter provides an update on the investigation as well as a summary of common questions about the investigation.

Detailed Site Investigation

As part of the environmental investigation, a Detailed Site Investigation is being conducted which involves a comprehensive sampling program. The sampling for the Detailed Site Investigation has now been completed with the results currently undergoing analysis. A report is being prepared which will identify the source areas for PFAS, examine how and where PFAS has moved from those source areas, provide results from sampling and identify potential PFAS exposure pathways which require further sampling and analysis.

Human Health Risk Assessment

A Human Health Risk Assessment has commenced which will assess the exposure pathways to PFAS for people living, working and undertaking recreational activities within the Investigation Area.

It looks closely at potential exposure pathways and characterises the level of exposure risk, which is then

compared against criteria recommended and/or adopted by state and federal regulatory agencies. If the exposure risk from a pathway is assessed as being above acceptable levels, then precautions will be suggested to minimise future PFAS exposure.

Biota (fish, plants, fruits and vegetables) sampling for the HHRA is underway, and further groundwater, surface water, soil and sediment sampling will take place in coming months.

The possible build up of PFAS in fish from the Bremer River or Warrill Creek, and their subsequent human consumption, has also been identified as a potential exposure pathway to PFAS.

As a result, the preliminary sampling of specific edible fish species has recently been completed. Further information

Ecological Risk Assessment

An Ecological Risk Assessment will soon commence, the planned scope for this work is currently being developed.

An Ecological Risk Assessment assesses the potential risks of PFAS exposure to water and land-based plants and animals and their environment. It also considers the exposure risks for the accumulation of PFAS in birds and mammals through the consumption of plants and smaller creatures.

PFAS Management Area Plan

The best management and remediation options for a particular site are determined by site-specific factors,



including hydrogeology, the type of contamination, and access.

At the end of the RAAF Base Amberley investigation, Defence will use all these findings to develop a PFAS Management Area Plan that is tailored to the unique conditions of the site.

RTI RELEASED

Health advice – Fish from the Bremer River and Warrill Creek

In April 2018, as part of the Human health and Risk Assessment, initial testing for PFAS was conducted on seafood (mullet, catfish and eel) in the Bremer River and Warrill Creek ~~for PFAS~~. The results of this testing were provided to Queensland Health.

Based on an assessment of the results, Queensland Health advises that you ~~do~~ should not consume fish caught in the Bremer River or Warrill Creek near RAAF Base Amberley.

This interim advice is a precautionary approach to minimise potential PFAS exposure.

Further testing and analysis will be carried out as part of the Human Health Risk Assessment, including tests of other species of more popular edible fish.

Until this further testing is completed, the Queensland Health advice applies to all fish species.

This is precautionary advice, based on preliminary test results, and we will keep the community and recreational fishers updated as the investigation progresses.

About PFAS exposure

Queensland Health advise that you should not be concerned for your health if you have occasionally consumed fish from Bremer River or Warrill Creek in the past.

Tolerable levels of PFAS for humans are measured using a lifetime daily intake.

This means that while the PFAS levels in the tested fish were above recommended levels, you would need to be consuming PFAS contaminated fish daily, and over many years, to have elevated exposure levels.

Government Guidance

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released guidance statements relating to human health.

According to enHealth, there is currently no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects. However, because these substances persist in humans and the environment, enHealth recommends that human exposure is minimised as a precaution.

Further information can be found via the Commonwealth Department of Health PFAS webpage and community information line:

Phone: 1800 941 180 **Web:** www.health.gov.au/pfas

The Investigation Area

The Investigation Area (below) defines the current extent of the investigation, focussed on the potential people, animals and environment that may be exposed to PFAS. The Investigation Area will be updated and amended as the investigation progresses and additional data becomes available.



Commented [JS1]: Under the "Government Guidance", consider using the most up to date health advice provided by the Federal Government's expert health panel in May 2018.

The Panel found that there is mostly limited or no evidence for any link with human disease, and that evidence for PFAS exposure and links to health effects is very weak and inconsistent. However, effects cannot be fully ruled out based on current evidence so the best recourse is to minimize exposure.



Investigation Timeline

-  Preliminary Site Investigation & Water Use Survey
Mar – May 2017
 -  Preparing Draft Sampling Plan
May – Oct 2017
 -  Community Walk-in Session
Nov 2017
 -  Detailed Site Investigation
Oct 2017 – Mid 2018
 -  Human Health Risk Assessment
May 2018 – Late 2018
 -  Ecological Risk Assessment
Jun 2018 – Late 2018
 -  PFAS Management Area Plan
Late 2018
- *Dates may be subject to rescheduling

WE
ARE
HERE

Upcoming Community Engagement

Defence is committed to regularly updating the community throughout the investigation.

The Detailed Site Investigation and assessment reports are expected to be released publicly in the second half of 2018 and a Community Walk-in Session will be held to coincide with the release of the reports.

What are the Water Use Surveys used for?

As part of the investigation, information has been collected through a Water Use Survey to find out more about water use near RAAF Base Amberley. The survey results provide us with an understanding of groundwater and surface water use and have helped to determine what sampling needs to be conducted as part of the investigation.

How can people be exposed to PFAS?

PFAS are manufactured chemicals used in products that resist heat, oil, stains and water. The chemicals have been used in Australia and around the world in many common household products and specialty applications, including legacy firefighting foams used by Defence.

Exposure to PFAS can occur from eating or drinking PFAS impacted food, groundwater and surface water and through contact with a range of work environments and various common household products.

Common household products containing PFAS include non-stick cookware, fabric, furniture and carpet stain protection applications and food packaging.

At locations where PFAS contamination has been identified at higher levels, the main way people can be exposed is by drinking contaminated bore or surface water. Other ways include consuming home grown produce (such as eggs, milk, meat, fruit or vegetables) where contaminated water has been used or eating seafood caught in affected areas.





Australian Government
Department of Defence

Contact the Project Team:

1800 817 751

amberley@ch2m.com.au

www.defence.gov.au/environment/pfas/amberley/

Media enquiries should be directed to
Defence Media on (02) 6127 1999 or



*Bremer River near RAAF Base
Amberley*



Janet Cumming

From: David Larkings
Sent: Tuesday, 19 June 2018 3:43 PM
To: Janet Cumming
Cc: Suzanne Huxley
Subject: FW: Amberley Q&A to check

Hi Janet

Can you please check the Q&A for fish at Amberley? I have made some additions including a Q&A on recreational use of the water.

Thanks
 David

From: Suzanne Huxley
Sent: Tuesday, 19 June 2018 1:44 PM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Amberley Q&A to check

Hi David

I have made some comments and tracked changes. It would also be worth asking Janet to have a look, and then once we are happy here perhaps someone from the media team could also give it a look for readability.

Thanks

Suzanne

From: David Larkings
Sent: Tuesday, 19 June 2018 1:04 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: Amberley Q&A to check

Hi Suzanne

I have updated the Q&A document for Amberley. Can you please check it? The changes can be seen in Track Changes.

It is saved at <Q:\HPB\SHARE\Incidents\PFAS\Defence\Amberley\Amberley preliminary biota sampling\QH Q&As Amberley PFAS in fish v19-6-18 DRAFT.docx>

Thanks
 David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]
a: PO Box 2368 Fortitude Valley BC QLD 4006
w: Queensland Health | **e:** david.larkings@health.qld.gov.au



Queensland's health vision | *By 2026 Queenslanders will be among the healthiest people in the world.*

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

RTI RELEASE

From: [David Larkings](#)
To: [James Stewart](#)
Cc: [Frank Mills](#); [Ramu Beesabathini](#); [Bruce Morton](#); [PFAS](#); [Sophie Dwyer](#); [Janet Cumming](#); [Suzanne Huxley](#)
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP - Aboriginal community at Amberley
Date: Tuesday, 19 June 2018 4:28:23 PM
Attachments: [image001.png](#)
[image013.png](#)
[image015.png](#)
[image016.png](#)

Hi James

The comments provided to the Department of Defence on the Amberley HHRA methodology included a comment that an there is Indigenous community centre on Middle Road at Purga (running down to the Warrill Creek) which might be a focus for indigenous fishing, and that consideration should be given to investigating if this community may potentially be affected.

The West Moreton Public Health Unit has made some enquiries and about fishing/hunting and gathering by the indigenous community in the area. They could not find any Aboriginal office or any Aboriginal community on Middle Road, Purga. However, they visited the Purga Elders & Descendants Aboriginal Corporation at 587 Ipswich Boonah Rd, Purga where they met Lesley Kanofski who is responsible for running the office. Lesley said that she is aware of many indigenous families who regularly undertake fishing activities in Warrill Creek.

Lesley also said that Derek Kinchela (Ph: 38106696) who works as a Reconciliation Officer at Ipswich City Council would be able to provide more information about the families who may be fishing at Warrill Creek.

Lesley Kanofski's contact details are as follows:

[Redacted contact details]

Can you please consider providing the above advice to the Department of Defence, which may assist them with the HHRA and considering whether there may potential health impacts on local indigenous community members.

Regards

David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [Redacted]

a: PO Box 2368 Fortitude Valley BC QLD 4006

w: [Queensland Health](#) | **e:** david.larkings@health.qld.gov.au



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From: James Stewart [mailto:james.stewart@premiers.qld.gov.au]
Sent: Monday, 11 June 2018 2:12 PM
To: PFASIM Amberley <pfasim.amberley@defence.gov.au>; Leriche, Michael MR <michael.leriche@defence.gov.au>; Simon Beesley <Simon.Beesley@dsdmip.qld.gov.au>; John White <John.White@dsdmip.qld.gov.au>; Adrian Mckay <Adrian.Mckay@dnrm.qld.gov.au>; Amani Kowero <Amani.Kowero@des.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Michael Logan <Michael.Logan@qfes.qld.gov.au>; Peter Kind <Peter.Kind@daf.qld.gov.au>; Raymond Bott <Raymond.bott@qfes.qld.gov.au>; Reinier Mann <Reinier.Mann@dsiti.qld.gov.au>; Richard Watts <Richard.Watts@daf.qld.gov.au>; simone.ventura@ehp.qld.gov.au; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Suzanne Vardy <Suzanne.Vardy@dsiti.qld.gov.au>; Tony Bradshaw <Tony.Bradshaw@ehp.qld.gov.au>
Cc: Glyde, Virginia MS <virginia.glyde@defence.gov.au>
Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP
Importance: High

Good afternoon Virginia,

Please find attached our review of the RAAF Amberley HHRA SAQP for PFAS contamination.

If you have any questions please don't hesitate to contact me.

Kin regards,

James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
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From: Glyde, Virginia MS [mailto:virginia.glyde@defence.gov.au] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 4:40 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June.

[SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Thanks for the update. Yes, we thought the biota results might affect the comments on the HHRA SAQP.

The Amberley team are never idle, an understatement perhaps, but I've managed to secure just a long weekend away at the end of next week.

Will hear further from you next week.

Have a great weekend.
Virginia

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Friday, 8 June 2018 3:06 PM
To: PFASIM Amberley
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June.
[SEC=UNCLASSIFIED]

Hi Virginia,

Thank you for letting me know. I'll put out a date claimer now.

I understand that Queensland Health are updating their comments in light of the recent biota results found at Amberley.

Hope you enjoy your leave.

Kind regards,
James.

James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



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From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 3:02 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June.
[SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Our project team are available for the Friday 15 June timeslot after 2pm, if it is confirmed we do need a teleconference.

Our attendee's would be:

Mick Le Riche, Defence Project Director, michael.leriche@defence.gov.au

Jeremy Wicks, Jacobs Project Manager, [REDACTED]

Jo Cuttler, Jacobs Project Director, [REDACTED]

Jackie Wright, Risk Assessor [REDACTED]

I will be on leave that day, however the team attending provides appropriate coverage.

Thanks

Ginni

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group

M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: Glyde, Virginia MS
Sent: Thursday, 7 June 2018 2:20 PM
To: 'James Stewart'
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June.
 [SEC=UNCLASSIFIED]

UNCLASSIFIED

Thank you James,

I'll gather the teams availability and respond to those dates/times as soon as possible.

Cheers
 Virginia

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Thursday, 7 June 2018 1:35 PM
To: Glyde, Virginia MS
Cc: Leriche, Michael MR
Subject: QLD Technical Working Group Availabilities week commencing 11 June.

Hi Virginia,

Please find below availabilities for the TWG to discuss the Amberley HHRA.

Wednesday 13 June – 9-10am or 1.30-2.30pm
 Thursday 14 June – 9-10am
 Friday 15 June - any time before 1pm or after 2pm

At this stage I cannot say whether or not a teleconference will be needed. However I'll put in a

1hr date claimer at your convenience just in case.

Thanks Virginia,
James.

James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



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Janet Cumming

From: Janet Cumming
Sent: Tuesday, 19 June 2018 5:18 PM
To: David Larkings
Cc: Suzanne Huxley
Subject: RE: Amberley Q&A to check

David,
There's a typo in the sentence on the FSANZ advice

This is in line with the recommended total dietary intake advised by Food Standards Australia New Zealand generally for fish caught anywhere to limit intake of mercury." It has an extra 'for' in it.

I won't save the version I've been reading via citrix, because it does weird things to the spacing.

Janet

From: David Larkings
Sent: Tuesday, 19 June 2018 3:43 PM
To: Janet Cumming
Cc: Suzanne Huxley
Subject: FW: Amberley Q&A to check

Hi Janet

Can you please check the Q&A for fish at Amberley? I have made some additions including a Q&A on recreational use of the water.

Thanks
David

From: Suzanne Huxley
Sent: Tuesday, 19 June 2018 1:44 PM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Amberley Q&A to check

Hi David

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Thanks

Suzanne

From: David Larkings
Sent: Tuesday, 19 June 2018 1:04 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: Amberley Q&A to check

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It is saved at <Q:\HPB\SHARE\Incidents\PFAS\Defence\Amberley\Amberley preliminary biota sampling\QH Q&As Amberley PFAS in fish v19-6-18 DRAFT.docx>

Thanks
David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]

a: PO Box 2368 Fortitude Valley BC QLD 4006

w: Queensland Health | **e:** david.larkings@health.qld.gov.au



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Janet Cumming

From: David Larkings
Sent: Wednesday, 20 June 2018 3:20 PM
To: Janet Cumming
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Janet

Do you have any concerns or comments in relation to sending the following additional comment to DPC to send to Defence?

Dear James

Can you please consider sending the following additional comments to the Department of Defence in relation to the Amberley HHRA methodology.

Following further review of the proposed HHRA Methodology, concern is raised that additional sampling of surface water from the Bremer River and Warrill Creek does not appear to be included. As such, there may be insufficient data for the HHRA to properly inform whether the water complies with current recreational water quality values for PFAS and for assessing whether the water is suitable to be used to water livestock intended for human consumption.

It is noted from the SAQP (2017) that water from Warrill Creek and the Bremer River was sampled in 2016 and 2017 and that some of the results exceeded the current drinking water quality values (which are relevant to livestock water) and the recreational water quality values published by the Australian Government Department of Health.

There is considerable variation in the concentrations of PFAS in the surface water at some sampling sites shown in the SAQP. The concentration of PFAS in these water courses may fluctuate over time. This may be influenced by rainfall runoff from RAAF Base Amberley and other factors such as water flow in the water courses.

Table 1 of the HHRA Methodology shows that there are a number of properties where cattle may have access to Warrill Creek, Purga Creek or the Bremer River for drinking purposes. Water consumption is a potential major PFAS exposure pathway for cattle. Ideally, the water used for livestock for human consumption should comply with human health limits for PFAS in drinking water.

It may be useful to understand current concentrations as well as historical ones when assessing the impact on livestock. Similarly, the public would need confidence in relation to the results for recreational water use and better knowledge of typical PFAS concentrations in the water would help provide advice to the public on recreational water use. As such, it is important to undertake further sampling of surface water from Warrill Creek and the Bremer River.

Regards
 David

From: James Stewart [mailto:james.stewart@premiers.qld.gov.au]
Sent: Monday, 11 June 2018 2:12 PM
To: PFASIM Amberley <pfasim.amberley@defence.gov.au>; Leriche, Michael MR <michael.leriche@defence.gov.au>; Simon Beesley <Simon.Beesley@dsdmip.qld.gov.au>; John White <John.White@dsdmip.qld.gov.au>; Adrian Mckay <Adrian.Mckay@dnrm.qld.gov.au>; Amani Kowero <Amani.Kowero@des.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Michael Logan <Michael.Logan@qfes.qld.gov.au>; Peter Kind <Peter.Kind@daf.qld.gov.au>; Raymond Bott <Raymond.bott@qfes.qld.gov.au>; Reinier Mann <Reinier.Mann@dsiti.qld.gov.au>; Richard Watts

<Richard.Watts@daf.qld.gov.au>; simone.ventura@ehp.qld.gov.au; Sophie Dwyer
 <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Suzanne Vardy
 <Suzanne.Vardy@dsiti.qld.gov.au>; Tony Bradshaw <Tony.Bradshaw@ehp.qld.gov.au>

Cc: Glyde, Virginia MS <virginia.glyde@defence.gov.au>

Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Importance: High

Good afternoon Virginia,

Please find attached our review of the RAAF Amberley HHRA SAQP for PFAS contamination.

If you have any questions please don't hesitate to contact me.

Kin regards,



James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



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From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 4:40 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Thanks for the update. Yes, we thought the biota results might affect the comments on the HHRA SAQP.

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Will hear further from you next week.

Have a great weekend.
 Virginia

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations

PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: virginia.glyde@defence.gov.au

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To: PFASIM Amberley
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Hope you enjoy your leave.

Kind regards,
James.



James Stewart
Policy Officer
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To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Our project team are available for the Friday 15 June timeslot after 2pm, if it is confirmed we do need a teleconference.

Our attendee's would be:

Mick Le Riche, Defence Project Director, michael.leriche@defence.gov.au
 Jeremy Wicks, Jacobs Project Manager, [REDACTED]
 Jo Cuttler, Jacobs Project Director, [REDACTED]
 Jackie Wright, Risk Assessor [REDACTED]

I will be on leave that day, however the team attending provides appropriate coverage.

Thanks
 Ginni

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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To: 'James Stewart'
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

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Cheers
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Virginia Glyde

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 Defence Project Manager - Environmental Investigations
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Sent: Thursday, 7 June 2018 1:35 PM
To: Glyde, Virginia MS
Cc: Leriche, Michael MR
Subject: QLD Technical Working Group Availabilities week commencing 11 June.

Hi Virginia,

Please find below availabilities for the TWG to discuss the Amberley HHRA.

Wednesday 13 June – 9-10am or 1.30-2.30pm

Thursday 14 June – 9-10am

Friday 15 June - any time before 1pm or after 2pm

At this stage I cannot say whether or not a teleconference will be needed. However I'll put in a 1hr date claimer at your convenience just in case.

Thanks Virginia,
 James.



James Stewart
 Policy Officer
Environment Policy
 Department of the Premier and Cabinet

P 07 3003 9487
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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David Larkings

From: Glyde, Virginia MS <virginia.glyde@defence.gov.au> on behalf of PFASIM Amberley <pfasim.amberley@defence.gov.au>
Sent: Thursday, 21 June 2018 1:11 PM
To: 'James Stewart'
Cc: David Larkings; Sophie Dwyer; Janet Cumming; Suzanne Huxley; Bruce Morton
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP - Aboriginal community at Amberley [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hello James,

Thank you for the information below.

I will pass this on to my communications lead consultant, who has just today advised that she met with Derek Kinchela yesterday. They had a good discussion and Derek provided advice on how and where to distribute the newsletter that we have developed for this precautionary advice.

The information and additional contact details provided below will still be of use, so we appreciate it.

Regards
 Virginia

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** virginia.glyde@defence.gov.au

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From: James Stewart [mailto:james.stewart@premiers.qld.gov.au]
Sent: Wednesday, 20 June 2018 9:05 AM
To: PFASIM Amberley
Cc: 'virginia.glyde@rpsgroup.com.au'; Leriche, Michael MR; David Larkings; Sophie Dwyer; Janet Cumming; Suzanne Huxley; Bruce Morton
Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP - Aboriginal community at Amberley
Importance: High

Good morning Virginia,

David Larkings from Queensland Health has provided the below information in regard to comments made on the Amberley HHRA SAQP. The below information may assist you in carrying out the assessment.

Kind regards,
James.



James Stewart
Policy Officer
Environment Policy
Department of the Premier and Cabinet
P 07 3003 9487
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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From: David Larkings [mailto:David.Larkings@health.qld.gov.au]
Sent: Tuesday, 19 June 2018 4:28 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Cc: Frank Mills <Frank.Mills@health.qld.gov.au>; Ramu Beesabathini <Ramu.Beesabathini@health.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>; PFAS <PFAS@health.qld.gov.au>; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP - Aboriginal community at Amberley

Hi James

The comments provided to the Department of Defence on the Amberley HHRA methodology included a comment that there is Indigenous community centre on Middle Road at Purga (running down to the Warrill Creek) which might be a focus for indigenous fishing, and that consideration should be given to investigating if this community may potentially be affected.

The West Moreton Public Health Unit has made some enquiries and about fishing/hunting and gathering by the indigenous community in the area. They could not find any Aboriginal office or any Aboriginal community on Middle Road, Purga. However, they visited the Purga Elders & Descendants Aboriginal Corporation at 587 Ipswich Boonah Rd, Purga where they met Lesley Kanofski who is responsible for running the office. Lesley said that she is aware of many indigenous families who regularly undertake fishing activities in Warrill Creek.

Lesley also said that Derek Kinchela (Ph: 38106696) who works as a Reconciliation Officer at Ipswich City Council would be able to provide more information about the families who may be fishing at Warrill Creek.

Lesley Kanofski's contact details are as follows:



Can you please consider providing the above advice to the Department of Defence, which may assist them with the HHRA and considering whether there may potential health impacts on local indigenous community members.

Regards
David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall m: [REDACTED]

a: PO Box 2368 Fortitude Valley BC QLD 4006

w: [Queensland Health](#) | **e:** david.larkings@health.qld.gov.au



Queensland's health vision | *By 2026 Queenslanders will be among the healthiest people in the world.*

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]

Sent: Monday, 11 June 2018 2:12 PM

To: PFASIM Amberley <pfasim.amberley@defence.gov.au>; Leriche, Michael MR <michael.leriche@defence.gov.au>; Simon Beesley <Simon.Beesley@dsmip.qld.gov.au>; John White <John.White@dsmip.qld.gov.au>; Adrian Mckay <Adrian.Mckay@dnrm.qld.gov.au>; Amani Kowero <Amani.Kowero@des.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Michael Logan <Michael.Logan@qfes.qld.gov.au>; Peter Kind <Peter.Kind@daf.qld.gov.au>; Raymond Bott <Raymond.bott@qfes.qld.gov.au>; Reinier Mann <Reinier.Mann@dsiti.qld.gov.au>; Richard Watts <Richard.Watts@daf.qld.gov.au>; simone.ventura@ehp.qld.gov.au; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Suzanne Vardy <Suzanne.Vardy@dsiti.qld.gov.au>; Tony Bradshaw <Tony.Bradshaw@ehp.qld.gov.au>

Cc: Glyde, Virginia MS <virginia.glyde@defence.gov.au>

Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Importance: High

Good afternoon Virginia,

Please find attached our review of the RAAF Amberley HHRA SAQP for PFAS contamination.

If you have any questions please don't hesitate to contact me.

Kin regards,



James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



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From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley

Sent: Friday, 8 June 2018 4:40 PM

To: James Stewart <james.stewart@premiers.qld.gov.au>

Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Thanks for the update. Yes, we thought the biota results might affect the comments on the HHRA SAQP.

The Amberley team are never idle, an understatement perhaps, but I've managed to secure just a long weekend away at the end of next week.

Will hear further from you next week.

Have a great weekend.
Virginia

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | **Estate & Infrastructure Group**
M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]

Sent: Friday, 8 June 2018 3:06 PM

To: PFASIM Amberley

Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

Hi Virginia,

Thank you for letting me know. I'll put out a date claimer now.

I understand that Queensland Health are updating their comments in light of the recent biota results found at Amberley.

Hope you enjoy your leave.

Kind regards,
James.



James Stewart
 Policy Officer
Environment Policy
 Department of the Premier and Cabinet
 P 07 3003 9487
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 3:02 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Our project team are available for the Friday 15 June timeslot after 2pm, if it is confirmed we do need a teleconference.

Our attendee's would be:

Mick Le Riche, Defence Project Director, michael.leriche@defence.gov.au
 Jeremy Wicks, Jacobs Project Manager, [REDACTED]
 Jo Cuttler, Jacobs Project Director, [REDACTED]
 Jackie Wright, Risk Assessor [REDACTED]

I will be on leave that day, however the team attending provides appropriate coverage.

Thanks
 Ginni

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** virginia.glyde@defence.gov.au

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From: Glyde, Virginia MS
Sent: Thursday, 7 June 2018 2:20 PM
To: 'James Stewart'
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Thank you James,

I'll gather the teams availability and respond to those dates/times as soon as possible.

Cheers
Virginia

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Thursday, 7 June 2018 1:35 PM
To: Glyde, Virginia MS
Cc: Leriche, Michael MR
Subject: QLD Technical Working Group Availabilities week commencing 11 June.

Hi Virginia,

Please find below availabilities for the TWG to discuss the Amberley HHRA.

Wednesday 13 June – 9-10am or 1.30-2.30pm
Thursday 14 June – 9-10am
Friday 15 June - any time before 1pm or after 2pm

At this stage I cannot say whether or not a teleconference will be needed. However I'll put in a 1hr date claimer at your convenience just in case.

Thanks Virginia,
James.



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RTI RELEASED

Janet Cumming

From: Wicks, Jeremy J <[REDACTED]>
Sent: Friday, 22 June 2018 8:12 AM
To: Wicks, Jeremy/BNE; eigservicedelivery.ambbsm@defence.gov.au; robert.craig@defence.gov.au; christopher.hood1@defence.gov.au; matthew.clarke1@defence.gov.au; linda.oliver@defence.gov.au; virginia.glyde@defence.gov.au; michael.leriche; Cuttler, Jo/HML; Scott, Philippa/SYD; leslie@communicate.net.au; Vanessa Bryant; ian.batterley@sensversa.com.au; Tiffany.Rees@ipswich.qld.gov.au; Amani.Kowero@des.qld.gov.au; tony.bradshaw@des.qld.gov.au; michael.ross@daf.qld.gov.au; guy.bignell@dnrm.qld.gov.au; Bruce Morton; christopher.hood1@defence.gov.au; Suzanne Huxley; Janet Cumming; Leslie Wapler; Ramu Beesabathini; Janet Cumming; BROWN Josh (DES); BIGNELL Guy; Scott, Philippa/SYD; Cuttler, Jo/HML
Subject: Amberley PFAS Investigation - PCG Meeting #5 - Meeting Agenda, Minutes of PCG Meeting #4
Attachments: RAAF Amberley PFAS Investigation - PCG Meeting 5 - Agenda.pdf; Amberley newsletter 18June18_final.pdf; RAAF Amberley PFAS Investigation - PCG Meeting 4 - Minutes_RevA.pdf

Good morning,

Please find attached the following:

- agenda for the PCG Meeting next Wednesday 27/6/18 at 13:30 pm.
- minutes of PCG Meeting #4
- RAAF Amberley PFAS Investigation Community Newsletter – 18 June 2018

Best regards

Jeremy Wicks | Jacobs | Senior Associate | ANZ Infrastructure & Environment | +61 7 [REDACTED] | +61 [REDACTED]
 | [REDACTED] | www.jacobsskm.com

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Australian Government
Department of Defence
 Estate and Infrastructure Group

**PFAS Environmental Investigation – RAAF Base Amberley
 PROJECT CONTROL GROUP MONTHLY MEETING #5**

AGENDA

Administrative Details	
Date	27 June 2018
Time	1.30 – 2.30 pm
Venue	Phone conference (Dial in)
Dial-in Details	Phone: [REDACTED] Participant Pin: [REDACTED]
Chair	Mick Le Riche
Minutes	Taken by CH2M

Invited Attendees	
Defence – PFAS	Mick Le Riche – Project Director Virginia Glyde – Project Manager
Defence – Base	AIRCDRE Ken Robinson - SADFO Christopher Hood - RAAF Base Amberley, Base Support Manager (acting) WGCDR Rosemary Dyke – ABXO SQNLDR Alex Smith - XO Linda Oliver – RAAF Base Amberley, RESO Matt Clarke – Defence Regional Representative
CH2M	Jo Cuttler – Project Director Jeremy Wicks – Project Manager Leslie Wapler – Stakeholder and Community Engagement Philippa Scott – Task Manager
Queensland Government	Amani Kowero – Department of Environment & Science Tony Bradshaw – Department of Environment & Science Josh Brown – Department of Environment & Science Michael Ross – Department of Agriculture & Fisheries Guy Bignell – Department of Natural Resources, Mines and Energy Ramu Beesabathini – Department of Health Bruce Morton – Department of Health Dr Suzanne Huxley – Department of Health Dr Janet Cumming – Department of Health
Ipswich City Council	Tiffany Rees - Ipswich City Council

Agenda		
Item 1	Welcome	Chair
Item 2	Amberley PFAS Investigation Overview	Chair
Item 3	Update on Project investigations and Reporting	CH2M
Item 4	Community and Stakeholder engagement	CH2M
Item 5	Project Risks and Issues	Chair
Item 6	Any other business	Chair



RAAF Base Amberley PFAS Investigation Community Newsletter

PFAS Investigation and Management Program

Investigation Update

In March 2017, Defence commenced a detailed environmental investigation at RAAF Base Amberley and the surrounding area to identify the nature and extent of per- and poly-fluoroalkyl substances (PFAS) in the environment and any potential exposure pathways to humans, plants and animals.

This newsletter provides an update on the investigation as well as a summary of common questions about the investigation.

Detailed Site Investigation

As part of the environmental investigation, a Detailed Site Investigation is being conducted which involves a comprehensive sampling program.

The sampling for the Detailed Site Investigation has now been completed with the results currently undergoing analysis.

A report is being prepared which will identify the source areas for PFAS, examine how and where PFAS has moved from those source areas, provide results from sampling and identify potential PFAS exposure pathways which require further sampling and analysis.

Human Health Risk Assessment

A Human Health Risk Assessment has commenced which will assess the exposure pathways to PFAS for people living, working and undertaking recreational activities within the Investigation Area.

It looks closely at potential exposure pathways and characterises the level of exposure risk, which is then compared against criteria recommended and/or adopted by state and federal regulatory agencies. If the exposure risk from a pathway is assessed as

being above acceptable levels, then precautions will be suggested to minimise future PFAS exposure.

Biota (fish, plants, fruits and vegetables) sampling and further groundwater, surface water, soil and sediment sampling for the Human Health Risk Assessment is underway.

The possible build up of PFAS in fish from the Bremer River or Warrill Creek, and their subsequent human consumption, has also been identified as a potential exposure pathway to PFAS.

As a result, the preliminary sampling of specific edible fish species has recently been completed. Further information can be found on page 2 of this newsletter.

Ecological Risk Assessment

An Ecological Risk Assessment will soon commence, the planned scope for this work is currently being developed.

An Ecological Risk Assessment assesses the potential risks of PFAS exposure to water and land-based plants and animals and their environment. It also considers the exposure risks for the accumulation of PFAS in birds and mammals through the consumption of plants and smaller creatures.

PFAS Management Area Plan

The best management and remediation options for a particular site are determined by site-specific factors, including hydrogeology, the type of contamination, and access.

At the end of the RAAF Base Amberley investigation, Defence will use all these findings to develop a PFAS Management Area Plan that is tailored to the unique conditions of the site.





Health advice – Fish from the Bremer River and Warrill Creek

In April 2018, as part of the Human Health and Risk Assessment, initial testing for PFAS was conducted on seafood (mullet, catfish and eel) in the Bremer River and Warrill Creek. The results of this testing were provided to Queensland Health.

Based on an assessment of the results, Queensland Health advises that you **should not** consume fish caught in the Investigation Area (shown right). This advice applies to fish caught in the Bremer River and Warrill Creek near RAAF Base Amberley.

This interim advice is a precautionary approach to minimise potential PFAS exposure.

Further testing and analysis will be carried out as part of the Human Health Risk Assessment, including tests of other species of more popular edible fish.

Until this further testing is completed, the Queensland Health advice applies to all fish species.

This is precautionary advice, based on preliminary test results, and we will keep the community and recreational fishers updated as the investigation progresses.

Queensland Health advises that you should not be concerned for your health if you have occasionally consumed fish from the Bremer River or Warrill Creek in the past.

Government Guidance

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released guidance statements relating to human health.

According to enHealth, there is currently no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects. However, because these substances persist in humans and the environment, enHealth recommends that human exposure is minimised as a precaution.

Further information can be found via the Commonwealth Department of Health PFAS webpage and community information line:

Phone: 1800 941 180

Web: <http://www.health.gov.au/pfas>

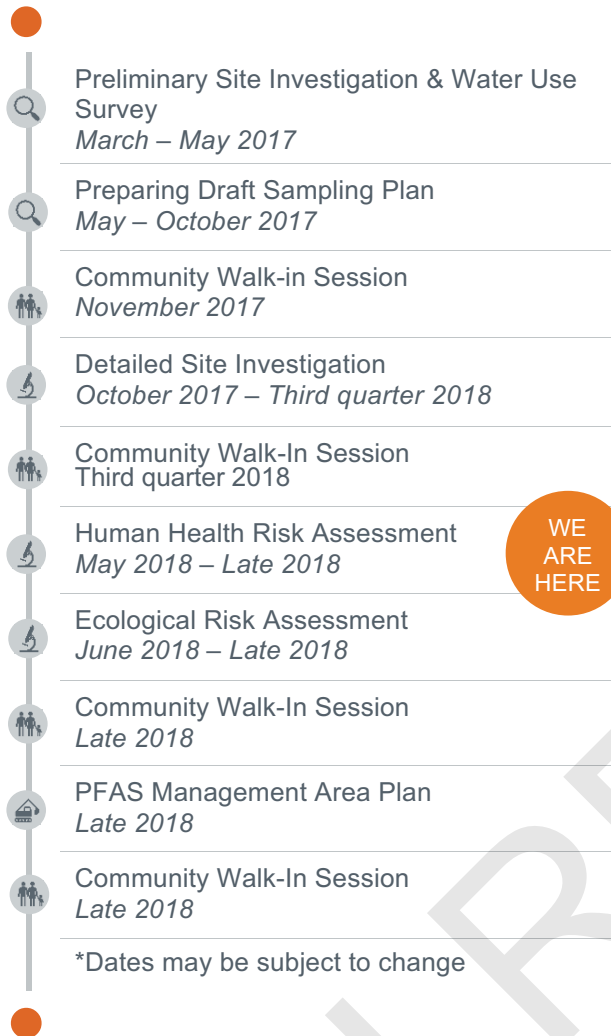
The Investigation Area

The Investigation Area (below) defines the current extent of the investigation, focussed on the potential people, animals and environment that may be exposed to PFAS. The Investigation Area will be updated and amended as the investigation progresses and additional data becomes available.





Investigation Timeline



Upcoming Community Engagement

Defence is committed to regularly updating the community throughout the investigation.

The Detailed Site Investigation and Human Health Risk Assessment reports are expected to be released publicly in the second half of 2018 and Community Walk-in Sessions will be held to coincide with the release of the reports.

What are the Water Use Surveys used for?

As part of the investigation, information has been collected through a Water Use Survey to find out more about water use near RAAF Base Amberley.

The survey results provide us with an understanding of groundwater and surface water use and have helped to determine what sampling needs to be conducted as part of the investigation.

How can people be exposed to PFAS?

PFAS are manufactured chemicals used in products that resist heat, oil, stains and water. The chemicals have been used in Australia and around the world in many common household products and specialty applications, including legacy firefighting foams used by Defence.

Exposure to PFAS can occur from eating or drinking PFAS impacted food, groundwater and surface water and through contact with a range of work environments and various common household products.

Common household products containing PFAS include non-stick cookware, fabric, furniture and carpet stain protection applications and food packaging.

At locations where PFAS contamination has been identified at higher levels, the main way people can be exposed is by drinking contaminated bore or surface water. Other ways include consuming home grown produce (such as eggs, milk, meat, fruit or vegetables) where contaminated water has been used or eating seafood caught in affected areas.

Contact the Project Team:

- 1800 817 751
- amberley@ch2m.com.au
- www.defence.gov.au/environment/pfas/amberley/

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





Australian Government
Department of Defence
Estate and Infrastructure Group

PFAS Environmental Investigation – RAAF Base Amberley
PROJECT CONTROL GROUP MONTHLY MEETING #4

Meeting Minutes

Administrative Details	
Date	30 May 2018
Time	1.30 – 2.30 pm
Venue	Phone conference (Dial in)
Dial-in Details	Phone: [REDACTED] Participant Pin: [REDACTED]
Chair	Mick Le Riche
Minutes	CH2M

ORGANISATION	ATTENDEES
Defence – PFAS	Mick Le Riche (ML) – Defence, Project Director Virginia Glyde (VG) – Defence, Project Manager
Defence – Base	Robert (Jim) Craig (JC) - Defence BSM Chris Hood (CH) - Defence A/BSM Linda Oliver (LO) -Defence AMB RESO GPCAPT Sheldon Kimber (SK) - Defence AMB Base Redevelopment Officer
Project Lead Consultant - CH2M	Jo Cuttler (JoC) – Lead Consultant, Project Director Leslie Wapler (LW) – Lead Consultant, Stakeholder and Community Engagement Philippa Scott (PS) – Lead Consultant, Task Manager
Project Technical Advisor - Senversa	Vanessa Bryant (VB) Ian Batterley (IB)
Department of Environment & Science	Amani Kowero (AK)
Department of Natural Resources, Mines and Energy	Guy Bignell (GB)
Department of Health	Ramu Beesabathini (RB)
ORGANISATION	APOLOGIES
Project Lead Consultant - CH2M	Jeremy Wicks – Lead Consultant, Project manager
Ipswich City Council	Tiffany Rees
Department of Agriculture and Fisheries	Michael Ross

Meeting Minutes	
Agenda Item	Summary
Project Update	<p>Field Work Completed Since 28 April 18:</p> <ul style="list-style-type: none"> • No additional Water Use Surveys have been received since 28 April / the last PCG meeting. • No additional soil, sediment, surface water, groundwater or tanks have been collected or analysed in May • Preliminary Biota (edible fish) Sampling Program undertaken from 9 to 20 April. The lab analysis for the preliminary biota samples was received 9 May 2018 (secondary lab analysis was received 18 May. Triplicate data is due 1 June) • HHRA edible biota sampling (fruit, vegetables and chicken eggs) conducted on 14 – 24 May. <p>Preliminary Biota Sampling:</p> <ul style="list-style-type: none"> • Biota samples were collected from two locations in Warrill Creek and five locations in the Bremer River. In total, 22 samples were collected. • A sampling summary and initial review have been conducted by the Lead Consultant's Human Health Risk Assessor and calculations have shown there is an elevated risk to people eating the fish. This information was provided to the Queensland Technical Working Group (TWG) on 30 May, so that Qld Health can conduct their own risk assessment. It is expected Qld Health will advise Defence on potential next steps following their assessment. <p>Upcoming Work to be Completed Over June:</p> <ul style="list-style-type: none"> • HHRA sampling - More edible biota sampling will be conducted on 31 May – 22 June. • ERA sampling to commence in July (10 days of field work). • Newsletter to be published in June. <p>DSI Report:</p> <ul style="list-style-type: none"> • Preliminary draft DSI Report submitted to Defence on 18 May 2018. • The Technical Adviser and Defence are reviewing, providing comments by early June. • The Lead Consultant will address comments and submit draft DSI Report V1 to Defence, late June 2018. This will go through another round of reviews in July, including the Queensland Government PFAS TWG and key Amberley Base representatives. • Publication is anticipated in mid to late August, and will be accompanied by a Community Walk In Session (CWIS). <p>Project Schedule:</p> <ul style="list-style-type: none"> • DSI publication – August including the accompanying CWIS • HHRA and ERA reports targeted to be published in October with an accompanying CWIS.
Stakeholder and Community Engagement	<p>Result Letters:</p> <ul style="list-style-type: none"> • Results letter delivery for the DSI sampling has been completed with exception of two results letters. All results letters are being hand delivered to residents. • EDQ has given approval to issue the two outstanding results letters to the tenants leasing their properties. Visits to deliver these letters are now being organised with the tenants. This is planned for next week (w/c 4 June). • The information packs provided with the letters include contact details of relevant State Departments (DES, DAF), if residents wish to contact them with questions that are beyond Defence scope to answer.

	<p>Community engagement and site access:</p> <ul style="list-style-type: none"> • As part of the results letter delivery, we have been introducing discussion on the HHRA and explaining upcoming requirements, so the community understand next steps. • Site access letters for the HHRA are being delivered and completed in person, so we can sit down with community members, answer questions and ensure they are comfortable with upcoming works. As a result, site access for the initial set of biota sampling as part of the HHRA has been arranged quite rapidly in recent weeks • Further sampling work is taking place this week and further site access letters are under development. <p>Community Newsletter:</p> <ul style="list-style-type: none"> • A Newsletter for the community is almost complete – the main challenge has been finalising the timeline for some of the major milestones we have coming up in future. • The Newsletter explains purpose / context / description of DSI, HHRA and ERA and will be useful reference document for the community. <p>Stakeholder engagement and site access:</p> <ul style="list-style-type: none"> • The team has presented at quarterly Amberley Consultative Working Group (ACWG) meetings and has provided a project briefing to the incoming Commanding Officer of the RAAF Amberley Security and Fire School. • HHRA sampling planned on Ipswich City Council properties is being coordinated with Council. This is considered an important part of the SCE process to ensure appropriate communications and engagement with nearby residents, as there is a higher volume of sampling works in the HHRA sampling phase on ICC properties.
<p>Project Risks and Issues</p>	<p>Attendees were asked to raise what they considered to be (if any) potential risks to the program:</p> <ul style="list-style-type: none"> • Comment. (BSM) <i>[Regarding Qld Health advice to Defence that is anticipated on Prelim Biota Sampling results]</i>. The main risk is incorrect and premature information being given to the public and the Base needing to repair the damage. What is the process for this information being released? • Answer. (ML) What causes the angst in the community <i>[in previous PFAS investigations]</i> is when they become aware of high levels of PFAS. This has occurred in fish. This data gets sent to the TWG and they assess the data to see if the risk needs to be communicated to the public. TWG and Department of Premier and Cabinet (DPC) will inform Defence if any information needs to be given to the public. QLD Health says the polluter is responsible for the communications. Defence will work with QLD Health to make sure they will not release information before Defence is ready. Any advice received from QLD Health, which is expected this week, will be advised to the BSM and SADFO. Leslie Wapler <i>[Comms Lead]</i> will be involved in ensuring there is a communications plan including fact sheets, etc. A good relationship with the TWG has been established, there is an expectation that TWG will inform Defence of their intentions and inform Defence of their requirements in terms of communicating risks to the public. • Comment. (BSM) Fishing and water use would be occurring now, and will need to be dealt with quickly. • Comment. (VG) An Investigation Area is set around the base where we know PFAS has moved. Landowners that use water have been given results and are aware of them. No one that has completed a water use survey has indicated that they fish and eat fish from the river. Therefore, we need to find out who the audience is that fish. • Comment. (BSM) Water in the creek goes to parks and playing fields. • Comment. (VG) One school has been identified that waters the playing field. Matt Clarke has provided advice on communicating with the school.

	<ul style="list-style-type: none"> • Comment. (ML) Defence is aware we don't want headlines, so we have established the communication with the TWG. There is a step before the information goes out to the public. Should the TWG see there is a risk, TWG would draft the words to provide Defence advice of what should be provided to the public. The PFAS team will provide this communication to the Base and PFASIM Branch in Canberra.
<p style="text-align: center;">Discussion</p>	<p>General discussion and questions about the Amberley PFAS investigation program:</p> <ul style="list-style-type: none"> • Question. (SK) Regarding upstream and downstream differences in the PFAS levels, is the assessment able to say that the western portion was the same as the southern most point, or that there is a difference? • Answer. (JoC) There are 22 AoCs identified through the investigation where AFFF has been used. The source pathway does change. If you were to take samples at both locations the results are likely be different. Generally, there are higher levels of PFAS at discharge points and migrating off-base, in comparison to the upstream locations. • Comment. (ML) Samples have been collected upstream of the base to confirm baseline, what is coming down the catchment, recognising that Amberley is one source. There are detections upstream indicating Amberley is one source in the broader spectrum. • Question. (GB) Do you know of anyone irrigating? • Answer. (ML) The Lead Consultant has a list of licensed irrigators within the IA. The risk for the investigation is unlicensed irrigators and how we find this out. Do you have any suggestions for how to manage this risk? • Answer. (GB) If you're watering with riparian water or groundwater over an area less than 5,000 m², this is considered domestic use and a license is not required. • Question. (GB) What is the connectivity between surface water and groundwater? • Answer. (CH2M, technical summary response taken on notice at the meeting) Gaining or losing stream sections and corresponding groundwater and surface water connectivity were evaluated with a multiple lines of evidence approach using available water level and chemical data. Available water level data indicates that surface water and groundwater connectivity varies between gaining and losing stream conditions, relative to the surface water elevation in Bremer River and Warrill Creek. Specifically, the water level elevation in Bremer River and Warrill Creek was sometimes above the local groundwater elevation and at other times below the local groundwater elevation. The apparent connectivity between surface water and groundwater is also supported by the chemical data that show depressed chloride concentrations in groundwater near Bremer River and Warrill Creek. In general, chloride concentrations in groundwater are an order of magnitude higher than in surface water, except in some areas near Bremer River and Warrill Creek where chloride concentrations are nearly identical, where it appears surface water has recharged to groundwater. Additional data is needed to better understand the seasonality of these conditions and their relationship to PFAS migration. • Comment. (ML) Please give an update on how the community is feeling (to LW) • Answer. (LW) The community is patient and understand the process. They are understanding of the fact there is a lot of work involved and we can't provide responses immediately. Communicating regularly has been of great benefit. Great progress is being made. The community in close vicinity of the base are well aware of what we are doing and are helpful and understanding of our need to access their properties.
<p style="text-align: center;">Other Business</p>	<ul style="list-style-type: none"> • Timeframe for PCG 5 is Wednesday 27 June at 1:30pm.

Janet Cumming

From: Suzanne Huxley
Sent: Monday, 25 June 2018 12:55 PM
To: David Larkings; Janet Cumming
Subject: RE: Additional comments on the Amberley HHRA methodology regarding water testing creek and river

Hi David

That looks fine to me. I have no additional comments.

Thanks
 Suzanne

From: David Larkings
Sent: Monday, 25 June 2018 12:47 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>
Subject: Additional comments on the Amberley HHRA methodology regarding water testing creek and river

Hi Suzanne and Janet

Do you have any comments or changes you would like to make to the attached additional comments on the Amberley HHRA methodology before we send it to Sophie to consider clearing?

The earlier draft sent to you has been changed to incorporate feedback from Dick Watts.

As far as timing goes, it may look like the comments are being made in response to the Australian Article on 25 June about the dumping of contaminated soil next to Warrill Creek – see page 23 of the following media report <http://report.mediaportal.com/8a5f605f2d418405936505c1b8029be3/MonitorReport-148f0e99-0429-4.pdf>.

If you want to edit the document, it is saved at <Q:\HPB\SHARE\Incidents\PFAS\Defence\Amberley\Additional comments Amberley HHRA Methodology 25-6-18.docx>

Regards
 David

From: WATTS Richard J [<mailto:Richard.Watts@daf.qld.gov.au>]
Sent: Monday, 25 June 2018 11:51 AM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

David

That seems Ok. I am happy if you want to make it edible offal.

Dick Watts
 Principal Scientific Advisor and Qld AgVet Chemical Coordinator
 Biosecurity Queensland
 Department of Agriculture and Fisheries

M [REDACTED] E richard.watts@daf.qld.gov.au W www.daf.qld.gov.au

From: David Larkings [<mailto:David.Larkings@health.qld.gov.au>]
Sent: Friday, 22 June 2018 1:34 PM
To: WATTS Richard J <Richard.Watts@daf.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Dick

Thank you for the comments.

Attached is a revised version with the changes showing in Track Changes.

Do you mind checking it and letting me know of any changes you think should be made.

Thanks
David

From: WATTS Richard J [<mailto:Richard.Watts@daf.qld.gov.au>]
Sent: Friday, 22 June 2018 9:46 AM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

David

You are correct that without further knowledge one should apply the human health drinking water criteria for livestock. However, for PFOS we have animal residue transfer studies so it is possible to assess the required exposure to produce a residue that will equate with the TDI. The reason we haven't calculated such water limits for cattle is because of the way the risks are being managed. That is there is low risk to parties outside the affected area and parties inside the affected area should minimise their exposure.

Whilst we can estimate such limits, exposure to humans from consumption of livestock tissues is best estimated from blood sampling of the animals. Therefore, my perspective is that where the water use survey indicates use of water where there is known PFOS contamination for livestock, the animals should be blood tested. So perhaps, in refining the message the cattle should be blood tested where their drinking water is above the human health drinking water guideline.

regards

Dick Watts

Principal Scientific Advisor and Qld AgVet Chemical Coordinator
Biosecurity Queensland
Department of Agriculture and Fisheries

M [REDACTED] E richard.watts@daf.qld.gov.au W www.daf.qld.gov.au

From: David Larkings [<mailto:David.Larkings@health.qld.gov.au>]
Sent: Wednesday, 20 June 2018 3:24 PM
To: WATTS Richard J <Richard.Watts@daf.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Dick

As discussed, I have prepared some draft additional comments on the Amberley HHRA Methodology, which are shown below. Do you have any concerns or comments or changes you think should be made in relation to sending the following additional comment to DPC to send to Defence?

Dear James

Can you please consider sending the following additional comments to the Department of Defence in relation to the Amberley HHRA methodology.

Following further review of the proposed HHRA Methodology, concern is raised that additional sampling of surface water from the Bremer River and Warrill Creek does not appear to be included. As such, there may be insufficient data for the HHRA to properly inform whether the water complies with current recreational water quality values for PFAS and for assessing whether the water is suitable to be used to water livestock intended for human consumption.

It is noted from the SAQP (2017) that water from Warrill Creek and the Bremer River was sampled in 2016 and 2017 and that some of the results exceeded the current drinking water quality values (which are relevant to livestock water) and the current recreational water quality values published by the Australian Government Department of Health.

There is considerable variation in the concentrations of PFAS in the surface water at some sampling sites shown in the SAQP. The concentration of PFAS in these water courses may fluctuate over time. This may be influenced by rainfall runoff from RAAF Base Amberley and other factors such as water flow in the water courses.

Table 1 of the HHRA Methodology shows that there are a number of properties where cattle may have access to Warrill Creek, Purga Creek or the Bremer River for drinking purposes. Water consumption is a potential major PFAS exposure pathway for cattle. Ideally, the water used for livestock for human consumption should comply with human health limits for PFAS in drinking water.

It may be useful to understand current concentrations as well as historical ones when assessing the impact on livestock. Similarly, the public would need confidence in relation to the results for recreational water use and better knowledge of typical PFAS concentrations in the water would help provide advice to the public on recreational water use. As such, it is important to undertake further sampling of surface water from Warrill Creek and the Bremer River.

Regards
David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]

a: PO Box 2368 Fortitude Valley BC QLD 4006

w: [Queensland Health](#) | **e:** david.larkings@health.qld.gov.au



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Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]

Sent: Monday, 11 June 2018 2:12 PM

To: PFASIM Amberley <pfasim.amberley@defence.gov.au>; Leriche, Michael MR <michael.leriche@defence.gov.au>; Simon Beesley <Simon.Beesley@dsmip.qld.gov.au>; John White <John.White@dsmip.qld.gov.au>; Adrian Mckay <Adrian.Mckay@dnrm.qld.gov.au>; Amani Kowero <Amani.Kowero@des.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Michael Logan <Michael.Logan@qfes.qld.gov.au>; Peter Kind <Peter.Kind@daf.qld.gov.au>; Raymond Bott <Raymond.bott@qfes.qld.gov.au>; Reinier Mann <Reinier.Mann@dsiti.qld.gov.au>; Richard Watts

<Richard.Watts@daf.qld.gov.au>; simone.ventura@ehp.qld.gov.au; Sophie Dwyer
 <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Suzanne Vardy
 <Suzanne.Vardy@dsiti.qld.gov.au>; Tony Bradshaw <Tony.Bradshaw@ehp.qld.gov.au>

Cc: Glyde, Virginia MS <virginia.glyde@defence.gov.au>

Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Importance: High

Good afternoon Virginia,

Please find attached our review of the RAAF Amberley HHRA SAQP for PFAS contamination.

If you have any questions please don't hesitate to contact me.

Kin regards,



James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
 Australia's campaign to stop violence against women

From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 4:40 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Thanks for the update. Yes, we thought the biota results might affect the comments on the HHRA SAQP.

The Amberley team are never idle, an understatement perhaps, but I've managed to secure just a long weekend away at the end of next week.

Will hear further from you next week.

Have a great weekend.

Virginia

Virginia Glyde

(Contractor to Defence)

Defence Project Manager - Environmental Investigations

PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Friday, 8 June 2018 3:06 PM
To: PFASIM Amberley
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

Hi Virginia,

Thank you for letting me know. I'll put out a date claimer now.

I understand that Queensland Health are updating their comments in light of the recent biota results found at Amberley.

Hope you enjoy your leave.

Kind regards,
James.



James Stewart
Policy Officer
Environment Policy
Department of the Premier and Cabinet
P 07 3003 9487
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
Australia's campaign to stop violence against women

From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 3:02 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Our project team are available for the Friday 15 June timeslot after 2pm, if it is confirmed we do need a teleconference.

Our attendee's would be:

Mick Le Riche, Defence Project Director, michael.leriche@defence.gov.au
 Jeremy Wicks, Jacobs Project Manager, [REDACTED]
 Jo Cuttler, Jacobs Project Director, [REDACTED]
 Jackie Wright, Risk Assessor [REDACTED]

I will be on leave that day, however the team attending provides appropriate coverage.

Thanks
 Ginni

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: Glyde, Virginia MS
Sent: Thursday, 7 June 2018 2:20 PM
To: 'James Stewart'
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Thank you James,

I'll gather the teams availability and respond to those dates/times as soon as possible.

Cheers
 Virginia

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Thursday, 7 June 2018 1:35 PM
To: Glyde, Virginia MS
Cc: Leriche, Michael MR
Subject: QLD Technical Working Group Availabilities week commencing 11 June.

Hi Virginia,

Please find below availabilities for the TWG to discuss the Amberley HHRA.

Wednesday 13 June – 9-10am or 1.30-2.30pm

Thursday 14 June – 9-10am

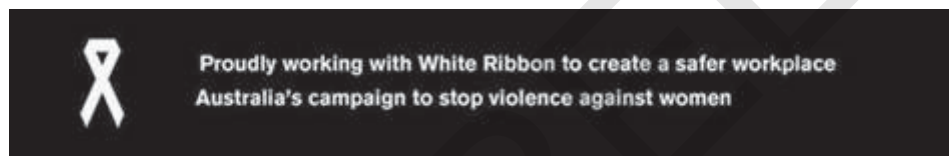
Friday 15 June - any time before 1pm or after 2pm

At this stage I cannot say whether or not a teleconference will be needed. However I'll put in a 1hr date claimer at your convenience just in case.

Thanks Virginia,
James.



James Stewart
Policy Officer
Environment Policy
Department of the Premier and Cabinet
P 07 3003 9487
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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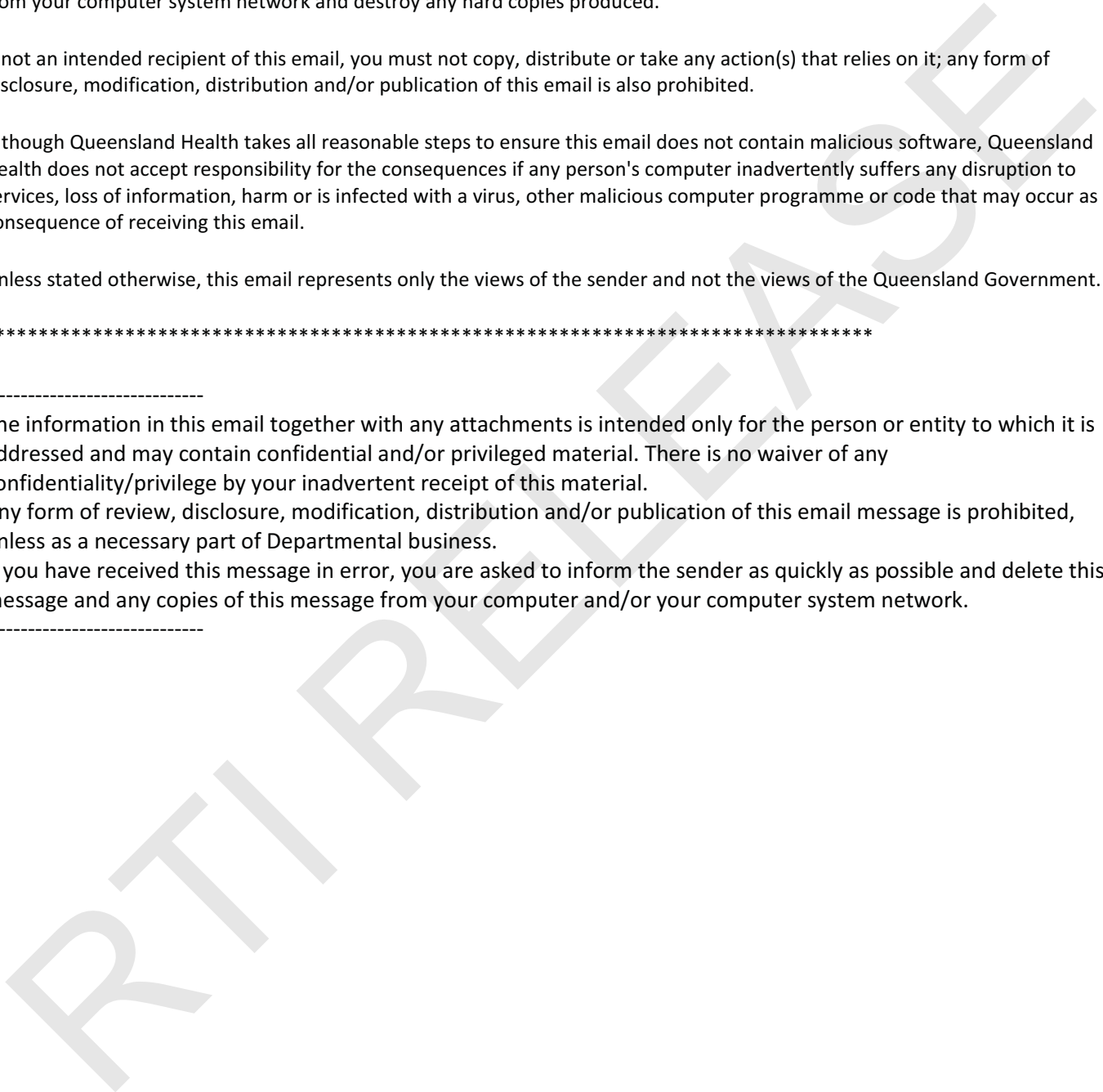
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Janet Cumming

From: Janet Cumming
Sent: Monday, 25 June 2018 1:06 PM
To: David Larkings
Subject: RE: Additional comments on the Amberley HHRA methodology regarding water testing creek and river

No further comments from me

From: David Larkings
Sent: Monday, 25 June 2018 12:47 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>
Subject: Additional comments on the Amberley HHRA methodology regarding water testing creek and river

Hi Suzanne and Janet

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The earlier draft sent to you has been changed to incorporate feedback from Dick Watts.

As far as timing goes, it may look like the comments are being made in response to the Australian Article on 25 June about the dumping of contaminated soil next to Warrill Creek – see page 23 of the following media report <http://report.mediaportal.com/8a5f605f2d418405936505c1b8029be3/MonitorReport-148f0e99-0429-4.pdf>.

If you want to edit the document, it is saved at <Q:\HPB\SHARE\Incidents\PFAS\Defence\Amberley\Additional comments Amberley HHRA Methodology 25-6-18.docx>

Regards
 David

From: WATTS Richard J [<mailto:Richard.Watts@daf.qld.gov.au>]
Sent: Monday, 25 June 2018 11:51 AM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

David

That seems Ok. I am happy if you want to make it edible offal.

Dick Watts

Principal Scientific Advisor and Qld AgVet Chemical Coordinator
 Biosecurity Queensland
 Department of Agriculture and Fisheries

M  E richard.watts@daf.qld.gov.au W www.daf.qld.gov.au

From: David Larkings [<mailto:David.Larkings@health.qld.gov.au>]
Sent: Friday, 22 June 2018 1:34 PM
To: WATTS Richard J <Richard.Watts@daf.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Dick

Thank you for the comments.

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David

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Sent: Friday, 22 June 2018 9:46 AM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

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Whilst we can estimate such limits, exposure to humans from consumption of livestock tissues is best estimated from blood sampling of the animals. Therefore, my perspective is that where the water use survey indicates use of water where there is known PFOS contamination for livestock, the animals should be blood tested. So perhaps, in refining the message the cattle should be blood tested where their drinking water is above the human health drinking water guideline.

regards

Dick Watts

Principal Scientific Advisor and Qld AgVet Chemical Coordinator
Biosecurity Queensland
Department of Agriculture and Fisheries

M [REDACTED] E richard.watts@daf.qld.gov.au W www.daf.qld.gov.au

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Sent: Wednesday, 20 June 2018 3:24 PM
To: WATTS Richard J <Richard.Watts@daf.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Dick

As discussed, I have prepared some draft additional comments on the Amberley HHRA Methodology, which are shown below. Do you have any concerns or comments or changes you think should be made in relation to sending the following additional comment to DPC to send to Defence?

Dear James

Can you please consider sending the following additional comments to the Department of Defence in relation to the Amberley HHRA methodology.

Following further review of the proposed HHRA Methodology, concern is raised that additional sampling of surface water from the Bremer River and Warrill Creek does not appear to be included. As such, there may be insufficient data for the HHRA to properly inform whether the water complies with current recreational water quality values for PFAS and for assessing whether the water is suitable to be used to water livestock intended for human consumption.

It is noted from the SAQP (2017) that water from Warrill Creek and the Bremer River was sampled in 2016 and 2017 and that some of the results exceeded the current drinking water quality values (which are relevant to livestock water) and the current recreational water quality values published by the Australian Government Department of Health.

There is considerable variation in the concentrations of PFAS in the surface water at some sampling sites shown in the SAQP. The concentration of PFAS in these water courses may fluctuate over time. This may be influenced by rainfall runoff from RAAF Base Amberley and other factors such as water flow in the water courses.

Table 1 of the HHRA Methodology shows that there are a number of properties where cattle may have access to Warrill Creek, Purga Creek or the Bremer River for drinking purposes. Water consumption is a potential major PFAS exposure pathway for cattle. Ideally, the water used for livestock for human consumption should comply with human health limits for PFAS in drinking water.

It may be useful to understand current concentrations as well as historical ones when assessing the impact on livestock. Similarly, the public would need confidence in relation to the results for recreational water use and better knowledge of typical PFAS concentrations in the water would help provide advice to the public on recreational water use. As such, it is important to undertake further sampling of surface water from Warrill Creek and the Bremer River.

Regards
David



David Larkings

Advanced Environmental Health Officer

Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]
a: PO Box 2368 Fortitude Valley BC QLD 4006
w: Queensland Health | **e:** david.larkings@health.qld.gov.au



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Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]

Sent: Monday, 11 June 2018 2:12 PM

To: PFASIM Amberley <pfasim.amberley@defence.gov.au>; Leriche, Michael MR <michael.leriche@defence.gov.au>; Simon Beesley <Simon.Beesley@dsmip.qld.gov.au>; John White <John.White@dsmip.qld.gov.au>; Adrian Mckay <Adrian.Mckay@dnrm.qld.gov.au>; Amani Kowero <Amani.Kowero@des.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Michael Logan <Michael.Logan@qfes.qld.gov.au>; Peter Kind <Peter.Kind@daf.qld.gov.au>; Raymond Bott <Raymond.bott@qfes.qld.gov.au>; Reinier Mann <Reinier.Mann@dsiti.qld.gov.au>; Richard Watts <Richard.Watts@daf.qld.gov.au>; simone.ventura@ehp.qld.gov.au; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Suzanne Vardy <Suzanne.Vardy@dsiti.qld.gov.au>; Tony Bradshaw <Tony.Bradshaw@ehp.qld.gov.au>
Cc: Glyde, Virginia MS <virginia.glyde@defence.gov.au>

Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Importance: High

Good afternoon Virginia,

Please find attached our review of the RAAF Amberley HHRA SAQP for PFAS contamination.

If you have any questions please don't hesitate to contact me.

Kin regards,



James Stewart
 Policy Officer
Environment Policy
 Department of the Premier and Cabinet
 P 07 3003 9487
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
 Australia's campaign to stop violence against women

From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 4:40 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Thanks for the update. Yes, we thought the biota results might affect the comments on the HHRA SAQP.

The Amberley team are never idle, an understatement perhaps, but I've managed to secure just a long weekend away at the end of next week.

Will hear further from you next week.

Have a great weekend.
 Virginia

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Friday, 8 June 2018 3:06 PM
To: PFASIM Amberley
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

Hi Virginia,

Thank you for letting me know. I'll put out a date claimer now.

I understand that Queensland Health are updating their comments in light of the recent biota results found at Amberley.

Hope you enjoy your leave.

Kind regards,
 James.



James Stewart
 Policy Officer
Environment Policy
 Department of the Premier and Cabinet
 P 07 3003 9487
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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 Australia's campaign to stop violence against women

From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 3:02 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Our project team are available for the Friday 15 June timeslot after 2pm, if it is confirmed we do need a teleconference.

Our attendee's would be:

Mick Le Riche, Defence Project Director, michael.leriche@defence.gov.au
 Jeremy Wicks, Jacobs Project Manager, [REDACTED]

Jo Cuttler, Jacobs Project Director, [REDACTED]
 Jackie Wright, Risk Assessor [REDACTED]

I will be on leave that day, however the team attending provides appropriate coverage.

Thanks
 Ginni

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: Glyde, Virginia MS
Sent: Thursday, 7 June 2018 2:20 PM
To: 'James Stewart'
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Thank you James,

I'll gather the teams availability and respond to those dates/times as soon as possible.

Cheers
 Virginia

Virginia Glyde

(Contractor to Defence)
 Defence Project Manager - Environmental Investigations
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Thursday, 7 June 2018 1:35 PM
To: Glyde, Virginia MS

Cc: Leriche, Michael MR
Subject: QLD Technical Working Group Availabilities week commencing 11 June.

Hi Virginia,

Please find below availabilities for the TWG to discuss the Amberley HHRA.

Wednesday 13 June – 9-10am or 1.30-2.30pm

Thursday 14 June – 9-10am

Friday 15 June - any time before 1pm or after 2pm

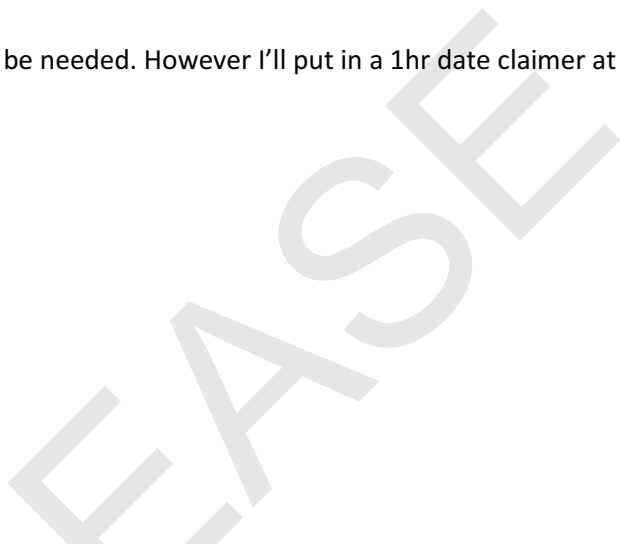
At this stage I cannot say whether or not a teleconference will be needed. However I'll put in a 1hr date claimer at your convenience just in case.

Thanks Virginia,
James.



James Stewart
Policy Officer
Environment Policy
Department of the Premier and Cabinet

P 07 3003 9487
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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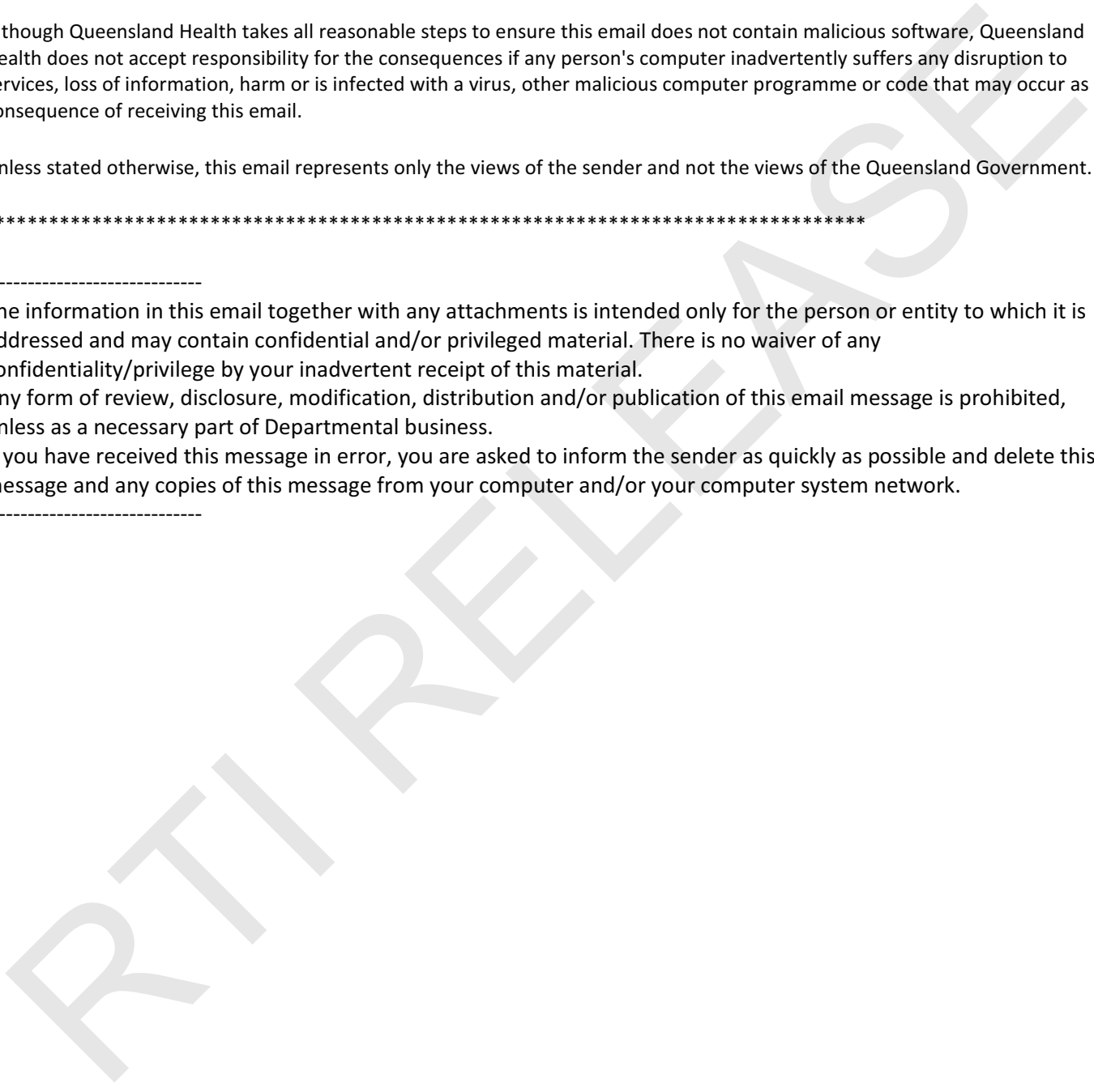
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Additional comments on the Amberley HHRA Methodology by Queensland Health

25 June 2018

Following further review of the proposed HHRA Methodology, concern is raised that additional sampling of surface water from the Bremer River and Warrill Creek does not appear to be included. As such, there may be insufficient data for the HHRA to properly inform whether the water complies with current recreational water quality values for PFAS and for assessing whether the water is suitable to be used to water livestock intended for human consumption.

It is noted from the SAQP (2017) that water from Warrill Creek and the Bremer River was sampled in 2016 and 2017 and that some of the results exceeded the current drinking water quality values (which are relevant to livestock water) and the current recreational water quality values published by the Australian Government Department of Health.

There is considerable variation in the concentrations of PFAS in the surface water at some sampling sites shown in the SAQP. The concentration of PFAS in these water courses may fluctuate over time. This may be influenced by rainfall runoff from RAAF Base Amberley and other factors such as water flow in the water courses.

More recent water results could help in the provision of advice to the public on recreational use of the waterways. Periodic sampling of water in the creek and river could also be considered if sampling indicates wide fluctuations in results over time that may influence public health messaging.

Table 1 of the HHRA Methodology shows that there are a number of properties where cattle may have access to Warrill Creek, Purga Creek or the Bremer River for drinking purposes. Water consumption is a potential major PFAS exposure pathway for cattle. Therefore, actions should be considered as part of the HHRA that minimise or remove exposure of livestock to PFAS contaminated water, especially if it exceeds human health limits.

Exposure to humans from consumption of livestock tissues is best estimated from blood sampling of the animals and use of animal residue transfer studies to estimate the likely concentration in meat and edible offal. Therefore, to properly inform the HHRA livestock should be blood tested where the water use survey indicates their drinking water is above the human health based guidance values for drinking water.

From: [James Stewart](#)
To: [Suzanne Huxley](#); [Sophie Dwyer](#)
Subject: URGENT ACTION REQUIRED Fishing signs [SEC=UNCLASSIFIED]
Date: Tuesday, 26 June 2018 8:39:22 AM
Attachments: [Draft warning signage 15 June.docx](#)
Importance: High

Hi Sophie, Suzanne,

Defence has told Council that QH has approved the attached sign. We do not believe this is correct as, in our feedback to Defence, we explicitly did not give Defence permission to reference the Queensland Government.

Can you please confirm whether or not anyone in PHU approved the attached sign?

Kind regards,
 James.

From: Leriche, Michael MR [mailto:michael.leriche@defence.gov.au] **On Behalf Of** PFASIM Amberley
Sent: Tuesday, 26 June 2018 8:04 AM
To: 'Tiffany Rees' <Tiffany.Rees@ipswich.qld.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>; 'Leslie-Ann Wapler' [REDACTED]; PFASIM Amberley <pfasim.amberley@defence.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: Fishing signs [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Tiffany
 How many of the attached signs does Council want printed and the sizes?
 Cheers
 Mick

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From: Tiffany Rees [mailto:Tiffany.Rees@ipswich.qld.gov.au]
Sent: Monday, 25 June 2018 4:43 PM
To: Leriche, Michael MR
Cc: McLachlan, James MR; PFAS Comms; 'Leslie-Ann Wapler'; PFASIM Amberley
Subject: RE: Fishing signs [SEC=UNCLASSIFIED]

Hi Mick,

I can confirm that Council is referring to the default signage that Defence has recently received approval from QLD Health to issue - for activities within the *investigation area*.

I understand that Council was provided with wording on this last week (?). This is the signage that Council seeks to progress through Defence.

Happy to discuss tomorrow, as needed.

With regards,

Tiffany



Tiffany Rees | Project Officer (Environmental Management)
Works, Parks and Recreation Department

T | 07 3810 7625

Confidential Communication | [Email Disclaimer](#)

From: Leriche, Michael MR [<mailto:michael.leriche@defence.gov.au>]
Sent: Monday, 25 June 2018 1:12 PM
To: Tiffany Rees
Cc: McLachlan, James MR; PFAS Comms; 'Leslie-Ann Wapler'; PFASIM Amberley
Subject: FW: Fishing signs [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Tiffany

Could you please provide the signage that Council would like printed, the number of copies and the sizes.

Defence can print the signs on corflute (eg. corrugated plastic sign used at construction sites).

Cheers
Mick

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From: Tiffany Rees [<mailto:Tiffany.Rees@ipswich.qld.gov.au>]
Sent: Monday, 25 June 2018 12:36 PM
To: Leriche, Michael MR
Subject: RE: Fishing signs [SEC=UNCLASSIFIED]

Hi Mick,

Kaye has asked that I follow this email up with you; and as per our phone call on Friday.

We confirm that Council approves the development and placement of signage regarding the investigation; *in the investigation area*, and particularly for fishing/public access sites.

We assume that Defence will take the lead on production, but Council can assist with installation, as required – as per Defence [Media Release](#) issued on 20/06/18.

Look forward to confirmation.

With regards,

Tiffany



Tiffany Rees | Project Officer (Environmental Management)
Works, Parks and Recreation Department

T | 07 3810 7625

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From: Kaye Cavanagh
Sent: Monday, 25 June 2018 11:29 AM
To: Tiffany Rees; Grant Sorensen
Subject: Fwd: Fishing signs [SEC=UNCLASSIFIED]

Sent from my Telstra Signature™ Premium handset on the Telstra Mobile Network

Kaye Cavanagh | Sport, Recreation and Natural Resources Manager
Works, Parks and Recreation Department
T | 07 3810 6860 **M** | [REDACTED]

----- Forwarded message -----

From: "Leriche, Michael MR" <michael.leriche@defence.gov.au>
To: "Kaye Cavanagh" <Kaye.Cavanagh@ipswich.qld.gov.au>
Subject: Fishing signs [SEC=UNCLASSIFIED]
Date: Fri, Jun 22, 2018 12:10 PM

UNCLASSIFIED

Hi Kaye

Just checking in whether Council needs any further assistance with the content of the fishing warning signs, such as providing a high resolution artwork version for printing?

Also, do you know when the signs will go out and their locations?

Cheers
Mick

Mick Le Riche

Project Director
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** michael.leriche@defence.gov.au

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RTI RELEASED

Myra Thompson

From: Leriche, Michael MR <michael.leriche@defence.gov.au>
Sent: Tuesday, 26 June 2018 3:59 PM
To: 'Kaye Cavanagh'; 'Tiffany Rees'
Cc: McLeod, Luke MR 1; McLachlan, James MR; Justin Carpenter; PFASIM Amberley; PFAS Comms
Subject: Fish Warning Signage [SEC=UNCLASSIFIED]
Attachments: Fish Warning Signage.pdf

UNCLASSIFIED

Hi Kaye and Tiffany

As per my recent phone conversation, attached is the fish warning signage cleared by Defence and Queensland Government associated with precautionary advice on the consumption of fish at Amberley.

I'll let you know once the signs have been printed and arrange for delivery at Council offices.

Council may then place the signs at fishing spots along the Warrill Ck and Bremer River.

Cheers
Mick

Mick Le Riche

Project Director
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: michael.leriche@defence.gov.au

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PRECAUTIONARY ADVICE ON THE CONSUMPTION OF FISH

Initial sampling of edible fish from the Bremer River and Warrill Creek, undertaken as part of the RAAF Base Amberley PFAS Environmental Investigation, have shown elevated concentrations of **PFAS** (per- and poly-fluoroalkyl substances).

As an interim precaution the Queensland Health recommends people should not eat fish caught in the Investigation Area.

Fishing in the Investigation Area may continue on a catch and release basis.



More information on the precautionary advice:

- www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley
- 13HEALTH (13 43 25 84)

More information on the Defence investigation:

- www.defence.gov.au/environment/pfas/amberley/
- 1800 817 751
- Amberley@ch2m.com.au

David Larkings

From: HProt.corro
Sent: Tuesday, 26 June 2018 4:32 PM
To: James Stewart (james.stewart@premiers.qld.gov.au)
Subject: FW: Additional comments on the Amberley HHRA methodology regarding water testing creek and river - for clearance
Attachments: Additional comments Amberley HHRA Methodology 25-6-18.docx

Dear James

Please see attached additional commentary re Amberley HHRA

The comments are suggesting that additional testing of the water in Warrill Creek and the Bremer River for PFAS should be considered in relation to recreational use of the waterways and stock drinking water. Also that blood testing of livestock should be considered.



Sophie Dwyer PSM

Executive Director

Health Protection Branch, **Department of Health**

p: 07 3328 9266 | **m:** [REDACTED]
a: 15 Butterfield Street, Herston, Qld, 4006
w: Queensland Health | **e:** Sophie.dwyer@health.qld.gov.au



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Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: David Larkings [<mailto:David.Larkings@health.qld.gov.au>]
Sent: Friday, 22 June 2018 1:34 PM
To: WATTS Richard J <Richard.Watts@daf.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Dick

Thank you for the comments.

Attached is a revised version with the changes showing in Track Changes.

Do you mind checking it and letting me know of any changes you think should be made.

Thanks
 David

From: WATTS Richard J [<mailto:Richard.Watts@daf.qld.gov.au>]
Sent: Friday, 22 June 2018 9:46 AM
To: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

David

You are correct that without further knowledge one should apply the human health drinking water criteria for livestock. However, for PFOS we have animal residue transfer studies so it is possible to assess the required exposure to produce a residue that will equate with the TDI. The reason we haven't calculated such water limits for cattle is because of the way the risks are being managed. That is there is low risk to parties outside the affected area and parties inside the affected area should minimise their exposure.

Whilst we can estimate such limits, exposure to humans from consumption of livestock tissues is best estimated from blood sampling of the animals. Therefore, my perspective is that where the water use survey indicates use of water where there is known PFOS contamination for livestock, the animals should be blood tested. So perhaps, in refining the message the cattle should be blood tested where their drinking water is above the human health drinking water guideline.

regards

Dick Watts

Principal Scientific Advisor and Qld AgVet Chemical Coordinator
Biosecurity Queensland
Department of Agriculture and Fisheries

M [REDACTED] E richard.watts@daf.qld.gov.au W www.daf.qld.gov.au

From: David Larkings [<mailto:David.Larkings@health.qld.gov.au>]

Sent: Wednesday, 20 June 2018 3:24 PM

To: WATTS Richard J <Richard.Watts@daf.qld.gov.au>

Subject: RE: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Hi Dick

As discussed, I have prepared some draft additional comments on the Amberley HHRA Methodology, which are shown below. Do you have any concerns or comments or changes you think should be made in relation to sending the following additional comment to DPC to send to Defence?

Dear James

Can you please consider sending the following additional comments to the Department of Defence in relation to the Amberley HHRA methodology.

Following further review of the proposed HHRA Methodology, concern is raised that additional sampling of surface water from the Bremer River and Warrill Creek does not appear to be included. As such, there may be insufficient data for the HHRA to properly inform whether the water complies with current recreational water quality values for PFAS and for assessing whether the water is suitable to be used to water livestock intended for human consumption.

It is noted from the SAQP (2017) that water from Warrill Creek and the Bremer River was sampled in 2016 and 2017 and that some of the results exceeded the current drinking water quality values (which are relevant to livestock water) and the current recreational water quality values published by the Australian Government Department of Health.

There is considerable variation in the concentrations of PFAS in the surface water at some sampling sites shown in the SAQP. The concentration of PFAS in these water courses may fluctuate over time. This may be influenced by rainfall runoff from RAAF Base Amberley and other factors such as water flow in the water courses.

Table 1 of the HHRA Methodology shows that there are a number of properties where cattle may have access to Warrill Creek, Purga Creek or the Bremer River for drinking purposes. Water consumption is a potential major PFAS exposure pathway for cattle. Ideally, the water used for livestock for human consumption should comply with human health limits for PFAS in drinking water.

It may be useful to understand current concentrations as well as historical ones when assessing the impact on livestock. Similarly, the public would need confidence in relation to the results for recreational water use and better knowledge of typical PFAS concentrations in the water would help provide advice to the public on recreational water use. As such, it is important to undertake further sampling of surface water from Warrill Creek and the Bremer River.

Regards
David



David Larkings

Advanced Environmental Health Officer
Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]
a: PO Box 2368 Fortitude Valley BC QLD 4006
w: [Queensland Health](#) | **e:** david.larkings@health.qld.gov.au



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Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]

Sent: Monday, 11 June 2018 2:12 PM

To: PFASIM Amberley <pfasim.amberley@defence.gov.au>; Leriche, Michael MR <michael.leriche@defence.gov.au>; Simon Beesley <Simon.Beesley@dsmip.qld.gov.au>; John White <John.White@dsmip.qld.gov.au>; Adrian Mckay <Adrian.Mckay@dnrm.qld.gov.au>; Amani Kowero <Amani.Kowero@des.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Michael Logan <Michael.Logan@qfes.qld.gov.au>; Peter Kind <Peter.Kind@daf.qld.gov.au>; Raymond Bott <Raymond.bott@qfes.qld.gov.au>; Reinier Mann <Reinier.Mann@dsiti.qld.gov.au>; Richard Watts <Richard.Watts@daf.qld.gov.au>; simone.ventura@ehp.qld.gov.au; Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Suzanne Vardy <Suzanne.Vardy@dsiti.qld.gov.au>; Tony Bradshaw <Tony.Bradshaw@ehp.qld.gov.au>

Cc: Glyde, Virginia MS <virginia.glyde@defence.gov.au>

Subject: Queensland Government PFAS TWG Review of the Amberley HHRA SAQP

Importance: High

Good afternoon Virginia,

Please find attached our review of the RAAF Amberley HHRA SAQP for PFAS contamination.

If you have any questions please don't hesitate to contact me.

Kin regards,



James Stewart

Policy Officer

Environment Policy

Department of the Premier and Cabinet

P 07 3003 9487

1 William Street, Brisbane QLD 4000

PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
Australia's campaign to stop violence against women

From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 4:40 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Thanks for the update. Yes, we thought the biota results might affect the comments on the HHRA SAQP.

The Amberley team are never idle, an understatement perhaps, but I've managed to secure just a long weekend away at the end of next week.

Will hear further from you next week.

Have a great weekend.
Virginia

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Friday, 8 June 2018 3:06 PM
To: PFASIM Amberley
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

Hi Virginia,

Thank you for letting me know. I'll put out a date claimer now.

I understand that Queensland Health are updating their comments in light of the recent biota results found at Amberley.

Hope you enjoy your leave.

Kind regards,
James.



James Stewart
Policy Officer
Environment Policy
Department of the Premier and Cabinet
P 07 3003 9487
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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Australia's campaign to stop violence against women

From: Glyde, Virginia MS [<mailto:virginia.glyde@defence.gov.au>] **On Behalf Of** PFASIM Amberley
Sent: Friday, 8 June 2018 3:02 PM
To: James Stewart <james.stewart@premiers.qld.gov.au>
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi James,

Our project team are available for the Friday 15 June timeslot after 2pm, if it is confirmed we do need a teleconference.

Our attendee's would be:

Mick Le Riche, Defence Project Director, michael.leriche@defence.gov.au

Jeremy Wicks, Jacobs Project Manager, Jeremy.Wicks@jacobs.com

Jo Cuttler, Jacobs Project Director, Jo.Cuttler@jacobs.com

Jackie Wright, Risk Assessor jackie@enrisks.com.au

I will be on leave that day, however the team attending provides appropriate coverage.

Thanks
Ginni

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: virginia.glyde@defence.gov.au

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From: Glyde, Virginia MS
Sent: Thursday, 7 June 2018 2:20 PM
To: 'James Stewart'
Subject: RE: QLD Technical Working Group Availabilities week commencing 11 June. [SEC=UNCLASSIFIED]

UNCLASSIFIED

Thank you James,

I'll gather the teams availability and respond to those dates/times as soon as possible.

Cheers
Virginia

Virginia Glyde

(Contractor to Defence)
Defence Project Manager - Environmental Investigations
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** virginia.glyde@defence.gov.au

IMPORTANT: This email remains the property of the Department of Defence and is subject to the jurisdiction of section 70 of the Crimes Act 1914. If you have received this email in error, you are requested to contact the sender and delete the email.

From: James Stewart [<mailto:james.stewart@premiers.qld.gov.au>]
Sent: Thursday, 7 June 2018 1:35 PM
To: Glyde, Virginia MS
Cc: Leriche, Michael MR
Subject: QLD Technical Working Group Availabilities week commencing 11 June.

Hi Virginia,

Please find below availabilities for the TWG to discuss the Amberley HHRA.

Wednesday 13 June – 9-10am or 1.30-2.30pm
Thursday 14 June – 9-10am
Friday 15 June - any time before 1pm or after 2pm

At this stage I cannot say whether or not a teleconference will be needed. However I'll put in a 1hr date claimer at your convenience just in case.

Thanks Virginia,
James.



James Stewart
Policy Officer
Environment Policy
Department of the Premier and Cabinet
P 07 3003 9487
1 William Street, Brisbane QLD 4000
PO Box 15185, City East, QLD 4002



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RTI RELEASE SE

Additional comments on the Amberley HHRA Methodology by Queensland Health

25 June 2018

Following further review of the proposed HHRA Methodology, concern is raised that additional sampling of surface water from the Bremer River and Warrill Creek does not appear to be included. As such, there may be insufficient data for the HHRA to properly inform whether the water complies with current recreational water quality values for PFAS and for assessing whether the water is suitable to be used to water livestock intended for human consumption.

It is noted from the SAQP (2017) that water from Warrill Creek and the Bremer River was sampled in 2016 and 2017 and that some of the results exceeded the current drinking water quality values (which are relevant to livestock water) and the current recreational water quality values published by the Australian Government Department of Health.

There is considerable variation in the concentrations of PFAS in the surface water at some sampling sites shown in the SAQP. The concentration of PFAS in these water courses may fluctuate over time. This may be influenced by rainfall runoff from RAAF Base Amberley and other factors such as water flow in the water courses.

More recent water results could help in the provision of advice to the public on recreational use of the waterways. Periodic sampling of water in the creek and river could also be considered if sampling indicates wide fluctuations in results over time that may influence public health messaging.

Table 1 of the HHRA Methodology shows that there are a number of properties where cattle may have access to Warrill Creek, Purga Creek or the Bremer River for drinking purposes. Water consumption is a potential major PFAS exposure pathway for cattle. Therefore, actions should be considered as part of the HHRA that minimise or remove exposure of livestock to PFAS contaminated water, especially if it exceeds human health limits.

Exposure to humans from consumption of livestock tissues is best estimated from blood sampling of the animals and use of animal residue transfer studies to estimate the likely concentration in meat and edible offal. Therefore, to properly inform the HHRA livestock should be blood tested where the water use survey indicates their drinking water is above the human health based guidance values for drinking water.

Myra Thompson

From: Suzanne Huxley
Sent: Wednesday, 27 June 2018 9:45 AM
To: James Stewart; Bruce Morton
Cc: Sophie Dwyer; Kahil Lloyd; Justin Carpenter; Peter Kind (Peter.Kind@daf.qld.gov.au); Janet Cumming; David Larkings
Subject: RE: Fishing warning signs clearance [SEC=UNCLASSIFIED]
Attachments: Fish Warning Signage QH 20180627.docx

Categories: CC'd

Hi James and Bruce

We have not yet heard anything from Council. Attached is our recommended signage. The most important message is this is recommended as a catch and release area, so this is what we have highlighted in the signage.

Regards

Suzanne

From: James Stewart [mailto:james.stewart@premiers.qld.gov.au]
Sent: Tuesday, 26 June 2018 10:38 AM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>
Cc: Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Kahil Lloyd <kahil.lloyd@premiers.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>
Subject: FW: Fishing warning signs clearance [SEC=UNCLASSIFIED]
Importance: High

Hi Suzanne, Bruce,

It seems that Defence will get back to you on this, through council, for approval (convoluted I know)

Our revisions of the sign are attached, as well as our original advice.

The final decision on branding, etc, is up to Health. However my advice would be that Defence won't budge on taking health completely off the sign.

At this point our priority is for them to get it out. I've made a note that it is a preference not to use Health on the sign but at the end of the day this may be what it takes.

We are okay with the version attached.

Kind regards,
James.



James Stewart
 Policy Officer
Environment Policy
 Department of the Premier and Cabinet
 P 07 3003 9487
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
 Australia's campaign to stop violence against women

From: Leriche, Michael MR [<mailto:michael.leriche@defence.gov.au>]
Sent: Tuesday, 26 June 2018 10:01 AM
To: 'Tiffany Rees' <Tiffany.Rees@ipswich.qld.gov.au>; 'Kaye Cavanagh' <Kaye.Cavanagh@ipswich.qld.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; McLeod, Luke MR 1 <luke.mcleod1@defence.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; 'Leslie-Ann Wapler' <leslie@communicate.net.au>
Subject: Fishing warning signs clearance [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Tiffany & Kaye

I refer to my earlier e-mail, could you please advise that Council has obtain clearance from Health on the content of the signage (attached) before the warning signs are installed?

Defence will print 6 x A3 signs once Council has provided confirmation to Defence that Qld Health has cleared the content.

Cheers
 Mick

Mick Le Riche

Project Director
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: michael.leriche@defence.gov.au

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RTI RELEASED

Myra Thompson

From: Justin Carpenter <justin.carpenter@premiers.qld.gov.au>
Sent: Wednesday, 27 June 2018 9:53 AM
To: Suzanne Huxley; James Stewart; Bruce Morton
Cc: Sophie Dwyer; Kahil Lloyd; Peter Kind (Peter.Kind@daf.qld.gov.au); Janet Cumming; David Larkings
Subject: RE: Fishing warning signs clearance [SEC=UNCLASSIFIED]
Attachments: Fish Warning Signage [SEC=UNCLASSIFIED]

Categories: CC'd

Hello
 This is what was agreed yesterday (reference to “the Queensland Health” and misspelling Amberley notwithstanding) – not ideal but sufficient.
 FYI



Justin Carpenter
 Acting Executive Director
 Environment Policy
 Department of the Premier and Cabinet

P 07 3003 9316 M [REDACTED]
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



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From: Suzanne Huxley [mailto:Suzanne.Huxley@health.qld.gov.au]
Sent: Wednesday, 27 June 2018 9:45 AM
To: James Stewart <james.stewart@premiers.qld.gov.au>; Bruce Morton <Bruce.Morton@health.qld.gov.au>
Cc: Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; Kahil Lloyd <kahil.lloyd@premiers.qld.gov.au>; Justin Carpenter <justin.carpenter@premiers.qld.gov.au>; Peter Kind (Peter.Kind@daf.qld.gov.au) <Peter.Kind@daf.qld.gov.au>; Janet Cumming <Janet.Cumming@health.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>
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 James.



James Stewart
 Policy Officer
Environment Policy
 Department of the Premier and Cabinet

 P 07 3003 9487
 1 William Street, Brisbane QLD 4000
 PO Box 15185, City East, QLD 4002



Proudly working with White Ribbon to create a safer workplace
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From: Leriche, Michael MR [<mailto:michael.leriche@defence.gov.au>]
Sent: Tuesday, 26 June 2018 10:01 AM
To: 'Tiffany Rees' <Tiffany.Rees@ipswich.qld.gov.au>; 'Kaye Cavanagh' <Kaye.Cavanagh@ipswich.qld.gov.au>
Cc: McLachlan, James MR <james.mclachlan@defence.gov.au>; Lymburner, Amanda MS <amanda.lymburner@defence.gov.au>; McLeod, Luke MR 1 <luke.mcleod1@defence.gov.au>; PFAS Comms <pfas.comms@defence.gov.au>; James Stewart <james.stewart@premiers.qld.gov.au>; 'Leslie-Ann Wapler' <leslie-ann.wapler@defence.gov.au>
Subject: Fishing warning signs clearance [SEC=UNCLASSIFIED]

UNCLASSIFIED

Hi Tiffany & Kaye

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Cheers
Mick

Mick Le Riche

Project Director
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: michael.leriche@defence.gov.au

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RTI RELEASE

Janet Cumming

From: Janet Cumming
Sent: Wednesday, 27 June 2018 11:42 AM
To: Suzanne Huxley
Subject: Re: Signage

Still with the incorrect spelling of Amberley?

Sent from my iPhone

On 27 Jun 2018, at 11:40 am, Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au> wrote:

Hi All

I have been advised that the signage was approved through DPC yesterday. Attached is the approved signage for your information.

Regards

Suzanne

<Fish Warning Signage.pdf>

PRECAUTIONARY ADVICE ON THE CONSUMPTION OF FISH

Initial sampling of edible fish from the Bremer River and Warrill Creek, undertaken as part of the RAAF Base Amberley PFAS Environmental Investigation, have shown elevated concentrations of **PFAS** (per- and poly-fluoroalkyl substances).

As an interim precaution the Queensland Health recommends people should not eat fish caught in the Investigation Area.

Fishing in the Investigation Area may continue on a catch and release basis.



More information on the precautionary advice:

- www.qld.gov.au/environment/pollution/management/investigation-pfas/amberley
- 13HEALTH (13 43 25 84)

More information on the Defence investigation:

- www.defence.gov.au/environment/pfas/amberley/
- 1800 817 751
- Amberley@ch2m.com.au

Janet Cumming

Subject: Amberley PFAS Investigation PCG Meeting #5
Start: Wed 27/06/2018 1:30 PM
End: Wed 27/06/2018 2:30 PM
Recurrence: (none)
Meeting Status: Accepted
Organizer: Wicks, Jeremy/BNE

Please note the following for the PCG Meeting.

AGENDA

- The agenda will be sent by email prior to the meeting

DIAL IN DETAILS

For those calling in to the meeting, please note the teleconference number below.

Phone: [REDACTED]

Participant Pin: [REDACTED]

IN PERSON ATTENDANCE AT RAAF AMBERLEY

For Defence PD and PM, and Base Representatives a further update will be provided with the room booked for the meeting.

Best regards

Jeremy Wicks
Project Manager – RAAF Base Amberley PFAS Investigation
M +61 [REDACTED]
CH2M
32 Cordelia Street
South Brisbane QLD 4101
www.ch2m.com

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David Larkings

From: David Larkings
Sent: Wednesday, 27 June 2018 3:57 PM
To: Suzanne Huxley; Janet Cumming
Subject: FW: 13 health -PFAS
Attachments: Confirmed PFAS case - RAAF Base Amberley.docx

Hi

Attached for your information is a copy of the 13HEALTH scripting in relation to fish caught in the Bremer River and Warrill creek at Amberley.

Regards
 David

From: Victoria Chalmers
Sent: Wednesday, 27 June 2018 3:49 PM
To: Bruce Morton <Bruce.Morton@health.qld.gov.au>
Cc: David Larkings <David.Larkings@health.qld.gov.au>
Subject: RE: 13 health -PFAS

Bruce

They are not. We refer callers to the Dept of Defence website and the RAAF Base Amberley information line as you will see in the attached script which is currently in production.

If any changes are needed please let me know.

Regards
 Victoria



Victoria Chalmers

Executive Director

Health Contact Centre
 Health Support Queensland, **Department of Health**

p | 07 3877 8252 **m** | [REDACTED]
a | GPO Box 48, Brisbane QLD 4001
w | Queensland Health **e** | victoria.chalmers@health.qld.gov.au

HSQ's vision | Delivering the best health support services and solutions for a safer and healthier Queensland.

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.



From: David Larkings
Sent: Wednesday, 27 June 2018 3:33 PM
To: Victoria Chalmers
Cc: Bruce Morton
Subject: FW: 13 health -PFAS

Hi Victoria

Can anyone from the Health Contact Centre advice Bruce Morton from West Moreton Public Health Unit if calls made to 13HEALTH about PFAS at RAAF Base Amberley are transferred to them or not?

Regards
 David



David Larkings

Advanced Environmental Health Officer
 Food Safety Standards and Regulation, Health Protection Branch, **Department of Health**

p: 07 3328 9328 | After hours oncall **m:** [REDACTED]
a: PO Box 2368 Fortitude Valley BC QLD 4006
w: Queensland Health | **e:** david.larkings@health.qld.gov.au



Queensland's health vision | *By 2026 Queenslanders will be among the healthiest people in the world.*

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: David Larkings
Sent: Wednesday, 27 June 2018 3:14 PM
To: Bruce Morton <Bruce.Morton@health.qld.gov.au>
Subject: RE: 13 health -PFAS

Hi Bruce

The Health Contact Centre was provided a copy of the Q&A document. I haven't seen the script. We were not asked to approve it. I can try and find the details to log into it and check if you want.

Cheers
 David

From: Bruce Morton
Sent: Wednesday, 27 June 2018 1:47 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Cc: Janet Cumming <Janet.Cumming@health.qld.gov.au>; David Larkings <David.Larkings@health.qld.gov.au>
Subject: Re: 13 health -PFAS

Just seeing if we know what the script is for 13 health if people call about the Amberley matters as information advises to call 13 health. Just interested if they refer to PHU.

Sent from my iPhone

On 27 Jun 2018, at 11:40 am, Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au> wrote:

Hi All

I have been advised that the signage was approved through DPC yesterday. Attached is the approved signage for your information.

Regards

Suzanne

<Fish Warning Signage.pdf>

RTI RELEASE

Confirmed PFAS case - RAAF Base Amberley

Properties:

Tag	1248
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As a part of the Human Health Risk Assessment being conducted by the Department of Defence, sampling of a small number of edible fish (eel, catfish and mullet) were caught between 9 and 17 April 2018 from the Bremer River and Warrill Creek. The samples were tested for ((Perfluorinated Chemicals@1|(PFAS))).

On 15 June 2018, as a precautionary measure, Queensland Health recommended that people should not consume fish caught in the Defence Investigation Area until further testing takes place. This advice applies to fish caught in the Bremer River and Warrill Creek near RAAF Base Amberley.

If you have occasionally consumed fish from the Bremer River and Warrill Creek in the past, you should not be concerned for your health.

More information is available on the ((Contact Department of Defence - RAAF Base Amberley@2|Department of Defence website)).

If you are concerned about your health or that of family members, you should consult your General Practitioner.

If the customer:

- has general PFAS enquiries or concerns:
 - [Open \(\(Weblink Health Conditions@1|Health Conditions Directory\)\)](#)
 - [Search either on the directory or word search](#)
 - [Select appropriate document about \(\(PFAS Factsheet@1|PFAS\)\) from returned list](#)
 - [Advise customer of information and/or fulfil fact sheet as requested](#)
- is experiencing symptoms or has further enquiries not covered by the ((PFAS Factsheet@1|factsheet)), cold transfer to a triage nurse.

Triage nurse

 [Triage Nurse - 3877 8000] 24/7

Properties:

Template name	Phone Triage Nurse
Version	1
Phone	0738778000
Call type	Consult

Popups:

Perfluorinated Chemicals@1

Perfluorinated Chemicals

These chemicals are used in everyday products such as:

- all-weather clothing
- water and stain repelling agents
- non-stick cookware.

These chemicals are also used in aqueous film forming foams (AFFFs), used by the Department of Defence and others, for training and operational firefighting purposes.

Properties:

Template name	Health Oakey Chemicals
Version	1
Popup	Yes
Default popup link text	perfluorinated chemicals

Contact Department of Defence - RAAF Base Amberley@2

Department of Defence - RAAF Base Amberley PFAS Investigation

Website	www.defence.gov.au/environment/pfas/Amberley
Email	amberley@ch2m.com.au
Phone	RAAF Base Amberley information line 1800 817 751

Myra Thompson

From: HProt.corro
Sent: Friday, 29 June 2018 8:56 AM
To: Sophie Dwyer
Subject: FW: Defence Dep Secretary
Attachments: Request to DoD for signage.docx; Fish Warning Signage QH 20180628.docx

Hi Sophie

Here is the Amberley signage for clearance.

Regards
 Gail

From: Suzanne Huxley
Sent: Thursday, 28 June 2018 3:49 PM
To: Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; HProt.corro <HProt.corro@health.qld.gov.au>
Subject: RE: Defence Dep Secretary

Hi Sophie

Please find attached the letter and recommended signage which includes changes/input from DPC comms and also QH comms. DPC requested the Federal Health contact number (Health Direct) be put on the signage which I have done. I am not sure that DoD will agree with this approach.

Regards

Suzanne

From: Sophie Dwyer
Sent: Wednesday, 27 June 2018 1:08 PM
To: Suzanne Huxley <Suzanne.Huxley@health.qld.gov.au>
Subject: FW: Defence Dep Secretary

Can you please action. Discuss with Justin too
 sophie



Sophie Dwyer PSM

Executive Director

Health Protection Branch, **Department of Health**

p: 07 3328 9266 | **m:** [REDACTED]
a: 15 Butterfield Street, Herston, Qld, 4006
w: Queensland Health | **e:** Sophie.dwyer@health.qld.gov.au



Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: Sophie Dwyer
Sent: Wednesday, 27 June 2018 1:08 PM
To: Jeannette Young <Jeannette.Young@health.qld.gov.au>; CHO CHO <CHO_CHO@health.qld.gov.au>
Subject: RE: Defence Dep Secretary

Will do. Mind you, we have been communicating that, with Premiers support.

Sophie



Sophie Dwyer PSM

Executive Director

Health Protection Branch, **Department of Health**

p: 07 3328 9266 | **m:** [REDACTED]
a: 15 Butterfield Street, Herston, Qld, 4006
w: Queensland Health | **e:** Sophie.dwyer@health.qld.gov.au



Queensland's health vision | *By 2026 Queenslanders will be among the healthiest people in the world.*

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

From: Jeannette Young
Sent: Wednesday, 27 June 2018 12:05 PM
To: Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au>; CHO CHO <CHO_CHO@health.qld.gov.au>
Subject: Re: Defence Dep Secretary

I spoke to him. We will need to draft a letter to him asking defence to put up signage along the river at Amberley. He wants us to advise him what to put on the sign. And wants it from QH. We will need to run it past premiers.

Sent from my iPad

On 20 Jun 2018, at 9:14 am, Sophie Dwyer <Sophie.Dwyer@health.qld.gov.au> wrote:

Dear Jeannette

Steve Grzeskowiak, Dep Sec, State and Infrastructure, Dept of Defence will be touching base with you this morning. I understand there are no specific issues, rather just connecting to enhance the working relationship.

As you appreciate, the particular approach that Queensland Government takes differs from other jurisdictions, placing greater responsibility on polluter to manage the communication.

Regards
 Sophie



Sophie Dwyer PSM

Executive Director

Health Protection Branch, **Department of Health**

p: 07 3328 9266 | **m:** [REDACTED]

a: 15 Butterfield Street, Herston, Qld, 4006

w: [Queensland Health](#) | **e:** Sophie.dwyer@health.qld.gov.au

<image002.jpg> <image003.jpg>



Queensland's health vision | By 2026 Queenslanders will be among the healthiest people in the world.

Queensland Health acknowledges the Traditional Owners of the land, and pays respect to Elders past, present and future.

RTI RELEASED



Department of Health

Enquiries to: Sophie Dwyer
Executive Director
Health Protection Branch
Prevention Division
Telephone: 3328 9266
Ref: CH0XXXXX

Mr Steve Grzeskowiak
Deputy Secretary
Estate and Infrastructure
Department of Defence
R1-6-A001, Russell Drive, Russell ACT 2601
PO Box 7902, Canberra BC, ACT 2610

Email: steven.grzeskowiak@defence.gov.au

Dear Mr Grzeskowiak

I am writing in relation to our recent conversation regarding the ongoing investigation of PFAS contamination off-site near the RAAF Base Amberley.

As you are aware, initial sampling of edible fish species from the Bremer River and Warrill Creek in the vicinity of the RAAF Base Amberley have shown elevated concentrations of PFAS. Our assessment of this preliminary data indicates that consumption of fish caught in this area may result in exceedance of the tolerable daily intake for PFAS in humans.

As a precaution, I ask that the Department of Defence erect signage in the designated investigation area to provide precautionary fishing advice to the public. Attached is our suggested signage.

If you require any further information in relation to this matter, please contact Ms Sophie Dwyer, Executive Director, Health Protection Branch, Department of Health, on telephone 3328 9266 or via email at Sophie.Dwyer@health.qld.gov.au.

Yours sincerely

Dr Jeannette Young PSM
**Chief Health Officer
and Deputy Director-General
Prevention Division**

/ /

Office
Department of Health
Level 7
33 Charlotte Street
BRISBANE QLD 4000

Postal
GPO Box 48
BRISBANE QLD 4001

Phone
(07) 3708 5190

Email
CHO_CHO@health.qld.gov.au

Prepared by: Suzanne Huxley
(Author) SMO
Health Protection Branch
3328 9606
28 June 2018

Cleared by: Sophie Dwyer
(Executive Director) Executive Director
Health Protection Branch
3328 9266
28 June 2018

RTI RELEASED

PRECAUTIONARY FISHING ADVICE

CATCH AND RELEASE ONLY

Elevated levels of PFAS chemicals have been detected in the Bremer River and Warrill Creek.

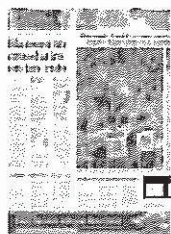
As a precaution, you should not eat fish caught in the investigation area (see map).

Catch and release fishing may continue.

For more information, visit:

<http://www.defence.gov.au/environment/pfas/Amberley> or call RAAF Base Amberley Information Line (1800 817 751) or Health Direct (1800 022 222)





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The Australian, Australia

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Page 1 of 2

back

EXCLUSIVE: Toxic soil dumped by creek

Thousands of tonnes of contaminated soil from a RAAF base was dumped beside a creek where fish are now being found to have dangerous levels of the toxins.

The soil and sludge was dug up during construction work on the Amberley air base, west of Brisbane, and buried less than 30m from Warrill Creek — a major

irrigation source for farmers. Satellite imagery from January and February last year, obtained by *The Australian*, shows the soil contaminated with toxic fire-fighting chemicals being trucked to a site just inside the base's fence line.

FULL REPORT P6

Defence dumped toxic soil close to creek

EXCLUSIVE

RORY CALLINAN
MICHAEL MCKENNA

Defence dumped thousands of tonnes of soil from an RAAF base, contaminated with firefighting chemicals, beside a creek where fish are now being found to have dangerous levels of the toxins.

The soil and sludge was dug up during construction work on the Amberley air base, west of Brisbane, and buried less than 30m from Warrill Creek — a major irrigation source for farmers.

Satellite imagery from January and February last year, obtained by *The Australian*, shows the per- and polyfluoroalkyl substances (PFAS)-laced material being trucked to a site just inside the base's fence line.

The football-field-sized dump site was then covered with top soil and turfed just weeks before it was drenched with record rainfall from Cyclone Debbie that caused localised flooding.

At the time, Defence knew Amberley was widely contaminated from firefighting foam, with the cancer-linked PFAS chemicals found in all underground and surface water tests conducted on the base in 2016.

Queensland Health this month issued an alert not to eat fish caught in Warrill Creek and nearby Bremer River — which are connected — after tests found they were highly contaminated

with PFAS. Defence has denied the site was a PFAS “dump”.

It said the material had been tested for PFAS and found to be “below the threshold of risk to human health” under state and federal guidelines.

“The material has been reused for flood mitigation purposes at RAAF Base Amberley,” Defence said about the site, which now sits as a low flattened mound.

The revelations come after the release last week of a major US Department of Health report warning the chemicals were more toxic than previous public research had concluded. It found PFAS chemicals — also linked to immune suppression and fertility problems — posed a health threat in concentrations up to 10 times lower than had guided US and Australian governments.

Use of the firefighting foam was phased out a decade ago and there had been several official inquiries showing contamination around the 18 RAAF bases that had used the material since 1970.

Despite the emerging evidence of the health risks and contamination, an ongoing investigation by *The Australian* has revealed mishandling of PFAS-contaminated material from Amberley.

Defence last year handed over almost 1 million litres of PFAS-contaminated water to a waste disposal company for use in compost that state regulators allege

breached environmental standards.

Subcontractors have also told *The Australian* that they trucked tonnes of “vac sludge” — which Queensland's Department of Environment now suspects was PFAS-contaminated — that was deposited on private properties.

When *The Australian* visited properties around Amberley last week, locals said water was widely used from the Warrill Creek system for agricultural purposes, including irrigation and to water livestock.

The residents, who asked not to be named for fear of their property values being affected, said Defence had given them no specific advice about whether to use Warrill Creek water.

Defence testing was being carried out this month, with locals saying everything from the figs in the trees to guavas on the banks of the creek were being looked at.

Preliminary test results undertaken on one of the nearby properties by Defence and seen by *The Australian* showed the presence of PFAS in bore water and in soil.

Mark Taylor, professor of environmental science at Macquarie University in Sydney, yesterday said PFAS was not only toxic but “highly mobile in soil and water systems”.

Professor Taylor, who last year wrote a report into PFAS for the NSW government, said: “These actions unnecessarily put down-



25 Jun 2018
The Australian, Australia

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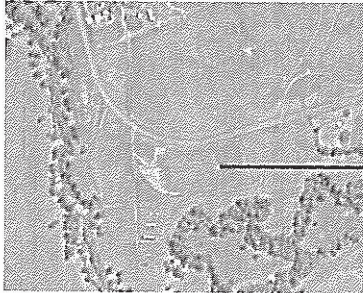
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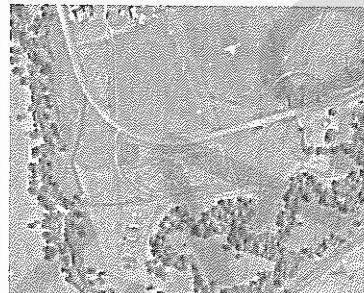
▲
back

stream users of waters draining
past the site at further unnecess-
ary risk.”

AMBERLEY'S GROUND WORK



Toxic soil
is dumped
just metres
from Warrill
Creek



Turf is
placed
over the
soil shortly
before
Cyclone
Debbie hit

RTI RELEASED

PRECAUTIONARY FISHING ADVICE

CATCH AND RELEASE ONLY

Initial sampling of edible fish from the Bremer River and Warrill Creek, undertaken as part of the RAAF Base Amberley PFAS Investigation, have shown elevated concentrations of **PFAS** (per- and poly-fluoroalkyl substances).

As an interim precaution Queensland Health recommends people should not eat fish caught in the Investigation Area.

Fishing in the Investigation Area may continue on a catch and release basis.

More information: <http://www.defence.gov.au/environment/pfas/Amberley>, RAAF Base Amberley Information Line (1800 817 751) or 13 HEALTH (13 43 25 84)





Queensland Government PFAS Technical Working Group

Feedback on Amberley Human Health Risk Assessment Methodology and Further Off-Property Sampling Program.

Introduction

The Queensland Government appreciates the opportunity to review the *RAAF Base Amberley PFAS Investigation – Human Health Risk Assessment Methodology and Further Off-Property Sampling Program*. Comments were provided by Queensland Health, the Department of Agriculture and Fisheries (DAF) and Economic Development Queensland (EDQ).

The Technical Working Group's (TWG) review focuses primarily on the Preliminary Biota Sampling Program undertaken by CH2M, in response to the November 2017 TWG Request (attachment 1) to undertake a biota sampling program as a priority. In general, support is given to further assessment of potential risks to recreational fishers as part of the HHRA.

The TWG notes that the HHRA SAQP is guided by a range of guidelines that the Queensland Government has adopted and supports, including the PFAS National Environment Management Plan and the Food Standards Australia New Zealand guideline for Perfluorinated Chemicals in Food. As such, no review of any standards used, or underlying assumptions made, has been undertaken in the review process.

Queensland Health

Biota

- It is noted that the Preliminary Biota Sampling Program produced samples of edible portions of eel, mullet and catfish, and only one sample of 'perch'. It is unclear in the Initial Review of Preliminary Biota Sampling Results report why other species were not sampled. It is important that further sampling be undertaken that includes other species that are more likely to be targeted and consumed by fishers accessing the area.
- The investigation should also identify whether there are any sub-groups of the population that may target species that may have higher levels of PFAS including eel, mullet and catfish. It is understood the Amberley area is home for some people with socio-economic disadvantage, so it could be assumed there may be individuals or families who have relatively high frequency of consumption of aquatic biota harvested in the area. There is also an Indigenous community centre on Middle Road at Purga (running down to the Warrill Creek) which might be a focus for indigenous fishing. Consideration should be given to investigating if this community may potentially be affected, extending the investigation area if necessary, and considering if other exposure pathways may be relevant.
- It is important the study should identify the individual species sampled, which is necessary to help understand the movements of the fish in and out of the investigation area and other factors such as lifespan. For example, DAF has advised that there are a number of species commonly referred to as perch, and that there are likely to be two species of catfish in the area.
- Consideration should be given the extending the investigation area for the sampling biota for human health risk assessment purposes, because it is likely some of the fish species in the current investigation area will migrate further downstream or upstream.

- For the purposes of a human health risk assessment (not inclusive of an Ecological Risk Assessment), only edible portions of fish and other aquatic biota should be tested. These should also be of a size normally consumed by people whenever possible. Concern is raised about the following statement in the first paragraph of section 3.7.3 that implies that whole organisms rather than edible portions will be analysed "Samples will be processed from whole of the biota specimen so that sufficient samples is required for the analysis." Further information on sampling and analysis may be found in the following Queensland Health document Guideline for sampling and analysis of seafood suitable for human health risk assessments of PFAS contamination. It is available from: <https://www.qld.gov.au/environment/assets/documents/pollution/management/pfas/pfas-fish-sampling-protocol.pdf>.
- It is noted in Appendix B that some properties keep poultry. Consideration should be given to whether consumption of poultry meat is a pathway for exposure to PFAS and if so an assessment be undertaken of the potential human health risk.

Department of Agriculture and Fisheries

Fishing activities

The following information was previously provided by the Department of Agriculture and Fisheries in October 2017 in relation to the Site Assessment Quality Plan (SAQP) for Amberley (Attachment1). The points are provided again as they are relevant to the HHRA methodology.

- There is no commercial fishing in the investigation area, however recreational fishing takes place by both local fishers and day-trippers.
- The tidal nature of the Bremer River means that a variety of popular estuarine and freshwater species are present in the river. Common target species for recreational anglers in the Bremer River include Australian bass, threadfin salmon, yellowfin bream, catfish, mullet and bull sharks.
- Warrill Creek is downstream of the Moogerah Dam, which is regularly stocked with bass, golden perch and silver perch. These species move out of the dam during flooding and are subsequently targeted in Warrill Creek, largely by anglers using kayaks.
- The Department of Agriculture and Fisheries (DAF) does not collect any specific data to assess what proportion of fish captured from either location are retained for consumption.
- It would be reasonable to expect that some anglers will be consuming fish from these locations on a regular basis.

Livestock tissues

It is recommended that the HHRA SAQP give further consideration to blood sampling livestock as a means of estimating human exposure from their consumption.

- It has been identified from the water use survey that cattle production (commercial and own use) makes up a reasonable amount of the land use around Amberley. Unlike all the other edible commodities, the methodology indicates that human exposure from consumption cattle tissues will be estimated using modelling from intakes from pasture, water and soil. The document acknowledges the considerable uncertainty involved in the methodological approach but does not provide a reason for taking such an approach. There would have to be a sound reason not to sample cattle directly given that a non-destructive method (blood sampling) is known and the correlation between blood plasma and tissue concentrations is reasonably well established.

- Whilst it is acknowledged that there is some concern about the trade implications for PFAS in cattle tissues but the likelihood of the establishment of importing country requirements for PFAS is quite low. It is approaching 3 years since the contamination in Oakey was first made public. If our trade sensitive markets were going to set PFAS requirements it is highly likely that they would have done so by now. Firefighting foams containing PFAS were used internationally so most countries have similar issues to those in Australia. Under the Phytosanitary agreement, countries must set the same requirements for domestic trade and imports. Technical barriers to trade such as importing country requirements are usually only set if there is a trade advantage. There is unlikely to be a trade advantage if the domestic trade would be equally impeded as imports. It is highly probable that where direct consumption of contaminated water by humans has not been prevalent in a community, that consumption of animal tissues and excretions will be one of the largest exposure pathways.

Mulches – Section 3.7.4.

- Paper-based mulches were at one point a common additive to garden soil sold through nurseries. It would be advisable to ascertain prior to sampling, particularly in vegetable gardens, if it contains imported soil.

Minor pathways

- It is important in risk assessment not to allow minor exposure pathways to disproportionately influence sampling programs. The movement of PFAs in soil on the hooves of animals is only likely to be important if there is very contaminated site and cattle move the soil in the opposite direction to surface water flow. For a mobile group of compounds such as PFAS, it is likely that surface water flow will, in general, have more effect on movement on the soil surface more than cattle movements. The sampling plan appear to spend too much effort on this pathway for its likely importance.

Pasture sampling

- The methodology does not describe sampling pasture in a grid pattern as would be expected to produce the best estimate of concentration. If the sampling program is not doing this then, it is recommend that grid based sampling be undertaken. The grazing habits of the species in the paddock should also be considered. Different species consume pasture at different heights.

Appendix B – Soil sampling

- Depending on conditions (drought etc) cattle can consume up to 1 kg of soil per day. A sample of the PFAS in the top 1-2cm of soil will be required to estimate the animals exposure. Appendix B (site 16) suggests that the soil sampling will be on cattle tracks rather than in the normally grazed areas. This kind of sample would not be relevant to estimating consumption from soil because the soil will not have pasture on it and will be very compacted.

Appendix B - Fodder vs forage

- Appendix B (site 17) indicates that 3 samples of 'hay' will be collected from irrigated area. It is questioned whether the irrigated crop is a 'hay crop' that is bailed grass or from Lucerne, cereals or pulses. It doesn't seem likely that the kind of crop is currently known if has been identified by aerial photography. The sampling needs to consider the kind of commodity that

is being grown and how it would be commercially presented at sale. It is also important to ascertain from the landholder if they put livestock in to graze the remaining stubbles after harvest.

Appendix B - herbs

- Appendix B site 48 is a commercial vegetable producer. It is questioned if there is any merit in sampling herbs as the chronic consumption of herbs is so low that any PFAS in them is extremely unlikely to be present an unacceptable dietary risk. The text also states, 'more than one tomato may be required per sample'. The approach for a commercial producer of vegetables is different to that for backyard vegetable growers. There will be plentiful fruit for sampling when tomatoes in season so it is recommended that that packed product is sampled from 5 punnets where each punnet is taken from a different box. This produces a far better estimate of exposure. DAF can provide a suitable procedure for sampling of lots from commercial producers.

Appendix B - eggs

- Appendix B (site 48) is unclear whether chicken eggs will be sampled. If there is evidence of PFAS exposure then chicken eggs should be sampled as they are a very effective elimination pathway for chickens. Information should be collected on whether chicken meat is consumed.

Economic Development Queensland

Gilbert and Sutherland has undertaken a review of the RAAF Base Amberley PFAS Investigation - *Human Health Risk Assessment Methodology and Further Off-Property Sampling Program*, on behalf of Economic Development Queensland. The following comments are relevant primarily to the proposed assessment of land owned by EDQ, however are likely to have broader relevance to the Amberley investigation.

Soil sampling

- Sampling to date on Economic Development Queensland (EDQ) owned land includes Lot 4 on RP 858136 and Lot 18 SP279423. The additional sampling proposed to inform the HHRA is understood to include additional sampling on these lots as well as sampling on EDQ owned Lot 5 on RP179506 and Lot 6 on RP217500.
- Whilst the HHRA provides some rationale about the land uses and features that will be targeted, the specific locations for sampling have not been identified. Additionally, it is understood that some locations will be sampled at the surface and at depth, however this information is not linked to any proposed sampling locations and the rationale for the selection of these locations is not provided. More detail should be provided with respect to the selection of sampling locations, the depths targeted for sampling and the rationale for the selection of sampling depths. This should include any data or rationale to establish what depth within the local soils will be the most likely to be impacted.
- Landholders have a right to understand the impact of Defence's activities, so they can assess the impact on future development objectives and manage their liability in the future. Ideally, in addition to collecting data to inform the HHRA, Defence should be collecting data to provide impacted landholders with an understanding of the extent and quantum of contamination of their land, which should involve additional sampling targeting the most likely impacted soil stratum.

- Does the sampling plan consider the site history with respect to the selection of sampling locations? Whilst areas being cultivated at the moment are likely to be targeted for testing, are there other areas on the site that have been cultivated and irrigated historically, that may have a similar or higher likelihood of contamination, depending on the historical use.
- Similarly, does the proposed additional sampling and HHRA consider the likelihood of changing land-use? Whilst land may be used for agricultural purposes at present, it is likely that these uses will change over time as is the case for EDQ land. It is likely that other 'off-site' land may be developed in the future for more sensitive uses and it is important to understand the risk to future occupants, as well as understanding the risk to the current occupiers of the land. Similarly, there should be consideration of the risk to construction personnel during earthworks and development of the land.

Appendix B

- On a more detailed note, there is a disparity in the sampling densities identified in Appendix B which is not explained by the rationale provided. For example, within Domain 2: WuS ID 17 has 17 sampling locations proposed at a rate of approximately 1 per 2ha; WuS ID 15, has 25 sampling locations proposed at a rate of 1 per 4ha; WuS ID 45 has 7 proposed locations at a rate of 1 per 9.5ha. The densities in the sampling plan detailed in Appendix B are higher than the sampling rates discussed at the meeting between EDQ and Defence on 7 June 2018, where a rate of 1 location per 3.5ha was proposed for the area of WuS ID 17 and WuS ID 15, had 17 sampling locations proposed at a rate of 1 per 8ha. It would be disappointing to see a reduction in scope, when for an external landowner it is desirable to see as much sampling undertaken as possible, to maximise the understanding of the impact.

Surface water and groundwater sampling

- Table 1 in the HHRA Methodology excludes surface water and sediment data from the Bremer River and Warrill Creek, although the reason for this is not detailed. This data is relevant with respect to extraction from the river/creek for irrigation and cattle watering or drinking directly. Whilst not disclosed in the HHRA Methodology it is assumed this information will still be used in the HHRA.
- It is understood that registered bores have been used in some instances as monitoring wells and that further sampling from these bores would be undertaken as part of the HHRA. Whilst it is understood that sampling from a water supply bore is appropriate for the purposes of the HHRA, it is noted from the existing data that there are instances where there is contamination in a shallow aquifer and not in a deeper aquifer. For the purpose of understanding the extent of groundwater contamination, where a registered bore is used for monitoring purposes, it should be confirmed that the registered bore is screened in the shallow aquifer where it is more likely to detect an impact, if present.
- It is noted that the Laboratory Limit of Reporting for PFAS in water is standard, providing an LOR of 0.01ug/L (PFOS). Whilst this is suitable to detect an exceedance of the Health Based Guidance Value (HBGV) for drinking water (0.07ug/L PFOS + PFHxS), analysis at low level or super trace level is likely to provide a better understanding of groundwater impact, which would add to the overall understanding of groundwater movement and mobility.

Queensland Government Interdepartmental Committee for Fluorinated Fire Fighting Foam

Response to RAAF Base Amberley Site Assessment Quality Plan

Introduction

The Queensland Government Technical Working Group (the group) for per-and polyfluoroalkyl (PFAS) substances appreciates the opportunity to provide comments on the Site Assessment Quality Plan (SAQP) for Amberley.

In general the Queensland Government understands that the SAQP will lead to a greater understanding of possible contamination risks both on and off-site at Amberley Airbase. However, the group notes that the SAQP does not yet address all aspects of what is needed to provide detailed human health or environmental risk assessment. The group also considers that these additional aspects will be important in developing community confidence in the efficacy of this work.

General Comments

Biota Sampling

The SAQP is part of a larger systematic testing process which may contain biota sampling based on 'the occurrence of PFAS in surface water, sediment or soil that poses an exposure route for potential biological receptors' (12-2). Scientifically speaking this is a sensible approach as it employs an 'as necessary' methodology to testing. However, this approach may be seen as unreasonable to communities. The Queensland Government suggests that biota testing should occur now and not sometime in the future for reasons that include:

1. If surface water is tested in advance of biota then it is likely that local communities will want to know the health effects of seafood consumption anyway. Without biota sampling, Queensland Health is unable to provide even general feedback on the precautionary measures in regards to fishing and seafood consumption in the area. It is therefore expected that the current approach will lead to community pressure to conduct biota sampling.
2. If the current method is employed and biota contamination is tested and found at a later date, it foreseeable that communities may blame Defence for knowing that contamination may be present, yet not testing for biota contamination and not informing local communities.
3. Similar to Oakey, there will be an expectation that the community is informed and kept up to date with testing. Information on seafood should be included as a part of this.

The Queensland Government believes that current testing has been insufficient in regards to biota and therefore recommends that, at a minimum, preliminary sampling of edible seafood portions should occur as part of this investigation stage. This will allow Queensland Health to provide appropriate health advice, and will also lead to an immediate greater understanding of contamination pathways. In addition, this preliminary sampling can be used to inform future testing requirements. If, against this recommendation, biota sampling is not included as part of this investigation, it must be incorporated into subsequent assessments if there is any indication that contamination pathways may lead to biota contamination, and should occur in consultation with the Queensland Technical Working Group.

Communications

The Queensland Government requests that current and future verified sampling results, as well as a general sampling plan, be made available to local communities within a reasonable timeframe, and that a communications plan (timeframe) be made available to the Queensland Interdepartmental Committee to assist in future community requests in regards to health or environmental advice in and around Amberley.

Department of Natural Resources and Mines

General Comments

- There is no surface geology map included. Formation names quoted appear outdated and not in line with current mapping, stratigraphic assessments (e.g. Heifer Creek Sandstone see comments below).
- There is no geological cross section through the area provided.
- As noted there is limited discussion/ understanding of the hydrogeology of the area both on and off base.
- Future assessments need to consider potential inter aquifer connections and therefore impacts to other aquifers in the area.

Section 2.2.2.4

- The Heifer Creek Sandstone is not typically referenced in this area under current geological mapping. It is included as part of the Koukandowie formation or Marburg.
- Note that the Ipswich 1:100,000 geological mapping outlines the Marburg Sandstone as the Koukandowie formation (upper unit) and the Gatton Sandstone (lower unit).

Section 2.2.3

- This section needs further work to accurately explain legislative arrangements.
- The alluvium is managed under the Moreton Water Plan as the Warrill Bremer **alluvial** groundwater management area.
- The Marburg Sandstone equivalents and the Walloon Coal Measures are managed under the Great Artesian and other Regional aquifers water plan (Sept 2017). Water use in these aquifers is managed under the plan.
- The reference to MW201 AHD of 14.379 m does not appear to align with the AHD referenced in figure 5 assuming that the two should align. It is noted that the AHD figure quoted on the map for MW201 (bore) aligns with the AHD referenced for Warrill Creek in the text.

Figure 5

- Whilst the lithology for some bores is presented in Figure 3 there are many bores which have been used in Figure 5 where lithology and stratigraphic interpretation has not been provided.
 - This is important when reviewing water level contours across multiple geological units. Therefore interpretation of groundwater flow direction is uncertain and may explain groundwater mounding around MW205B.

Department of Agriculture and Fisheries (DAF)
General information on fishing activities

The Department of Agriculture and Fisheries recommends biota testing as part of this investigation stage in order to enable human Queensland Health to formulate specific health advice related to fishing in the area.

- Whilst there is no commercial fishing in the area, sections of the Bremer River and Warrill Creek are popular with recreational anglers, both from the shore and in kayaks and small boats.
- The tidal nature of the Bremer River means that a variety of popular estuarine and freshwater species are present in the river. Common target species for recreational anglers in the Bremer River include Australian bass, threadfin salmon, yellowfin bream, catfish, mullet and bull sharks.
- Warrill Creek is downstream of the Moogerah Dam, which is regularly stocked with bass, golden perch and silver perch. These species move out of the dam during flooding and are subsequently targeted in Warrill Creek, largely by anglers using kayaks.
- The Department of Agriculture and Fisheries (DAF) does not collect any specific data to assess what proportion of fish captured from either location are retained for consumption.
- It would be reasonable to expect that some anglers will be consuming fish from these locations on a regular basis. As such, DAF recommends additional biota sampling to develop an understanding of the risks associated with fishing in these waters.

Department of the Environment and Heritage Protection (EHP)
Section 1.4 Regulatory Framework and Guidance Documents

This section should include State government environmental requirements, in particular:

- The *Environmental Protection Act 1994* which defines some environmental values which apply generally throughout Queensland
- The *Environmental Protection (Water) Policy 2009* which defines additional specific environmental values of surface water and groundwater that apply in the Bremer River catchment.

<http://www.ehp.qld.gov.au/water/policy/pdf/documents/bremer-river-ev-2010.pdf>

<http://www.ehp.qld.gov.au/water/policy/pdf/plans/bremer-river-ev-plan-2010.pdf>

- The *Waste Reduction and Recycling Act 2011* which deals with acceptability for reuse of biosolids via a general reuse approval for biosolids. [Note this is relevant to investigating whether biosolids from the waste water treatment plant a potential issue.]

<https://www.ehp.qld.gov.au/assets/documents/regulation/wr-ga-biosolids.pdf>

Contaminants of Potential Concern

The SAQP does not address all PFAS contaminants of potential concern:

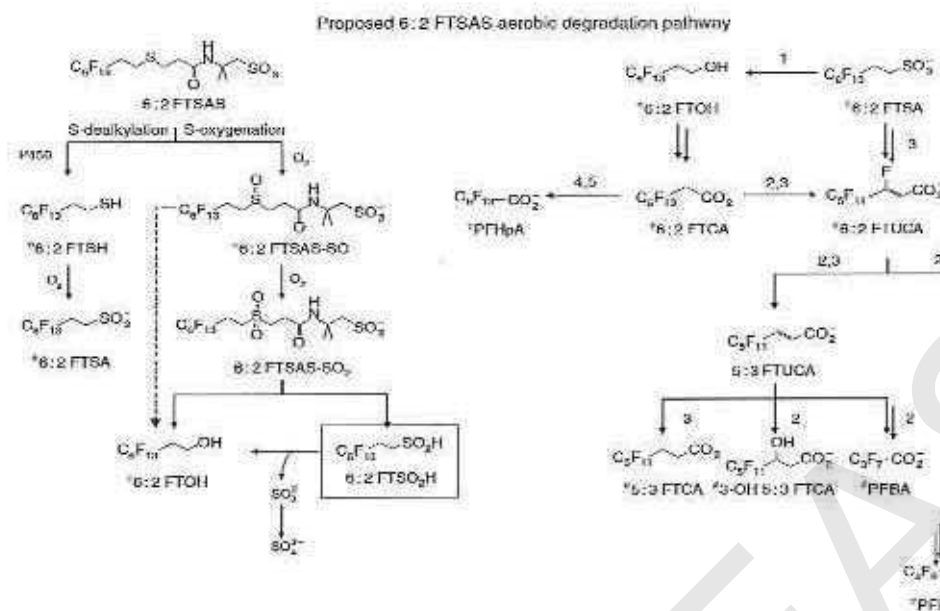
- Defence has advised that Ansulite AFFF has historically been used at the airport.
- Two Ansulite foams were analysed and studied by Weiner et al in 2013 (see links below). These are foams number 4 and 11 (refer Table S2 in research paper). They also studied 3M lightwater, foam reportedly used on site prior to adopting Ansulite. This is foam number 12 (refer Table S2 in research paper).
- A comparison was made in the study between PFAS identifiable by standard analysis and PFAS not identified. The latter are understood to be precursors. The study found both Ansulite foams as well as the 3M lightwater had a very large component of unidentified PFAS (refer Table S5 in research paper), between 50% and 95% (see table below)

Comparison of proportions of identified and unidentified PFAS in Ansulite and 3M Lightwater AFFF

Foam	Known PFAS mg F/L	Unidentified PFAS mg F/L	Percent not identified by standard analysis
Ansulite 2003	743	15557	95 %
Ansulite 2006	969	3491	78%
3M Lightwater	7100	7100	50%

- It is clear that the list of PFAS on page 5-1 do not address all contaminants of potential concern, particularly for Ansulite where the most common AFFF components are 6:2 and 8:2 fluorotelomermercaptoalkylamido sulfonates.
- Other research is available (Backe et al. 2013) which shows a range of other PFAS not included in the standard LC/MSMS suite present in 3M lightwater (see Table S6 for 3M lightwater formulations). Backe et al (2013) also contains information on Ansulite formulation circa 2005 (see Ansul product Table S5).
- The contaminants of potential concern section should therefore describe the likely presence of other PFAS and explain how the sampling program will take this into account, investigating source zones, pathways and, where there have been identified releases to receptors, receptors e.g. use of TOP Assay.
- It is also important to acknowledge that many of these precursor compounds can transform in the environment into intermediates and daughter end products (much the same way as a site conceptual model for a chlorinated solvent site would list PCE, TCE, DCE and vinyl chloride as COPC).

Some guidance (see below) is provided by studies such as Weiner (et al 2013).



Again, this section should explain how and where precursors are identified in sampling, the potential end products and intermediates will be addressed or encompassed either directly or indirectly by the sampling program.

Study Goals & Inclusion of Biosolids and Construction Impacts

A key goal of the study is to determine keys to ecological and human receptors.

- One potential pathway is an indirect one where PFAS have been released to the sewage treatment plant.
- A portion of PFAS discharged to the plant are likely to have partitioned to biosolids, hence this represents a potential for secondary exposure.
- The site investigation should therefore investigate historical and present disposal practices for biosolids. Where disposal has occurred on base, this should be considered a potential source. Sampling of current biosolids quality should be undertaken to inform whether this is also a current source requiring management.
- Various construction projects are known to have been undertaken on site. Previous advice from Defence has been that stormwater discharge criteria for PFOS were related under in house directives to previous recreational guidelines rather than aquatic ecosystem criteria. The study should include assessment of where these discharges may have occurred and whether the sampling program adequately addresses potential impacts.

Data Quality Indicators for quality assurance

There are no data quality indicator assessment criteria for TOP Assay. Quality assurance measures on the TOPA oxidation would include the following:

- The total PFAS concentration post-TOPA should be greater or less than total PFAS concentration pre-TOPA, which signifies no material losses observed in preparation steps, noting a decrease of up to 10% might be expected due to normal analytical variability)
- The sum of PFCAs post-TOPA should equal or exceed sum of PFCAs pre-TOPA, which signifies any precursors being converted to PFCA products

- The sum of PFASs post-TOPA should approximate the sum of PFASs pre-TOPA, signifying that precursors did not convert to PFAS products
- For a full oxidation, no PFAA precursors (e.g. 6:2 FtS, FOSA) are detectable post oxidation (signifying complete oxidation)
- For situations where a near complete oxidation is acceptable, minimal PFAA precursors are detectable post oxidation signified by -
 - For aqueous samples, sum of [PFAA Precursors] divided by sum of [Total PFAS] <5%
 - For soil samples, sum of [PFAA Precursors] divided by sum of [Total PFAS] <10%
 - Noting greater leniency may be applied for samples where PFAS were detected ≤ 10 times LOD
- Laboratories will determine maximum sample dilution that can be performed to achieve the adopted reporting limits. Knowledge of sample dilution is important for is important when comparing results from the primary and secondary laboratories.

Ecological screening levels (section 9.1.2)

- The ecological screening values proposed to be used for PFOS (Table 18, text page 9-3) do not adequately take into account secondary poisoning, being based on short term toxicity, primarily of plant species.

PFAS can pose a risk to the ecological safety of soil:

- A recent study (Das et al. 2015) has been conducted of PFOS release patterns from soils collected from the contaminated sites of Australian fire training areas and its bioaccumulation potential in earthworm. The study suggests that PFOS could indeed pose a potential risk to ecological safety of soil if present even at concentrations as low as 0.8 $\mu\text{g/g}$ (i.e. 0.8 mg/kg) since the highest bioaccumulation factor was found to be from such a soil. The contaminated soils at the three fire training grounds tested contained PFOS concentrations of 1.83, 16.17, and 9.26 mg/kg. This indicates the relative differential between the proposed screening values of 6.6 to 60 mg/kg and concentration that appear to cause bioaccumulation.
- There are large differences between criteria developed to address toxicity in biota versus those to protect against bioaccumulation in higher order organisms. Soil should also be assessed for potential to adversely affect ecosystem via bioaccumulation as well as toxicity.

For example, the United Kingdom Environment Agency (UK Agency 2009) advises that the key concern with PFOS is its role in secondary poisoning i.e. bio-concentrating and bio-accumulating in wildlife rather than toxicity, stating:

PFOS is a very persistent, bio-accumulative and toxic substance. PFOS is the perfluorooctane sulfonate anion, and is not a substance as such. Probable no effect concentration (PNEC) for soil has been derived at 46 $\mu\text{g kg}^{-1}$ based on plant data and the use of equilibrium partition theory (Environment Agency 2004). However, the key environmental concern associated with PFOS is in secondary poisoning for both the terrestrial and especially the aquatic compartments. For the terrestrial compartment a soil concentration that would lead to secondary effects for birds and mammals consuming earthworms would be 0.0106 mg kg⁻¹ (based on a PNEC oral of 0.067 mg/kg wwt in food).

- It is recommended that the UK Environment Agency criterion of 0.0106 mg/kg PFOS be utilised to for screening of bioaccumulation in the first instance.
- For avian fauna, Giesy (et al 2010) have developed screening criteria of 2.6 ng/L based on avoiding ill effects in birds is recommended for screening this potential impact.

Evaluation of data gaps

- The evaluation of data gaps does not assess the degree to which existing data adequately assesses presence or absence of PFAS precursors.
- As discussed in comments on contaminants of potential concern, PFAS precursors are a valid issue, particularly where the Ansolite product has been used and areas where 3M light water have historically been used and the environmental setting is reducing (hence likely limiting transformations).
- Detailed risk assessment of the PFAS contamination precursors requires consideration of where PFAS including precursors are found, with different risks related to presence in sources zones, pathways and at receptors.
- From the data gap analysis of each area of concern, it is not possible to assess the degree to which existing data is adequate and need for additional data. The sampling plan (page 10-10) advises only that a maximum of 5% of soil samples and 5% of groundwater samples and thus nil surface water, sediment and any affected biota will be assessed for presence of precursors (i.e. via TOP Assay analysis).
- This is inadequate. It is not possible to determine whether all relevant source areas and pathways will properly be assessed under the proposed plan.

A more detailed explanation of data gaps and explanation of the actual number of samples, location and media is necessary to explain how the DSI will assess risks of precursors in source zones (areas of concern), pathways (groundwater and surface water) and at any identified receptors.

Evaluation of Biota Receptors

The sampling plan states that there is not enough information to support "off-property biota sampling". The Department of Environment and Heritage disagrees, considering that biota sampling should be included from commencement. The rationale is as follows:

- a) There are numerous areas of concern listed that can affect surface waters e.g. discharges to Frogs Hollow Gully;
- b) There are numerous discharge points associated with the drainage network that discharge into Frogs Hollow Gully, Warrill Creek and the Bremer River (refer Figure 4 of plan);
- c) The plan advises that the extent of off-property PFAS concentrations are not yet well defined, however, detections have been reported up to 6 km downstream in the Bremer River, though the source of these detections is not yet understood. Surface water results have been reported consistently above guidance levels (page 3-17);
- d) Warrill Creek and the Bremer River, which form part of the property boundary, are popular for kayaking, canoeing, fishing and swimming. (page 3-2); and
- e) Sampling results presented on figure 8a show many instances of PFAS, particularly PFOS, in excess of screening concentrations in Frogs Hollow Gully, Warrill Creek and the Bremer River opposite and downstream that would indicate a risk to the environmental values protected under the Environmental Protection Act 1994 including suitability for human consumption¹,

¹ FSANZ recommended trigger points for investigation for fish is PFOS + PFHxS 5.2 µg/kg. The RIVM (2010) utilised a bioaccumulation factor (BAF) of 14000 L/kg for freshwater fish in developing the European Union water quality directive to protect human consumption. Utilising that BAF and the FSANZ trigger point for fish indicates a screening value of 5.2 µg/kg/ 14000 L/kg = 0.0004 µg/L or 4 ng/L.

ecological health ²(secondary poisoning of mammalian and avian predators) and aquatic ecosystems³.

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<http://www.publish.csiro.au/en/pdf/EN13128>

http://www.publish.csiro.au/en/acc/EN13128/EN13128_AC.pdf

² For evaluating potential effects of secondary poisoning to mammalian predators, the Dutch RIVM calculated MPCs using bio-magnification factor and bio-concentration factors to avoid adverse effects in high level mammalian predators. For the freshwater environment, the calculated maximum permissible concentration is 0.0026 µg/L or 2.6 ng/L.

For avian fauna, Giesy (et al 2010) have developed screening criteria of 2.6 ng/L based on avoiding ill effects in birds.

³ Refer Table 17 of Sampling plan which references draft ANZECC 99% species protection trigger value of 0.00023 µg/L. ANZECC recommends use of the 99% protection level for substances that bio-accumulate and the ANZECC guideline approach is prescribed under the *Environmental Protection (Water) Policy 2009*.