Background

In October 2017, the Department of Defence commenced a detailed environmental investigation into the nature and extent of per- and polyfluoroalkyl substances (PFAS) on, and in the vicinity of, Lavarack Barracks, which has resulted from the historical use of firefighting foams.

As part of the investigation, a Human Health Risk Assessment (HHRA) has been conducted to provide an understanding of potential PFAS exposure risks to people within the Lavarack Barracks Investigation Area.

To complete the HHRA process, two reports were prepared. The first, a Seafood HHRA, was released in October 2019. The second, a comprehensive HHRA, was released in December 2019.

This factsheet summarises the overall findings of the HHRA Report including the seafood HHRA assessment.

What did the Human Health Risk Assessment (HHRA) assess?

The HHRA assessed potential PFAS exposure risks associated with:

- contact with soil, sediment, surface water and groundwater within the Investigation Area
- consumption of home-grown produce including fruit, vegetables and poultry eggs
- consumption of seafood caught from the Ross River and its tributaries.

How were the risks of PFAS exposure to people assessed?

Food Standards Australia New Zealand (FSANZ) have determined how much PFAS a person can be exposed to every day of their life without long-term risk to their health. This is known as the Tolerable Daily Intake (TDI).

Risks are assessed by calculating how much PFAS people are likely to be exposed to each day. This is based on the PFAS detected in soil, water, seafood or vegetables. This figure is compared to the TDI to identify a specific risk rating.

Where exposure is lower than the TDI, the level of exposure-risk is considered ‘low and acceptable’. Where exposure is higher than the TDI, the level of exposure-risk is considered ‘elevated’. An elevated exposure-risk does not mean that a person’s health will be affected, but action to reduce the risk may be required as a precaution.

As part of this risk assessment, each exposure scenario was considered independently. Combined exposure from different scenarios were not assessed as part of the HHRA Report.

*Dates may be subject to rescheduling*
Human Health Risk Assessment (HHRA) findings

Overall, the HHRA found that the majority of PFAS exposure risk scenarios assessed are ‘low and acceptable’. Tables 1 and 2 outline different exposure scenarios in the Investigation Area and their associated exposure-risk.

![Image](image.png)

The HHRA Report is available to view at www.defence.gov.au/environment/pfas/lavarack/

<table>
<thead>
<tr>
<th>Exposure Scenario</th>
<th>Potential exposure pathways</th>
<th>Exposure-risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Eating, touching or inhaling dust</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Groundwater</td>
<td>No exposure pathway</td>
<td>No current exposure risk</td>
</tr>
<tr>
<td>Surface water</td>
<td>Incidental ingestion or touching</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Sediment</td>
<td></td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Surface water within the golf course (on-base recreational activities)</td>
<td>Incidental ingestion or touching</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Sediment within the golf course (on-base recreational activities)</td>
<td></td>
<td>Low and acceptable</td>
</tr>
</tbody>
</table>

Table 2: Summary of Risks per Exposure Scenario — off-base

<table>
<thead>
<tr>
<th>Exposure Scenario</th>
<th>Potential exposure pathways</th>
<th>Exposure-risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>Eating, touching or inhaling dust</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Incidental ingestion of groundwater extracted for irrigation</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Surface water</td>
<td>Incidental ingestion of groundwater or touching</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Sediment</td>
<td></td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Home grown produce (fruits, vegetables and poultry eggs)</td>
<td>Eating home grown produce watered with PFAS impacted groundwater or grown in PFAS impacted soils</td>
<td>Low and acceptable for current scenario*</td>
</tr>
<tr>
<td>Surface water and sediment from the Ross River and tributaries</td>
<td>Incidental ingestion of groundwater or touching</td>
<td>Low and acceptable</td>
</tr>
<tr>
<td>Seafood</td>
<td>Eating recreationally caught local seafood. (Please note: fillet samples of barramundi, milk fish, flatfish, sleepy cod, blackspotted rock cod, dusky flathead, Moses perch, northern whiting, pikey bream, sea mullet, silver javeelin and blackspot longtom, and the whole body of longfin eel were assessed as part of the HHRA)</td>
<td>Low and acceptable up to three serves (where serving size is 75g) of fish per week from the assessed areas (outlined in Figure 1)</td>
</tr>
<tr>
<td>Shellfish</td>
<td>Eating recreationally harvested local shellfish (Please note: edible meat samples from blue swimmer crabs and mud crabs were assessed)</td>
<td>Low and acceptable</td>
</tr>
</tbody>
</table>

* The exposure risks from eating vegetables, fruits and poultry eggs are considered low because the investigation identified that produce is not widely grown within the Investigation Area. If there is an increase in consumption of home grown produce, or an increase in watering home grown produce with groundwater, the associated PFAS exposure-risk level may change.
Queensland Health Advice

In 2018, Queensland Health assessed results from fish tested from the Ross River and found that the levels of PFOS and PFHxS in the Investigation Area would not change the standard fish consumption advice issued by Food Standards Australia and New Zealand (FSANZ) to limit consumption of most fish species to 2 to 3 serves per week from a range of sources. Precautionary advice was provided to not consume fish from the lakes in Idalia, but anyone that has occasionally consumed fish from the lakes in the past should not be concerned about their exposure to PFAS from the fish. Queensland Health did not recommend any restrictions for consumption of eel because eel from the Ross River is unlikely to be regularly consumed in Townsville. The precautionary advice not to consume fish from Idalia Lakes remains in place and can be found via the following link:


Next Steps

An Ecological Risk Assessment (ERA) is being undertaken to assess exposure-risks for plants and animals within the Investigation Area. The ERA is expected to be completed in the second quarter of 2020.

A PFAS Management Area Plan (PMAP) will be developed. The PMAP will recommend actions to manage and reduce the risks of PFAS exposure for the community.

As part of the PMAP, an Ongoing Monitoring Plan will be prepared. This outlines the sampling program that will be undertaken by Defence to monitor and track PFAS contamination over the coming years.

enHealth Advice

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released guidance to help assess public health risks when PFAS have been released into the environment. In July 2019, the statements were updated to reflect the most current evidence relating to PFAS.

The Expert Health Panel for PFAS found that there is limited to no evidence of human disease or other clinically significant harm resulting from PFAS exposure at this time.

However, although the scientific evidence in humans is limited, reviews and scientific research to date have provided fairly consistent reports of an association with several health effects. The health effects reported in these associations are generally small and within normal ranges for the whole population.

As a precaution, enHealth recommends exposure to PFAS be minimised wherever possible while further research is undertaken on the potential health effects of PFAS exposure. If you live or work in a PFAS contaminated area, your state or territory health department can provide you with local advice on how to minimise PFAS exposure.

For more information, contact the Commonwealth Department of Health:

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

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