



## About PFAS

Per- and polyfluoroalkyl substances (PFAS) are a large family of manufactured chemicals that were used since the 1950s in common household products as well as specialist products such as firefighting foams and industrial liquids.

Historically, the South Australian Country Fire Service (CFS) used firefighting foam containing PFAS in training activities at the Brukunga State Training Centre (STC); however CFS ceased using firefighting foam containing PFAS on the flammable pad facility at the STC in 2002.



*Above: PFAS has been used in a range of products with brands such as Teflon, Scotchguard and Goretex.*

Upon direction from the EPA, the CFS engaged key specialists to investigate, report and deliver key outcomes on the nature and extent of PFAS on and around the CFS STC to understand if it represents a potential human health and/or ecological risk.

## Government guidance

Most people living in developed countries are exposed to PFAS due to their common use in household and industrial applications.

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released guidance statements regarding the assessment of public health risks associated with PFAS exposure.

While there may be potential human health effects (based primarily on the results of animal studies), research is on-going, and the advice is to minimise exposure as much as possible as more research is undertaken.

For more information, contact the Commonwealth Department of Health.

**Phone:** 1800 941 180

**Web:** [pfas.gov.au](http://pfas.gov.au)

## Key Points

- CFS engaged the services of GHD to undertake and deliver on directions provided by the EPA.
- CFS has engaged an accredited independent Site Contamination Auditor to oversee and review all works undertaken by GHD.
- The completed investigations have assessed the health risk as low.
- Community event - information session to be held shortly.

## PFAS investigations and findings

Since 2019, GHD have been undertaking various PFAS investigations on and around the site, which are still on-going. The investigation area (Figure 1) extends downstream of the site along Dawesley Creek, Mt Barker Creek and the Bremer River, as far as Lake Alexandrina.

The investigations have mainly found PFAS in areas of the STC site, where firefighting foams were previously used and stored. The residual PFAS are largely contained within the site by the collection and treatment system for acid mine drainage associated with the former Brukunga mine. Surface water runoff from the site, and water from the Brukunga mine, is further treated for PFAS prior to discharge back into Dawesley Creek. During heavy rainfall however, the capacity of these systems can be exceeded and bypassed.

Detectable levels of PFAS have also been found within the surface water, sediments, and aquatic fauna (yabbies and/or fish) of Dawesley Creek, Mt Barker Creek and the Bremer River. The identified off-site groundwater impacts are more limited in extent and generally localised to areas where interaction with surface water occurs.

With respect to the off-site area, samples of soil, sediment, surface water (creeks and rivers) and aquatic fauna (yabbies and fish) have been collected from the waterways and groundwater was sampled from dedicated monitoring wells and several private bores.

## Human Health and Ecological Risk Assessment (HHERA)

In 2020, a community survey was undertaken to understand the ways that residents living downstream of the site along Dawesley Creek, Mt Barker Creek and the Bremer River use surface water and groundwater. The reported water uses included livestock watering, irrigation, non-drinking domestic use and occasional drinking during dry periods.

In 2023, GHD completed a Human Health and Ecological Risk Assessment (HHERA) to assess whether these water uses could be associated with a level of PFAS exposure sufficient to represent a potential risk to relevant receptors.

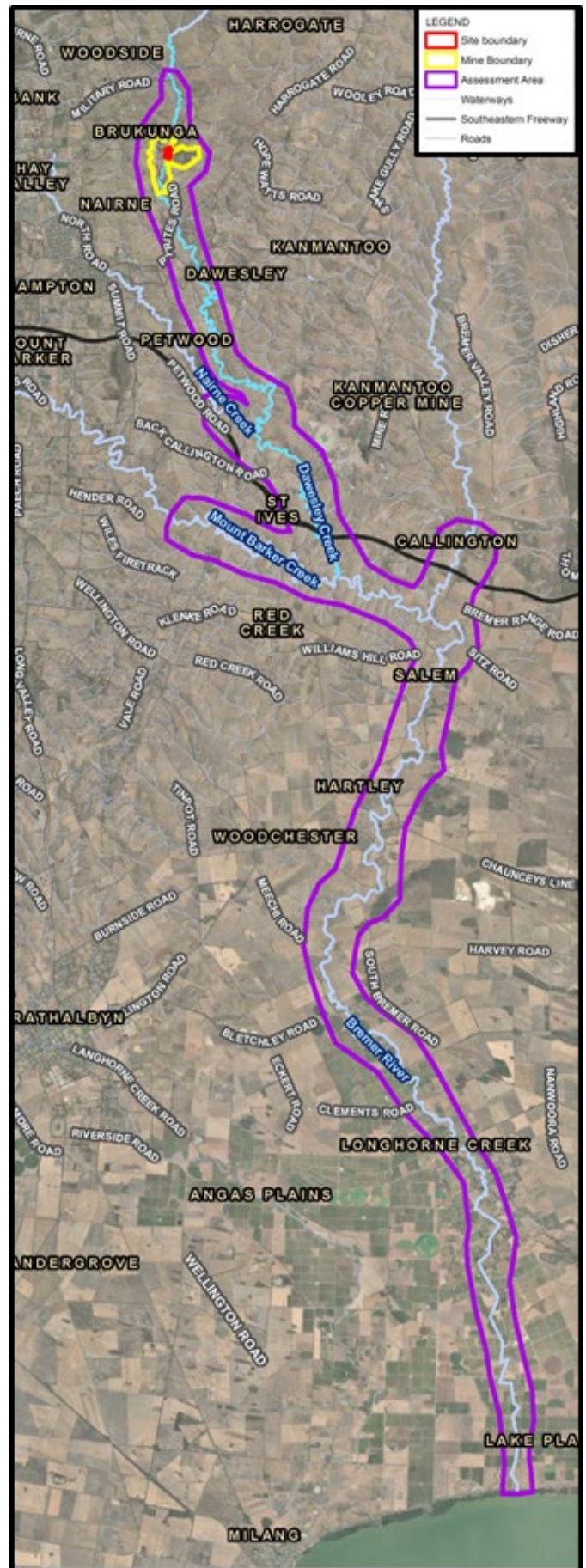


Figure 1 Investigation Area



## Assessing PFAS exposure risks

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

Health risks were assessed by calculating how much PFAS people could be exposed to each day in this area and comparing this value to the TDI. Exposure below the TDI indicates that the health risk is low.

The HHERA included two scenarios:

- *Current patterns of water use* – using the community survey outcomes to calculate exposure.
- *A reasonable, worst-case future water use scenario* – where the cumulative exposure that could occur from a range of possible water uses was calculated.

The water uses considered included occasional drinking, non-drinking domestic use, recreational use and the consumption of plants, livestock and eggs produced using surface water or groundwater.

## What were the estimated exposure risks?

The HHERA found that the use of surface water or groundwater downstream of the site currently represents only a minor source of PFAS exposure for local residents.

This finding was made on the basis that:

- The community survey did not identify properties downstream of the site that rely primarily on surface water for irrigation or consume livestock watered mainly with surface water.
- The intermittent seasonal flow patterns of Dawesley Creek and Mt Barker Creek, and the water quality issues associated with the release of acid mine drainage from the Brukunga mine, limit the suitability of the water for intensive use and hence the potential for PFAS exposure.

The HHERA also found that the PFAS concentrations measured in downstream surface water and private groundwater bores would be unlikely to represent a health risk if the water was extracted and used more intensively in the future. This was because the cumulative exposures estimated from the use of extracted water for a range of potential purposes were lower than the FSANZ TDI.

Calculations were performed to estimate the maximum PFAS concentration in surface water and groundwater and concluded they would not cause adverse health effects to local residents over a lifetime of use for the range of possible beneficial purposes.

A site-specific water quality guideline of 0.3 micrograms per litre was derived for PFOS + PFHxS (the main types of PFAS that were present).

The PFOS+PFHxS concentrations in creek and groundwater samples collected from private properties were below this value.

The findings of the HHERA regarding the PFAS exposure risk indicated that it was low and acceptable for the range of beneficial uses of extracted surface water and groundwater shown below.

Water Use	Risk rating
Supplementing rainwater supplies during dry periods (such as pumping into a dam or rainwater tank).	LOW
Non-drinking domestic purposes use (such as washing a car).	LOW
Recreational use (e.g. swimming in or filling swimming pools – which may bring about swallowing small amounts of water).	LOW
Irrigating gardens, including fruit trees and vegetable gardens and eating the produce from those gardens.	LOW
Watering livestock that are eaten at home.	LOW
Watering egg-laying chickens and eating the eggs.	LOW
Eating locally caught yabbies and fish ( <i>noting that field observations suggest a limited presence of edible fish and yabbies in the local waterways</i> ).	LOW

The HHERA report has been reviewed and endorsed by an independent Site Contamination Auditor, accredited by the SA EPA, confirming the validity of the investigation outcomes.

## What about my livestock business?

SAFEMEAT SA<sup>1</sup> advises there are no restrictions on domestic or international trade in agricultural products containing PFAS.



The PFAS concentrations measured in downstream surface water and groundwater are not harmful to animal health or to the productivity of a livestock operation.

## Next steps?

Residents living along Dawesley Creek, Mt Barker Creek and the Bremer River do not need to take any specific actions.

The PFAS levels identified downstream of the STC represent a low and acceptable risk to the health of local residents.

GHD is engaged to continue monitoring of PFAS through the on-going sampling of surface water within the downstream waterways. This will assist in informing key stakeholders if PFAS levels are changing over time.

## Keeping the community informed

We will continue to update you on the progress of on-going monitoring and management activities.

The HHERA report and other related PFAS documents are available on the EPA public register.

## Community Event - Information Session

To provide the community and other key stakeholders with further information and to hear from the experts directly, the CFS is coordinating a community information session to discuss the HHERA outcomes and any other aspects of the PFAS investigation program. The session will provide you with an opportunity to ask questions to the experts as they relate to you.

Information on the community session will be sent out shortly to all key stakeholders.

## Contact information

For further information please contact our team using the details below.

Phone: 1800 815 725

<sup>1</sup> <https://www.pfas.gov.au/audience/community-member>.