

PFAS WATER QUALITY SAMPLING COCKBURN SOUND

Background

In January 2017, the Cockburn Sound Management Council (CSMC) undertook sampling to measure perfluoroalkyl and polyfluoroalkyl substances (commonly referred to as PFAS) in the marine waters of Cockburn Sound.

Samples were collected at the 18 sites in Cockburn Sound and the two reference sites in Warnbro Sound that are routinely sampled during the CSMC's [Summer Water Quality Monitoring](#) program (see **Figure 1**).

The sampling followed the Department of Environment Regulation's [Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances \(PFAS\)](#), with analysis undertaken by National Association of Testing Authorities (NATA)-accredited Eurofins.



Figure 1: Location of water quality monitoring sites in Cockburn Sound and the reference sites in Warnbro Sound

What are PFAS?

PFAS are a group of synthetic fluorine-containing chemicals used in fire-fighting foams and also in various heat, stain and water resistant products.

Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are two of the best-known PFAS and are contaminants of emerging concern in Australia and internationally.



CSMC sampling results

Concentrations of PFAS, including PFOS and PFOA, were at or below the limits of reporting (between 0.005 micrograms per litre [$\mu\text{g/L}$] and 0.05 $\mu\text{g/L}$) at all the sites sampled by the CSMC in Cockburn and Warnbro Sounds.

Based on the results of this sampling, there is no evidence that PFAS contamination identified at *HMAS Stirling* (discussed below under the 'Department of Defence sampling' heading) has impacted water quality in Cockburn Sound.

Department of Defence sampling

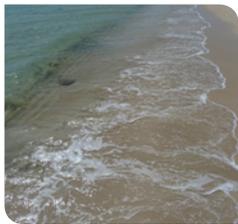
The Department of Defence (Defence) [undertook sampling](#) at *HMAS Stirling* on Garden Island between October 2013 and February 2016. This sampling identified concentrations of PFOS and PFOA in groundwater on the island that exceeded the screening levels for groundwater (drinking water) and surface water (recreational use).

Based on these results, Defence will undertake a [detailed environmental investigation](#) at *HMAS Stirling* to identify the nature and extent of PFAS on and in the vicinity of the base. This investigation will commence in mid-2017 and is expected to take approximately 12 months to complete.

Why are they considered contaminants of emerging concern?

PFAS are highly persistent in the environment, moderately soluble, can be transported long distances and transfer between soil, sediment, surface water and groundwater. They have been shown to be toxic to some animals and, because they break down very slowly, can bioaccumulate and biomagnify in some wildlife, including fish. This means that fish and animals higher in the food chain may accumulate higher concentrations of PFAS in their bodies.





Australian Government guidance

The Australian Government has prepared draft environmental management guidance on PFOS and PFOA.¹ The guidance includes proposed Australian-derived guidelines for PFOS and PFOA in water and soil to achieve ecological protection. The guidance does not specify Australian-derived guidelines for the protection of human health.

The draft guidelines provide an indication of whether PFOS and/or PFOA are likely to be a contamination issue for a specific site or the wider environment. If the soil or water contamination levels exceed the relevant guidelines, more detailed investigation or risk assessment might be appropriate. The water quality guidelines provide certainty that there will be no significant impact on water resource values if the guidelines are met.

Most of Cockburn Sound is designated as having a high-level of ecological protection (see **Figure 1**). The Australian Government's proposed guideline levels for PFOS and PFOA in marine waters of high conservation value are 0.29 µg/L and 3,000 µg/L, respectively. The limits of reporting for PFOS and PFOA in CSMC's sampling are well below these investigation levels.

The limits of reporting are also below the Australian Government's recreational water quality health based guidance values for assessing site contamination.² The health based recreational water guidelines for PFOS and PFOA are 0.7 µg/L and 5.6 µg/L, respectively.



For more information please contact the Cockburn Sound Management Council:

Phone: 6467 5000
Email: CSMC@der.wa.gov.au

Or visit the Cockburn Sound Management Council's website:
www.der.wa.gov.au/about-us/csmc

- [Australian Government \(October 2016\). Commonwealth Environmental Management Guidance on Perfluorooctane Sulfonic Acid \(PFOS\) and Perfluorooctanoic Acid \(PFOA\).](#)
- [Australian Government \(2017\). Health Based Guidance Values for PFAS. For Use in Site Investigations in Australia.](#)