



HMAS Cerberus PFAS Investigation – Detailed Site Investigation Findings

PFAS Investigation and Management Program

Background to the Investigation

In May 2017, Defence commenced a detailed environmental investigation into the nature and extent of per- and poly-fluoroalkyl substances (PFAS) on or near HMAS Cerberus (the Base). This investigation is part of Defence's review of a number of its properties around Australia that used legacy fire-fighting foams containing PFAS. The investigation and reporting of the results and findings of the investigation were concluded in September 2018.

Investigation timeline



The Detailed Site Investigation (DSI)

The Detailed Site Investigation included a desktop review of prior site contamination reports, key stakeholder engagement, interviews with key site personnel, a water use survey of properties within a one-kilometre radius of the Base, on-base sampling of soil, sediment, sludge, surface water, groundwater, and biota. It also included continuous reporting consistent with national environmental¹ and PFAS guidance documents².

Sample Type	# samples (inc. Hanns Inlet)
Soil	127
Sediment	50
Pore water in sediments	19
Groundwater	136
Surface water	66
Tap water / Recycled water	3
Sewage sludge	8
Terrestrial grass / vegetation / algae	20
Fish (Hanns Inlet)	66
Total samples analysed	495

DSI results and key findings

As shown on Figure 1 (over the page), residual PFAS in soils were identified within and surrounding the key areas where known legacy firefighting foam use, storage and waste management has occurred.

Key source areas consist of the Fire Ground, South Creek wetlands, Fire Station and nearby Ornamental Lake, Sullage Pit, Irrigated Sports Fields, and former Sewage Treatment Plant. Within the Base training areas outside these key areas of impact, low levels of PFAS were identified in soils, groundwater, and surface water.

¹ National Environment Protection (Assessment of Site Contamination) Measure (1999) amended 2013 (NEPM 2013).

² Heads of EPAs Australia and New Zealand (2018) PFAS National Environmental Management Plan (NEMP 2018).



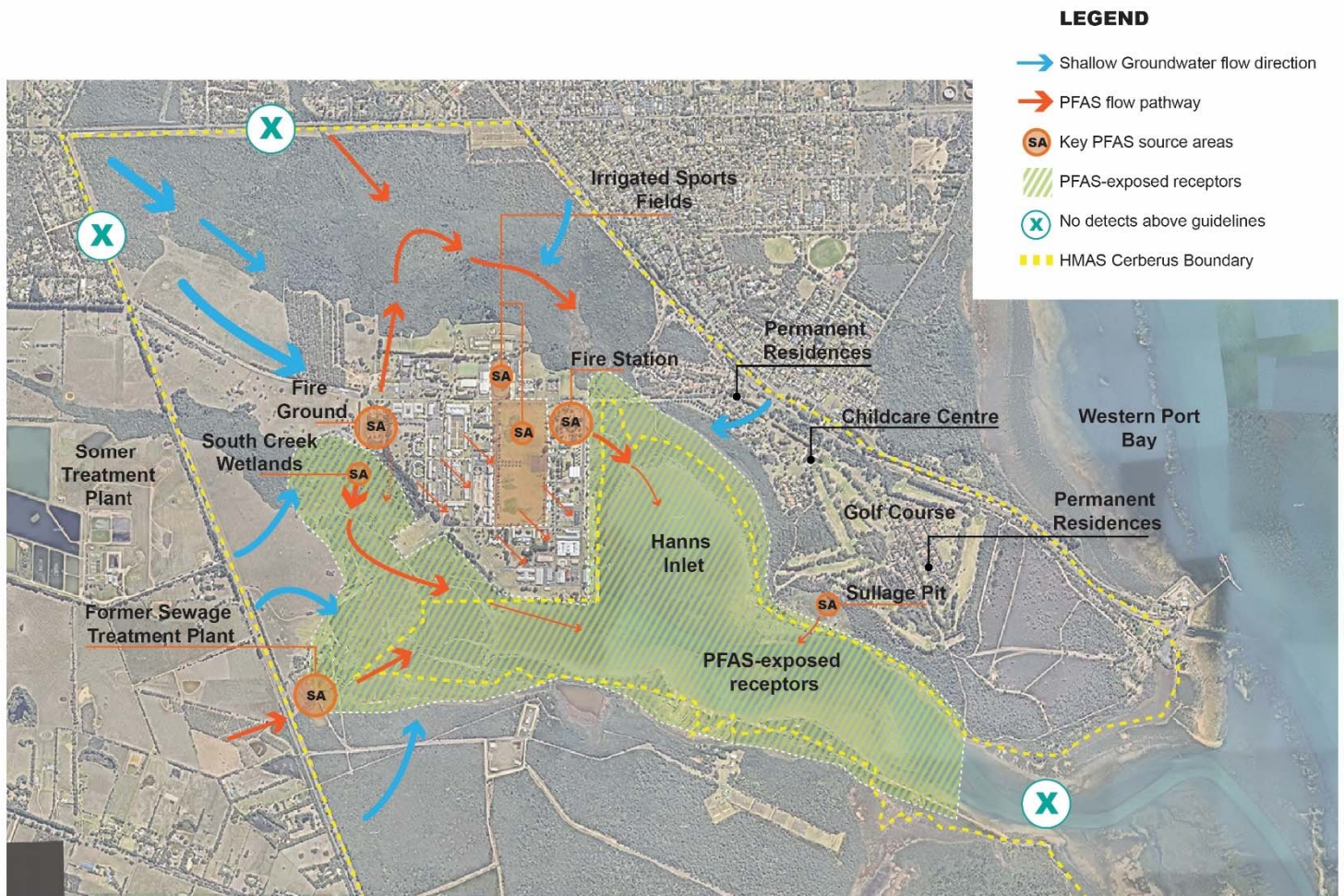


Figure 1 PFAS Sources / pathways / receptors

Both groundwater and surface water from the Base flows away from adjacent residential and community land and ultimately discharges into Hanns Inlet.

Review of exposure risks

As part of the DSI, the sampling results were used to identify if there were potential pathways from the source areas to people, plants and animals within the Investigation Area. As part of the DSI a Tier 1 Risk Assessment was undertaken by comparing sample results to literature-based screening levels.

Based on the DSI characterisation of the key source areas and the findings from the Tier 1 Risk Assessment, there was sufficient information to devise risk-based remediation strategies without the need to pursue further and more detailed site-specific assessment of exposure risk to humans plants or animals.

Tier 1 Risk assessment

There is no evidence of any unacceptable exposure risk to:

- Off-Base residents
- On-Base residents
- Users of the child-care centre
- Consumers of edible fish caught within the confines of Hanns Inlet (access to these waters for fishing purposes is strictly prohibited)
- On-Base workers (undertaking non-surface intrusive works)
- Trainees or Base visitors through direct exposure to soil on-Base

There is evidence of potential unacceptable exposure risk to workers who may undertake intrusive site construction or maintenance works. The exposure risk occurs through



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potential incidental ingestion of PFAS impacted soil, sediment, biosolids surface water, and groundwater.

There is also evidence of potential exposure risk to on-base (including Hanns Inlet) land and aquatic biota (flora and fauna). The exposure risk occurs by coming into contact with PFAS-impacted soil, sediment, porewater, surface water, groundwater, and PFAS-impacted biota.

The primary pathway for exposure is the identified on-base source areas (primarily the Fire Training Ground and the South Creek wetlands) and the discharge of impacted surface waters and groundwater to Hanns Inlet.

While there is evidence of PFAS accumulation in fish caught within Hanns Inlet, there is no exposure risk to potential human consumers, noting that access to these waters for fishing purposes is strictly prohibited.

Next steps

Based on the results of the DSI there is sufficient information to develop a response management strategy without conducting further assessments of exposure risk to humans, plants, animals and the environment.

The findings of the detailed environmental investigation have been used to develop a PFAS Management Area Plan (PMAP).

The PMAP identifies practicable solutions to prevent or minimise the migration of PFAS beyond the Defence property boundary and manage identified on-base exposure risks.

Government Guidance

All detailed environmental investigations are undertaken by experienced environmental services providers in accordance with the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (NEPM).

The Department of Health established an Expert Health Panel (the Panel) to advise the Australian Government on

the potential health impacts associated with PFAS exposure and identify priority areas for further research.

The Panel's findings support the previous Environmental Health Standing Committee's (enHealth) advice in 2016 that there is no consistent evidence that exposure to PFAS 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 at the Commonwealth Department of Health PFAS webpage and via the community hotline:

Phone: 1800 941 180

Keeping the community informed

Defence will continue to keep the community informed on the progress of the ongoing monitoring and implementation of the PFAS Management Area Plan.

Contact the national information line



1800 365 414



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



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