

PFAS remediation—status report

- 3.1 The Department of Defence has described its PFAS Investigation and Management Program as ‘possibly the largest program of environmental investigations ever conducted in Australia’.¹
- 3.2 Under the Program, the Department of Defence is undertaking environmental investigations in and around 28 Defence sites.² The Department has advised the Sub-committee that it does not anticipate that any more sites will need to be investigated.³
- 3.3 This chapter provides a preliminary review of work in progress based on evidence taken from Defence officers during the public hearing in Canberra on 2 December 2019. As noted, answers to Questions on Notice taken at the hearing are yet to be provided.
- 3.4 Further consideration of the Department’s progress in its remediation work, its effectiveness in managing environmental hazards, and its responsiveness to community concerns will be evaluated over the course of the Committee’s inquiry.

Site investigation and remediation

- 3.5 The Department of Defence’s environmental investigation of PFAS contaminated Defence sites is conducted in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) and involves three main steps:

1 JSCFADT, *Inquiry into the management of PFAS contamination in and around Defence bases*, Australian Government, *Submission 64*, p. 3.

2 *Department of Defence Annual Report 2018–19*, p. 138.

3 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

- a Preliminary Site Investigation (PSI);
 - a Detailed Site Investigation (DSI); and
 - a Human Health and Ecological Risk Assessment (if deemed necessary).⁴
- 3.6 Once the investigation is completed a PFAS Management Area Plan (PMAP) is tailored to address the specific conditions on the site.⁵
- 3.7 Current PMAP activities include:
- provision of alternative water supplies to residents who live near investigation sites and are reliant on bore water for drinking;
 - implementation of management and remediation options for contaminated water and soil, including through clearance of drains, the installation of water treatment plants; and
 - review of emerging scientific and technical approaches for future application.⁶
- 3.8 Defence's PFAS website provides detail on work conducted at each specific site under investigation, including:
- installation of a Soil Treatment plant at RAAF Base Edinburgh;
 - operating water treatment plans at Williamtown, Oakey and Katherine;
 - provision of bottled at Williamtown, Oakey and Katherine and Bullsbrook, with tanks installed at 87 properties in Katherine;
 - funding of town water connections for eligible properties in Williamtown and Oakey; and
 - excavation of sediment from open drains at Oakey and RAAF Base Williamtown, replacement of new drain linings and disposal of contaminated material in accordance with EPA guidelines.⁷

4 *Department of Defence Annual Report 2018–19*, p. 138, and see PFAS Investigation Process www.defence.gov.au/Environment/PFAS/InvestigationProcess.asp viewed 5 December 2019.

5 Department of Defence, (all future program references from Defence site) PFAS Investigation Process www.defence.gov.au/Environment/PFAS/InvestigationProcess.asp viewed 5 December 2019.

6 Summary from *Department of Defence Annual Report 2017–18*, p. 192; 2018–19 Annual Report, p. 138.

7 PFAS Investigation and Management Program, Management Activities www.defence.gov.au/Environment/PFAS/ManagementActivities.asp viewed 5 December 2019.

The partners

3.9 The Department of Defence contracts industry partners to provide environmental management services. Contractors on more recent soil and water treatment works include:

- At RAAF Edinburgh
 - ⇒ Enviropacific Services Pty Ltd installed a base water treatment plant to remove PFAS from groundwater beneath the current Fire Training Area conducted by; in operation since mid-August 2019.
 - ⇒ Ventia Utility Services is operating and maintaining a PFAS Soil Treatment Plant to wash 2 500 tonnes of soil, to be reused on site. The plant, delivered from the United Kingdom (UK) commenced work in July 2019, with a trial to be completed by late 2019.⁸
- At Oakey Army Aviation Centre
 - ⇒ Emerging Compounds Treatment Technologies (ECT2) developed a water treatment plant for the former fire station. In operation since September 2017, the plant treats contaminated groundwater and reinjects treated water back into the aquifer.⁹
 - ⇒ OPEC Systems installed and commissioned a commercial scale water treatment plant for the fire training area in first and second quarter of 2019. The plant processes 250 000 litres of PFAS contaminated water per day to drinking water standards.¹⁰
 - ⇒ Results monitored monthly to September 19 are available on the PFAS management site.
- At Williamtown
 - ⇒ An ECT2 developed water treatment plant is also taking groundwater from a field of 15 extraction bores around the former fire training area at RAAF Base Williamtown. The plant has been operational on site since July 2018.¹¹

8 ADF Edinburgh Management Activities www.defence.gov.au/Environment/PFAS/Edinburgh/managementactivities.asp viewed 5 December 2019.

9 Oakey Management Activities, Water Assistance, Former Fire Station defence.gov.au/environment/pfas/oakey/managementactivities.asp viewed 5 December 2019.

10 Oakey Management Activities, Water Assistance, Fire Training area and see OPEC Systems, 'PFAS Solutions' www.opecsystems.com/shop/category/pfas-solutions viewed 5 December 2019.

11 ECT2 at www.defence.gov.au/Environment/PFAS/ManagementActivities.asp viewed 5 December 2019.

- ⇒ Synergy Resource Management developed the Lake Cochran water treatment plant as an interim measure. In Operation since 2017, a long term solution is still being developed.¹²
- 3.10 Defence also collaborates in studies and trials to improve understanding of PFAS and its management and remediation.¹³ Recent research includes:
- The Special Research Initiative: PFAS Remediation Research (Linkage) Program – Australian Research Council (ARC) funding of \$4.8 million to manage and remove PFAS from the environment. Applications for round two closed in February 2019.¹⁴
 - Richmond Trial Remediation System – with the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) – installation of a trial remediation system for PFAS in groundwater, commenced in early October 2019 for completion (two months) and monitoring post installation (six months). Focuses on the fire training area but testing for possible wider application.¹⁵

The challenge of PFAS

- 3.11 In 2016, Defence established a national program to investigate the nature and extent of PFAS contamination and assess the associated human health and ecological risks. The program’s initial focus was to commence detailed environmental investigations on Defence sites where aqueous, film-forming firefighting foams were used or stored, and to support impacted communities to try and break exposure pathways.¹⁶
- 3.12 In evidence to the Sub-committee, the Defence Deputy Secretary, Estate and Infrastructure, Mr Steven Grzeskowiak advised that the Department’s understanding of these chemicals and how they interact with the environment has grown significantly since that time:

12 Synergy PFAS Treatment synergyresource.com/services/pfas-treatment viewed 5 December 2019.

13 Studies and Trials, PFAS Investigation and Management Program www.defence.gov.au/Environment/PFAS/studiesandtrials.asp viewed 12 December 2019.

14 Applications closed in February 2019, see Australian Government GrantConnect: Linkage Program – Forecast Opportunity View – PFAS www.grants.gov.au/?event=public.FO.show&FOUUIID=7F361450-BE46-18B4-7A113D38FA2EA993 viewed 12 December 2019.

15 Department of Defence, Studies and Trials, viewed 12 December 2019.

16 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

We know that PFAS chemicals are highly soluble and can migrate significant distances in water. Our investigations have demonstrated that our former and current firefighting training areas and storage areas, where these chemicals were kept, are highly concentrated sources of PFAS. We know that, depending on the nature of the soil at each site, the PFAS are able to migrate through soil and enter groundwater systems. Where the soil is coarse, a sandy type soil, it will more readily enter groundwater systems than at those locations where the soil is fine, or clay based. We know that a significant portion of the mass of PFAS chemicals is still resident in soils at high-concentration areas like source sites. We also know that, when it rains, surface water comes into contact with these source areas and can carry PFAS chemicals away from the areas through drainage networks and off Defence bases.¹⁷

- 3.13 On this basis, Defence had focused its remediation efforts on reducing the concentration of PFAS at source areas. As Mr Grzeskowiak explained, current knowledge suggests that this is the most effective action and will mitigate the volume of PFAS which might otherwise migrate off a defence base.¹⁸

Progress under the National Program

- 3.14 The Department of Defence is currently conducting investigation and remediation works at sites at 28 Defence sites around Australia. Mr Grzeskowiak provided the following progress report on site assessment and management under the National Program as at December 2019:

At 17 of those sites the investigations have been completed, with the remaining 11 sites anticipated to be completed by the end of this financial year – around the middle of next calendar year. At those sites where we have completed investigations, we've produced a PFAS management area plan, which has been developed and shared with jurisdictional environmental regulators and made available to communities. These plans propose remediation initiatives focused on mitigating the

17 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

18 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

migration of PFAS chemicals. The plans include ongoing monitoring programs to inform our understanding of any change in the environment due to the movement of PFAS in the environment, and also to help us assess the impact of remediation activities that we are undertaking.¹⁹

- 3.15 The Sub-committee asked about the process for identifying investigation sites and their prioritisation for remediation work. Defence outlined the historical approach explaining that this had evolved in response as knowledge increased:

When we first were alerted to this issue, which happened at Oakey first and then at Williamtown, we commenced a desktop review of our sites. Obviously, we were looking for places where defence had used firefighting type activities over time. We did an activity to triage where we would look first. So we started our program of investigations. We didn't have the capacity back in 2016 to launch all investigations at the same time and I suspect Australian industry would not have had the capacity to respond to that as well. We launched investigations in a trached sense. Roughly, every three or four months we would launch the next few investigations.²⁰

- 3.16 First Assistant Secretary, Infrastructure, Mr Christopher Birrer explained that Defence now prioritises works in terms of two questions:

One is credible and proven migration pathways, where the PFAS can migrate off the base into the community. The second is: are those communities where, as a result of the human health risk assessments, we can see that there are complete potential human health exposure pathways.²¹

- 3.17 Mr Birrer emphasised that Defence's immediate priority is to disrupt potential exposure pathways, such as by providing alternative water, and then, under remediation, 'to break or wind back those potential migration pathways' from the base into the community.²²

- 3.18 A member asked about the process and total number of sites that were evaluated for potential investigation. Mr Grzeskowiak referred to a three tier review – 'Tier 1 was we really need to do an investigation. Tier 3 was

19 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, pp. 1-2.

20 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

21 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 4.

22 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 4.

no need to look here'. Overall it was estimated that 60 sites were considered for investigation.²³

- 3.19 Questions were also asked about the potential identification and treatment of new sites. Mr Grzeskowiak explained that sites were initially included where the old 3M light water firefighting foam had been used, however: 'Over time, our knowledge has matured and we have been gradually adding in sites as we've learnt more information about places. At 28, I think, we are now at the maximum number of sites'.²⁴
- 3.20 Defence, however, acknowledged a potential that new sites may be identified and undertook to review that number should new information become available.²⁵

Effectiveness and monitoring

- 3.21 According to the Department of Defence's web advice, the aim of the PFAS Management Area Plan (PMAP) is 'to provide options to manage the risks of PFAS exposure on and near the Base and outline a plan for ongoing monitoring'.²⁶
- 3.22 An important concern for PFAS affected communities is whether remediation works can eliminate PFAS from affected sites. Defence representatives were candid about the limitations, stating:

Proven remediation technologies to destroy PFAS chemicals are limited at this stage. The primary remediation technologies available are focused on separating PFAS chemicals from contaminated materials – that is, soil and water – and concentrating the chemicals in a waste stream which can be contained and stored for destruction at a later date as technology for destruction matures. There are limited waste disposal options available for high concentrations of PFAS waste streams, and we will only use sources for disposal of PFAS where they are licensed and accredited to do so.²⁷

23 Senator Faruqi asked for further clarification in a Question on Notice, Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 8.

24 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

25 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, pp. 1-2.

26 *PFAS Investigation and Management Program, Management Activities*, www.defence.gov.au/Environment/PFAS/ManagementActivities.asp viewed 5 December 2019.

27 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 8.

- 3.23 Water and soil treatments are used at Defence sites to remove or disrupt the flow of PFAS contamination through affected environments. Commenting on the effectiveness of these methods Mr Grzeskowiak advised:

Water treatment technologies for PFAS have matured more quickly than equivalent technologies for treating soil. We've implemented a number of water treatment facilities at some of our high-profile sites to begin removing PFAS, principally from groundwater but also from surface water. Treatment technologies for soil are emerging but are not yet proven at the scale equivalent to Defence's needs. Defence is prioritising the treatment of soil source areas in our current management area plans. This will include a combination of strategies, including excavation of soil or capping of areas where it's likely that PFAS may migrate into groundwater systems or interact with surface water.²⁸

- 3.24 The Committee noted that the results of monthly water testing at Oakey are posted on the Defence web tab dedicated to the remediation work carried out there.²⁹ Results over 2018 and 2019 indicate declines and fluctuations in PFAS concentrations in untreated water, and overall improvements after treatment, a relative indicator of the effectiveness of the remediation measures deployed.³⁰
- 3.25 Mr Grzeskowiak made ongoing commitments to a flexible program of continuous improvement and monitoring in remediation works:

We will continue to implement our remediation plans and will remain flexible to take advantage of emerging treatment technologies as they are proven and as they become commercially available. We will continue to monitor PFAS within the environment on and surrounding our bases to understand any changes in concentration or spread and to assess the effectiveness of our remediation actions, and then to inform any changes required of our management area plans.³¹

28 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

29 Oakey Management Activities defence.gov.au/environment/pfas/oakey/managementactivities.asp viewed 11 December 2019.

30 The results also record periods when treated water concentration was above the Health Based Guidance Values, with fluctuations for untreated water for different concentrations of PFOS and PFHxS, and PFOA. See 2019 and 2018 Water Sampling Results, Oakey Management Activities, viewed 11 December 2019.

31 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

Testing new approaches

- 3.26 The Department of Defence provides opportunities for industry to demonstrate treatment technologies, including by funding the Australian Research Council's PFAS special research initiative and other bodies giving grants for research into PFAS remediation and related issues.³²
- 3.27 The Sub- committee investigated soil-washing trials being conducted at Edinburgh, which were reported to be effective at separating PFAS from soil. Mr Grzeskowiak explained that the RAAF Edinburgh site was selected for this trial because of the soil type, which was clay based. In effect, this would make for a more rigorous trial of the technology, since evidence had suggested that it is harder to extract PFAS from clay soils.³³
- 3.28 As noted in this chapter, the technology being trialled at RAAF Edinburgh has been imported from the UK to wash 2 500 tonnes of soil, with treated soil intended to be reused on site. Mr Grzeskowiak discussed some of the logistical issues involved in an operation of this scale. Noting that the size of the plant precludes its transportation to another site, he advised that Defence is considering at present whether to invest in plant at a few different locations or to transport contaminated soil to treatment centres.³⁴
- 3.29 Another issue discussed was the storage and/or destruction of highly concentrated PFAS which has been extracted from contaminated water either by use of GAC–granulated active carbon or, more currently, resin.³⁵
- 3.30 Mr Birrer updated members on the currency and effectiveness of these measures:

So there is still GAC that is involved in the water treatment process. As well, we still operate a plant at Williamtown on Lake Cochran which is a GAC based removal of PFAS. In terms of the resin, as you know... it's an ionic exchange resin on the charge of PFAS particles in the water. What that achieves is very high levels of removal of PFAS, and there are the three PFAS ... that have health based guidance values attached to them. They're the key ones in terms of having a regulatory framework. It has a very high level of removal, and so you're getting down to the limits of

32 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

33 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, pp. 2, 4.

34 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 4.

35 Ms Swanson, MP, *Proof Committee Hansard*, Canberra, 2 December 2019, pp. 4–5.

detection in terms of the water that then comes out of the water treatment plant.³⁶

3.31 The Sub-committee was told of advancements in PFAS processing, in terms of plant size and efficiency. Super-concentrated PFAS contaminants, in very small amounts, are now being stockpiled in metallic cylinders, while work on the destruction of these small amounts using pyrolytics is also being advanced.³⁷

3.32 Pyrolytics involves the use of heat to break down complex chemical substances into simpler substances.³⁸ Mr Birrer reported on partnership work in this area and its regulation:

We're continuing to work with companies around that. One thing that we've always worked on is ensuring that the contractors are fully licensed and use licensed facilities and methodologies from the state regulators... it really comes down to it being something that's agreed to by the state jurisdictions in terms of being a credible pathway in that, whenever materials are removed from the bases, we do require our contracts to ensure that they're going to licensed facilities and are being both transported and treated in accordance with state regulatory regimes.³⁹

3.33 Mr Grzeskowiak advised that Defence is 'very cautious' about such removal noting that Defence would prefer to stockpile the super concentrated PFAS as 'it doesn't take up a lot of room. Imagine oxygen cylinders and those sorts of things. You run the plant in Katherine for a year and you end up with just one big cylinder full...'⁴⁰

3.34 The Sub-committee was concerned about the robustness of storage arrangements and requested advice on this in a question on notice.⁴¹

3.35 Mr Grzeskowiak advised that Defence is continuing to engage with industry and internationally to better understand available technologies and their possible applicability in Australia.⁴²

36 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 4.

37 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 4.

38 Encarta Dictionary UK.

39 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 5.

40 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 4.

41 Ms Swanson MP, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 5, Question on Notice.

42 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

Coordination and leadership

- 3.36 PFAS is a national problem and the Department of Defence works with governments at all levels to support affected communities in the course of its PFAS remediation activities.
- 3.37 The Sub-committee enquired about Defence's leadership in the national coordination of PFAS management. Mr Grzeskowiak advised:
- Since commencement of the national program, Defence has been proactive in engaging and collaborating across all tiers of government, nationally and also internationally. At the national level, we've worked with the PFAS Taskforce since it was established and we've worked with intergovernmental agencies throughout this process. We've contributed to the development of the intergovernmental agreement on PFAS, to facilitate a consistent approach to PFAS contamination across responsible jurisdictions. We've also contributed to the development of the PFAS National Environmental Management Plan, which was initially released in 2018 and is due for revision later this year or, probably, early next year.⁴³
- 3.38 The Intergovernmental Agreement on a National Framework for Responding to PFAS was introduced in February 2018 to ensure a harmonised approach was taken among Federal and State jurisdictions to reduce PFAS contamination. The PFAS National Environmental Management Plan (NEMP) was appended to the Agreement at that time.⁴⁴
- 3.39 In March 2019, a revised draft of the NEMP, the NEMP 2.0, was released for comment. The new draft NEMP aims to strengthen and clarify obligations for State and Territory governments, providing updated guidance on four urgent priorities: standardised environmental guideline values; soil reuse; waste water management, and on-site containment.⁴⁵
- 3.40 Invited commentary closed in June 2019, but no further advice has been launched about the NEMP consultations on government websites.⁴⁶ Mr

43 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

44 Council of Australian Governments, Intergovernmental Agreement on a National Framework for Responding to PFAS, 2018 www.coag.gov.au/about-coag/agreements/intergovernmental-agreement-national-framework-responding-pfas-contamination viewed 11 December 2019.

45 PFAS National Environmental Management Plan, Version 2.0 Consultation Draft developed by the National Chemicals Working Group (NCWG) of the HEPA (NEMP2.0) p. 3 www.epa.vic.gov.au/your-environment/land-and-groundwater/pfas-in-victoria/~/

46 The EPA Victoria website notes NCWG work on a report titled *Human health soil screening criteria for PFOS, PFHxS and PFOA*, published in May 2019, viewed 12 December 2019.

Birrer referred to the challenges and importance of these reforms to ensure national consistency in environmental standards:

It's fair to say that different jurisdictions engage in different ways; that would be my personal observation. So the Victorian EPA has been quite at the forefront of producing some of the draft documents. But it is very much still an emerging contaminant, with the guidelines still emerging. In fact, there's still work being done now on what's been referred to as NEMP 2.0, or National Environmental Management Plan 2.0, to set further guidelines.⁴⁷

- 3.41 Mr McLeod, Assistant Secretary, PFAS Investigation and Management confirmed that the heads of the Environmental Protection Agency (EPA) and the PFAS Taskforce were all involved in the finalisation of NEMP 2.0, which was now unlikely before the new year.⁴⁸

State level and regional partnerships

- 3.42 Defence also referred to the importance of its ongoing work with state and regional governments and regional authorities in coordination and delivery of its remediation activities:

We have productive working relations with various jurisdictional authorities and share all of our investigation findings with them, and we also brief them to the communities involved. That includes sampling results in reports to facilitate those authorities to formulate and release any community based advisories that they consider necessary.⁴⁹

- 3.43 One area of collaboration is in the provision of alternative water supplies to affected communities with regional councils a partner in this work. Oakey was the first site identified for management of PFAS and is one of the sites where Defence is providing alternative sources of drinking water to eligible residents, in this instance as part of 'a long-term and precautionary measure' for the supply of safe drinking water.⁵⁰ The

47 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, pp. 5-6.

48 Mr Luke McLeod, Assistant Secretary, PFAS Investigation and Management, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 6.

49 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

50 As part of its National PFAS management program work, Defence provides alternative sources of drinking water as an interim measure to residents located in areas under investigation or management where residential bore, rainwater tank or other existing sources of drinking water are found to have levels of PFAS above the Health Based Guidance Value. PFAS Environmental Investigation, defence.gov.au/environment/pfas/oakey/support.asp viewed 11 December 2019.

Department has funded Toowoomba Regional Council to provide access to the reticulated water supply system to residents who live within the Oakey Management Area.⁵¹

- 3.44 The Sub-committee was also told of whole-of-government initiatives involving partners at all levels. Mr Birrer referred, for instance, to Defence's collaboration with the PFAS Task Force, state jurisdictions and the water industry to coordinate approaches on levels of PFAS from sewage treatment plants, with Defence operating these on its bases.⁵²

Keeping communities informed

- 3.45 As indicate above, partners at many levels of government are involved in keeping affected community members informed about remediation work and its results as work progresses. However, during the inquiry, members of the Sub-committee reported community concerns about consistency in advice about PFAS and uncertainty about what remediation efforts might achieve for families and the environment.

- 3.46 In evidence to the Sub-committee, the Department of Defence gave firm assurances that it was doing its best to provide accurate information and promote confidence in affected communities that progress is being made:

We're committed to responding to the PFAS contamination in a responsible, scientifically credible, evidence based and meaningful way. Our initial response to PFAS contamination was to ensure the community exposure pathways were broken through the provision of alternative water and risk advice. We're committed to being open and transparent with each impacted community about our investigation process, the findings of those investigations and the proposed remediation actions. We engage with communities throughout the process and we've run, literally, about a 137 separate community engagements, with more to come.⁵³

- 3.47 Mr Birrer, First Assistant Secretary, Infrastructure, in answer to a question about progress at Richmond described the type of information provided and the level of engagement that Defence undertakes:

In terms of Richmond, we'd already presented the final investigation and also the PFAS management area plan. We have

51 Oakey management Activities defence.gov.au/environment/pfas/oakey/managementactivities.asp viewed 5 December 2019.

52 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 6.

53 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 2.

been undertaking ongoing monitoring, including dealing with particularly one member of the community there who had concerns about her eggs. You will recall that we spoke to her that evening as well at that event. Since that event members of the Hawkesbury Environment Network have contacted me and provided additional questions, which we've provided answers to. They came back to me as late as last Thursday actually. They emailed me again saying that they just wanted to stay in contact. We're very much committed to continuing to engage with that community and to be open and transparent with them as we have information available.⁵⁴

- 3.48 Asked about reported dissatisfaction from the community, Mr Birrer reiterated the Department of Defence's commitment to ongoing engagement. He also noted that, while some community members are satisfied, others are concerned about their own businesses, their ways of living and livelihood. Defence, in response took a 'flexible' and 'open' approach at community fora, where further contact is encouraged: 'We continue to maintain our national information lines, phone number and email, and are happy to engage with members of the community there', he said.⁵⁵
- 3.49 Defence representatives also referred to online resources on government agency websites with the Government's website PFAS.gov.au being the key resource site with 'all the PFAS information available from government'. Mr Birrer noted that the PFAS National Environmental Management Plan is published there and there are links to it from that website. State and territory jurisdictions also have websites that publish PFAS information.⁵⁶
- 3.50 The Sub-committee assessed Federal government online resources and found that information on the Defence site was both up to date and detailed whereas information on the PFAS government site, while comprehensive, did not have recent updates on the status of the NEMP2.0 (the original NEMP plan 2016 was reproduced on the site). This was also the case for the Health and former Department of Environment and Energy sites.⁵⁷

54 Senator Faruqui to Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 9.

55 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 9.

56 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 3.

57 Sites viewed 6 December 2019.

- 3.51 Further, updates were not provided on any site (including Defence and Health) about the progress of the PFAS Health Study, nor its current call for input into its critical Cross-sectional survey and blood serum study.
- 3.52 The Sub-committee also noted that the Defence annual reports do not provide any other indicator of the progress of remediation techniques, nor do they provide links to the information other than online.
- 3.53 The Committee asked the Department of Defence to provide detail about the types of information it provided to communities in a Question on Notice, including its compliance with COAGs' *PFAS Information Sharing, Communication and Engagement Guidelines*, which are part of the National Framework for Responding to PFAS Contamination.⁵⁸

Issues under review

- 3.54 As noted in the first chapter of this report, the Sub-committee's review proceeds between the delivery of the JSCFADT's 2018 inquiry report on the management of PFAS contamination in and around Defence bases, and the Government's response to that report which is still being prepared.
- 3.55 With Government's position on the report as yet unstated, the Sub-committee's review has focused on matters pertinent to remediation progress – the processes, effective management and monitoring of PFAS contamination, innovation in remediation work, on the harmonisation and coordination of remediation works; and finally on communication to communities.
- 3.56 In the course of this review, a number of persistent concerns raised by residents last Parliament were investigated further by Sub-committee members. This section of the report highlights a few of these.

Continued use in firefighting—is PFAS banned?

- 3.57 Recommendation 7 of the 2018 JSCFADT report called on the Australian Government to implement legislation to ban long chain PFAS based firefighting foams and regulate non-essential shorter chain non-PFAS based foams, and use PFAS free alternatives wherever possible.

58 In Questions on Notice. Note: The aim of the Guidelines is to ensure that agencies and governments provide information to communities that is clear and consistent, see Information sharing, Communication and Engagement Guidelines, National Framework for Responding to PFAS Contamination www.coag.gov.au/sites/default/files/agreements/iga-national-framework-pfas-appendix-c.pdf viewed 6 December 2019.

- 3.58 The Sub-committee wanted clarification on Defence's progress towards this goal in its operations – has Defence suspended use of PFAS substances on its bases and in firefighting exercises in particular?
- 3.59 Mr Grzeskowiak's assurances on this matter were qualified – Defence has not moved away from fluorinated products completely, but is progressing towards that. He noted that Defence stopped using the 3M Light Water product in around 2004, because it was the legacy product that introduced PFOS and PFOA into the environment. He went on to explain:

As ever, it's complicated.... We started using a different product which is called Ansulite, and we still use that product today. While that product doesn't have PFOS and PFOA put into it when it's made, it still would have other chemicals from the PFAS family unit. So it's not a fluorine free foam.... We are now running a quite advanced piece of work looking for the next foam product we can go to. The world has moved on. There are probably foams out there now that are completely fluorine free that will be able to meet the task of doing what we need to do with these products. So we do say we've stopped using the product that had that PFOS and PFOA, but Ansulite does have fluorinated products in it.⁵⁹

- 3.60 In conclusion, Mr Grzeskowiak indicated that the challenges of becoming fluorine free are ongoing:

As we said, there are approximately 4 000 different types [of PFAS related substances] and we're seeking to move away from using Ansulite – hopefully next year, but we need to just confirm that we have found a suitable product.⁶⁰

PFAS remediation—what can be expected?

- 3.61 In this review, Sub-committee members acknowledged the progress Defence has made in implementing mass scale and scoped remediation work. As suggested in the last Parliament, Defence is at the forefront of this work among governments and agencies in Australia.⁶¹
- 3.62 Messages from the community at this stage do not appear to be commensurate with this however; confidence remains low. Even with emerging technologies being deployed or investigated and data coming in with good results, many people in affected communities are unsure about
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59 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, pp. 6–7.

60 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

61 Associate Professor Robert Niven, University of NSW, *Committee Hansard*, 14 September 2018, p. 40.

what the treatments being conducted and the technologies being used will actually do for them.

- 3.63 Asked about the overall effectiveness of remediation efforts, the Sub-committee was told that remediation work involves many methods, over the long haul.⁶² Mr Grzeskowiak stated:

We are remediating and we've have started that process, and we've said consistently that it will be a long process. We are attacking source areas as the most high-value mechanism of remediation. We're looking at point-of-use treatment as well, so if there are places – Pearce, for example – where we're still providing bottled water or cask water to some properties, a long-term solution might be point-of-use filters so people could still use groundwater but there is a point-of-use treatment. We're looking at those things.⁶³

- 3.64 The Sub-committee asked for clarification – can Defence's remediation works be expected, eventually, to completely clear sites of the PFAS problem?⁶⁴ Defence indicated that present measures could not support that hope:

...I've been saying for a little while we'll never remove all of the PFAS from the environment, because it's just out and about and spread out. But what we're seeking to do is reduce as much as we can and to continually refine our efforts to target hot spots, if you like, so that we get the best value in terms of the amount of product that we can remove from the ground, all the time with a focus on, if we discover exposure pathways for people, how do you remove that exposure pathway? So that's where connecting to town water and providing water tanks comes from.⁶⁵

PFAS investigations—scoping and review

- 3.65 A number of questions focused on the process of investigation as a trigger point for remediation activities, and the accurate scoping of investigation areas as PFAS flows penetrated the soil and water tables of surrounding areas.

62 Dr McVeigh MP, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

63 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

64 Dr McVeigh MP, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

65 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

- 3.66 Reference was made to the PFAS plume which moved from Oakey Army Aviation Centre south-west. There were concerns that unaffected areas on the opposite eastern side of Oakey were included on published maps of the investigation area, which potentially affected the value of the unaffected land.⁶⁶
- 3.67 Defence representatives advised that the designated investigation area was an accurate reflection of the risk at the time. Mr Birrer explained that the published map of 2016, which had been referred to then by the media, showed how the PFAS plume would have increased without remediation. However, because of the remediation and management action, the impact shown on the map did not eventuate. Mr Birrer said that this was later reflected in the published management plan:

As a result of the investigation, when that was completed in December 2017, we then published the management areas, which are different from that investigation area. As a result of the investigation we know that, as well as the groundwater plume, there are very important surface water flows through those drains. We've addressed both in terms of cleaning out the drains and removing PFAS material. We're addressing source areas on the base and we're also treating groundwater, very much in the expectation that over time – and it is a long-term plan – it will shrink the plume in terms of the areas being contaminated.⁶⁷

The status of investigated land

- 3.68 A related issue to the discussion above was the status of land which had been investigated by Defence and found to be uncontaminated by PFAS. There were concerns that the value of land once included in an investigation area could be reduced based on perceptions, despite it not being subject to PFAS remediation and management.⁶⁸
- 3.69 This raised questions for the Department about its communication of clearance status, and perhaps also about contamination issues averted by successful remediation outlined previously.
- 3.70 Mr Grzeskowiak explained that the clearance status would be indicated in the comparative analysis presented in the management area plan – the area not affected by PFAS would not be included in the MAP.⁶⁹

66 Dr McVeigh MP, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

67 Mr Birrer, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

68 Dr McVeigh MP, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

69 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

- 3.71 The Sub-committee asked about the disparity between the official status of the clearance and its necessary communication to affected communities. Mr Grzeskowiak acknowledged that this needed clarification :

Your question highlights a point for me about how we communicate to the community at large that – [once] that’s been ticked off; it’s fine, and we think it’s going to be fine for the long term, so our focus is elsewhere. It may be asking a bit much to expect people to read the management area plan, go back and re-reference the investigation area and do their own comparison. Maybe we need to get better at that.⁷⁰

Conclusion

- 3.72 As noted in this chapter, the Department of Defence currently conducts the largest and most extensive program of PFAS remediation work in Australia. It has been acknowledged as being at the forefront of this, and is participating in the reform of national regulatory frameworks which will confirm, direct and advance this work.
- 3.73 The review of the PFAS National Environmental Management Plan, the NEMP 0.2, will harmonise and strengthen national requirements for the storage, containment and management of PFAS contaminated waters and soils. New regulations on recreational water use, which highlight the impacts of PFAS on ecosystems and birdlife,⁷¹ will also impose new stringencies on PFAS affected communities, perhaps further diminishing their quality of life and heightening their concerns.
- 3.74 As recorded in this report, the Sub-committee investigated with Defence representatives a wide range of issues and concerns raised by affected communities, as well as a range of technical matters related to project management. Responses to the Sub-committee were frank on both the strengths and limitations of remediation methods and outcomes. The Department also committed to answer detailed written Questions on Notice on its operations. While these were not provided in time for inclusion, they will be referenced in later reports.
- 3.75 In regard to other published information, the Sub-committee commends the Department for its very comprehensive PFAS Investigation and

70 Mr Grzeskowiak, Department of Defence, *Proof Committee Hansard*, Canberra, 2 December 2019, p. 7.

71 National Health and Medical Research Council, *Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water*, 2019 www.nhmrc.gov.au/guidelines-publications/ viewed 12 December 2019.

Management website which provides current and detailed advice about works and consultations at all sites, including information on the monitoring of PFAS levels in treated water and soils over time.

3.76 By contrast, the Sub-committee found that information on PFAS remediation in Defence annual reports was minimal; a half a page for both the 2017-18 and 2018-19 volumes, with no reportage on investment or results evident, nor links included or advice about online information.

3.77 The Sub-committee recognises that management of PFAS contamination and its remediation in the environment is a complex process involving multiple governments, private sector partners, researchers and other experts. There are many strengths in that engagement.

3.78 However, as discussed in this report, levels of anxiety in affected communities remain high. The ANU PFAS study Focus Group report noted:

Many participants were concerned about continuation of uncertainty and feeling unable to sell their property, being “stuck” in their community and lacking options to “move on”.

Participants in the group discussions asked for greater transparency and consistency in the information they received.

They discussed options that they thought would reduce their anxiety and provide information or pathways that could lead them out of their current situation soon.⁷²

3.79 Proposals to provide key advice on land status, clearance, and understandable information on remediation are vital in this context. Equally so is managing the expectations of community members – knowing what can reasonably be provided or changed, and within what time frame, is just as important as the volume or frequency of updates and advice. Consideration must also be given to the lived impacts of evolving national regulatory and coordination frameworks for management of PFAS, which will protect but also potentially impose new stringencies on affected communities.

3.80 A successful program to build community resilience will inevitably involve the continuation of the high level of commitment currently demonstrated by Defence in its efforts to assist and inform affected community members. It will also entail a higher level of frankness and a visible commitment from the Executive government, by providing new

72 C Banwell, T Housen, K Smurthwaite, S Trevenar, L Walker, K Todd, M Rosas [Ngaigu-Mulu Aboriginal Corporation, Katherine, NT, Australia], M Kirk, *The PFAS Health Study, Component One: Oakey, Williamtown and Katherine Focus Groups Study*, ANU, Report Prepared for the Department of Health, February 2019, p. 6.

opportunities for consultation and leadership, as well as practical and tailored supports to give options to affected residents.

- 3.81 The Government's response to these challenges will be monitored by the Sub-committee over the cycle of this inquiry.

Senator the Hon David Fawcett

Chair

Joint Standing Committee on Foreign Affairs, Defence and Trade

19 December 2019