

The Senate

Foreign Affairs, Defence and Trade
References Committee

Firefighting foam contamination
Part B – Army Aviation Centre Oakey and
other Commonwealth, state and territory sites

May 2016

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Abbreviations

AACO	Army Aviation Centre Oakey
AFFF	Aqueous Film Forming Foam
ARFF	aviation rescue firefighting
CFA	Victorian Country Fire Authority
enHealth	Environmental Health Standing Committee of the Australian Health Protection Principle Committee
ENRRDC	Victorian Parliament's Environment, Natural Resources and Regional Development Committee
Environment	Commonwealth Department of the Environment
EPA	Environmental Protection Agency
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
ICAP	Independent Compensation Assessment Panel
NICNAS	National Industrial Chemicals Notification and Assessment Scheme
NSW	New South Wales
Oakey RO WTP	Oakey Reverse Osmosis Water Treatment Plant
PFAS	perfluoroalkyl substance
PFCs	perfluorinated compounds
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RAAF	Royal Australian Air Force
Stockholm Convention	Stockholm Convention on Persistent Organic Pollutants
TOP	Toowoomba Oakey Pipeline
TRC	Toowoomba Regional Council

Recommendations

Recommendation 1

2.67 The committee recommends that the Department of Defence recommence and fund a program of blood tests for residents in the Oakey investigation area on an annual basis.

Recommendation 2

2.70 The committee recommends that the Department of Defence ensure that mental health and counselling support services are provided free of charge to those affected by PFOS/PFOA contamination from Army Aviation Centre Oakey, and that these services continue for as long as they are required by residents.

Recommendation 3

2.74 The committee recommends that the Commonwealth Government commit to voluntarily acquire property and land which is no longer fit for purpose due to PFOS/PFOA contamination from Army Aviation Centre Oakey. The committee further recommends that the Commonwealth Government assist residents who may wish to relocate to an alternative estate within the local community which is free from contamination.

Recommendation 4

3.55 The committee recommends that the Government explicitly legislate for the immediate removal and safe disposal of PFOS and PFOA firefighting foams from circulation and storage at all Commonwealth, state and territory facilities in Australia.

Recommendation 5

3.60 The committee recommends that voluntary blood testing be made available to current and former workers at sites where firefighting foams containing PFOS/PFOA have been used, and current and former residents living in proximity to these sites who may be affected by contamination.

Recommendation 6

3.67 The committee recommends that the Department of the Environment complete the domestic treaty making process for the ratification of the addition of PFOS as an Annex B restricted substance under the Stockholm Convention on Persistent Organic Pollutants before the end of 2016.

Recommendation 7

3.71 The committee recommends that the Commonwealth Government review the *Environment Protection and Biodiversity Conservation Act 1999* and, if necessary, seek to have it amended to enable the Department of the Environment to assume a national leadership role and intervene early should other legacy

contamination events emerge on the scale of Williamstown or Oakey, especially when contamination spreads from land controlled by Defence to non-Commonwealth land.

Recommendation 8

4.9 The committee recommends that it continue to monitor the Department of Defence's handling of contamination of its estate and surrounding communities caused by PFOS/PFOA, and report to the Senate on an interim basis as required.

Recommendation 9

4.10 The committee recommends that it continue to monitor the response of, coordination between and measures taken by Commonwealth, state and territory governments to legacy contamination caused by PFOS/PFOA, including the adequacy of environmental and human health standards and legislation.

Chapter 1

Introduction

Referral of inquiry and terms of reference

1.1 On 30 November 2015, the Senate referred matters relating to perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) contamination at RAAF Base Williamtown and other sites to the Foreign Affairs, Defence and Trade References Committee for inquiry and report.¹

1.2 The terms of reference for the inquiry are as follows:

- (a) by 4 February 2016 on PFOS and PFOA contamination at RAAF Base Williamtown and Australian Defence Force facilities, with reference to:
 - (i) what contamination has occurred to the water, soil and any other natural or human made structures in the RAAF Base Williamtown and the surrounding environs,
 - (ii) the response of, and coordination between, the Commonwealth Government, including the Department of Defence and RAAF Base Williamtown management, and New South Wales authorities to PFOS/PFOA contamination, including when base employees, local residents and businesses, Port Stephens and Newcastle City Councils, and the New South Wales Environmental Protection Agency (EPA) were informed of the contamination,
 - (iii) the adequacy of consultation and coordination between the Commonwealth Government, the New South Wales Government, Port Stephens and Newcastle City Council, the Department of Defence and Australian Defence Force, affected local communities and businesses, and other interested stakeholders,
 - (iv) whether appropriate measures have been taken to ensure the health, wellbeing and safety of Australian military and civilian personnel at RAAF Base Williamtown,
 - (v) the adequacy of health advice and testing of defence and civilian personnel and members of the public exposed, or potentially exposed, to PFOS/PFOA in and around RAAF Base Williamtown,
 - (vi) the adequacy of Commonwealth and state and territory government environmental and human health standards and legislation, with specific reference to PFOS/PFOA contamination at RAAF Base Williamtown,

1 *Journals of the Senate*, 30 November 2015, pp. 3518-3519.

- (vii) what progress has been made on remediation works at RAAF Base Williamtown, and the adequacy of measures to control further contamination,
 - (viii) what consideration has been undertaken of financial impacts and assistance to affected business and individuals, and
 - (ix) any other related matters; and
- (b) by 30 April 2016 on PFOS and PFOA contamination on other Commonwealth, state and territory sites in Australia where firefighting foams containing PFOS and PFOA were used, with reference to:
- (i) what Commonwealth, state and territory facilities have been identified as having PFOS/PFOA contamination, and what facilities may potentially still be identified as being contaminated,
 - (ii) the response of, and coordination between, the Commonwealth, state and territory governments, local governments, commercial entities and affected local communities,
 - (iii) what measures have been taken by the Commonwealth and state and territory governments, to ensure the health, wellbeing and safety of people in close proximity to known affected sites,
 - (iv) the adequacy of public disclosure of information about PFOS/PFOA contamination,
 - (v) what consideration has been undertaken of financial impacts on affected businesses and individuals,
 - (vi) the adequacy of Commonwealth and state and territory government environmental and human health standards and legislation, with specific reference to PFOS/PFOA contamination,
 - (vii) what progress has been made on the remediation and the adequacy of measures to control further PFOS/PFOA contamination at affected Commonwealth, state and territory sites,
 - (viii) what investigation and assessment of contaminated sites and surrounding areas has occurred, and
 - (ix) any other related matters.

Conduct of the inquiry

1.3 The committee advertised the inquiry on its website calling for submissions to be lodged by 14 December 2015 for part (a) of the inquiry and 5 February 2016 for part (b) of the inquiry. The committee also wrote directly to a range of people and organisations likely to have an interest in matters covered by the terms of reference, drawing their attention to the inquiry and inviting them to make written submissions.

1.4 The committee received 124 submissions for Part (a) and Part (b) of this inquiry. All submissions are listed at Appendix 1 and are available from the committee's website: www.aph.gov.au/senate/fadt. The bulk of the submissions

received were from individuals and businesses affected by PFOS/PFOA contamination around RAAF Base Williamtown and Army Aviation Centre Oakey (AACO). Additional information and the responses to questions on notice received during the inquiry are listed at Appendix 2.

1.5 On 3 December 2015, the committee held an initial public hearing for the inquiry at Parliament House in Canberra. Further hearings were held on 22 December 2015 at the Newcastle City Hall in Newcastle, 9 March 2016 at the Oakey Cultural Centre in Oakey, and 7 April at Parliament House in Canberra. A list of witnesses who appeared at these hearings is available at Appendix 3. The *Hansard* transcripts of these public hearings are available via the committee's website.

Part A: RAAF Base Williamtown

1.6 The inquiry's terms of reference Part (a) focused on the circumstances at RAAF Base Williamtown. The committee's report, *Firefighting foam contamination Part A—RAAF Base Williamtown*, was tabled on 4 February 2016. The committee found that the immediate impact of the contamination on residents and businesses, including the shadow of uncertainty regarding the spread of pollutants, was nothing short of a crisis for the community. It found a lack of Commonwealth Government leadership, a reluctance to take full responsibility and an inadequate response given the urgency of the situation. The committee also found an unsatisfactory level of engagement by other Commonwealth Government agencies.

1.7 The committee made a number of recommendations to Defence and the Commonwealth Government more broadly which fall into three categories. The first category of recommendations focused on access to water issues, the provision of mental health and counselling services, initial compensation of the fishing community and the coordination of the response of government agencies. The second category of recommendations focused on providing certainty for affected residents and commercial fisherman in the longer term. Finally, the committee made some recommendations in relation to blood testing and the application of environment regulation to Defence. The committee's recommendations are listed in Appendix 4. An update on the situation in Williamtown based on new evidence is provided in Chapter 2 of this report.

Part B: other Commonwealth, state and territory sites

1.8 The committee's first report on RAAF Williamtown noted that the situation at AACO was raised with the committee and that many residents in Oakey had been living with the uncertainty created by possible PFOS/PFOA contamination for a significant period. The report also noted that there are likely to be many other military and civilian airports, firefighting training sites and other facilities which will have legacy PFOS/PFOA contamination as a result of the use of firefighting foams. This second report into firefighting foam contamination focuses on both of these issues.

Structure of the report

1.9 The committee's second report, on Part (b) of the terms of reference, is structured as follows:

- Chapter 2 examines circumstances surrounding contamination at AACO from use of firefighting foams; the impact on the community; Defence's response to the unfolding crisis and its engagement with the community and the Toowoomba Regional Council; and an update on the situation in Williamtown including the government response to report Part (a).
- Chapter 3 provides a brief update on the evidence around the environmental and human health effects of PFOS and PFOA and the issue of blood testing; an overview of other Commonwealth, state and territory sites which have experienced contamination; the different responses by Defence, state government authorities and Air Services Australia to legacy contamination; and the regulatory frameworks in place to address this issue.
- Chapter 4 provides the committee's conclusion to both Part (a) and Part (b) of the inquiry, including a recommendation which provides for an ongoing oversight role for the committee in relation to the issue of legacy contamination by firefighting foams.

Acknowledgements

1.10 The committee thanks all of those who contributed to the inquiry by making submissions, providing additional information or appearing at the public hearings to give evidence.

Note on references

1.11 References to the committee *Hansard* are to the proof *Hansard*. Page numbers may vary between the proof and official *Hansard* transcripts.

Chapter 2

Army Aviation Centre Oakey and RAAF Base Williamtown revisited

Introduction

2.1 Army Aviation Centre Oakey (AACO), which is situated 30 kilometres west of Toowoomba, provides a training establishment for Australian Army Aviation including the Army Helicopter School. While the airfield is military controlled and regulated, a small civil terminal has been maintained. Originally established in 1943 as a RAAF base serving as a maintenance depot for the RAAF base at Amberley, the Army assumed responsibility for the base in 1969 and developed the facility as an Army Aviation training base under the responsibility of 1st Aviation Regiment which had its headquarters in Oakey until 2005.¹

2.2 This chapter will provide an overview of the contamination at AACO, including a brief timeline of events, the impacts on the effected community and the response of Commonwealth and Queensland governments. It concludes with the committee's findings and recommendations.

Use of firefighting foams at Army Aviation Centre Oakey

2.3 Evidence provided by Defence's environmental consultant, AECOM, as summarised by Shine Lawyers, reveals that the use of 3M Aqueous Film Forming Foam (AFFF) at the base may have started in the mid-1970s with the introduction of Oshkosh fire engines which were specifically designed to handle the product.²

2.4 It is estimated that from 1977 to 2003 a total volume of approximately 1.2 megalitres of AFFF concentrate was discharged at the base, largely in firefighting drills. Activities at the base resulting in the discharge of firefighting foam included:

- daily training events resulting in the discharge of AFFF on a grassy area at the rear of the base fire station;
- major fire training exercises at least once a month which involved fire engines attending simulated aircraft crashes at random locations on the base and drenching mock aircraft with AFFF;
- building fire tests involving discharges of AFFF; and
- infrequent discharges of AFFF in actual emergency situations.³

2.5 As a result of the use of AFFF at AACO over a 25 year period, it is certain that the contaminants have permeated the ground at or near where it was discharged; flowed into the surrounding water catchment areas and Oakey Creek; and entered the

1 Shine Lawyers, *Submission 88*, p. 4.

2 Shine Lawyers, *Submission 88*, p. 5.

3 Shine Lawyers, *Submission 88*, p. 5.

groundwater beneath the base and beneath surrounding properties.⁴ (Detection area maps for both PFOS and PFOA are included at Appendix 5.) The Shine Lawyers submission noted that Defence had advised that:

...the contamination affects an area in the order of 24 square kilometres at Oakey. The affected area includes much private irrigation and grazing land and captures several hundred private water bores and several kilometres of Oakey Creek traversing private property.⁵

Timeline summary

2.6 Initial routine environmental investigations into potential hydrocarbon contamination at AACO undertaken in 2010 were followed by more comprehensive investigations in 2011. According to the Defence submission, these investigations identified the presence of PFOS and PFOA within soil and groundwater:

Progressive investigation and assessment activities to determine the extent of contamination, identify potential receptors and pathways, and assess the risks to human health and the environment, have continued at properties both on and off the Army Aviation Centre Oakey.⁶

2.7 Further assessments indicated the contamination had travelled beyond the AACO. Defence completed limited targeted water sampling in early 2013. Wider scale testing beyond the AACO perimeter occurred from early 2014 as part of the evolving process to determine the extent of the impact. However, it appears that Defence was aware of the potential for firefighting foam contamination at AACO as early as 2005 following an investigation specific to Oakey carried out by Sinclair Knight Merz.⁷

2.8 The Toowoomba Regional Council (TRC) advised the committee that the Council's Manager of Water Operations, Mr John Mills, attended a neighbourhood information session at AACO on 13 December 2012 which identified localised contamination of ground water in areas contained within the base.⁸ A small number of property owners neighbouring the base were also present at that session.⁹ Mr Mills told the committee:

I was at an information session that I was invited to. At that time, the information was reasonably limited. I think there had been a number of tests done in association with what was going on [at] the Army base. It would have appeared that the plume was moving in a slightly different

4 Shine Lawyers, *Submission 88*, p. 6.

5 Shine Lawyers, *Submission 88*, p. 8.

6 Department of Defence, *Submission 87*, p. 24.

7 Shine Lawyers, *Submission 88*, pp 6–7.

8 Toowoomba Regional Council, *Submission 115*, p. 1.

9 Shine Lawyers, *Submission 88*, p. 7.

direction from where it is known to be moving now, which was moving away from our stuff.¹⁰

2.9 On 9 May 2014, Council was advised by Mr Mark O'Connell, Base Support Manager Darling Downs, Defence Support Organisation, of potential ground water impacts affecting the aquifer and TRC bore fields and requested permission to access TRC bores for sampling. The sampling carried out by Parsons Brinkerhoff and later by AECOM indicated that perfluoroalkyl substance (PFAS) contamination extended from close to AACO to Council's bore 3 (at the gatehouse), and bores 7 and 8 (in the showgrounds). Bores 5 and 6, which are located on the road towards the abattoir, were not contaminated. The Council submission noted that PFAS contamination originating from AACO had been migrating through the aquifer.¹¹

2.10 Mr O'Connell subsequently wrote to Council on 14 July 2014 advising of the test results: 'As a precaution Defence recommends not drinking water from any underground sources within the investigation area until further notice'.¹² The Council submission also noted that in August 2014 Defence had provided Council with reports of investigations that had been conducted dating back to 2011.¹³

2.11 For those within the investigation area, Defence provided the following advice:

As a precaution, Defence recommends not drinking water from any underground sources (i.e. bore water) within the investigation area, until further notice. This includes boiled groundwater.

Landholders or residents within the investigation area, whose only source of drinking water is groundwater, should contact the project team in order to discuss possible management strategies. Each household's drinking water requirements will be assessed on a case-by-case basis, to determine the most appropriate assistance that Defence may be able to provide.

Defence does not have any information which indicates that using groundwater for irrigation of crops and watering livestock should cease.

Should additional information, to be gathered through Defence's ongoing investigations, change this position, landholders and residents will immediately be informed.

Defence will continue to work cooperatively with all relevant stakeholders including those from Commonwealth, State and local government agencies to ensure appropriate management strategies are implemented.¹⁴

10 Mr John Mills, Manager Water Operations, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 4.

11 Toowoomba Regional Council, *Submission 115*, p. 2.

12 Toowoomba Regional Council, *Submission 115*, p. 1.

13 Toowoomba Regional Council, *Submission 115*, p. 2.

14 Defence, 'Oakey – Army Aviation Centre – Groundwater Investigation Project', available at: <http://www.defence.gov.au/id/oakey/Default.asp> (accessed 2 December 2015).

2.12 Shine Lawyers has played a prominent role assisting 51 residents and business people from Oakey in their dealings with the Department of Defence. Its main role is to act collaboratively and to explore means of resolving issues related to contamination. According to the Shine Lawyers submission, the July 2014 public announcement by Defence gave rise to uncertainty, confusion and anxiety for people affected by the contamination as well as for members of the wider Oakey community. While the residents of Oakey were advised not to drink bore water:

Nothing was said about using bore water for other purposes. Nothing was said about eating food that was grown using bore water. Nothing was said about using bore water for domestic purposes, including cooking, showering and washing. Nothing was said about eating meat or poultry that drank bore water, or was raised on feed that in turn was grown using bore water. And, importantly, nothing was said about the possible consequences for those people who had been exposed to bore water, for whatever reason, over many years.¹⁵

2.13 Defence is undertaking a long-term environmental investigation and assessment of the groundwater beneath the AACO base and surrounds. Defence anticipates that the investigation and any subsequent management actions may take several years to implement.¹⁶

Pathways to contamination

2.14 One issue raised in evidence was the difficulty identifying the pathway(s) to contamination in Oakey. Unlike the situation in Williamtown, where contamination of waterways and bores is the primary source of contamination in humans, uncertainty exists around how PFOS/PFOA is getting into the bloodstream of Oakey residents, especially those living outside the contamination zone. Dr Eric Donaldson, a landholder with a thousand acres adjoining the southern boundary of AACO and a professional background in the biological sciences, told the committee he did not believe the higher than normal blood level readings from specimens collected was only attributable to drinking bore water or consuming meat, milk and fish:

Certainly, there are very few people in that plume that have their own cow that they milk...There are very few people in that plume that have eaten their own meat—very few. There is no doubt that some people have high levels I could attribute to watering feed, the stock eating the feed and then the humans eating the stock. I think I have that pretty well established, but that is very few people in the plume.¹⁷

2.15 There is no doubt that a small number of residents drink bore water on a regular basis and also use their bores to supplement household water requirements, such as providing water for bathing, showering, cooking, washing and in gardens (growing vegetables and fruit trees) and for poultry, livestock and other produce.

15 Shine Lawyers, *Submission 88*, p. 3.

16 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 9 March 2016, p. 41.

17 Dr Eric Donaldson, *Committee Hansard*, 9 March 2016, p. 10.

Many residents also top-up their rain water tanks with bore water during dry spells for human consumption and other domestic uses.¹⁸

2.16 A 2015 audit by AECOM indicated that complete exposure pathways are likely to exist between PFOS/PFOA use at AACO and the following:

- domestic irrigators extracting water for edible crops and livestock;
- agricultural irrigators;
- agricultural users of biosolids sourced from regional wastewater treatment plants;
- recreational users of Oakey Creek and sporting fields; and
- regional terrestrial and Oakey Creek ecologies (avian species, freshwater mussels and edible terrestrial and aquatic species).¹⁹

2.17 When asked at a public hearing if Defence knew how contamination had occurred for residents who did not drink bore water or eat locally processed foods in excessive amounts, a senior official told the committee:

That is what our human health risk assessment is looking at. The human health risk assessment is ongoing at Williamtown and Oakey. The reason we talk to the community and ask them to fill out questionnaires about water that they may or may not use and products they may or may not consume—lifestyle in general—is to try and understand what possible pathways exist for PFOS and PFOA to find their way into the human system. We are working on that. I do not understand it. We had thought that the main exposure routes would be through drinking contaminated water or, for example, eating fish that had bioaccumulated the PFOS.²⁰

2.18 The official went on to say that it is possible that some people have been exposed in ways that are completely unrelated to pathways that have been identified in Williamtown and Oakey, for example '...something else they do in their life'.²¹

Water use

2.19 Oakey has been supplied with potable water from the Mt Kynoch Water Treatment Plant since the commissioning of the Toowoomba Oakey Pipeline (TOP) on 15 December 1997. Previously, water was supplied exclusively from bores that were put down most likely during the Second World War. Consequently, the water

18 Shine Lawyers, *Submission 88*, p. 9.

19 Shine Lawyers, *Submission 88*, p. 7.

20 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 23.

21 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 23.

quality in Oakey was '...fairly poor. Any hot water systems or any filters were blocked up pretty quickly'.²²

The bore water associated with the local ball field out here had a reasonable mineral load in it—a mineral load based on conductivity and total dissolved solids—and it was also quite hard. The hardness values of that water were around 500 milligrams per litre and, based on the National Health and Medical research Council guidelines, good quality water should be between 60 and 200 milligrams per litre.²³

2.20 For a decade from 1999, the region experienced a significant drought. The Toowoomba Regional Council submission described measures that were taken in an effort to drought-proof the community:

In 2006 the State Government provided funding to construct a Reverse Osmosis (RO) Water Treatment Plant as part of the overall drought response measures to supplement dwindling reserves in the Toowoomba supply storages.²⁴

2.21 The Oakey bore field was brought back on line for approximately four years from October 2008 to supply feed water to the newly-commissioned Oakey Reverse Osmosis Water Treatment Plant (Oakey RO WTP) before the plant was taken offline for maintenance in November 2012. That meant that water coming out of the bores through the RO process was blended with more water from the bores and further blended with water from Toowoomba to supplement the supply for Oakey:

Extraction from the bore field continued until the RO WTP and supply bores were taken out of service on 30 November 2012. Since the cessation of the supplementary supply from the RO WTP, water supply in Oakey has been exclusively sourced from the Mt Kynoch WTP via the Oakey Toowoomba pipeline.²⁵

2.22 It was likely that the RO process would have removed any chemical of concern, including PFOS or PFOA, at that time as it is able to remove large molecules. Council was of the view that while the water going into the system contained contaminants, it '...would have been in-line with health guidelines that were around, if there were any at the time'.²⁶ At the 9 May public hearing, Council elaborated:

It is about an 80-20 mix. It is 80 per cent water going through the RO plant, which is pure water, mixed with about 20 per cent of raw bore water to

22 Mr Kevin Flanagan, General Manager Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 1.

23 Mr John Mills, Manager Water Operations, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 3.

24 Toowoomba Regional Council, *Submission 115*, p. 2.

25 Queensland Government, *Submission 112*, p. 1.

26 Mr Kevin Flanagan, General Manager Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 1.

make a shandy, which then went to the large reservoirs on the hill here. Then it was blended with a further 30 per cent—a 30-70 blend—of Toowoomba water. The blend, we believe, would have been well below the limits that were around at the time...It was 0.3 micrograms per litre, I think.²⁷

2.23 Council advised that because AACO is located on the same aquifer from which Oakey RO WTP draws feed water '...the presence of perfluoroalkyl substances (PFAS) in the aquifer originating from prolonged use of firefighting chemicals at the Centre...meant that the Oakey RO WTP could not be returned to service due to the risk of toxicity that PFAS presents'.²⁸ Any maintenance activities have been put on hold due to the groundwater contamination.

2.24 Council further assured the committee that the residents of Oakey currently have access to clear, clean water: 'You can rest assured that is the case for everybody who is connected to the reticulated supply...provided by the Toowoomba Regional Council [which] is up to the Australian Drinking Water Guidelines'.²⁹

Impact of contamination on the Oakey community

2.25 Evidence presented to the committee demonstrates that while contamination has caused significantly elevated levels of PFOS/PFOA in the blood of many Oakey residents, the health implications flowing from these elevated levels are far from clear. Shine Lawyers argued that while scientific opinion around the world varies as to the water quality guidance value for PFOS in freshwater, '...what is obvious is that levels at Oakey are many multiples of what is considered a "safe" level of exposure from drinking water'. This includes elevated levels of PFOA in the town water supply bore 8 located at the Oakey showgrounds, and PFOS concentrations above the adopted drinking water limit at 42 of the 112 bores tested, one of 13 creek samples tested and 39 of 43 drainage line locations tested.³⁰

2.26 Dr Donaldson advised the committee that he had investigated the distribution of several perfluorinated compounds in the plume area with the cooperation of neighbours and other residents and with the assistance of colleagues:

To my chagrin and surprise my results exposed a much greater level of exposure than expected. As a matter of professional courtesy I sent some of my results to the Department of Defence. The results were subsequently confirmed.³¹

27 Mr Kevin Flanagan, General Manager Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 2.

28 Toowoomba Regional Council, *Submission 115*, p. 2.

29 Mr Kevin Flanagan, General Manager Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 6.

30 Shine Lawyers, *Submission 88*, p. 10.

31 Dr Eric Donaldson, *Committee Hansard*, 9 March 2016, p. 7.

2.27 Dr Donaldson expressed the view that the media has presented a '...damning portrayal of Oakey by linking the whole district to health threatening contamination',³² as a consequence of ill-advised public meetings and injudicious statements by public officials (such as 'do not drink the bore water' and 'PFOS is the new Asbestos'). His submission argued that the adverse perceptions of Oakey '...should not be allowed to fester as there is potential for far reaching damage'.³³

Concerns of residents

2.28 The committee received many submissions from residents concerned about elevated levels of PFOS/PFOA in their blood, the sudden decrease in value of their properties and the stress the contamination issue has placed on their families.³⁴ The overall sense of anxiety was captured by the submission from Ms Robyn Wilkins:

I am really concerned about the valuation of my property due to the contamination from the Oakey Army Base through no fault of my own...Neither the Queensland Government or the Commonwealth Government have done anything to help us, we feel like we have been abandoned. Our property is set up for horse training and this requires a substantial and secure water supply. We can't go on like this. I just don't know what to do. We are in dire need of any assistance you can give to end the indefinite hanging in the air. We desperately need a resolution to this problem the Army has created.³⁵

2.29 Similar evidence was received from Mr Brad Hudson, whose property is located approximately 400 metres from the Army base, about the effects of using contaminated bore water for over 15 years to shower, wash, clean, drink, water stock and hose gardens. His submission described how he, his wife and three children have 'extremely high' levels of PFOS in their blood and are worried about the effects on their future health:

My 5 year old daughter has high levels already at her young age. God knows how this will effect her in her future life. My levels...are extremely high and concerning since I have already had testicular cancer at my age of 42. It is extremely hard to close my eyes at night thinking about my family and our futures with these contaminants in our systems at the high levels that they are...

Wouldn't mind if someone from government was to live a life of uncertainty like we are forced to do. Deal with the stress and headaches that come with our lives now, which is at time unbearable. To try waking up one day and realising that their \$700000 property is worth next to nothing now.

...

32 Dr Eric Donaldson, *Submission 102*, p. 1.

33 Dr Eric Donaldson, *Submission 102*, p. 1.

34 For example: Ron and Jenny Hess, *Submission 123*; Ms Sonya Street, *Submission 91*; Mr Gary Watson, *Submission 90*; Ms Dianne Priddle and Mr David Jefferis, *Submission 86*; Ms Coral Kennedy, *Submission 81*; Mrs Veronica and Mr Rodney Watson, *Submission 74*.

35 Ms Robyn Wilkins, *Submission 105*, p. 1.

We need the government...and the army to step up and take full responsibility of the situation and to do whatever it takes to fix this problem. Our futures are depending on it.³⁶

2.30 During the hearing in Oakey on 9 March, the committee heard powerful evidence from residents about the health and mental health implications of having elevated levels of PFOS and PFOA in their blood, the lack of an adequate and timely response by Defence and Queensland government authorities, the collapse in the value of their properties, and the overall uncertainty surrounding their future. A resident of nearly 30 years, Ms Jennifer Spencer and her partner live on a six acre property in the Oakey racing precinct. They were first advised of PFOS/PFOA contamination of the groundwater covering their property in 2014:

From that day I was deeply concerned. As time went by we were involved in and attended all of the meetings held by Defence. These meetings just led to more upset and frustration, as there were no new answers ever given to us...

We are now living our lives in limbo. We purchased our property in good faith. We thought that we were on the home stretch in our lives...It all feels now like it has been for nothing. We are now living in a rented house, paying someone else's mortgage. Our personal lives are a mess. We are both suffering depression.³⁷

2.31 Other residents presented the committee with disturbingly similar accounts of their encounter with PFOS/PFOA contamination and the response of the authorities. Mr Peter Jones, a resident of 25 years, who lives on a 2.728 hectare block located on the south-western boundary of the Army base, told the committee:

I have contacted Queensland Health and I have spoken to Queensland Health representatives in person, and they have no answers. The problem is not of my making...My life has changed, and the uncertainty is very stressful and is taking a toll on my wellbeing.³⁸

2.32 Others expressed anger at the apparent lack of understanding and information provided by the authorities after the contamination became widely known in 2014. The owner of Berwick Stud on the Warrego Highway, Ms Dianne Priddle, told the committee:

I find the lack of understanding and the lack of information given to us is atrocious. All I want is some answers—and quickly. The longer that this takes, the longer this township suffers with taint and contamination.³⁹

2.33 Evidence from Professor Jochen Mueller, Professor of Environmental Toxicology at the University of Queensland, expressed his personal view that individuals with an elevated reading of PFOS/PFOA have a very small risk of

36 Mr Brad Hudson, *Submission 84*, p. 1.

37 Ms Jennifer Spencer, *Committee Hansard*, 9 March 2016, p. 13.

38 Mr Peter Jones, *Committee Hansard*, 9 March 2016, p. 14.

39 Ms Dianne Priddle, *Committee Hansard*, 9 March 2016, p. 14.

experiencing adverse health outcomes as a result of exposure: 'I think the evidence that is out there...from all I know from the literature, I would not expect that this effects my health in any way. I think people being worried about it affects their health more'.⁴⁰ When questioned further about the likely health effects on the residents of Oakey, Professor Mueller elaborated on the relationship between the contamination, living with uncertainty and health outcomes:

If I was an Oakey resident...and someone came out and announced..."By the way, your land is contaminated and you might not be able to use your bores or eat your cows", and my values were decimated overnight and I had a blood test which ended up with a high level of PFOS or PFOA, I would be pretty disappointed that that outcome had been visited on me by Defence or Health or whoever.⁴¹

Blood testing

2.34 The Defence submission advised that in late 2014 it wrote to residents located within the detection area inviting them to nominate to participate in a limited blood testing program. The program was intended to be available to a limited number of residents who met a set of clear eligibility criteria. At the 9 March hearing, the Department of Veterans' Affairs' Chief Medical Officer, Dr Ian Gardner, told the committee that the decision by Defence to fund blood testing:

...started out as an initial request from [Dr Donaldson] to Defence through me for us to consider funding a small series of blood tests on the people whom he was providing clinical advice to in and around his property. Subsequently, in discussion with Defence legal and Shine Lawyers, and after a lengthy period within Defence to get approval to undertake this testing...we agreed to expand the cohort to about 75 people...We had 75 tests done, including 69 originals, and some have been tested twice because they were done privately under a separate program.⁴²

2.35 In May 2015 Defence engaged a pathology company to facilitate collection and analysis of up to 100 blood samples from those who met the eligibility criteria. The Defence submission went on to say:

Testing was provided to a limited number of people who self-nominated and met the criteria of living on properties within the detection area, with their bore results indicating elevated levels of PFOS and PFOA, and who had consumed ground water in the last three years. Other people were permitted to participate in the testing on a case-by-case basis.⁴³

40 Professor Jochen Mueller, Professor of Environmental Toxicology, University of Queensland, *Committee Hansard*, 9 March 2016, p. 25.

41 Professor Jochen Mueller, Professor of Environmental Toxicology, University of Queensland, *Committee Hansard*, 9 March 2016, pp 27–28.

42 Dr Ian Gardner, Principal Medical Advisor and Special Consultant to the Secretary, Department of Veterans' Affairs, *Committee Hansard*, 9 March 2016, p. 38.

43 Department of Defence, *Submission 87*, p. 24.

2.36 In the end, a total of 75 samples were analysed. At a public meeting in Oakey on 25 August 2015, residents were advised that blood samples had been sent and batched for analysis by the testing laboratory. Test results were sent to residents in the second half of September 2015. The Shine Lawyers submission questioned why it took Defence five months to release the blood test results.⁴⁴

2.37 The Defence submission advised that it did not intend to conduct further blood testing in relation to PFOS or PFOA, arguing this approach is consistent with advice provided by the NSW Health Department and by enHealth. Defence noted that the Queensland Health Department had not yet published any health guidance on PFOS or PFOA.⁴⁵

2.38 Defence's decision not to continue with a voluntary blood testing program as part of its community response in Williamtown and Oakey drew criticism from the Shine Lawyers submission:

There has been the recent suggestion that further blood testing ought not to be carried out, because of the potential anxiety and harm it may cause. It seems counterintuitive to approach a problem of this nature without seeking to understand the extent of the problem, and to gather as much information about it as possible. Those residents for whom we act, and, we suspect, the other residents of Oakey strongly resist the notion of their being kept 'in the dark' about these matters. We are unaware of any other PFC contaminations globally where blood testing did not occur.⁴⁶

2.39 Their supplementary submission continued this line of criticism, but in stronger terms:

We respectfully submit that it is paternalistic and a source of considerable resentment among those affected residents who have subsequently requested blood testing and been denied that opportunity by Defence ostensible on the grounds that a positive result may cause unnecessary anxiety.

The anxiety has already been created given that a positive blood test result now seems to be the more likely outcome for many Oakey residents and we are aware that a number of residents have indicated an intention to have private PFC blood testing at considerable expense...⁴⁷

2.40 The Chief Health Officer and Deputy-Director-General in the Queensland Department of Health advised the committee that Defence had shared the results of the blood tests with the Queensland state health authorities:

The average value of PFOA in 74 Oakey residents that they tested in 2015 was 3.05 nanograms per millilitre. It ranged—I think the range is very important—from a minimum of 0.78 nanograms per millilitre up to 19.21

44 Shine Lawyers, *Supplementary Submission 88.1*, p. 7.

45 Department of Defence, *Submission 87*, p. 11.

46 Shine Lawyers, *Submission 88*, p. 23.

47 Shine Lawyers, *Supplementary Submission 88.1*, p. 7.

nanograms per millilitre, remembering that the Australian average was 7.6. That is PFOA, so suggesting that that is not a big concern.

The bigger concern is PFOS. The average value for those 74 Oakey residents in 2015 was 69.38 nanograms per mil. . Again, I think it is the range that is important. It ranged from a minimum of 2.35 nanograms per mil up to a maximum of 381.29 nanograms per mil—again remembering that the average Australian pooled level was 21.3 nanograms per mil.⁴⁸

Defence engagement with the community and Toowoomba Regional Council

2.41 The committee received evidence critical of the timeliness of information provided to Council and the local community by Defence, which echoed the concerns raised by the residents of Williamtown about Defence's method of consultation. Toowoomba Regional Council, for example, expressed concern that after being provided with reports of investigations into contamination by Defence in August 2014 '...limited additional information has been provided to Council'. Council also engaged CH2M Hill, a global engineering company that provides consulting, design, construction and operations services, to undertake scoping studies relating to the impacts of the contamination on the future operation of the Oakey RO WTP as a result of '...the limited amount of information being provided by the Department of Defence...'.⁴⁹

2.42 Shine Lawyers was particularly critical of Defence's approach to the health impacts of firefighting foam contamination on residents and their genuinely held concerns about links between PFOS/PFOA contamination and various cancers.⁵⁰ Shine Lawyers also raised concerns about the lack of public confidence in Defence's handling of the data obtained from testing for contamination, and what they considered was a possible lack of independence within Defence:

...the people that [Defence] is appointing to interpret the data that it is gathering are people that we would expect a certain result from...We have real concern about the likely outcomes of the processes currently being undertaken. You know when a panel is independent. You know the people in whom the public have confidence.⁵¹

2.43 When asked to expand on how the process could be improved, Mr Peter Shannon told the committee:

I would like to see Defence engage an independent panel to comment upon the data that it is collecting and what it is doing. As I understand it, at the moment Defence and basically everyone is being guided by the interpretation to be placed on the data by one person. That is the concern

48 Dr Jeannette Young, Chief Health Officer and Deputy Director-General, Prevention Division, Queensland Department of Health, *Committee Hansard*, 9 March 2016, p. 35.

49 Toowoomba Regional Council, *Submission 115*, p. 2.

50 Shine Lawyers, *Supplementary Submission 88.1*, pp 5–6.

51 Mr Peter Shannon, Legal Partner, Shine Lawyers, *Committee Hansard*, 9 March 2016, p. 19.

that we have. We think that a carefully selected panel is more likely to engender confidence.⁵²

2.44 Defence rejected the criticism that it was not as forthcoming with the local community as it should have been, telling the committee categorically: 'We have nothing to hide':

We have held seven separate community engagements over the last few years...We did letterbox drops earlier in the piece. We had information up on a website when the study a couple of years ago was done. That was the first study that we did and we made the results of that study available. They are on our website, freely available, and the studies that we are doing at the moment will be made available when they are finished.⁵³

2.45 Defence also confirmed that it was committed to an ongoing process of consultation with the local community, putting on the record that 'Defence does not walk away from its responsibilities in dealing with this issue':

The last community consultation process we had two weeks ago was quite successful. It was differently structured to the previous ones; it was more of a community drop-in rather than a big presentation. We are very interested in getting feedback from the community on how we can improve in the way we consult the community. We will try and meet expectations where we can.⁵⁴

2.46 In response to the specific criticism about the lack of independence regarding the interpretation of blood test results, Defence stated it was not picking and choosing experts to arrive at a particular view, and all of its work is independently reviewed by an expert panel:

We use expert consultants and we only use people who have a national accreditation either in a testing laboratory, companies like ENTOX, or in terms of the environmental health experts that we use. We have all of our results peer reviewed by third parties. We do not rely just on one toxicologist. There is a range of people who are involved in this. If there were to be, for example, an expert panel established here by the Queensland government, as the New South Wales government has done, we would have no problem at all with full exposure of everything we have done into an expert panel for another peer review. We would have no problem at all.⁵⁵

2.47 The Defence submission stated that Stage 2C of its environmental investigation commenced in June 2015. These works include:

52 Mr Peter Shannon, Legal Partner, Shine Lawyers, *Committee Hansard*, 9 March 2016, p. 22.

53 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 9 March 2016, p. 38.

54 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 9 March 2016, p. 42.

55 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 9 March 2016, p. 39.

- hydro-geological assessment (sampling of drainage lines, creeks and irrigated soil; installing 20 new ground water monitoring wells on and off base; re-sampling of specific existing offsite bores; ground water modelling; and a hydro-geological assessment report);
- identifying and prioritising management of contamination pathways (literature review of current PFC remediation and management options and assessment of their feasibility); and
- community engagement and updates (management of a community hotline and project email address; drafting FAQs and project updates/fact sheets; community information sessions; stakeholder roundtables; direct communication with landholders; and water use surveys.⁵⁶

Queensland Government response

2.48 Representatives of Queensland Government agencies appearing before the committee on 9 March provided an overview of how the Queensland Government is working to assist Defence in addressing contamination issues at Oakey. In particular, the government has formed an interdepartmental committee chaired by the Department of Premier and Cabinet and comprising representatives from Queensland Health, the Department of Agriculture and Fisheries, the Department of Heritage and Environment Protection and the Department of Natural Resources and Mines.⁵⁷

2.49 Defence first advised the Queensland Department of Environment and Heritage Protection of the contamination in December 2012. In December 2013 Defence further advised that the contaminants from the use of firefighting foams in training exercises between 1970 and 2005 had infiltrated groundwater below the base and was likely to have migrated outside the base.⁵⁸

2.50 The Director-General of the Department of Environment and Heritage Protection, Mr Jim Reeves, told the committee:

Since being informed of the potential for off-site contamination in December 2013, the Queensland government representatives have attended all community meetings run by the Department of Defence, and continue to monitor advice given by the Department of Defence to the public. In addition, Queensland Health has prepared advice for community members who contact the department through the 13 HEALTH hotline, and it has provided advice to local general practitioners, should they be approached by members of the community.⁵⁹

56 Department of Defence, *Submission 87*, p. 25.

57 Mr Jim Reeves, Director-General, Queensland Department of Environment and Heritage Protection, *Committee Hansard*, 9 March 2016, p. 29.

58 Mr Jim Reeves, Director-General, Queensland Department of Environment and Heritage Protection, *Committee Hansard*, 9 March 2016, p. 29.

59 Mr Jim Reeves, Director-General, Queensland Department of Environment and Heritage Protection, *Committee Hansard*, 9 March 2016, p. 29.

2.51 Mr Reeves further advised the committee that the Queensland Government supported the development of a nationally consistent approach for standards and screening guidelines, as well as assessment, management and remediation protocols for sites identified as being contaminated: 'This matter should not be left to individual states or territories'.⁶⁰ The Queensland Government submission added:

A nationally consistent approach will support effective communication about impacts of contamination that is based on rigorous scientific assessment. It will also support clarity about roles and responsibilities, where there are cross-jurisdictional implications.⁶¹

2.52 Mr Reeves confirmed that for constitutional reasons the Queensland government does not have a direct regulatory role over activities on Defence bases. However, this does not prevent the Queensland government from testing the rigor of investigations undertaken by Defence and their conclusions. Furthermore, the Queensland government had received legal advice to have AACO declared a contaminated area by having it registered on the state's inventory of contaminated sites, but '...it is not a straightforward matter when you get constitutional lawyers involved'.⁶²

2.53 A representative from the Queensland Department of Environment and Protection provided clarification around the Environment Management and Contaminated Land Registers and how state law can be applied to Commonwealth law:

It is a very complex area. We have sought legal advice, we have formed a position that we can list the base on the environmental management register, but we are far less confident in our ability to actually compel defence to do things in terms of heads of power. It has been a case of us providing scope of works to Defence, in terms of what needs to be done to identify exposure pathways and areas at risk.⁶³

2.54 On the issue of the different approaches taken by the New South Wales and Queensland authorities in response to the Williamtown and Oakey contamination issues respectively, a Queensland Government representative advised the committee that while it was working through the Australian Health Protection Principal Committee to obtain one source of advice:

I think we were caught a little off balance in that New South Wales was told at one stage about Williamtown and we were told about Oakey and we did not have a chance to sit down and methodically work out what the risks

60 Mr Jim Reeves, Director-General, Queensland Department of Environment and Heritage Protection, *Committee Hansard*, 9 March 2016, p. 30.

61 Queensland Government, *Submission 112*, p. 1.

62 Mr Jim Reeves, Director-General, Queensland Department of Environment and Heritage Protection, *Committee Hansard*, 9 March 2016, p. 30.

63 Mr Andrew Connor, Executive Director, Industry, Development and South Queensland Compliance, Queensland Department of Environment and Heritage Protection, *Committee Hansard*, 9 March 2016, p. 32.

genuinely are and what information we should be providing. That work has now started at the national level, so all states and territories have been engaged.⁶⁴

Remediation

2.55 Very little evidence was taken on the issue of remediation on and off-base at AACO. At the 9 March hearing, Defence advised that it was researching remediation options to prevent further movement of the chemicals from the high-concentration areas in the ground out into the aquifers:

...we have been investigating remediation options and techniques. Within in about four weeks, we will start doing testing trials on the ground on the base at Oakey of a couple of techniques for remediating the soils there of the contamination that we know exists there. We have researched globally looking for techniques. We are talking to the Americans who have some promising techniques. We are talking to companies like CRC Care and other experts in Australia. We probably have about four or five different potential options that we are looking at and we will be starting trials on the base here, certainly, next month.⁶⁵

2.56 At a later hearing, Defence provided a detailed overview of the actual techniques being put to trial in Oakey and Williamtown:

The first one is a technique of containment through either solidification or stabilisation. This is for where we have PFOS in soils or in the ground. The techniques review various types of product they refer to as resins that would be injected into the ground. I get very quickly out of my technical depth here, but they essentially bind the PFOS so that it cannot move—for example, into groundwater and then away—or they seek to effectively solidify that area of ground, which has a similar effect to binding. I think they are probably quite similar techniques, but they are different technically.

We are...looking at something called physiochemical sequestration, which is a two-part process that looks at stabilisation first in the ground, using one of these resins, and then later removal of the soils that have been stabilised for treatment through an approved process. We are and have been using filtering of water through activated granulated carbon. We have spoken about the use of that before, for example, at Williamtown. Where we are removing groundwater to do works, it is being filtered through that process before being reinjected out below levels of concern. We are looking at a technique called foam separation, which is only applicable to water, standing water—I do not think underground water. It is simply a question of agitating the water so that the foam is generated and then taking the foam away and having that treated somehow.

64 Dr Jeannette Young, Chief Health Officer and Deputy Director-general, Prevention Division, Queensland Department of Health, *Committee Hansard*, 9 March 2016, p. 35.

65 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 9 March 2016, p. 39.

We have started stabilisation and solidification trials at both Williamtown and Oakey. If people care to have a look, what we are doing is drilling large core samples at various places. There would be about 90-millimetre diameter cores to whatever depth is required. We are taking those samples away and then running the trials in a more laboratory type environment, so still relatively small scale. We will know relatively quickly whether those trials work. The reason we are trying a range of techniques is that the soils are different in different places, whether they are clay based or sandy soils or whatever, and we think and we are advised by the various specialist companies we are talking to that different techniques will work better in different soil compositions. As these trials mature, if we find that they look like they are delivering as advertised, then we will seek to gear up and start applying the techniques at both Oakey and Williamtown. But right now it is too early to say, as we have literally just started on those works this week.⁶⁶

Compensation

2.57 The Toowoomba Regional Council advised that the loss of production from the Oakey RO WTP is potentially 730 megalitres per annum which would require Council to bring forward capital works to cater for expected growth. Council told the committee three options are available to provide that quantity of water to a growing community. First, the Oakey RO WTP would need to be extensively upgraded to safely treat and use the PFAS contaminated ground water, which would be an expensive option. Second, Council could look for new bores outside the contaminated areas from between five to 20 kilometres outside the contaminated plume. However, the alluviums '...that we are in here are heavily over-allocated, and we expect it would be very difficult to get additional bores to come to the RO plant'. The third option is to augment the supply coming in from Toowoomba.⁶⁷

2.58 The Council submission also noted that:

If Council was to upgrade the Oakey WTP, Council would face increased regulatory compliance and would still need to counter significant community perception, given the current level of concern in the community over the aquifer contamination. Additionally, without further processing, disposal of the waste stream from the Oakey RO WTP via the sewerage network to the Wetalla Water Reclamation Facility located in Toowoomba would jeopardise the existing extensive beneficial biosolids reuse program. Council may have to abandon the Oakey RO WTP and be forced to duplicate the Toowoomba Oakey Pipeline to ensure a safe and reliable supply to the township of Oakey and the Army Aviation Centre Oakey.⁶⁸

66 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 13.

67 Mr Kevin Flanagan, General Manager Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, 9 March 2016, p. 1.

68 Toowoomba Regional Council, *Submission 115*, p. 2.

2.59 The Council submission stressed the significant additional cost that will be incurred as a result of the ground water contamination and stated that as a result it will be seeking financial compensation from the Australian Government.⁶⁹

2.60 Dr Donaldson submitted that any claims of financial damage should be expeditiously investigated and settled to '...quieten the aggravation, take the matter off the front pages and give Oakey a positive image as only a small number of people are involved'.⁷⁰

2.61 The Shine Lawyers submission argued that in appropriate cases involving affected landowners, '...urgent temporary measures and/or financial assistance should be provided'. Moreover, any approach to compensation issues should be 'generous' and not 'niggardly', ensuring that independent assistance is provided in formulating claims and that individual claims are resolved in a timely manner. The submission argued that an Independent Compensation Assessment Panel (ICAP) should be established comprising at least an experienced valuer, forensic accountant and a lawyer or retired judicial officer. Protocols should also be put in place to govern the functioning of the ICAP to address:

- reimbursement of reasonable legal, accounting and valuation fees incidental to making, pursuing and resolving any claim; and
- that any determination as to an appropriate compensation amount will be binding on Defence but not upon the claimant, who will be at liberty to accept the amount assessed, or be entitled to pursue their rights at law.⁷¹

2.62 Defence confirmed it had received the protocols from Shine Lawyers, however it had not acted on the proposal or developed any counter-proposals on its own on the issue of compensation.⁷²

Committee view and recommendations

2.63 The committee is not surprised that the evidence received in relation to Oakey, especially the effect of the contamination on residents and the response of Commonwealth and state government authorities, has largely mirrored the evidence received in relation to the unfolding crisis in Williamtown. While Defence was again criticised in its response to the contamination from AACO and its engagement with the local community, one noticeable difference between Williamtown and Oakey is the absence of any response by the Queensland Government comparable to the unilateral actions taken by the New South Wales EPA. Queensland government authorities have largely remained in the background, which came in for some criticism by residents.

69 Toowoomba Regional Council, *Submission 115*, p. 2.

70 Dr Eric Donaldson, *Submission 102*, p. 1.

71 Shine Lawyers, *Submission 88*, pp 24-25.

72 Mr Michael Lysewycz, Defence Special Counsel, Defence Legal, Department of Defence, *Committee Hansard*, 9 March 2016, p. 37.

2.64 The committee does not share the concern of Shine Lawyers about the independence of Defence in its analysis of data from samples collected from many contaminated sites. The committee is satisfied that the work being undertaken by Defence to collect, interpret and process samples is robust and underpinned by verifiable science and a whole-of-government approach involving high-level advice from state authorities. The committee did not receive evidence demonstrating any conflict of interest within Defence, pre-determined outcomes or any shortcomings with the current process.

2.65 The committee examined the issue of voluntary blood testing on the residents of Williamstown in its first report and found that Defence was taking its advice from NSW Health which recommended against blood testing because it cannot predict the level of health risk. The committee notes that similar advice has been provided at the Commonwealth level by EnHealth in its guidance statement of 16 March 2016. Notwithstanding the consistency of this advice, the committee maintains its position that uncertainty regarding levels of exposure to PFOS/PFOA is causing anxiety for Oakey residents. The committee received evidence that people are interested in blood tests and are likely to obtain them privately at significant personal cost.

2.66 The committee also heard that the authorities cannot explain why some residents who live outside the investigation area have significantly elevated levels of PFOS/PFOA in their blood. The reasons for this are unknown. Uncertainty also remains around the exact pathways to contamination from AACO. For these reasons the committee is of the view that regular blood testing is warranted. Given that Defence initially funded a program of voluntary blood testing for Oakey residents and only recently changed its position, the committee strongly urges Defence to continue funding a program of voluntary testing on an annual basis for residents most affected by contamination.

Recommendation 1

2.67 The committee recommends that the Department of Defence recommence and fund a program of blood tests for residents in the Oakey investigation area on an annual basis.

2.68 Notwithstanding the efforts by Defence to engage with residents of Oakey affected by the contamination from AACO, the committee is concerned that, like the situation in Williamstown, residents are living under a cloud of uncertainty which is having a significant impact on their lives. The committee is concerned by the evidence received at the 9 March hearing which demonstrated a heightened level of stress and its effect on the mental health of many residents and their families. The committee is of the view that all affected residents and business people should be able to access counselling and assistance.

2.69 On this note, the committee is disappointed that the Queensland Government was not proactive when it became aware of the contamination by providing the local community with the on-ground support it clearly needed. This stands in contrast to the initiative shown by the New South Wales authorities in establishing dedicated local engagement officers in the Williamstown area to provide ongoing support to residents. The committee also notes that the Queensland Government submission was silent on

this issue. Defence should be working closely with the Queensland health authorities to ensure that residents are provided with the mental health and counselling support services they need.

Recommendation 2

2.70 The committee recommends that the Department of Defence ensure that mental health and counselling support services are provided free of charge to those affected by PFOS/PFOA contamination from Army Aviation Centre Oakey, and that these services continue for as long as they are required by residents.

2.71 The committee notes that neither Defence nor the Queensland Government provided an estimate of the number of residents and properties around AACO which are potentially affected by PFOS/PFOA contamination. However, the committee is of the view that it is likely to include a significant number of small acreage properties of which many will have contaminated bores. Not unlike Williamtown, the committee accepts that many residents are concerned that their properties have become worthless as a result of the contamination.

2.72 The committee notes that in responding to its first report on RAAF Base Williamtown, the Government gave an undertaking to consider the matter of property acquisition, but only after interim health reference values are established and detailed environmental investigations concluded: 'Until these activities are finalised, the Australian Government is not in a position to determine the actual level of risk for existing property use'. The committee is disappointed by this response given that no timeframes are provided, potentially leaving residents in Williamtown and Oakey in a state of uncertainty for the indefinite future.

2.73 The committee reiterates the point made in the conclusion of its first report on Williamtown that the Commonwealth Government is best placed to manage the risks of ownership of land which it has played a key role in contaminating. Defence should be actively engaging with residents concerned that their properties may no longer be fit for purpose and interested in being relocated to an alternative estate within the local community which is free from contamination.

Recommendation 3

2.74 The committee recommends that the Commonwealth Government commit to voluntarily acquire property and land which is no longer fit for purpose due to PFOS/PFOA contamination from Army Aviation Centre Oakey. The committee further recommends that the Commonwealth Government assist residents who may wish to relocate to an alternative estate within the local community which is free from contamination.

RAAF Base Williamtown revisited

2.75 Following the tabling of report Part (a) on the contamination by firefighting foams at RAAF base Williamtown in February 2016, the committee received further evidence on developments as they affected that community, including the response by Commonwealth and state government authorities. At the 7 April Canberra hearing, Defence provided an update on the situation in Williamtown which touched on several

key issues examined in detail in the committee's first report. These issues are summarised below.

Remediation

2.76 Defence advised that tests were about to commence on a range of remediation techniques at both Williamstown and Oakey:

We have been in touch with a range of players who have got a range of potential techniques for us to use. The majority of them have been tested on a very small scale, so we are starting to put trials in place now. If the techniques prove to work well, then we will start to roll them out on a bigger scale to start treating PFOS and PFOA in soils and water...⁷³

2.77 Further details about the various techniques used in these trials are included in this chapter at paragraph 2.58.

Community engagement

2.78 Defence advised that it continued to engage with the local community by holding additional meetings. This included a community drop-in session on 6 April to collect information from local residents about their use of water, consumption of dairy products and general lifestyle: 'The information that has been collected will be fed into the human health risk assessment study'.⁷⁴

2.79 While Defence confirmed that the Minister for Defence had not visited the community, the Assistant Minister for Defence, the Hon Michael McCormack MP, had attended community reference group meetings and meetings of elected representatives in Williamstown as the Assistant Minister responsible for Defence estate policy and major projects.⁷⁵

Water access

2.80 Defence advised that it continued to provide water to residents for whom groundwater is their only source of drinking water, and would continue to provide water for as long as it was necessary because drinking water that has PFOS/PFOA in it: '...is probably one of the primary causes of ingestion':

We are still providing water. We have processes in place to ensure that people do not go short of water. If the water is bottled, we are making sure that we collect all the bottles and the like. For some people it is tank water, and we are just refilling tanks.⁷⁶

73 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 12.

74 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 13.

75 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 12.

76 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 16.

Assessments

2.81 Defence advised that it had developed a close working relationship with the New South Wales EPA, and the human health risk assessment and environmental assessment being undertaken would be completed by August 2016:

Clearly, in particular at Williamtown we are pushing really hard to try and get data out of those assessments early so that we can provide that data to New South Wales authorities. They can then consider their position, particularly around the existing fishing bans that are in place.⁷⁷

Compensation

2.82 Defence advised that no formal compensation claims had been lodged in respect of contamination although there have been general discussions between Defence and the local community about issues which may be the subject of claims for compensation including mortgage stressors, business losses and sales of land. Defence also raised the prospect of a class action being launched in the near future by a Sydney Law firm on behalf of residents of Williamtown.⁷⁸

Government response to Report Part A

2.83 During a Foreign Affairs, Defence and Trade Legislation Committee hearing for the 2015-16 additional estimates on 10 February 2016, the Minister for Defence, Senator the Hon Marise Payne, gave an assurance that the issue of contamination was being taken seriously by the Minister and Assistant Minister, that a whole-of-government process was being undertaken to address the contamination at Williamtown, and that a Government response to the committee's first report would be provided as a matter of priority and 'not in three months' time'.⁷⁹

2.84 The Government Response was tabled on 15 April 2016 (the full response is included in Appendix 6). Recommendations 1, 3 and 4 were agreed; recommendation 8 agreed in part; and recommendation 7 not agreed. Recommendations 2 and 5 received an interim response. The following issues raised by the Government Response are noteworthy:

- Defence is committed to ensuring that residents continue to have access to drinking water and will continue to determine the most appropriate methods of delivery (Recommendation 1);
- Defence is engaging with the NSW Government to identify areas where the Australian Government may be able to assist in improving community awareness of the full range of available mental health and

77 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 13.

78 Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 18.

79 Senator the Hon Marise Payne, Minister for Defence, Foreign Affairs, Defence and Trade Legislation Committee, Additional Estimates Hearings, *Estimates Hansard*, 10 February 2016, pp 10–11.

counselling support services and how to access them (Recommendation 3);

- In response to contamination in Williamstown and Oakey, the Government is canvassing a national taskforce to coordinate the national response of government agencies to the management of PFOS and PFOA, to improve coordination between governments and to address community concerns (Recommendation 4); and
- Defence is currently completing a review of its environmental policy and supporting environmental management framework. Defence's policy is to meet the spirit and intent of state and territory legislation where there is no conflict with obligations under Commonwealth legislation (Recommendation 8).⁸⁰

2.85 The committee's recommendations which address compensation for commercial fisherman and the voluntary acquisition of property and land which is no longer fit for purpose, received only interim responses. The Government response to recommendation 2 restated that a financial assistance package offered to fishers and businesses affected by the decision of the New South Wales Government to institute fisheries closures had been implemented by the Government. It also noted that the Income Recovery Subsidy to individuals who have experienced a loss of income as a result of the Fullerton Cove and Tilligerry Creek fisheries closures will continue for a period of eight weeks after 30 June 2016.⁸¹

2.86 In relation to the NSW Government's decision regarding the closure of fisheries, which is due by 30 June 2016:

...[I]n the event that the NSW Government does not reopen these fisheries by 30 June 2016, the Australian Government will provide the opportunity for affected businesses to claim a Business Transition Payment of up to the \$25,000 to assist businesses pursue alternative sources of income if they wish to do so.⁸²

2.87 The Government response to recommendation 5 summarised the environmental investigations being undertaken by Defence in consultation with the NSW Government, and advised that the Australian Government:

...will further consider the matter of property acquisition once interim health reference values have been established and a detailed environmental

80 Australian Government Response to the Senate Foreign Affairs, Defence and Trade References Committee Report: *Inquiry into firefighting foam contamination Part A—RAAF Base Williamstown* pp 1–12.

81 Australian Government Response to the Senate Foreign Affairs, Defence and Trade References Committee Report: *Inquiry into firefighting foam contamination Part A—RAAF Base Williamstown*, p. 6.

82 Australian Government Response to the Senate Foreign Affairs, Defence and Trade References Committee Report: *Inquiry into firefighting foam contamination Part A—RAAF Base Williamstown*, p. 6.

investigation at RAAF Base Williamtown has been concluded, Until these activities are finalised, the Australian Government is not in a position to determine the actual level of risk for existing property use.⁸³

Correcting the record

2.88 The Government response included a 'correction of error of fact' in paragraph 3.11 of the committee's first report. The error of fact relates to the statement that the United Nations Persistent Organic Pollutants Review Committee had agreed that PFOA 'causes' kidney and testicular cancer, disruption of thyroid function and endocrine disruption in women.⁸⁴ The committee is unable to let this correction stand without a brief response.

2.89 The committee notes the correction did not identify that the source of the statement is the National Toxics Network submission. In no way does the statement reflect the committee's view or conclusion as implied by the Government Response. At the Oakey hearing, Dr Gardner acknowledged that the quote in the committee's first report '...came straight out of the National Toxics Network submission...where I believe they have incorrectly quoted [from the UN POP Review Committee document] which your committee has, in honesty, just picked up by mistake'.⁸⁵ This should have been reflected in the Government Response to avoid confusion and the risk of attributing to the committee a view which it does not hold.

2.90 The committee's intent in Paragraph 3.11 was to highlight that PFOA had been nominated for inclusion in the Stockholm Convention due to its dangerous toxicity, extreme persistence, bioaccumulation and long-range transport. These are matters of scientific fact which have not been disputed during this inquiry.

83 Australian Government Response to the Senate Foreign Affairs, Defence and Trade References Committee Report: *Inquiry into firefighting foam contamination Part A—RAAF Base Williamtown*, p. 9.

84 Australian Government Response to the Senate Foreign Affairs, Defence and Trade References Committee Report: *Inquiry into firefighting foam contamination Part A—RAAF Base Williamtown*, pp 3–4.

85 Dr Ian Gardner, Principal Medical Advisor and Special Consultant to the Secretary, Department of Veterans' Affairs, *Committee Hansard*, 9 March 2016, p. 41.

Chapter 3

Other Commonwealth, state and territory sites

3.1 This chapter begins with a brief update on evidence received by the committee on the environmental and human health effects of PFOS and PFOA and the issue of blood testing since the first report on Williamstown was tabled in February 2016. It then provides an overview of other Commonwealth, state and territory sites which have experienced PFOS/PFOA contamination; the different responses by the Department of Defence, state government authorities and Air Services Australia; and the regulatory frameworks in place to address legacy contamination. The chapter concludes with a committee view and recommendations.

The effects of PFOS/PFOA: update

3.2 Further evidence received by the committee regarding the risks that PFOS and PFOA pose to the environment showed a clear consensus among the experts. This is best summarised by the submission from the Commonwealth Department of the Environment (Environment) which described these chemicals as persistent, bioaccumulative and toxic, noting that 'they persist in the environment for many years, become more concentrated over time and accumulate up the food chain, and are toxic to organisms in the environment'.¹ However, there was considerably less consensus regarding the impact of PFOS and PFOA on human health.

3.3 Professor Jochen Mueller, a Professor of Environmental Toxicology at the University of Queensland, explained that risk is a function of the intrinsic properties of a chemical and the level of exposure and accumulation in the blood stream, noting that 'it is the dose that makes the toxin'.² Dr Brian Richards, the Director of the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) agreed, emphasising that it is the level of exposure or 'dose' that is the subject of ongoing scientific debate, 'When we talk about what level of exposure a human person needs...to get what adverse health effects, that is the issue that is the subject of ongoing scientific debate'.³

3.4 On 15 March 2016, the Department of Health published the Environmental Health Standing Committee of the Australian Health Protection Principle Committee (enHealth) Guidance Statements on Perfluorinated Chemicals. The Guidance Statements asserted that 'there is currently no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects', but that 'because these chemicals persist in humans and the environment, enHealth recommends that human

1 Department of the Environment, *Submission 114*, p. 2.

2 Professor Jochen Mueller, Professor of Environmental Toxicology, University of Queensland, *Committee Hansard*, 9 March 2016, p. 27.

3 Dr Brian Richards, Director, National Industrial Chemicals Notification and Assessment Scheme, *Committee Hansard*, 7 April 2016, p. 26.

exposure to these chemicals is minimised as a precaution'.⁴ NICNAS noted that the scientific literature on the effects of PFOA and PFOS in humans 'does not give clear, unambiguous results'.⁵

3.5 Dr Mariann Lloyd-Smith, Senior Advisor at the National Toxics Network, refuted NICNAS and enHealth's assertions regarding the absence of evidence of the health impacts of PFOS/PFOA, advising the committee that 'there is more than ample evidence of the health impacts of PFCs':

Animal studies show that PFOS causes testicular and pancreatic tumours—I think some of the first reports of the toxicity of PFOS were in 1978 in the literature, and by 1987 its carcinogens had already been shown in rats— as well as neurotoxicity and immunotoxicity, while human population studies have linked PFOS with reduced immune responses, preterm birth and reduced fertility. Similarly, for PFOA, there are numerous adverse findings from animal studies, while human population studies have focused on non-occupational exposure of women of reproductive age, and children, and these have demonstrated impaired neurodevelopment, delayed sexual development, immunotoxicity and obesity.⁶

3.6 Dr Lloyd-Smith stressed that there is a consensus amongst international scientists regarding the adverse human health effects of exposure to PFOS and PFOA.⁷ The Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention)'s Review Committee recently determined that there was sufficient evidence of adverse human health effects for PFOA to meet the screening criterion on adverse effects. The Stockholm Convention's decision states that:

(e) Adverse effects:

(i) There is epidemiological evidence for kidney and testicular cancer, disruption of thyroid function and endocrine disruption in women (Steenland et al., 2012; Knox et al., 2011a, b; Melzer et al., 2010; ECHA 2014);

(ii) There exists experimental evidence from animal studies (Sibinski et al., 1987 and Biegel et al, 2001, cited in ECHA, 2011) that PFOA induces tumours (e.g., in the liver). Developmental effects have been observed in mice (e.g. Lau et al., 2006). Postnatal administration of ammonium salts of PFOA (APFO) in mice indicated adverse effects on mammary gland development (delayed/stunted) in offspring. Repeated oral exposure of several species to PFOA showed adverse effects such as mortality, reduced

4 Department of Health, Environmental Health Standing Committee of the Australian Health Protection Principle Committee, *enHealth Guidance Statements on Perfluorinated Chemicals*, March 2016, p. 3.

5 National Industrial Chemicals Notification and Assessment Scheme, *Submission 47*, p. 2.

6 Dr Mariann Lloyd-Smith, Senior Advisor, National Toxics Network, *Committee Hansard*, 7 April 2016, p. 7.

7 Dr Mariann Lloyd-Smith, Senior Advisor, National Toxics Network, *Committee Hansard*, 7 April 2016, p. 8.

body weight gain, cyanosis and liver cell degeneration and necrosis (ECHA, 2011). Mothers excrete PFOA via breast milk, which causes concern for the health of breastfed infants (ECHA, 2011).

There is sufficient evidence that PFOA meets the criterion on adverse effects.⁸

3.7 Dr Lloyd-Smith described the government's assertion that there is no consistent evidence of harm on health as 'sheer dishonesty' suggesting that the government is reluctant to acknowledge international scientific studies and determinations regarding the adverse health effects of PFOS and PFOA due to fears of exposing itself to liability:

The scientific data is there and there is certainly consensus with international scientists, because the POPs review committee is made up of international scientists put there by the various countries of the world. There is no debate or discussion there. I have suggested that perhaps the reason that government is trying to downplay the seriousness of this contamination is an attempt to downplay their liability, because once you accept that there is a problem they are going to have to resolve the problem with the residents living there. They cannot continue to live on contaminated land or to eat contaminated produce, and that means big liability.

...

Certainly with workers there is a major problem with liability and, even if you look at some of the firefighters, you will see that the levels of contaminants in their blood are well over those of the average population. So yes, there are liability issues, and I can only assume that that is why there is this downplaying. But I have to say, when I hear statements that there is no consistent scientific evidence of harm on health, that it is just sheer dishonesty. I am sorry, but I found it very, very difficult to listen to some of those comments.⁹

3.8 The lack of consensus regarding the effect of PFOS/PFOA on human health has resulted in conflicting advice and confusion regarding what is and is not considered safe. Shine Lawyers highlighted the lack of consistency in the health guidelines and statements issued by various Commonwealth and state agencies regarding PFOS and PFOA contamination. Mr Peter Shannon noted that:

For instance, Defence says at paragraph 20 of its submission 87:

8 Stockholm Convention on Persistent Organic Pollutants, Persistent Organic Pollutants Review Committee, *POPRC-11/4: Pentadecafluorooctanoic acid (CAS No: 335-67-1, PFOA, perfluorooctanoic acid), its salts and PFOA-related compounds*, <http://chm.pops.int/TheConvention/POPsReviewCommittee/ReportsandDecisions/tabid/3309/Default.aspx>, accessed 22 April 2016.

9 Dr Mariann Lloyd-Smith, Senior Advisor, National Toxics Network, *Committee Hansard*, 7 April 2016, p. 8.

Defence understands that the primary pathway for ingestion of this product is through drinking water or eating food containing these chemicals.

...Defence go on to say:

Primary producers have not been advised to stop using bore water to water vegetables or crops, or as drinking water for stock.

That is notwithstanding that, some paragraphs earlier, they are saying that exposure through eating products is an issue. So there is a fair bit of inconsistency there. Part of the reason people are confused is that Defence has maintained that position. We then get the New South Wales Department of Health saying:

Don't eat fish, prawns or oysters from the following areas—

And then they identify those with PFOAs contamination in relation to Williamtown.

Don't drink or prepare food with bore water from this area. It is safe to drink water from the reticulated water supply (town water).

Which is clear in Williamtown.

Don't eat eggs from your own back yard.

And:

Don't drink milk from cows or goats grazing in this area.

Even the Queensland Department of Health, in a brochure that was circulated for a while and does not appear to be easy to locate anymore, says:

There is no conclusive evidence at this stage which links exposure to these chemicals with long term adverse health effects in humans such as cancer.

It goes on to say:

It is safe to drink water from the town water and to consume commercial produce from the Oakey area.

So there is this continual inconsistency.¹⁰

Blood testing

3.9 A number of submissions emphasised the need for blood testing for current and former workers and current and former nearby residents at sites where firefighting

10 Mr Peter Shannon, Legal Partner, Shine Lawyers, *Committee Hansard*, 9 March 2016, pp 19–20.

foams containing PFOS and PFOA have been used.¹¹ However, the enHealth Guidance Statements recommended against blood testing for PFOS/PFOA, stating that 'blood testing has no current value in informing clinical management':

There is currently no accepted clinical treatment to reduce levels of PFCs in the human body. Given the uncertainty that PFCs are directly linked to adverse health outcomes, blood tests cannot determine if the PFC levels in a person's blood will make them sick now or later in life.

Therefore, blood tests are not recommended to determine whether any medical condition is attributable to exposure to PFOS or PFOA and have no current value in informing clinical management, including diagnosis, treatment or prognosis in terms of increased risk of particular conditions over time.¹²

3.10 The enHealth Guidance Statements' advice regarding blood testing was supported by the New South Wales Chief Scientist and Engineer, Professor Mary O'Kane AC,¹³ as well as the Queensland Government.¹⁴ However, the Victorian Government advised the committee that it is utilising blood testing as part of its response to the contamination from the CFA Training College at Fiskville.¹⁵

3.11 Dr Lloyd-Smith disagreed, asserting that people who may have been exposed to PFOS/PFOA have a right to know what is in their bodies and that their doctors need to know if they have high levels of PFOS/PFOA. Dr Lloyd-Smith recommended that regular blood testing be conducted, especially for children and women of reproductive age.¹⁶

3.12 Shine Lawyers criticised the government for waiting for scientific certainty before taking action, asserting that 'any approach to health issues should be one adopting a precautionary approach and not one requiring scientific certainty before so acting'.¹⁷ Mr Rory Ross, Senior Solicitor at Shine Lawyers, told the committee that

11 For example: Mr John and Mrs Sue Luke, *Submission 12*, pp 1–2; Ms Trish McLuckie and Mr Martin Vitiello, *Submission 21*, p. 3; Port Stephens Greens, *Submission 31*, p. 2; Ms Julie Bailey, *Submission 53*, p. 1; Ms Jennifer Spencer and Mr Chris Weise, *Submission 59*, p. 1; Ms Susan Dodt, *Submission 70*, p.1; Dr Michelle Chan, *Submission 75*, p. 2; Name withheld, *Submission 83*, p. 2; Mrs Samantha Kelly, *Submission 95*, p. 2; Ms Yvette Davidson, *Submission 99*, p. 1; and Name withheld, *Submission 107*, pp 1–2.

12 Department of Health, Environmental Health Standing Committee of the Australian Health Protection Principle Committee, *enHealth Guidance Statements on Perfluorinated Chemicals*, March 2016, p. 4.

13 NSW Chief Scientist and Engineer, answer to a question on notice, 3 December 2015 (received 21 April 2016).

14 Dr Jeanette Young, Chief Health Officer and Deputy Director-general, Prevention Division, Department of Health, Queensland, *Committee Hansard*, 9 March 2016, p. 34.

15 Victorian Government, *Submission 121*, Attachment 1.

16 Dr Mariann Lloyd-Smith, Senior Advisor, National Toxics Network, *Committee Hansard*, 7 April 2016, pp 8–9.

17 Shine Lawyers, *Submission 88*, p. 24.

overseas jurisdictions have conducted blood testing at all PFOS groundwater contamination events:

In the Ohio Valley in the United States, we understand that 69,030 people were blood tested. I understand they were tested for nine different PFCs. In Decatur, Alabama, 155 people were blood tested for PFC exposure. The Pease trade port in New Hampshire, to date, 1,874 people have been blood tested. East Metro Minnesota, 205 people blood tested. Arnsberg, Germany, 179 children aged five to six, 317 mothers aged 23 to 49, and 204 men. Lake Mohne, in Germany, 99 men and six women. Ronneby in Sweden—and this is a very interesting study—3,000-plus residents have been blood tested, in a town with a population of approximately 9,000 people. It is a few kilometres downstream of a Swedish air base with a very similar type of groundwater issue. In addition to the 3,000 that have been tested there is a representative sample of 113 residents from that town, aged four to 83, who from 2014 to 2015 were blood tested every three months, and from 2015 to date and ongoing are being blood tested every six months.¹⁸

3.13 The enHealth Guidance Statements acknowledged that blood samples have been collected overseas as part of ongoing investigations into PFC contamination of soil and water, but stated that the value of blood testing is limited and frequent blood monitoring is of no value:

It is noted that various organisations around the world have collected blood samples from people as part of ongoing investigations into PFC contamination of soil and water. The purpose of these tests was either a part of a defined research program, or to determine how much of these chemicals may be entering a person's body. The value of blood testing is limited to assessing exposure, such as monitoring over time, which may help to determine the success of exposure reduction measures. However, given the long biological half-life of PFCs, frequent blood monitoring is of no value.¹⁹

Contaminated sites

3.14 PFOS and PFOA contamination is not limited to Williamstown and Oakey. A number of other sites were identified to the committee, including Defence properties, airports, and other sites such as firefighting training grounds.

Defence sites

3.15 The Department of Defence advised the committee that it has undertaken a 'desktop review' of its entire estate to 'determine where and how [Aqueous Film Forming Foam] (AFFF) was used and whether it is possible that the historical use may have affected soil, groundwater and surface water'. This review identified:

18 Mr Rory Ross, Senior Solicitor, Shine Lawyers, *Committee Hansard*, 9 March 2016, p. 18.

19 Department of Health, Environmental Health Standing Committee of the Australian Health Protection Principle Committee, *enHealth Guidance Statements on Perfluorinated Chemicals*, March 2016, p. 4.

- 16 properties as 'category one' sites, which 'are known or likely to have used substantial quantities of PFOS/PFOA on site' (in addition to Oakey and Williamstown);
- 20 properties as 'category two' sites, where 'available information has shown some uncertainty as to either the potential for substantial PFOS/PFOA use on the property or for offsite migration'; and
- 31 properties as 'category three', which 'present a low potential for substantial PFOS/PFOA to be present either on or off the property'.²⁰

3.16 The 16 'category one' properties identified for detailed environmental investigation of PFOS and PFOA are: Jervis Bay Range Facility, ACT; RAAF Base Richmond, NSW; Holsworthy Barracks, NSW; HMAS Albatross, NSW; RAAF Base Wagga, NSW; RAAF Base Tindal, NT; RAAF Base Darwin, NT; Robertson Barracks, NT; RAAF Base Townsville, QLD; RAAF Base Amberley, QLD; RAAF Base Edinburgh, SA; RAAF Base East Sale, VIC; Bandiana Military Area, VIC; HMAS Cerberus, VIC; HMAS Stirling, Fleet Base West, WA; and RAAF Base Pearce, WA. The order of the properties listed does not indicate the level of risk of potential contamination.²¹

3.17 Defence advised that it intends to commence detailed environmental investigations at three 'category one' bases in early 2016: RAAF Base Pearce in WA, RAAF Base East Sale in Victoria and HMAS Albatross in NSW.²²

Airports

3.18 Airservices Australia advised that its investigations identified 56 sites where aviation rescue firefighting (ARFF) services at airports were provided, of which:

- 36 sites (both current and historical) have, or are suspected of having, perfluorinated compounds (PFCs) residues as a result of AFFF use; and
- 20 sites where AFFFs have not been used.²³

3.19 A detailed list of current and historical sites where ARFF services were provided, including the foams used at each site, is included at Appendix 7.

Other sites

3.20 The committee received evidence that the historical use of firefighting foams containing PFOS and PFOA at other sites, such as firefighting training colleges, may have led to PFOS and PFOA contamination of the surrounding environment. The Victorian Government advised the committee that it is currently investigating potential PFC contamination at a number of sites across the state, primarily focusing

20 Department of Defence, *Supplementary Submission 87.1*, pp 3–4.

21 Department of Defence, answer to question on notice, no. 5, Foreign Affairs, Defence and Trade Legislation Committee, Additional Estimates Hearings, 10 February 2016.

22 Department of Defence, *Supplementary Submission 87.1*, p. 5.

23 Airservices Australia, *Submission 113*, p. 4.

on Victorian Country Fire Authority (CFA) sites such as the CFA Training College at Fiskville.²⁴

Response of authorities

3.21 Commonwealth, state and territory governments have each responded to PFOS and PFOA contamination in different ways, with some states and organisations taking precautionary and proactive steps to address concerns regarding contamination, human health, and compensation, whilst others, such as Defence, have adopted a more guarded and reactive approach. The Department of the Environment advised the committee that it is 'collaborating with its Commonwealth and state and territory counterparts as part of a whole-of-government response to legacy contamination' and outlined the key areas of responsibility and actions taken:

- **health standards and measures:** the Commonwealth Department of Health and relevant state and territory agencies are considering appropriate health standards and measures associated with PFOS and PFOA contamination;
- **contamination on Commonwealth land:** Commonwealth landowners, such as Defence, are responsible for investigating and managing potential contamination on their sites;
- **contamination on state and territory land:** states and territories are primarily responsible for environmental protection and waste disposal where contamination or waste disposal occurs on state and territory land;
- **environmental protection regulation policy and standards:** Environment and relevant state and territory agencies are considering appropriate standards and measures association with PFOS and PFOA contamination. In addition, Commonwealth environmental assessment and approval processes will be required when any new action related to PFOS and PFOA is likely to have a significant impact on a nationally protected matter under Part 3 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), including on Commonwealth land. This includes actions that are likely to significantly impact the 'whole of the environment', but only in those instances where the actions affect, or are taken on, Commonwealth land, or are carried out by a Commonwealth agency.²⁵

Stockholm Convention Annex B

3.22 In 2010, PFOS was listed as one of nine new substances added as an Annex B restricted substance in accordance with the Stockholm Convention. A number of submissions raised concerns that, despite being a signatory of the Convention, Australia had not yet ratified this addition, calling for the amendment to be ratified

24 Victorian Government, *Submission 121*, pp 1–3.

25 Department of the Environment, response to question on notice, 7 April 2016, (received 21 April 2016), pp 1–2.

without delay.²⁶ Environment advised that any amendments to the annexes of the Stockholm Convention only enter into force for Australia once the domestic treaty making process is complete, which includes several stages of analysis, particularly where new implementation measures are required.²⁷ Environment advised that the process has been a 'substantial exercise' and that a Regulatory Impact Statement on PFOS is due for release in mid-2006:

That has been a very substantial exercise and it is probably worth me just touching on some of the work that has gone into that. We have had to do a very significant amount of technical, scientific and regulatory analysis to underpin that, including looking at all of the restrictions and how they might work under the convention and the management options that would exist within Australia to deal with particular obligations. To do that we have looked at both validating and understanding better past and current uses of PFOS in Australia, in terms of how they have been used. We have looked at where imported articles have contained PFOS and how that impacts this. We have looked at how you could treat PFOS waste in Australia—the capability we have to deal with the waste. We have looked at trying to understand better the environmental fate of PFOS that has been used—where it ends up and what it affects. We have looked at whether PFOS is present in sewage treatment plant effluent or biosolids that are then subsequently spread onto land, and we have also been attempting to understand the mechanisms that might be used to implement particular measures if the government chooses to ratify.²⁸

3.23 In 2015, PFOA passed the Annex D stage but will not be considered for listing by the Convention until 2019 at the earliest.²⁹

Department of Defence

3.24 Defence's response to PFOS and PFOA contamination has been slow and reactive, seemingly focused on limiting its liability rather than addressing the needs of residents. Defence noted that unacceptable levels of exposure to PFOS and PFOA in soil, groundwater and surface water have yet to be determined in Australia and that it would not be feasible to determine appropriate long term management strategies until relevant health and environmental assessment criteria have been developed. Defence advised the committee that it is developing a national plan to manage known and potential PFOS/PFOA contamination across the Defence estate. The plan aims to 'investigate the extent of the contamination and the potential for human and

26 For example: Ms Deborah Sketchley, *Submission 7*, p. 1; National Toxics Network, *Submission 29*, p. 3; Port Stephens Greens, *Submission 31*, p. 2; Fire Protection Association Australia, *Submission 116*, p. 10; Mr Mike Willson, *Submission 119*, p. 1.

27 Department of the Environment, *Submission 114*, p. 3.

28 Mr Andrew McNee, Assistant Secretary, Chemicals and Waste Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 37.

29 Department of the Environment, *Submission 114*, pp 2–3.

environmental exposure' and to 'then identify appropriate interim and long term management strategies'.³⁰

3.25 Defence advised that whilst remediation technologies are available for treatment of PFC contaminated soil, such as thermal desorption, and for the treatment of reasonably small amounts of waste water, 'there are no proven options in Australia for large scale remediation activities, particularly with regard to groundwater remediation'. Furthermore, Defence noted that any remediation plans would need to be site-specific due to differences in the hydrology and topography of each site. For example, at RAAF Base Williamtown, the high water table and complex interplay of surface water and ground water, presents further challenges to remediation. Defence assured the committee that it was continuing to work with industry to 'determine appropriate remediation options'.³¹

Compensation

3.26 Shine Lawyers criticised Defence's response, asserting that Defence 'cannot have it both ways'—if the risks regarding PFOS and PFOA contamination are serious enough to warrant advising against the consumption of groundwater, it must also be serious enough to warrant action taken to compensate those people whose groundwater has been affected. Shine Lawyers emphasised Defence's moral responsibility to take action:

It surely cannot be moral or just to have Defence call national attention as it did in July 2014 (referenced also by the reports leading up to it) that the groundwater of Oakey was contaminated, to identify a spreading "plume", to advise people not to drink the water, to acknowledge publically the likelihood of affected property values and to say the health effects were uncertain – only to now say that all is well and "*sorry, we were worrying about nothing, but hey don't drink the water anyway just in case*".³²

3.27 Defence advised that financial assistance is available to 'individuals and businesses whose livelihoods have been affected by the closure of Hunter River and Port Stephens fisheries in response to contamination at RAAF Base Williamtown' but noted that 'the question of compensation is separate to any financial assistance to affected parties' and that:

In the event that individuals or businesses wish to make a claim for compensation against the Commonwealth, such claims will be handled by Defence in accordance Defence's obligations under the Attorney-General's Legal Services Directions.³³

3.28 Defence informed the committee that it has received inquiries regarding compensation from people in Williamtown and Oakey but, as yet, no formal claims

30 Department of Defence, *Supplementary Submission 87.1*, p. 9.

31 Department of Defence, *Supplementary Submission 87.1*, pp 9–10.

32 Shine Lawyers, *Supplementary Submission 88.1*, p. 4.

33 Department of Defence, *Supplementary Submission 87.1*, p. 7.

for compensation have been made. When asked about its intentions to purchase properties and assets that have lost value as a result of contamination, Defence reiterated that, whilst it is engaged in talks with approximately 30 people regarding potential claims for losses suffered, no formal claims have been lodged.³⁴

3.29 In its Part (a) report, the committee recommended that 'the Commonwealth Government, with the advice of the NSW Department of Primary Industries, develop an initial compensation package for the commercial fishermen affected by the closures of Fullerton Cove and Tilligerry Creek'. The Interim Government Response to the recommendation avoided the issue of compensation, only stating that 'individual claims for compensation received by the Australian Government are handled on a case by case basis', focusing instead on the provision of short-term financial assistance packages.³⁵

3.30 The Government noted that the current financial assistance package for fishers and businesses affected by the decision of the NSW EPA to institute fisheries closures will continue to be available until 30 June 2016, when the NSW Government is due to make its decision regarding the closure of the fisheries. On 1 July 2016, a further Business Hardship Payment of up to \$20,000 will be made available; and, if the NSW Government does not reopen the fisheries, businesses will be able to apply for a Business Transition Payment of up to \$25,000 to 'assist businesses to pursue alternative sources of income if they wish to do so'. The Government also advised the committee that it will continue to provide an Income Recovery Subsidy to 'individuals who have experienced a loss of income' as a result of the closure of the fisheries, for a period of eight weeks after 30 June 2016.³⁶

New South Wales

3.31 As discussed in Part (a), the New South Wales Government and Environment Protection Authority (NSW EPA) has demonstrated a precautionary and proactive response to PFOS/PFOA contamination. In September 2015, the NSW Government closed commercial and recreational fisheries and oyster harvesting in Fullerton Cove and Upper Tilligerry Creek for one month,³⁷ which in October 2015 was extended to a further eight-month ban on fishing while human health risk assessment is undertaken. The NSW Government explained that:

34 Mr Steven Grzeskowiak, Deputy Secretary Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 18.

35 Australian Government, *Response to the Senate Foreign Affairs, Defence and Trade References Committee report: inquiry into firefighting foam contamination Part A – RAAF Base Williamtown*, April 2016, p. 6.

36 Australian Government, *Response to the Senate Foreign Affairs, Defence and Trade References Committee report: Inquiry into firefighting foam contamination Part A – RAAF Base Williamtown*, April 2016, p. 6.

37 NSW Environmental Protection Agency, 'Department of Defence and NSW Government investigating chemicals around Williamtown RAAF Base', *Media release*, 3 September 2015.

The proposed ban on commercial and recreational fishing in the designated area is recommended to remain in place until 30 June 2016. Meanwhile, the Expert Panel has restated the need for local residents to heed other precautionary advice until the human health risk assessment is complete.

As such, residents who live inside the investigation area should not:

- drink or prepare food from private water bores, or water from dams, ponds, creeks or drains (town water is safe)
- eat eggs from backyard chickens or milk from cows and goats that have been drinking bore water or surface water in the area; and
- eat fish, prawns or wild oysters caught in the nearby area.³⁸

3.32 In November 2015, the NSW Government updated its advice that, as a precaution, residents and young children should not swim in pools filled with bore water or local creeks, dams, drain or ponds in the investigation area.³⁹ In addition to Defence's assistance package for commercial fishers affected by the closures announced by the Assistant Defence Minister in November 2015⁴⁰, the NSW Government announced an assistance package for Williamstown residents affected by contamination from the RAFF base in December 2015. This package includes a program to connect affected developed properties within the investigation area to town water, an investment in new contamination testing equipment and the deployment of additional community liaison staff to help address concerns of the local community.⁴¹

Queensland

3.33 As discussed in chapter 2, the Queensland Government took a different and less proactive approach to that of the NSW Government. Dr Jeannette Young, the Queensland Department of Health's Chief Health Officer and Deputy Director-General, explained that, compared to NSW, Queensland 'had a little more time to think things through' and determined that Defence's response to PFOS/PFOA contamination in Oakey was appropriate:

New South Wales, who I did talk with after they made their comments, decided that, because they were not quite sure what was happening, they would take a very precautionary approach, which is very understandable, and suggest that any exposure be limited. Whereas in Queensland we had had a little more time to think things through. They were told I think a bit later than we were and we were going through and felt that Defence had

38 NSW Government Gazette, No 92 of 30, October 2015, p. 3426.

39 Department of Defence, *Submission 87*, p. 17.

40 Department of Defence, *Submission 87*, p. 17.

41 NSW Government, 'NSW Government help for Williamstown residents', *Media release*, 23 December 2015, p. 1.

very appropriately responded to provide alternative drinking water supplies.⁴²

3.34 The Queensland Government advised the committee that it has established an interdepartmental committee to review and monitor Defence's response to PFOS/PFOA contamination in Oakey. The Queensland Government stressed the importance of a nationally consistent approach to PFOS/PFOA contamination which will 'support effective communication about impacts of contamination that is based on rigorous scientific assessment' as well as supporting 'clarity about roles and responsibilities, where there are cross-jurisdictional implications'.⁴³

3.35 The Queensland Government advised the committee that it has developed a Draft Policy on Management of Firefighting Foams.⁴⁴ However, the draft was criticised by firefighting organisations, which asserted that the Draft Policy takes an overly simplistic approach and does not properly consider the differences between PFOS/PFOA foams and other firefighting foams, nor does it consider other factors such as firefighting performance:

The C6 foam chemistry is the chemistry that is being used to comply with the US EPA stewardship program. So we would argue that the C6 chemistry has an acceptable environmental profile. Obviously, there still needs to be management practices put in place and containment of effluent from fires and that sort of thing, recognising that all foams have environmental impacts. But C6 chemistry is not the same as PFOS or PFOA chemistry and it should be treated separately. Unfortunately, the Queensland draft policy has taken a very simplistic approach of saying, 'All this stuff's bad. It's all the same as PFOS, therefore, you shouldn't use it.' We are saying that while that is a nice simplistic approach it does not take into consideration a lot of the other factors that need to be considered, as Matthew mentioned before, such as firefighting performance and so on. The fluorinated chemicals—the C6 chemicals—have significant firefighting performance advantages over some of the other technology. As a result, you can use less foam and you have less fire water effluent to manage after an incident. We would argue that in certain applications—we are really talking about major hazard facilities like petrochemical facilities where you potentially have very large severe fires—the use of a C6 fluorinated foam is probably a better choice, from a holistic environmental consideration, putting the fire out quickly and minimising the impact to the community on. That is on the proviso that your fire water effluent is contained after or during an event. We would argue that management practice should apply to all foams whether they are fluorinated or fluorine free. The key issue here is

42 Dr Jeannette Young, Queensland Department of Health's Chief Health Officer and Deputy Director-General, *Committee Hansard*, 9 March 2016, pp 35–36.

43 Queensland Government, *Submission 112*, p. 1.

44 Queensland Government, *Submission 112*, p. 2.

to contain the fire water effluent and then treat it appropriately after the incident.⁴⁵

3.36 Willson Consulting, technical specialists in firefighting foams, also asserted that the Queensland Government's draft is flawed, providing a detailed assessment of its shortcomings. Willson Consulting noted that 'there is no such thing as "environmentally friendly foams"' and that a range of factors, including firefighting safety and effectiveness, need to be considered when regulating their use.⁴⁶

Victoria

3.37 The Victorian Government demonstrated a proactive approach to PFOS/PFOA contamination. In 2012, the CFA Training College at Fiskville was the subject of an independent report into the historical use of chemicals for live firefighting from 1971 to 1999, known as the Joy Report. In December 2014, the Victorian Parliament's Environment, Natural Resources and Regional Development Committee (ENRRDC) commenced an inquiry into the CFA Training College at Fiskville, which is scheduled to report in May 2016.⁴⁷ An interim report was published in June 2015, which made three key recommendations:

RECOMMENDATION 1:

- (a) The Victorian Government oversee the thorough testing of soil and water, including tank water, on adjoining or relevant properties and the results assessed in light of the decisions made at Fiskville. It is important to ensure people living or working on those properties are not subject to ongoing unacceptable risks of exposure;
- (b) In addition, all information regarding exposure to PFOS, testing results and other decisions from authorities related to contamination should be made available to those property owners; and
- (c) Due to market sensitivity regarding contamination of food the Government considers the situation whereby local producers may not be able to sell their livestock or other produce.

RECOMMENDATION 2: That the Victorian Government assess the feasibility of providing voluntary testing for PFOS free of charge to firefighters – career and volunteer – current and former staff at Fiskville, other trainees, and people who live or have lived on neighbouring properties. The Government, through the department of Health and Human Services, is to report to the Committee on the feasibility of this process by September 2015.

45 Mr Brett Staines, Chair, Technical Advisory Committee for Special Hazard Fire Protection Systems, Fire Protection Association Australia, *Committee Hansard*, 7 April 2016, p. 5.

46 Mr Mike Willson, *Submission 119*, pp 1–11.

47 Parliament of Victoria, Environment, Natural Resources and Regional Development Committee, 'Report and Response', Inquiry into the CFA Training College at Fiskville, <http://www.parliament.vic.gov.au/enrrdc/article/2526>, accessed 22 April 2016.

RECOMMENDATION 3: That the Victorian Government ensures that any person who seeks records and documents relating to their involvement with Fiskville is able to do so from government agencies and departments without hindrance.⁴⁸

3.38 The Victorian Government's response to the ENRRDC was tabled in December 2015. The response agreed with the ENRRDC recommendations and emphasised a proactive approach to the situation, including:

- implementing a number of measures to remediate and manage the surface water and sediments in lake Fiskville and the dams linked to the lake, and stop further discharges of water from the Fiskville water management system;
- extensive testing of the family, livestock, water and soil on the neighbouring properties most at risk of PFOS exposure, with face-to-face briefings providing and explaining the results of the testing;
- Victorian Department of Health and Human Services officials visiting owners of the neighbouring property most at risk of PFOS exposure on a number of occasions to discuss their concerns about PFOS and health;
- providing face-to-face briefings with all neighbouring property owners and occupiers at which officials:
 - explained the soil and water testing already undertaken and offered to test the soil and water on their properties for PFOS;
 - explained the human health testing already undertaken, the testing regime already available and offered to arrange testing; and
 - if the test results disclose any elevated level PFOS levels, will offer to conduct PFOS tests of stock on those properties.
- expanding the CFA health check program to include testing for PFCs to the pathology testing;
- expanding the eligibility of the CFA health check program to people who live or have lived on neighbouring properties or nearby local properties (which can be access either through the 24-hour Health and welfare Hotline or an Independent hotline for vulnerable witnesses);
- representatives of the Chief Veterinary Officer participating in face-to-face briefings with owners and occupiers of the neighbouring properties to address concerns regarding animal health concerns and livestock saleability; and
- emphasising its commitment to transparency and free and unhindered provision of information, records, and documents to people regarding their involvement at Fiskville.⁴⁹

48 Parliament of Victoria, Environment, Natural Resources and Regional Development Committee, *Inquiry into the CFA Training College at Fiskville: Interim Report*, June 2015, p. xiii.

49 Victorian Government, *Submission 121*, Attachment 1.

Airservices Australia

3.39 Airservices Australia has been very proactive in its approach to PFOS/PFOA contamination. In 2008, despite an absence of regulatory screening or investigation levels in Australia for PFCs, Airservices Australia conducted a program of preliminary site assessment work to consider the impacts of historical firefighting foam use, focused on the detection of PFOS and PFOA in the soil and groundwater. A program of detailed site assessments was then initiated following a priority risk ranking based at ARFF sites at Brisbane, Sydney, Rockhampton and Perth Airports, with the results of the investigations provided to site owners and regulators. In 2009/2010 Airservices Australia wrote to Commonwealth, state and territory government environmental regulators advising them of its PFC concerns in relation to current and former ARFF facilities.⁵⁰ Dr Rob Weaver, Executive General Manager, Safety, Environment and Assurance, described Airservices Australia's approach:

There are two fundamental planks that have guided our approach. The first is the health and safety of our staff and the community and the second is sharing everything that we know with regulators and airports to ensure that they are aware of our actions and that we are taking on board the latest science on how to treat PFCs. When we made the decision to phase out firefighting foams containing PFCs, we also started to investigate the impacts from its historic use.⁵¹

3.40 Airservices Australia advised the committee that it is implementing a research and development program with industry to better understand the behaviour of PFCs in the environment, assist in establishing screening criteria, and assist in the development and trialling of treatments to remove PFCs from impacted materials. Airservices Australia noted that its recent trials of products such as MyCelx, MacCARE and RemBind have been 'extremely positive':

Airservices has in recent years undertaken trials of the RemBind™ product as an immobilising agent for PFCs in impacted soils. Initial laboratory trials of PFC impacted soil from ARFF sites were undertaken by an independent consultancy firm in co-operation with Ziltek, the manufacturer of RemBind™. These trials were highly successful, with immobilisation levels attained up to 99%. Airservices has subsequently used this technology in its operations, with over 700 cubic metres of PFC impacted soil from one site treated and sent to landfill for disposal, and similar uses elsewhere intended in the near future. Further investigations are underway in collaboration with the University of Queensland, to assess the application of RemBind™ as an in-situ treatment for PFC impacted soils.⁵²

3.41 Airservices Australia assured the committee that, based on all the evidence it has to date, it has not found any significant migration of PFCs away from its airport

50 Airservices Australia, *Submission 113*, pp 12–15.

51 Dr Rob Weaver, Executive General Manager, Safety, Environment and Assurance, Airservices Australia, *Committee Hansard*, 7 April 2016, p. 28.

52 Airservices Australia, *Submission 113*, p. 13.

firefighting grounds and does not believe that its use of firefighting foam has contaminated drinking water at any location.⁵³

Regulatory frameworks and coordination between Commonwealth and state governments

3.42 Environment advised the committee that, under the division of powers between the Australian Government and the states and territories under the Australian Constitution, the states and territories have primary responsibility for environmental protection such as air quality, noise, dour or general amenity. There are a number of intergovernmental agreements relating to environmental policy and regulation, including the 1997 Heads of Agreement on Commonwealth and State Roles and Responsibilities for the Environment. Environment noted that 'these intergovernmental agreements outline the broad approach to the different responsibilities of Commonwealth, State and Territory Governments and agencies in relation to environmental management'.⁵⁴

3.43 The committee received evidence from Commonwealth and state agencies highlighting shortcomings of the existing regulatory framework to address legacy contamination as well as identifying shortcomings in the coordination between agencies at different levels of government. The interim report of Professor Mark Taylor into the management of contamination at RAAF Base Williamtown highlighted the lack of clarity regarding to whom the Commonwealth is accountable for contamination caused by it on non-Commonwealth land. The report recommended that:

The NSW Government, as a matter priority, should engage with the Commonwealth Government to resolve the ability of states and territories to use their enforcement powers to address environmental contamination on Commonwealth land and the remediation of contamination caused by the Department of Defence (or other Commonwealth polluters) on non-Commonwealth owned land. In particular, the NSW Government should work with the Commonwealth Government to reassess the efficacy of any arrangements put in place with respect to regulating the Department of Defence pursuant to Attachment 3 of the 1997 *Heads of Agreement on Commonwealth and State roles and responsibilities for the Environment*.

It needs to be clear and transparent to whom the Department of Defence is accountable for contamination caused by it on non-Commonwealth land. This would have flow-on benefits for NSW. The Review notes that there

53 Dr Rob Weaver, Executive General Manager, Safety, Environment and Assurance, Airservices Australia, *Committee Hansard*, 7 April 2016, p. 28.

54 Department of the Environment, response to question on notice, 7 April 2016, (received 21 April 2016), p. 3.

are multiple military and airport sites across NSW (and Australia) that are likely to be similarly affected.⁵⁵

3.44 And that:

The NSW EPA, as a matter of priority, should seek legal advice at the highest level to resolve the seeming ambiguity in regard to its powers to (a) regulate and manage contaminated Commonwealth land; and (b) deal with contamination caused by the Department of Defence on non-Commonwealth land.

This issue is particularly important where it is clear contamination has or is likely to have adverse impacts on surrounding land under the jurisdiction of the NSW Government.⁵⁶

3.45 The EPBC Act is described as 'the Australian Government's central piece of environmental legislation' which 'provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places—defined in the EPBC Act as matters of national environmental significance'.⁵⁷ However, despite being the 'central piece of environmental legislation', it appears to have significant limitations in the context of firefighting foam contamination. Environment emphasised its limited power under the EPBC Act, noting that, even if it is made aware of contamination or significant environmental concerns, as in the case of Williamtown, its ability to act is restricted:

Whenever we get any intelligence or any piece of information that goes to the environment, the first step we take is make a consideration of whether we have got any lawful basis or legal ability to be able to act. It is very important for us as a regulator to be able to say we cannot step up beyond our powers. So, if we get some information going to our compliance area, the first thing we do...is make some inquiries and see if we have any legal power to be able to address that. When it goes to these legacy cases, that power is obviously limited.

When a matter has been referred to us, there is a process about environmental impact studies and a range of other things, and our assessment officers...will ask some questions to be able to see whether or not there are matters that we should be taking into consideration through that referral process, such as contamination. The limitation for us under the act is that, if it is not related to the action itself, we may not have jurisdiction to act. But our posture is to make our best endeavours to find

55 Professor Mark Taylor, *Stage One of Review of the NSW Environment Protection Authority's (EPA) Management of Contaminated Sites Interim Chronology of Williamtown RAAF Base Contamination: Interim Report*, 14 December 2015, pp 27–28.

56 Professor Mark Taylor, *Stage One of Review of the NSW Environment Protection Authority's (EPA) Management of Contaminated Sites Interim Chronology of Williamtown RAAF Base Contamination: Interim Report*, 14 December 2015, pp 27–28.

57 Department of the Environment, <http://www.environment.gov.au/epbc>, accessed 20 April 2016.

whether or not there is something that we can address within the legal powers that we have as a department.⁵⁸

3.46 Environment told the committee that, under Part 3 of the EPBC Act, the Commonwealth Environment Minister can only statutorily intervene in environmental matters and make approval decisions in relation to actions that are likely to significantly impact the following nationally protected matters:

- World Heritage properties;
- National Heritage places;
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed);
- nationally threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- Nuclear actions (including uranium mining);
- A water recourse, in relation to coal seam gas development and large coal mining development; and
- the whole of the environment, but only in those instances where the actions affect, or taken on, Commonwealth land, or are carried out by a Commonwealth agency.⁵⁹

3.47 Furthermore, Environment advised that approvals under the EPBC Act do not focus on impacts or outcomes but only on the action undertaken:

The way the act is worded, it talks about approving an action not an impact. You approve an action to be undertaken, so the action is the airport and the normal operation of the airport. The impacts are not what is approved; you approve the action.⁶⁰

...

It is not designed to operate on the basis of whether there is a contamination of a certain thing or because something that is a particular protected matter is at threat, and then the EPBC Act steps in. That is not how it operates. It only operates on the basis of actions and impacts. Because it is designed in that way, it is why, when it was introduced, the exemption provisions my

58 Mr Matt Cahill, First Assistant Secretary, Environmental Standards Division, Department of the Environment, *Committee Hansard*, 7 April 2016, pp 43–44.

59 Department of the Environment, response to question on notice, 7 April 2016, (received 21 April 2016), p. 3.

60 Mr Shane Gaddes, Assistant Secretary, Compliance and Enforcement Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 38.

colleagues talked about were in place. It is focused on actions and impacts rather than outcomes, if you like.⁶¹

3.48 Environment advised that it is the responsibility of the person proposing to take an action to 'self-assess' and consider whether their proposal is likely to have a significant impact on a nationally protected matter and requires referral for approval under the Part 7 of the EPBC Act.⁶² Therefore, under the EPBC Act, Defence is only required to seek an assessment or consideration from Environment if and when Defence decides that one is necessary:

If Defence want to do something, they have to satisfy themselves. They have to consider whether they are going to have a significant impact on the environment and, if they are, they need to seek an assessment, a consideration by the department. If they decide they are not having a significant impact on the environment, then they do not need to come to us.⁶³

3.49 The EPBC Act also contains a range of transitional provisions, including sections 43A and 43B which exempt certain actions from the assessment approval provisions. These sections apply to lawful continuations of land use that started before or actions that were legally authorised before the commencement of the act on 16 July 2000. Environment noted that 'there may be circumstances where activities resulting in PFOS and PFOA contamination would not be subject to the EPBC Act because the actions are covered by one of the above transitional provisions'. Environment advised that any enlargement, expansion, or intensification of an existing use is not a continuation of that use and is not covered by the exemptions.⁶⁴ However, this too relies on self-assessment, with landowners determining whether or not they are increasing or intensifying their actions from any grandfathered actions:

...the primary responsibility lies with the landowner to satisfy themselves they are not having a significant impact on the environment. If the landowners satisfy themselves that they are not having a significant impact—nor are they intensifying, increasing or substantively changing the nature of their operations where there is provision under the act for those things to have been grandfathered...then they would not refer.⁶⁵

3.50 Environment confirmed that it recently received a referral from Defence regarding an intensification of operations at RAAF Base Williamstown due to the Joint

61 Mr James Tregurtha, Assistant Secretary, Policy and Reform Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 41.

62 Department of the Environment, response to question on notice, 7 April 2016, (received 21 April 2016), p. 3.

63 Mr James Tregurtha, Assistant Secretary, Policy and Reform Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 37.

64 Department of the Environment, response to question on notice, 7 April 2016, (received 21 April 2016), p. 6.

65 Mr James Tregurtha, Assistant Secretary, Policy and Reform Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 42.

Strike Fighters, but advised that even when an assessment is referred, 'the referrer determines what gets referred to the department'⁶⁶ and any actions that are assessed must be linked to the referred action. Therefore, as the primary issues which were raised in that consideration were related to noise impacts and potential contamination of fuel dumping, Environment was unable to consider PFOS/PFOA contamination issues:

The thing we need to be careful about here is that the fact that someone is undertaking something in an action that may be significant is not a free pass for us to go in and resolve any legacy issues that exist on that site. So, under our statutory authority, we would still be limited, because the actions that need to be assessed must be linked to the referred action. There would need to be a direct link—and there may well be as you were pointing out—between the action that is referred and the larger action. That is the only caution I would put on that. So you cannot say that, if someone referred something on a particular site, we could go in and look at the entire site, as Mr Gaddes has pointed out. An example of that would be that you cannot use a mine extension proposal to require a whole bunch of conditions in relation to the existing mine that had already been operating for 20 years.⁶⁷

3.51 Environment assured the committee that 'whilst the onus is on the person taking an action to 'self-assess'...the department examines all allegations of non-compliance with the EPBC Act on a case-by-case basis to ensure that unapproved actions that have had, or are likely to result in, a significant impact on nationally protected matters receive an appropriate compliance response'.⁶⁸ However, in November 2013, the NSW EPA raised the issue of contamination with Environment but did not receive any response. Environment advised the committee that it assessed the circumstances and determined that the EPBC Act 'did not apply':

As we do with most issues or allegations or incidents like that, we go through and we look at the circumstances around that incident and whether or not the EPBC Act would apply given the circumstances. At that time, that was referred to the compliance officers within the department. The compliance officers spoke to the EPA, sought further information, had a look at the activities that had occurred at that site and deemed that there had not been a significant intensification of the activities and that they were activities which related to legacy activities at the site. Therefore, the act did not apply.⁶⁹

66 Mr James Tregurtha, Assistant Secretary, Policy and Reform Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 41.

67 Mr James Tregurtha, Assistant Secretary, Policy and Reform Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 44-45.

68 Department of the Environment, response to question on notice, 7 April 2016, (received 21 April 2016), p. 4.

69 Mr Shane Gaddes, Assistant Secretary, Compliance and Enforcement Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 42.

3.52 Yet Environment did not see fit to advise the NSW EPA of this determination. When asked by the committee, Environment confirmed that it did not write back advising the NSW EPA of its findings as 'there was not a substantive issue for [Environment] to address' and it did not have the resources to provide a response.⁷⁰

Committee view

Interpreting the science of PFOS/PFOA

3.53 The committee's first report made passing reference to the human and environmental health impacts of PFOS/PFOA contamination.⁷¹ In this report the committee has refrained from attempting to engage in a complex and technical debate, which is likely to continue unresolved for some time. However, the committee is able to draw one conclusion from the scientific evidence. The peer-reviewed studies drawn to the committee's attention demonstrate that PFOS and PFOA are persistent, toxic and transboundary organic pollutants that bio-accumulate through the food chain. That is why there is a consensus that PFOS/PFOA should not be used. These contaminants are very difficult to manage in the environment which is also the main reason authorities have struggled to develop effective remediation strategies for the contaminated ground water and mobile plumes at Williamstown and Oakey.

3.54 There is definitely no place for these chemicals at any Commonwealth, state or territory facility where firefighting foams are used. As such, the committee was surprised to learn that there is no Australian legislation that prescribes actions or standards specifically in respect of PFCs.⁷² The committee is of the view that, despite evidence that these foams are no longer in use, all PFOS and PFOA firefighting foams should be immediately removed from circulation and storage to avoid increasing existing legacy management issues and locations. To this end, the committee is of the view that legislation should be introduced in the Parliament banning PFOS/PFOA once and for all.

Recommendation 4

3.55 The committee recommends that the Government explicitly legislate for the immediate removal and safe disposal of PFOS and PFOA firefighting foams from circulation and storage at all Commonwealth, state and territory facilities in Australia.

3.56 The committee continued to receive evidence highlighting probable adverse health outcomes of exposure to PFOS/PFOA, including bibliographies, references to international case studies and the outcome of overseas litigation. The committee was at times perplexed by the volume of scientific literature on PFOS/PFOA and the conflicting interpretations arrived at by scientists and health professionals with

70 Mr Shane Gaddes, Assistant Secretary, Compliance and Enforcement Branch, Department of the Environment, *Committee Hansard*, 7 April 2016, p. 45.

71 Foreign Affairs, Defence and Trade References Committee, *Firefighting foam contamination Part A—RAAF Base Williamstown*, February 2016, pp 5–6.

72 Airservices Australia, *Submission 113*, p. 11.

considerable experience and expertise both in Australia and overseas. The committee accepts evidence provided by the National Industrial Chemicals Notification and Assessment Scheme, or NICNAS, and Professor Mueller from Queensland University, that risk is a function of the intrinsic properties of a chemical and the level of exposure and accumulation in the blood stream.⁷³ The committee agrees that debate around the human toxicological impact of PFOS/PFOA is unlikely to be resolved any time soon and for this reason is unable to formulate an overall conclusion around the science of these contaminants.

3.57 Throughout the inquiry Defence remained steadfast in arguing there is no consistent scientific data linking PFOS/PFOA with adverse human health effects, and reiterating that the health community is not united on the effects of these chemicals.⁷⁴ This became Defence's mantra at the committee's four public hearings, with senior officials maintaining that its position aligns with public statements by New South Wales, Queensland and Western Australian state health authorities and most recently by EnHealth. Yet this official position stands in contrast to evidence from expert witnesses critical of the Australian authorities for giving the appearance of downplaying the seriousness of the contamination so as to forestall accepting legal liability. This evidence made the committee aware of decades of scientific research and review by the Stockholm Convention technical committee, which has demonstrated a probable link between PFOS/PFOA and testicular and kidney cancer and a wide range of other serious human health impacts. The accumulation of peer-reviewed scientific studies from the 1970s shows a range of likely adverse human health effects from high level exposure to these contaminants.

3.58 Nonetheless, the lack of definitive scientific consensus regarding the effect of PFOS/PFOA on human health does not alter the fact that people living within and around the contamination zones in Williamstown and Oakey, some of whom have extremely high levels of PFOS/PFOA in their blood for reasons that are not clear, have had their lives and livelihoods turned upside down and sometimes ruined through no fault of their own. The committee understands that for many residents in Williamstown and Oakey it is exposure to risk and linking that exposure to existing health issues including a range of cancers that is the primary cause of concern.

3.59 As such, and as recommended in Chapter 2, the committee supports the provision of voluntary blood testing, which continues to be a major source of contention between Commonwealth and state authorities and residents affected by contamination. The committee believes that the official view taken by state health authorities and EnHealth, which underpinned Defence's official line on blood testing in Williamstown and Oakey, is out of kilter with the views of residents and

73 Dr Brian Richards, Director, National Industrial Chemicals Notification and Assessment Scheme, *Committee Hansard*, 7 April 2016, p. 26; and Professor Jochen Mueller, Professor of Environmental Toxicology, University of Queensland, *Committee Hansard*, 9 March 2016, p. 27.

74 Mr Steven Grzeskowiak, Deputy Secretary Estate and Infrastructure, Department of Defence, *Committee Hansard*, 7 April 2016, p. 20.

international experience where blood testing appears to be the norm for residents affected by PFOS groundwater contamination.⁷⁵ The committee is of the view that sufficient evidence exists for Commonwealth and state authorities to at least reconsider their position, not only for the residents of Williamstown and Oakey but also in relation to other likely contamination events at other sites around Australia.

Recommendation 5

3.60 The committee recommends that voluntary blood testing be made available to current and former workers at sites where firefighting foams containing PFOS/PFOA have been used, and current and former residents living in proximity to these sites who may be affected by contamination.

The response by the authorities

3.61 Putting to one side the inconclusive scientific evidence, the committee is left in no doubt the residents of Williamstown and Oakey were let down by the tardy and inconsistent response of Commonwealth and state authorities charged with managing legacy contamination of the environment. The committee accepts that contamination caused by firefighting foams is a legacy issue affecting hundreds of sites across Australia. The policy challenges of environmental contamination are complex and will require the boundaries of authority and responsibility between the Commonwealth, states and territories to be challenged and reconfigured in ways probably not seen before. A national policy response to legacy contamination and development of agreed national environmental regulations and guidelines on the use of firefighting foams are urgently required.

3.62 The committee notes the variation in response between the state governments, ranging from the proactive responses in New South Wales and Victoria, to the more reserved approach of Queensland. The committee is satisfied with the proactive approach taken by Air Services Australia to firefighting foam contamination at airports around Australia. It welcomes evidence that it is unlikely the use of firefighting foams at Australian airports has contaminated drinking water at any location. The committee congratulates Air Services Australia for implementing a range of early investigative and intervention practices, as well as its research and development program with industry to better understand the behaviour of PFCs in the environment, assist in establishing screening criteria, and assist in the development and trialling of treatments to remove PFCs from impacted materials.

3.63 However, the committee does not have the same level of confidence in Defence's handling of its estate and the environmental and human threats posed by firefighting foam contamination both on and off a number of bases. Defence's handling of legacy contamination, particularly its response to the situation at RAAF Base Williamstown, leaves a lot to be desired and has definitely compounded the anger, frustration and stress experienced by hundreds of affected residents and businesses. The loss of confidence in government authorities and the sense of betrayal experienced in Williamstown and Oakey is regrettable, all the more so because these

75 Mr Rory Ross, Senior Solicitor, Shine Lawyers, *Committee Hansard*, 9 March 2016, p. 18.

Defence facilities have historically provided an economic and social lifeline for many residents.

3.64 The committee welcomes measures recently initiated by Defence to identify a priority list of facilities around Australia to be tested for PFOS/PFOA contamination. The committee welcomes the sense of urgency around the timely completion of the human health and environmental risk assessments for Williamstown and Oakey conveyed by senior Defence officials. In undertaking a response to contamination of its estate and engaging with other affected communities, the committee encourages Defence to learn from the mistakes of Williamstown and Oakey and adopt a proactive stance in tackling this problem.

3.65 The committee encourages Defence to notify residents as early as possible, work cooperatively with relevant state agencies and engage residents and businesses in practical discussions about remediation, compensation, relocation and where appropriate acquisition of property which is no longer fit for purpose. Communities need to be reassured that Defence is 'open for business' when it comes to accepting liability and offering compensation on just terms.

3.66 The committee acknowledges that the domestic treaty making process for the ratification of the addition of PFOS as an Annex B restricted substance under the Stockholm Convention may be 'substantial'. However it is disappointed that, after more than half a decade, Environment advises that it is still working on releasing a draft consultation Regulatory Impact Statement for public consultation. The committee is unconvinced that this delay is justified and urges Environment to make the completion of the process and ratification of the Convention a priority.

Recommendation 6

3.67 The committee recommends that the Department of the Environment complete the domestic treaty making process for the ratification of the addition of PFOS as an Annex B restricted substance under the Stockholm Convention on Persistent Organic Pollutants before the end of 2016.

A national regulatory approach

3.68 Evidence received from Commonwealth and state agencies has put a spotlight on the shortcomings of the existing regulatory framework to address legacy contamination and the patchy coordination between agencies at different levels of government. The committee is concerned that Environment has not assumed the role of lead agency tackling this issue head-on, leaving state agencies to fill the regulatory void with unintended consequences. The committee fails to see how Environment can be so hamstrung in dealing with an emerging national environmental contamination issue by the key piece of national environmental protection legislation over which it has responsibility—the EPBC Act. Evidence from Environment that an issue as significant as legacy contamination by firefighting foams falls outside the scope of the EPBC Act, including significant base upgrades for the proposed Joint Strike Fighter acquisition, came as a real surprise to the committee and is an area of concern.

3.69 The complexity of the regulatory environment, the interaction of laws and regulations at state and federal levels and the operation of the EPBC Act have together

been detrimental to communities seeking answers and requiring government assistance. Nowhere is the level of regulatory confusion more clear than in the conflicting views of Defence and the NSW EPA about when to notify the Williamtown community of the contamination, which both agencies had known about for some years, and the subsequent unilateral action taken by the EPA out of frustration with Defence's inaction. Furthermore, the inconsistency in agency responses is clearly demonstrated by the contrast between the New South Wales EPA's intervention in Williamtown (a trigger for this inquiry) and the absence of any visible early response by the Queensland Government to the equally serious situation which was already unfolding in Oakey.

3.70 There is an urgent need for Government to undertake a review of the EPBC Act and, if necessary, provide a legislative basis for Environment to assume a national leadership role and intervene early should other legacy contamination events emerge on the scale of Williamtown or Oakey. The committee takes little comfort from the existence of an inter-departmental committee headed by Environment which Defence claimed was looking at the broader problem of PFOS/PFOA contamination. Residents of Williamtown and Oakey expect more than the creation of an interdepartmental committee.

Recommendation 7

3.71 The committee recommends that the Commonwealth Government review the *Environment Protection and Biodiversity Conservation Act 1999* and, if necessary, seek to have it amended to enable the Department of the Environment to assume a national leadership role and intervene early should other legacy contamination events emerge on the scale of Williamtown or Oakey, especially when contamination spreads from land controlled by Defence to non-Commonwealth land.

Chapter 4

Conclusion: moving forward

4.1 During Part (a) and Part (b) of this inquiry, the committee received submissions and heard evidence which focused on circumstances surrounding the contamination at RAAF Base Williamtown, Army Aviation Centre Oakey and issues around PFOS/PFOA contamination at other Commonwealth, state and territory sites in Australia. The committee concludes this inquiry with an air of uncertainty about what the future holds for the residents of Williamtown and Oakey, the scale of this national contamination issue and the response of authorities across different political jurisdictions which remains at best a work in progress.

4.2 The committee heard honest and at times emotional testimony from the residents of Williamtown and Oakey which highlighted the devastating impact of contamination on two communities which have little in common except for Defence's legacy contamination and feeling let down, ignored and abandoned by the authorities. The committee was moved by the stories people told about their encounters with a slow-moving contamination crisis, none more so than Mr Nathaniel Roberts, his wife, Stephanie, and four-day old daughter, Isla, who live in Oakey. Mr Roberts told the committee: 'My daughter is my whole world, and it breaks my heart to think that she may be hurt because I bought a house in Oakey'.¹

4.3 The committee was struck by the similarities in how people from different communities were affected physically, emotionally and economically once the contamination became public and in the weeks and months that followed. What is clear from the Williamtown and Oakey experience is that Defence's failure to notify residents sooner; the lack of transparency, accountability and consistency; and the delay in addressing community concerns fuelled a sense of crisis and fear among residents about an uncertain future. One expert witness who has worked with communities on contaminated land for 30 years told the committee: '...information is much more powerful than lack of information. If people are not told something, then they can often think the worse or be concerned about the worse. The more information the better'.² This view is consistent with on the ground observations by the committee in Williamtown and Oakey.

4.4 The committee concludes that scientific uncertainty around the human toxicological impact of PFOS/PFOA and legal uncertainty around environmental regulation when contamination spreads from land controlled by Defence to non-Commonwealth land should no longer be viewed by government as obstacles to action. Obtaining scientific and legal certainty is likely to remain beyond the government's reach for the indefinite future. It is not acceptable for Defence to hide behind uncertainty as an excuse for inaction. As the committee noted in its first

1 Mr Nathaniel Roberts, *Committee Hansard*, 9 March 2016, p. 17.

2 Dr Mariann Lloyd-Smith, Senior Advisor, National Toxics Network, *Committee Hansard*, 7 April 2016, p. 10.

report,³ Defence knew about the likely human health impacts of PFOS/PFOA back in 2003 when a key finding of an internal Defence report on environmental issues associated with the use of firefighting foams was that 'Both PFOS and PFOA have been implicated with a variety of cancers and toxic health effects in humans that have had long term exposure to products containing PFOS/PFOA'.⁴

4.5 The report's authors also warned that in addition to environmental harm, pollution incidents across Defence establishments have the potential to seriously damage Defence's reputation as an environmental manager and good corporate citizen. These prophetic words were not lost on the committee as it heard evidence from angry residents of Williamtown and Oakey who had lost confidence in Defence. Notwithstanding the evolving science, alarm bells should have been ringing in Defence more than a decade ago about the potential harmful effects of PFOS and PFOA to both the environment and humans. Defence must now accept responsibility for its inaction and engage proactively with communities on the subject of compensation, or risk damaging its already tarnished reputation and exposing the Commonwealth to unknown financial risk.

4.6 Defence's stubborn approach to the issue of compensation is highlighted by evidence from the Defence Special Counsel on 3 December 2015 that the department had not been advised on liability '...because I do not have evidence on which to base that assessment', and evidence on 7 April 2016 that the objective of informal discussions between Defence and some Williamtown residents about their concerns for the future '...is to put options to government for consideration as part of the decision they are going to make shortly'. While Defence argued that a door was open for Williamtown residents who may seek to recover costs from the department, the evidence received by the committee suggests otherwise. The committee also notes the less than satisfactory Government response on the issue of compensation for the commercial fishing industry in Williamtown as further evidence of policy inertia and failure to address the concerns of residents about ongoing financial hardship and an uncertain future for many businesses.

4.7 Should the Government continue with its 'head in the sand' approach to liability and compensation, it need look no further than existing impacts on Williamtown and Oakey to see what the future may bring as Defence engages with other communities affected by contamination. Defence's unsatisfactory responses to questions by the committee on the issue of responsibility, liability and compensation, and its failure to adopt a blanket precautionary approach, are the most disappointing outcomes of this inquiry. The committee is of the view that Defence should be working with affected communities to prevent expensive and lengthy class action which may drive those communities to breaking point.

3 Foreign Affairs, Defence and Trade References Committee, *Firefighting foam contamination Part A—RAAF Base Williamtown*, February 2016, p. 8.

4 Sonia Colville and Nicole McCarron, *Environmental Issues Associated with Defence Use of Aqueous Film Forming Foams (AFFF)*, Environment Stewardship, Environment, Heritage and Risk Branch, May 2003, p. 1.

4.8 While Defence needs to move forward in addressing its legacy contamination, the committee is not confident Defence is capable of managing contamination of its estate without a whole-of-government response and ongoing parliamentary oversight. The committee also remains concerned by the lack of response by state governments to emerging legacy contamination issues when authorities were aware of the contamination for years and, in some cases, decades but no action was taken.⁵

Recommendation 8

4.9 The committee recommends that it continue to monitor the Department of Defence's handling of contamination of its estate and surrounding communities caused by PFOS/PFOA, and report to the Senate on an interim basis as required.

Recommendation 9

4.10 The committee recommends that it continue to monitor the response of, coordination between and measures taken by Commonwealth, state and territory governments to legacy contamination caused by PFOS/PFOA, including the adequacy of environmental and human health standards and legislation.

Senator Alex Gallacher
Chair

5 See, for example, *Action and inaction, transparency and secrecy in the NT*, <http://blogs.crikey.com.au/northern/2016/04/19/action-and-inaction-transparency-and-secrecy-in-the-nt/>, accessed 19 April 2016.

Dissenting report of Coalition senators

1.1 Throughout the inquiry, the committee received evidence detailing the Williamstown and Oakey residents' uncertainty and fears regarding the spread and effects of PFOS/PFOA contamination. The effects of these chemicals on human health may remain to be seen, but the effect of prolonged uncertainty and fear is clear. It is therefore essential that authorities take a measured and evidence-based approach in their response to PFOS/PFOA contamination rather than focusing on alarmist possibilities and feeding residents' fears.

1.2 The evidence regarding the risks that PFOS and PFOA pose to the environment is undisputed; however, the effects of PFOS/PFOA contamination on human health are subject to ongoing scientific debate. This is reflected in the official enHealth Guidance Statements, which assert that 'there is currently no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects'¹ and the advice from the National Industrial Chemicals Notification and Assessment Scheme (NICNAS), which noted that the scientific literature on the effects of PFOA and PFOS in humans 'does not give clear, unambiguous results'.²

1.3 Hastening to action before the risks to human health are properly understood will cause more harm than good. Professor Jochen Mueller, a Professor of Environmental Toxicology at the University of Queensland, advised that individuals with an elevated reading of PFOS/PFOA are at much greater risk of ill-health from stress and fears regarding PFOS/PFOA than risk of experiencing adverse health outcomes as a result of exposure: 'I think the evidence that is out there...from all I know from the literature, I would not expect that this effects my health in any way. I think people being worried about it affects their health more'.³

1.4 Coalition senators remain unconvinced of the value of conducting blood testing for PFOS/PFOA. The NSW Chief Scientist and Engineer, Queensland Government, and the enHealth Guidance Statements recommend against blood testing. EnHealth stated that 'blood testing has no current value in informing clinical management':

There is currently no accepted clinical treatment to reduce levels of PFCs in the human body. Given the uncertainty that PFCs are directly linked to adverse health outcomes, blood tests cannot determine if the PFC levels in a person's blood will make them sick now or later in life.

Therefore, blood tests are not recommended to determine whether any medical condition is attributable to exposure to PFOS or PFOA and have no current value in informing clinical management, including diagnosis,

1 Department of Health, Environmental Health Standing Committee of the Australian Health Protection Principle Committee, *enHealth Guidance Statements on Perfluorinated Chemicals*, March 2016, p. 3.

2 National Industrial Chemicals Notification and Assessment Scheme, *Submission 47*, p. 2.

3 *Committee Hansard*, 9 March 2016, p. 25.

treatment or prognosis in terms of increased risk of particular conditions over time.⁴

Recommendation 1

1.5 Coalition senators recommend that the Commonwealth Government continue to follow the advice of enHealth in relation to blood testing for PFOS and PFOA.

1.6 Coalition senators are of the view that the majority report is unfairly critical of Defence's response to PFOS/PFOA contamination and does not properly acknowledge the considerable effort and resources being devoted by Defence to address this issue. The majority report also understates the complexity of the contamination at RAAF Williamtown and Army Aviation Centre Oakey and the difficulty of remediating these sites.

1.7 Defence is currently conducting large scale human health risk assessments which will provide a better understanding of the contamination from RAAF Base Williamtown and Army Aviation Centre Oakey. Defence has also undertaken a desktop review of its entire estate to determine where and how aqueous film forming foam (AFFF) was used and whether it is possible that the historical use may have affected soil, groundwater and surface water. Defence has identified a further 16 properties as category one sites which are known to likely to have used substantial quantities of PFOS/PFOA on site and will commence detailed environmental investigations at three 'category one' bases in early 2016: RAAF Base Pearce in WA, RAAF Base East Sale in Victoria and HMAS Albatross in NSW.⁵

1.8 Defence advised the committee that it is developing a national plan to manage known and potential PFOS/PFOA contamination across the Defence estate. The plan aims to 'investigate the extent of the contamination and the potential for human and environmental exposure' and to 'then identify appropriate interim and long term management strategies'. However, Defence noted that unacceptable levels of exposure to PFOS and PFOA in soil, groundwater and surface water have yet to be determined in Australia and that it would not be feasible to determine appropriate long term management strategies until relevant health and environmental assessment criteria have been developed.⁶

1.9 The Commonwealth Government has delivered a financial assistance package to support the commercial fishers and businesses affected by the decision of the NSW EPA, which will continue to be available until 30 June 2016, when the decision regarding the closure of the fisheries is due to be made. A further Business Hardship Payment of up to \$20,000 will be made available on 1 July 2016, and, if the NSW Government does not reopen the fisheries, businesses will be able to apply for a

4 Department of Health, Environmental Health Standing Committee of the Australian Health Protection Principle Committee, *enHealth Guidance Statements on Perfluorinated Chemicals*, March 2016, p. 4.

5 Department of Defence, *Supplementary Submission 87.1*, p. 5.

6 Department of Defence, *Supplementary Submission 87.1*, p. 9.

Business Transition Payment of up to \$25,000 to 'assist businesses to pursue alternative sources of income if they wish to do so'. The Commonwealth Government will also continue to provide an Income Recovery Subsidy to 'individuals who have experienced a loss of income' as a result of the closure of the fisheries, for a period of eight weeks after 30 June 2016.⁷

1.10 Coalition senators note the Government's undertaking in its response to Report Part A that consideration will be given to the issue of property acquisition once interim health reference values have been established and detailed environment investigations concluded. This is a sensible and prudent approach. Coalition senators also agree that it is appropriate for any compensation claims which are received by Defence to be considered on a case by case basis.

1.11 Coalition senators do not support recommendations 1, 3, and 5 of the majority report, pending the outcome of further scientific evidence.

Senator Chris Back
Deputy Chair

Senator David Fawcett

7 Australian Government, *Response to the Senate Foreign Affairs, Defence and Trade References Committee report: Inquiry into firefighting foam contamination Part A – RAAF Base Williamtown*, April 2016, p. 6.

Additional Comments from the Australian Greens

Background

1.1 Following a request from Williamstown residents, the Australian Greens initiated the inquiry into contamination at and around RAAF Base Williamstown. This inquiry was expanded into an examination of contamination of sites where firefighting foams have been used across the country, including at Australian Defence Force facilities. These Additional Comments complement the Additional Comments on the inquiry's Part (a) report into the Williamstown contamination.

1.2 Throughout the inquiry the Australian Greens have urged the Department of Defence and other government authorities to be thorough, transparent and proactive about their plans for remediation of the affected areas, health support for local residents and workers and financial support for local residents and businesses. As was the case in Williamstown, residents at Oakey in Queensland, around the Gold Coast Airport, at Darwin and at other sites have relied on self-organised community action groups to gather information about how the contamination may affect them.

1.3 The Australian Greens believe that the Liberal-National Government could have done much more to coordinate a national response to the crisis with a focus on community support and care. A theme of much of the evidence from members of the community has been a lack of leadership from the Commonwealth Government. The Department of Defence, while accepting responsibility for the contamination, has taken little responsibility for managing and responding to the crisis that many local residents and workers near contaminated sites are now living with on a daily basis.

1.4 The pressure and anguish many locals are feeling is compounded by the refusal of the Commonwealth Government to provide health tests, compensate for lost income and arrange property buy ups where necessary. The Department of Defence's response to the recommendations from the inquiry's Part (a) report into the Williamstown contamination has been disappointing.

Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) contamination

1.5 The Australian Greens agree with the committee, the National Toxics Network, the Fire Protection Association Australia and other expert witnesses that the Commonwealth government should ratify PFOS as a persistent organic pollutant under the Stockholm Convention.

1.6 The Australian Greens are very concerned about public statements regarding the health effects of PFOS and PFOA. The New South Wales Department of Health has advised the local community that 'Whether PFOS or PFOA causes adverse health effects in humans is currently unknown.'¹ Similar statements have been made in the

1 "PFOS and PFOA – Williamstown RAAF Site Contamination", Department of Health, October 2015, accessed: <http://www.health.nsw.gov.au/factsheets/Pages/RAAF-site-contamination.aspx>

in-house Department of Defence magazine.² These statements are misleading and represent either a misunderstanding or ignorance of the international literature and expert advice provided on these chemicals.

1.7 The industry has already moved to stop using these chemicals. PFOS has not been sold in Australia for over a decade, but there is no legislation to prevent continued use of old stock. The European Union (EU) has banned the marketing and use of PFOS since 2008 and its use in 28 countries in 2011 due to its persistent, toxic properties.

1.8 The University of Queensland was commissioned by Airservices Australia to examine PFC levels. They found that the US population has around 15 parts per million PFCs in their bloodstream and Australians have around 30 parts per million on average. Firefighters have roughly 60 parts per million and some factory workers have around 800 parts per million. National Toxics Network senior advisor, Dr Mariann Lloyd-Smith, gave evidence that the dangers of perfluorinated compounds (PFCs), including PFOS and PFOA have been established since the 1970s. The Australian Greens are particularly concerned that the Department of Defence is not providing their own workers with adequate, accurate information and support, and is not consulting current and former Defence personnel and other affected workers as key stakeholders in this issue.

Contamination recommendations

1.9 The committee recommends that the 'Government explicitly legislate for the immediate removal and safe disposal of PFOS and PFOA firefighting foams from circulation and storage at all Commonwealth, state and territory facilities in Australia' (Recommendation 4). The Australian Greens agree with the committee and make the following recommendations.

Recommendation 1

1.10 The Australian Greens recommend that the Department of the Environment undertake an immediate recall of existing stocks of PFOS and PFOA based firefighting foams.

Recommendation 2

1.11 The Australian Greens recommend that the Department of the Environment conduct an urgent review of the chemical foams that have replaced PFOS and PFOA and establish an inventory of all PFC based foams.

Recommendation 3

1.12 The Australian Greens recommend that residents and workers who have been exposed to PFOS be provided with adequate information and regular blood tests.

2 "Blood testing, a waste of money?" RAAF Advocate, November 2015.

Recommendation 4

1.13 The Australian Greens recommend that urgent regulatory action be taken to ensure people are protected from ongoing exposures to perfluorinated compounds in consumer products, in food and in drinking water.

Recommendation 5

1.14 The Australian Greens recommend that the Commonwealth Government engage with key stakeholders to develop a holistic policy regarding the use and implementation of replacement foams. Replacement foams should be assessed based on their performance and reliability, their potential impacts upon workers and other users, and their potential environmental and toxicological impacts.

Stockholm Convention

1.15 Australia ratified the Stockholm Convention on Persistent Organic Pollutants in 2004 but refrained from ratifying additions to appendices of 2009, which includes matters relating to PFOS, until a further assessment was made. This process has been very slow and it was only this year that public consultation commenced.

1.16 The United Nation's Persistent Organic Pollutants Review Committee's (UN POPs Review Committee) Risk Profile of PFOS, published in 2006, emphasised the inherent properties of PFOS as a highly persistent chemical with reproductive, transgenerational toxicity. The UN POPs Review Committee described the immunotoxicity of PFOS in humans as serious and warranting international action.

1.17 At the October 2015 meeting of the UN POPs Review Committee, committee members concluded that PFOA met all criteria for further evaluation as a POP. The UN POPs Review Committee concluded that the probable adverse effects in humans include increased risk of testicular and kidney cancer, thyroid dysfunction, and many others. Children are especially likely to be affected. It is not known exactly what concentration of these chemicals will produce specific effects, but direct causation is not a responsible benchmark for government action.

Recommendation 6

1.18 The Australian Greens recommend that the Commonwealth Government fast-track the inclusion of PFOS and PFOA in the list of pollutants that Australia is committed under international law to prohibit, and for which it is required to have a strategy for remediation for past use.

Time for remediation

1.19 Thorough investigation and remediation of environmental contamination is long overdue. There has been some work in this area. Airservices Australia has been doing research and developing remediation projects. Research has shown that the use of RemBind to bind chemicals in the soil can work. It locks the chemicals into an inert state so they do not readily move into water or other through soil.

1.20 PFOS may be present in sewage, which means that after treatment the effluent could still be contaminated. How to manage this issue has yet to be determined and more funding is needed to expand remediation research.

1.21 Airservices Australia is negotiating with the New South Wales Environment Protection Authority to allow remediated soil to go to landfill.

Recommendation 7

1.22 The Australian Greens recommend that regulatory agencies ensure that contamination sites are cleaned up.

Recommendation 8

1.23 The Australian Greens recommend that the Commonwealth Government fund research and development to test different remediation systems.

Recommendation 9

1.24 The Australian Greens recommend that, in the absence of national Australian standards, the United States Environmental Protection Agency levels be adopted for drinking water and soil contamination.

Impacted sites

1.25 While the Department of the Environment can investigate impacted sites, the grandfathering clause of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) would probably apply. This means any practice that was occurring at the time the EPBC Act came into force in 2000 could be deemed to be exempt from further approval. As the majority of the impacted airports and defence bases were established before the EPBC Act came into force, the EPBC Act would be used by the authorities to justify nil or minimal action in response to contamination linked to firefighting foams.

Gold Coast Airport

1.26 There have been reports of PFOS and PFOA contamination in Gold Coast Airport runoff and groundwater that enters Cobaki Broadwater, an environmental heritage area. With reference to the Major Development Plan of Gold Coast Airport, the Department of Infrastructure and Regional Development has acknowledged local PFOS and PFOA contamination. Despite the fact that the Department of the Environment also acknowledges the contamination the next step is still unclear.

1.27 Interim guidelines were developed with Airservices. However, Airservices commented on 'the absence of nationally agreed trigger standards and remediation process. We will need to consider these when they will be available – as to what actions will be required'. With regard to Gold Coast Airport, the advice concerning contamination was conveyed to the Minister for the Environment. It was then up to them to consider 'if they had identified specific conditions that they felt should be applied'.

Great Barrier Reef

1.28 In response to a question about PFOS and PFOA contamination, the Department of the Environment stated: 'any potential contamination of the reef in relation to PFOS has not been brought to our attention as a matter for investigation'. This is despite previous evidence that toxic firefighting foam from Townsville is likely to have run off into the Reef.

Darwin

1.29 A Sydney Morning Herald report, published in 2008, suggested that contamination was initially detected at Darwin Airport in 2003. After a community group in Darwin agitated for action, it was reported that the Department of Defence would investigate the contamination at RAAF Base Tindal and RAAF Base Darwin. Journalists have noted that there is no publically available evidence of any Department of Defence investigations at these sites and the Northern Territory Environment Protection Authority has refused to provide the results of tests conducted at Rapid Creek and Ludmilla Creek in February 2016.

1.30 Speaking to Darwin reporters, the Assistant Defence Minister, the Hon Michael McCormack MP, told reporters in April 2016 that there was 'no link whatsoever' between PFOS and PFOA and adverse human health effects. This is in direct contradiction to the evidence provided to this committee by scientific and toxicology experts and to advice from the International Agency for Research on Cancer.

Oakey

1.31 Many of the issues associated with a lack of government leadership and support appear to be reflected for residents living near the base at Oakey. Advice has been provided to the community about drinking bore water but there has not been adequate advice or support beyond that about safe use of water for other purposes. Many members of the community have expressed similar concerns and anxieties to those who have been affected by the contamination in Williamstown.

1.32 The Australian Greens note that the draft policy for the provision of firefighting foams developed by the Queensland Government has been criticised by stakeholders as being inadequate and not 'holistic' enough.

Recommendation 10

1.33 The Australian Greens recommend that fair and equitable compensation processes for affected communities be initiated.

Recommendation 11

1.34 The Australian Greens recommend that the Department of Defence or Airservices Australia, depending on who has jurisdiction, complete a risk assessment of each of the impacted airports (including the provision of information regarding testing, containment and forward action plans) as a matter of priority.

Recommendation 12

1.35 The Australian Greens recommend that the risk assessment of each impacted airport be made available publicly to each of the airport owners/managers as soon as possible so that airport workers, the local community and other stakeholders are fully aware of the health and environmental issues.

Recommendation 13

1.36 The Australian Greens recommend that the Department of Defence and Airservices comply with their environmental obligations and ensure that they take primary responsibility and leadership in managing and remediating any contamination that has occurred as a result of operations on their sites (past and present) throughout Australia.

Recommendation 14

1.37 The Australian Greens recommend that the Commonwealth Government finalise and release its policy framework and interim standards on PFOS and PFOA management as soon as possible in order to end the regulatory uncertainty and allow for environmental and health concerns to be resolved.

Extent of contamination

1.38 Considering the same chemicals may have been used by professional and volunteer fire authorities throughout Australia, contamination problems may not be restricted to airports or Defence bases but could extend at least to fire stations or other sites where the chemicals were used repeatedly for training. This means that fire fighters repeatedly involved in operations or training where the chemicals were used could suffer high levels of contamination.

Recommendation 15

1.39 The Australian Greens recommend that this inquiry undertake further work to obtain as accurate a picture as possible of the potential scale and extent of the contamination and any problems the contamination may have caused, across all sectors and activities where the chemicals were (or still are) in use, in Australia.

Senator Lee Rhiannon

Appendix 1

Submissions

- 1 Mr Desmond Maslen
- 2 Mr Daniel Perrin
- 3 Ms Roslyn Perrin
- 4 Mrs Janice Robinson
- 5 Mrs Marion Cox
- 6 Professor Matti Lang
- 7 Mrs Deborah Sketchley
- 8 Mr Jason Hewitt and Ms Karen Peak
- 9 Mr E Serhan
- 10 Newcastle Airport Business Park
- 11 Hunter Water Corporation
- 12 Mr John Luke and Ms Sue Luke
- 13 Fullerton Cove Residents Action Group
- 14 Mr Peter Jones
- 15 Mr Chris Hyde
- 16 The O'Connell Family
- 17 Name Withheld
- 18 Mr Phillip Goodwin
- 19 Mrs Christine Sykes
- 20 Ms Julie Banks and Mr Graham Banks
- 21 Ms Trish McLuckie and Mr Martin Vitiello
- 22 Ms Kristy Banks
- 23 Ms Pauline Eltoft

- 24 Ms Helen Bawden
- 25 Ms Yvonne Parslow and Mr Craig Wilkin
- 26 Port Stephens Council
- 26.1 Supplementary to submission 26
- 27 Commercial Fishermen's Co-operative Ltd
- 28 Professional Fishermen's Association Inc
- 28. Supplementary to submission 28
- 29 National Toxics Network
- 30 Wild Caught Fishers Coalition
- 31 Port Stephens Greens
- 32 Ms Kate Washington MP, Member for Port Stephens
- 33 Mr Robert Roseworne
- 34 Mr Colin Trinder
- 35 NSW Farmers' Association
- 36 Williamtown and Surrounds Resident's Action Group
- 37 Miss Chantel Walker and Mr John Hewitt
- 37.1 Supplementary to submission 37
- 37.2 Supplementary to submission 37
- 37.3 Supplementary to submission 37
- 38 Mr Kevin Radnidge
- 39 Mr Phillip Radnidge
- 40 Mr Stephen Wilks
- 41 Mr David Woodward
- 42 Mr William Madge
- 43 Mr David Blanch
- 44 Confidential

-
- 45 Mr John and Mrs Beverley Hewitt
- 46 Mr Fred Haskins
- 47 National Industrial Chemicals Notification and Assessment Scheme
- 48 Mr & Mrs Robert & Suzane Hamilton
- 49 Name Withheld
- 50 Mr Michael Tarrent
- 51 Mr and Mrs Geoff Hyde
- 52 Name Withheld
- 53 Name Withheld
- 54 Mr Peter Gillies and Joanne Robinson
- 55 Mr Matt and Marie Killick
- 56 Mrs Julie Woodward
- 57 Name Withheld
- 58 Warrigal East Coast Charters
- 59 Jennifer Spencer and Chris Weise
- 60 Mr Stanley and Ms Marlene Hannaford
- 61 Mr Mark Sheldon
- 62 Mr Braiden Micallef
- 63 Ms Kim-leeanne King
- 64 Mr Robert O'Brien
- 65 Ms Lillian Gibson
- 66 Mr Mathew Hollis
- 68 Mr John Verdich
- 69 Mr Troy Clarke
- 70 Ms Susan Dodt
- 71 Bernie and Alma Haaijer

- 71.1 Supplementary to submission 71
- 72 Jeff and Jenny Vietheer
- 73 Name Withheld
- 74 Veronica and Rodney Watson
- 74.1 Supplementary to submission 74
- 75 Dr Michelle Chan
- 76 Name Withheld
- 77 Mr Ian and Jodie Plumridge
- 78 Ms Fay Henry
- 79 Mr Arthur and Ms Elva Hiscock
- 80 Mark and Kerry Develyn
- 81 Ms Coral Kelly
- 81.1 Supplementary to submission 81
- 82 Name Withheld
- 83 Name Withheld
- 84 Mr Brad Hudson
- 85 Mr Robert Knauth
- 86 Dianne Priddle and David Jefferis
- 87 Department of Defence
- 87.1 Supplementary to submission 87
- 88 Shine Lawyers
- 88.1 Supplementary to submission 88
- 89 Mr John Donahoo
- 89.1 Supplementary to submission 89
- 90 Mr Gary Watson
- 91 Ms Sonya Street

-
- 92 Kelly and Jon-Antoni Turnbull
- 93 Mr Daryal Tunnah
- 94 Mr Peter Sexton
- 95 Mrs Samantha Kelly
- 96 Mr Warren Munro
- 97 Ms Shirlee Buckley
- 98 Ms Lucinda Hornby
- 99 Mrs Yvette Davidson
- 100 Mr Robert and Mrs Kathryn Cram
- 101 Mr Andre Hemmerle
- 102 Mr Eric Donaldson
- 103 Ms Edwina Schmidt
- 104 Ms Jean Armstrong
- 105 Ms Robyn Wilkins
- 106 Ms Julianne Curry
- 107 Name Withheld
- 108 NSW Department of Primary Industries
- 109 Confidential
- 110 Name Withheld
- 111 Department of Infrastructure and Regional Development
- 112 Queensland Government
- 113 Airservices Australia
- 114 Department of the Environment
- 115 Toowoomba Regional Council
- 116 Fire Protection Association Australia
- 117 BioCentral Laboratories

- 118 Mr Bill Woolrich
- 119 Mr Mike Wilson
- 120 Australian Airports Association
- 121 Victorian Government
- 122 3M
- 123 Ron and Jenny Hess
- 124 Oakey Beef Exports Pty. Ltd.
- 125 Mr George Bury
- 126 Mr Keith Campbell

Appendix 2

Tabled documents, answers to questions on notice and additional information

Tabled documents

1. Department of Defence, opening statement by Mr Steve Grzeskowiak, tabled at public hearing, 3 December 2015
2. Professor Mary O'Kane, Williamtown Contamination Expert Panel–Terms of Reference, tabled at public hearing, 3 December 2015
3. Professor Mary O'Kane, Williamtown Contamination Expert Panel–Meeting Minutes 1-11, tabled at public hearing 3 December 2015
4. NSW Department of Primary Industries, situation report–Williamtown contamination, tabled at public hearing, 22 December 2015
5. Shine Lawyers - 'Preliminary bibliography of papers implicating exposure to PFCs with sundry adverse health outcomes in humans' – tabled at public hearing 9 March 2016

Answers to questions on notice

1. Professor Mary O'Kane - response to comments and answers to question on notice from public hearing held on 3 December 2015 (received 17 December 2015)
2. Department of Defence - response to comments and answers to question on notice from public hearing held on 3 December 2015 (received 21 December 2015)
3. Department of Environment - response to comments and answers to question on notice from public hearing held on 22 December 2015 (received 18 January 2016)
4. Hunter Water - response to comments and answers to question on notice from public hearing held on 22 December 2015 (received 18 January 2016)
5. Department of Defence - response to comments and answers to question on notice from public hearing held on 22 December 2015 (received 19 January 2016)
6. Hunter Water–updated - response to comments and answers to question on notice from public hearing held on 22 December 2015 (received 21 January 2016)
7. NSW Environment Protection Authority - response to comments and answers to question on notice from public hearing held on 22 December 2015 (received 25 January 2016)

8. Queensland government - response to questions on notice, public hearing 9 March 2016 (received 31 March 2016)
9. Professor Mary O'Kane - additional responses to questions on notice, public hearing 3 December 2015 (received 20 April 2016)
10. Department of Infrastructure and Regional Development - response to comments and answers to questions on notice, public hearing 7 April 2016 (received 21 April 2016)
11. Department of the Environment part 1 - response to comments and answers to questions on notice, public hearing 7 April 2016 (received 21 April 2016)
12. Department of the Environment part 2 - response to comments and answers to questions on notice, public hearing 7 April 2016 (received 2 May 2016)
13. Department of Defence, responses to questions on notice, public hearing 9 March 2016 (received 2 May 2016)

Additional information

1. Letter of correction of evidence at public hearing held 3 December 2015, received from Department of Defence, (received 15 December 2015)
2. Form letters – received from 20 Oakey QLD residents (received from 15 February 2016)

Appendix 3

Public hearings and witnesses

Thursday 3 December 2015

Department of Defence

Mr Steve Grzeskowiak, Deputy Secretary, Estate and Infrastructure

Ms Alison Clifton, Assistant Secretary, Environment and Engineering

Dr Ian Gardner, Principal Medical Adviser (Department of Veterans' Affairs)

Mr Michael Lysewycz, Defence Special Counsel

Brigadier Noel Beutel, Director General, Capital Facilities and Infrastructure

NSW Chief Scientist and Engineer

Professor Mary O'Kane, Chair, Williamstown Contamination Expert Panel

Shine Lawyers

Mr Peter Shannon, Partner

Mr Rory Ross, Senior Solicitor

Tuesday 22 December 2015

Ms Kate Washington, Member for Port Stephens

Hunter Water Corporation

Dr Darren Cleary, Chief Operation Officer

Professional Fishermen's Association Inc

Ms Patricia Beatty, President

Commercial Fishermen's Co-operative Ltd

Mr Robert Gauta, General Manager

Wild Caught Fishers Coalition

Mr Kevin Radnidge, President

**Global Centre for Environment Remediation, University of Newcastle,
Cooperative Research Centre for Contamination Assessment and Remediation of
the Environment (CRC CARE)**

Professor Ravi Naidu, Managing Director

Professor Megharaj Mallavarapu, Professor of Environmental Biotechnology

The Tom Farrell Institute for the Environment, University of Newcastle

Dr Steve Lucas, Research Project Manager

Williamstown and Surrounds Residents Action Group

Mr Cain Gorfine, President

Ms Rhianna Gorfine, Convenor

Fullerton Cove Residents Action Group

Mr Lindsay Clout, President

Mr Justin Hamilton, Public Officer

NSW Environment Protection Authority

Mr Barry Buffier AM, Chair and Chief Executive

Mr Craig Lamberton, Director, Hazardous Incidents and Environmental Health

Mr Adam Gilligan, Director Hunter Region

NSW Department of Primary Industries

Mr Ian Lyall, Manager, Aquaculture

Mr John Paul Williams, Region Hydrogeologist

NSW Department of Premier and Cabinet

Ms Jodie Calvert, Assistant Region Coordinator

Department of Defence

Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure

Ms Alison Clifton, Assistant Secretary, Environment and Engineering

Mr Michael Lysewycz, Defence Special Counsel

Brigadier Noel Beutel, Director General, Capital Facilities and Infrastructure

Mr Mathew Klein, Senior Medical Advisor, Occupational and Environmental
Medicine

Community speakers

Mr John Donahoo, private capacity

Ms Suzane Hamilton, private capacity

Mrs Lucinda Hornby, private capacity

Mr Des Maslen, private capacity

Mr Leonard O'Connell, private capacity

Mrs Deborah Sketchley, private capacity

Mrs Kim Smith, private capacity

Miss Chantel Walker, private capacity

Wednesday, 9 March 2016**Toowoomba Regional Council**

Mr Kevin Flanagan, General Manager, Water and Waste Services

Mr John Mills, Manager Water Operations

Dr Eric Donaldson, Private capacity**Shine Lawyers**

Mr Peter Shannon, Partner

Mr Rory Ross, Senior Solicitor

National Research Centre for Environment Toxicology (ENTOX)

Professor Jochen Mueller, Group Leader

Queensland Government

Mr Jim Reeves, Director-General, Department of Environment and Heritage Protection

Mr Andrew Conner, Executive Director, Department of Environment and Heritage Protection

Mr Adrian Jeffreys, Executive Director, Department of Premier and Cabinet

Dr Jeanette Young PSM, Chief Health Officer, Queensland Health

Mr Elton Miller, Executive Director, Department of Agriculture and Fisheries

Mr Paul Sanders, Regional Manager, Water Services, Department of Natural Resources and Mines

Department of Defence

Mr Steve Grzeskowiak, Deputy Secretary, Estate and Infrastructure

Ms Alison Clifton, Assistant Secretary, Environment and Engineering

Mr Michael Lysewycz, Defence Special Counsel, Defence Legal

Dr Ian Gardner, Principal Medical Adviser, department of Veterans' Affairs

Thursday, 7 April 2016

Fire Protection Association Australia

Mr Matthew Wright, Chief technical Officer/Deputy CEO

Mr Brett Staines, Chair, Technical Advisory Committee

National Toxics Network

Dr Mariann Lloyd-Smith, Senior Adviser

Department of Defence

Mr Steve Grzeskowiak, Deputy Secretary, Estate and Infrastructure

Ms Alison Clifton, Assistant Secretary, Environment and Engineering

Mr Michael Lysewycz, Defence Special Counsel, Defence Legal

Mr Matthew Klein, Senior Medical Advisor Occupational and Environmental Medicine

Dr Ian Gardner, Principal Medical Adviser, Department of Veterans' Affairs

National Industrial Chemicals Notification and Assessment Scheme

Dr Brian Richards, Director

Dr Kerry Nugent, Departmental Officer

Airservices Australia

Mr Alec Wagstaff, Executive General Manager, Corporate Affairs

Dr Rob Weaver, Executive General Manager, Safety, Environment and Assurance

Mr Glenn Wood, Chief Fire Officer, Aviation Rescue Fire Fighting

Department of the Environment

Mr Dean Knudson, Deputy Secretary, Environment Protection

Mr Matt Cahill, First Assistant Secretary, Environment Standards Division

Mr Andrew McNee, Assistant Secretary, Chemicals and Waste Branch

Mr James Tregurtha, Assistant Secretary, Policy and Reform Branch

Mr Shane Gaddes, Assistant Secretary, Compliance and Enforcement Branch

Mr Mark Taylor, Assistant Secretary, Wetlands Policy and Northern Waste Use Branch

Dr Sara Broomhall, Director, Chemicals Management and Standards Section, Chemicals and Waste Branch

Mr Chris Videroni, Director Environment Health – Strategic Policy, Policy and Reform Branch

Department of Infrastructure and Regional Development

Ms Pip Spence, Executive Director, Aviation and Airports Division

Ms Robyn Fleming, Executive Director, Local Government and Territories Division

Mr Sam Lucas, Acting General Manager, Local Government, Mainland Territories and Regional Development Australia

Ms Leonie Horrocks, General Manager, Airports

Appendix 4

Part A - Recommendations

Recommendation 1

6.14 The committee recommends that Defence immediately review its provision of water and replacement of water infrastructure to affected residents to ensure it is sufficient to meet their needs.

Recommendation 2

6.19 The committee recommends that the Commonwealth Government, with the advice of the NSW Department of Primary Industries, develop an initial compensation package for the commercial fishermen affected by the closures of Fullerton Cove and Tilligerry Creek.

Recommendation 3

6.23 The committee recommend that Defence examine providing additional mental health and counselling support services to those affected by contamination at RAAF Base Williamtown.

Recommendation 4

6.26 The committee recommends that Defence and the NSW Government examine establishing a joint taskforce to coordinate the response of government agencies to the contamination from RAAF Base Williamtown.

Recommendation 5

6.32 The committee recommends the Commonwealth Government commit to voluntarily acquire property and land which is no longer fit for purpose due to PFOS/PFOA contamination from RAAF Base Williamtown.

Recommendation 6

6.35 The committee recommends that if PFOS/PFOA contamination from RAAF Base Williamtown causes permanent or long-term fishing closures, the Commonwealth Government should:

- commit to compensate and purchase the relevant rights of fisherman affected; and
- establish an industry transition program for affected commercial fishermen to assist them relocate or transfer to other industries.

Recommendation 7

6.41 The committee recommends that Defence arrange and fund a program of blood tests for residents in the investigation area on an annual basis.

Recommendation 8

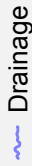
6.43 The committee recommends that Defence release a policy statement to clarify its environmental obligations and responsibilities for contamination which

spreads to non-Commonwealth land. In particular, it should clarify the capacity of State and Territory environment regulation to apply to its activities.

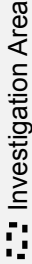
Appendix 5
Oakey PFOA and PFOS Detection Area and Investigation
Area Maps

Datum: GDA 1994, Projection: MGA Zone 56

PFOA Concentrations (µg/L)



Limit of Reporting – 0.4



Management Area

Indicates that limited data has

Disclaimers

LOR = Laboratory Limit of Reporting. Note: This figure has been compiled to provide a visual representation of PFOA concentrations in sampled bores, and does not represent the full nature and extent of bore water in the area, nor does it represent inferred aquifer conditions.

Bore water has been sampled directly from the bores represented on this figure at the point of extraction (i.e. at the ground surface or as close to the extraction point as possible). Details of bore construction is not available for all bores sampled, however those bore where construction information is available are not all screened within the same portion of the aquifer (i.e. the water sampled is not all from the same depth below ground) and caution should be taken in extrapolating PFOA concentrations between data points. The shading provided on this figure represents the area over which PFOA has been detected at various concentration intervals (refer to legend above). This figure is not intended to be used for the purpose of understanding the full extent of bore water and/or aquifer impacts, but provides an indication of potential exposure point concentrations. Caution should be used when using this figure for any other than for preliminary indicative purposes.

Datum: GDA 1994, Projection: MGA Zone 56

PFOS Concentrations (µg/L)

- Drainage

Limit of Reporting – 0.2

- Investigation Area

AACO Base Boundary

area

PFOS concentration ranges displayed on this figure are based on the highest PFOS detection reported for any given location (i.e. from one or more sampling events), which includes data from Parsons Brinckerhoff (2012-2013) and AECOM (2013-2015) groundwater investigations.

LOR = Laboratory Limit of Reporting Note: This figure has been compiled to provide a visual representation of PFOS concentrations in sampled bores, and does not represent the full nature and extent of bore water impacts in the area, nor does it represent inferred aquifer conditions.

Bore water has been sampled directly from the bores represented on this figure at the point of extraction (i.e. at the ground surface or as close to the extraction point as possible). Details of bore construction is not available for all bores sampled, however those bore where construction information is available are not all screened within the same portion of the aquifer (i.e. the water sampled is not all from the same depth below ground) and caution should be taken in extrapolating PFOS concentrations between data points. The shading provided on this figure represents the area over which PFOS has been detected at various concentration intervals (refer to legend above). This figure is not intended to be used for the purpose of understanding the full extent of bore water and/or aquifer impacts, but provides an indication of potential exposure point concentrations. Caution should be used when using this figure for any other than for preliminary indicative purposes.



Appendix 6

Government Response to Part A



Australian Government

**Australian Government response to the
Senate Foreign Affairs, Defence and Trade
References Committee report:**

**Inquiry into firefighting foam contamination
Part A - RAAF Base Williamtown**

April 2016

Introduction

On 4 February 2016, the Senate Foreign Affairs, Defence and Trade References Committee tabled its report *"Inquiry into firefighting foam contamination Part A - RAAF Base Williamtown"*. The report lists eight recommendations:

- **Recommendation 1**

The committee recommends that Defence immediately review its provision of water and replacement of water infrastructure to affected residents to ensure it is sufficient to meet their needs.

- **Recommendation 2**

The committee recommends that the Commonwealth Government, with the advice of the NSW Department of Primary Industries, develop an initial compensation package for the commercial fishermen affected by the closures of Fullerton Cove and Tilligerry Creek.

- **Recommendation 3**

The committee recommend that Defence examine providing additional mental health and counselling support services to those affected by contamination at RAAF Base Williamtown.

- **Recommendation 4**

The committee recommends that Defence and the NSW Government examine establishing a joint taskforce to coordinate the response of government agencies to the contamination from RAAF Base Williamtown.

- **Recommendation 5**

The committee recommends the Commonwealth Government commit to voluntarily acquire property and land which is no longer fit for purpose due to PFOS/PFOA contamination from RAAF Base Williamtown.

- **Recommendation 6**

The committee recommends that if PFOS/PFOA contamination from RAAF Base Williamtown causes permanent or long-term fishing closures, the Commonwealth Government should:

- Commit to compensate and purchase the relevant rights of fisherman affected; and
- Establish an industry transition program for affected commercial fishermen to assist them to relocate or transfer to other industries.

- **Recommendation 7**

The committee recommends that Defence arrange and fund a program of blood tests for residents in the investigation area on an annual basis.

- **Recommendation 8**

The committee recommends that Defence release a policy statement to clarify its environmental obligations and responsibilities for contamination which spreads to non-Commonwealth land. In particular, it should clarify the capacity of State and Territory environment regulation to apply to its activities.

The Australian Government recognises the uncertainty that has been generated for members of the Williamstown community as a result of perfluorinated compounds (PFCs) being detected in the Williamstown area and the management responses that have been adopted, including precautionary closures of NSW fisheries. The Australian Government is working with the NSW Government to ensure that the uncertainty, and the impacts that this uncertainty is having on individuals and businesses in the area, are addressed at the earliest opportunity.

Correction of Error of Fact

The Australian Government recognises the concerns that some members of the community have regarding the possible association between particular health conditions and prolonged exposure to high levels of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

Paragraph 3.11 within the Senate Foreign Affairs, Defence and Trade References Committee report, *Inquiry into firefighting foam contamination Part A - RAAF Base Williamstown*, states:

“At the October 2015 meeting of the [United Nations Persistent Organic Pollutants Review Committee] UNPOPs Review Committee, committee members concluded that PFOA met all criteria for further evaluation as a [persistent organic pollutant] POP; a decision that starts its journey to global elimination. In a consensus decision, the experts agreed that PFOA causes – “kidney and testicular cancer, disruption of thyroid function and endocrine disruption in women”. In addition, they concluded PFOA was highly persistent, and does not undergo any degradation under environmental conditions.”

The decision of the UN POPs Review Committee was not that PFOA “causes” the quoted medical conditions. Rather, the decision stated that there “is epidemiological evidence for” these conditions. There was a statistical relationship or association in some studies, which is not a finding of causation.

There have been some studies that have found, within the sample of people tested, those with certain medical conditions also had higher levels of PFOA in their bloodstream. The wording of the decision recognises that, rather than necessarily demonstrating that PFOA causes these conditions, other factors may influence an association between levels of PFOA and the likelihood of contracting certain medical conditions. Further, people with certain medical conditions may have an impaired ability to excrete PFOA and reduce levels in their bloodstream. The statistical strength of the association also needs to be further considered.

The Committee determined that PFOA meets relevant criteria to list it for Annex D, the screening stage of the Stockholm Convention. A draft risk profile has yet to be finalised to facilitate further consideration of PFOA at a future meeting of the UNPOPs Review Committee.

Noting this error of fact regarding the possible health effects of PFOA, the Australian Government has given careful consideration to the recommendations of the Senate Committee Inquiry Part A report.

Recommendation 1

The committee recommends that Defence immediately review its provision of water and replacement of water infrastructure to affected residents to ensure it is sufficient to meet their needs.

Government Response

Agreed.

The Australian Government recognises the concerns that some members of the community have regarding the possible association between particular health conditions and prolonged exposure to high levels of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

The Australian Government notes that the Environmental Health Standing Committee (enHealth), a subcommittee reporting to the Australian Health Protection Principal Committee, is developing interim guideline values to provide consistent information in order to assess any public health risks arising from the detection of PFOS and PFOA in groundwater and food intended for human consumption. In the interim, Defence is taking a precautionary approach for the supply of drinking water in its environmental investigation areas.

Defence has reviewed its provision of water to ensure that sufficient volumes of drinking water are being provided to residents who are reliant on sourcing drinking water from bores and affected tanks in the investigation zone around RAAF Base Williamtown. Defence is committed to ensuring that these residents have continual access to an ample supply of drinking water. Defence will continue to determine the most appropriate methods of delivering drinking water.

Recommendation 2

The committee recommends that the Commonwealth Government, with the advice of the NSW Department of Primary Industries, develop an initial compensation package for the commercial fishermen affected by the closures of Fullerton Cove and Tilligerry Creek.

Interim Government Response

The Australian Government has implemented a financial assistance package to address immediate hardship for fishers and businesses affected by the decision by the New South Wales Government to institute fisheries closures. This financial assistance package will continue to be available until 30 June 2016, when the NSW Environment Protection Authority (EPA) is due to consider its position on the fishing closures it has instituted for Fullerton Cove and Tilligerry Creek.

Defence is carrying out a Stage 2B Environmental Investigation at Williamstown, which includes the development of a Human Health Risk Assessment. If this Human Health Risk Assessment determines there is not a significant risk to human health, the Australian Government looks forward to the NSW EPA reversing its decision to close fisheries at the earliest opportunity. In the interim, the Australian Government will continue to assist in addressing the financial hardship experienced by individuals and businesses as a result of the NSW Government's decision. The Australian Government notes that the NSW Government is due to make a decision regarding its fisheries closures by 30 June 2016. On 1 July 2016, the Australian Government will provide the ability for fishing businesses affected by the current closures of Fullerton Cove and Tilligerry Creek fisheries to claim a further Business Hardship Payment of up to \$20,000. In addition, in the event that the NSW Government does not reopen these fisheries by 30 June 2016, the Australian Government will provide the opportunity for affected businesses to claim a Business Transition Payment of up to \$25,000 to assist businesses to pursue alternative sources of income if they wish to do so. This may provide support to commence fishing in another fishery, for example.

The Australian Government will continue to provide an Income Recovery Subsidy to individuals who have experienced a loss of income as a result of the Fullerton Cove and Tilligerry Creek fisheries closures. These payments will continue for a period of eight weeks after 30 June 2016, when the NSW Government is due to make its decision.

Individual claims for compensation received by the Australian Government are handled on a case by case basis.

Recommendation 3

The committee recommends that Defence examine providing additional mental health and counselling support services to those affected by contamination at RAAF Base Williamtown.

Government Response

Agreed.

The Australian Government understands the mental health pressures that some members of the community around Williamtown are experiencing in association with the circumstances of this matter. This concern has arisen from a range of circumstances, including the precautionary bans on fishing.

A range of mental health and counselling support services are already being delivered by the Australian Government and NSW Department of Health for the Williamtown community, and the NSW Department of Primary Industries for fishers. Defence is engaging with the NSW Government to identify areas where the Australian Government may be able to assist in improving community awareness of the full range of available mental health and counselling support services, and how to access them.

Recommendation 4

The committee recommends that Defence and the NSW Government examine establishing a joint taskforce to coordinate the response of government agencies to the contamination from RAAF Base Williamtown.

Government Response

Agreed.

Defence is engaging with the NSW Government to determine the best way to coordinate government actions to address PFOS and PFOA detected in the vicinity of RAAF Base Williamtown. The Australian Government also notes that the New South Wales Government has recently commenced a programme of testing that will assess potential sources of PFOS and PFOA from some industrial sites and state fire-fighting facilities across New South Wales, including in the Newcastle area. The early results of this NSW Government testing have demonstrated the potential for PFOS and PFOA to enter the environment from activities that are not related to Defence. As NSW Government information regarding other possible sources of PFOS and PFOA improves, it may in turn influence the optimal model for coordinating the response of government agencies.

In addition to Williamtown, the Australian Government recognises that the community of Oakey, Queensland is also seeking a coordinated response to this issue. The Queensland Government has emphasised the importance of national consistency. Therefore, the Australian Government is also canvassing a national taskforce to coordinate the national response of government agencies to the management of PFOS and PFOA, to improve coordination between governments to address community concerns.

Recommendation 5

The committee recommends the Commonwealth Government commit to voluntarily acquire property and land which is no longer fit for purpose due to PFOS/PFOA contamination from RAAF Base Williamtown.

Interim Government Response

The Department of Defence, in consultation with the NSW Government, is actively progressing detailed environmental investigations for RAAF Base Williamtown and these investigations are now well-advanced. The detailed environmental investigations are being completed by expert contamination scientists and scrutinised by a NSW Government-accredited independent contaminated site auditor. To date, PFOS and PFOA have not been detected in 80 to 90 per cent of the samples that have been taken across the investigation area that was originally declared by the NSW Environmental Protection Agency. The detailed environmental investigations by expert contamination scientists will include preparation of a Human Health Risk Assessment, which is expected to be made available to the Williamtown Expert Panel for consideration in July 2016. Upon completion of these detailed environmental investigations, the actual extent of PFOS and PFOA will be better understood.

Defence is progressing its environmental investigations as quickly as is feasible while ensuring that the findings are scientifically robust. Defence is ensuring that investigations align with the National Environment Protection (Assessment of Site Contamination) Measure framework. The expert environmental site investigation contractors only use laboratories accredited by the National Association of Testing Authorities (NATA) for analysis of sampling results. There are only two laboratories NATA-accredited for PFOS and PFOA testing in Australia, which constrains the rate at which samples can be analysed and results provided.

In addition to the environmental investigation at Williamtown, the Environmental Health Standing Committee (enHealth), a subcommittee reporting to the Australian Health Protection Principal Committee, is developing interim guideline values to provide consistent information in order to assess any public health risks arising from the detection of PFOS and PFOA.

The Australian Government will further consider the matter of property acquisition once interim health reference values have been established and a detailed environmental investigation at RAAF Base Williamtown has been concluded. Until these activities are finalised, the Australian Government is not in a position to determine the actual level of risk for existing property use. The Australian Government is committed to the considered investigation of this important issue and will review its response to this recommendation once this information has been established.

Recommendation 6

The committee recommends that if PFOS/PFOA contamination from RAAF Base Williamstown causes permanent or long-term fishing closures, the Commonwealth Government should:

- *Commit to compensate and purchase the relevant rights of fishermen affected; and*
- *Establish an industry transition program for affected commercial fishermen to assist them relocate or transfer to other industries.*

Interim Government Response

The NSW EPA has advised it is premature to speculate whether fishing closures may remain in effect beyond 30 June 2016, when the NSW Government will provide further advice on this matter. The Australian Government will work with the NSW Government on options with respect to the ability of the fisheries to operate.

Defence's environmental investigations are now well-advanced. Defence continues to make all verified results available to the NSW Government and has recently received some of the initial fish testing results from NSW Department of Primary Industries that are required inform an interim Human Health Risk Assessment. The NSW EPA will determine the level of information it requires to make a decision as to whether fisheries will be reopened.

As noted under Recommendation 2 above, on 1 July 2016 the Australian Government will provide the ability for fishing businesses affected by the current closures of the Fullerton Cove and Tilligerry Creek to claim a further Business Hardship Payment of up to \$20,000. In addition, in the event that the NSW Government does not reopen these fisheries by 30 June 2016, the Australian Government will provide the opportunity for businesses to claim a Business Transition Payment of up to \$25,000 to assist businesses to pursue alternative sources of income if they wish to do so. This may provide support to commence fishing in another fishery, for example.

The Australian Government will continue to provide an Income Recovery Subsidy to individuals who have experienced a loss of income as a result of the Fullerton Cove and Tilligerry Creek fisheries closures. These payments will continue for a period of eight weeks after 30 June 2016, when the NSW Government is due to make its decision.

Recommendation 7

The committee recommends that Defence arrange and fund a program of blood tests for residents in the investigation area on an annual basis.

Not agreed

The Environmental Health Standing Committee (enHealth) comprises health advisers from Commonwealth, state and territory jurisdictions across Australia and is responsible for the provision of national health guidance to inform state and territory health policies. Defence is guided by enHealth and the relevant state/territory health authority on health matters in the community.

On 16 March 2016, enHealth released a statement that advises against blood testing of individuals for PFOS and PFOA:

<http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-publicat-enviro.htm>

The enHealth statement notes the uncertainty that PFCs are directly linked to adverse health outcomes and recommends that blood testing has no current value in informing clinical management. While blood tests can measure PFOS/PFOA, blood tests do not predict any level of health risk. Most Australians will have had some level of exposure to perfluorinated compounds from a range of sources.

The NSW Department of Health has issued a formal health statement that is consistent with the national enHealth guidance in advising against blood testing of individuals.

Defence will follow the enHealth advice and NSW Health advice that blood testing of individuals is not recommended.

The enHealth statement does note that the monitoring of pooled community blood samples over time may help determine the success of exposure reduction measures. It is a NSW Health decision to determine whether it may wish to pursue pooled testing for communities in NSW.

Recommendation 8

The committee recommends that Defence release a policy statement to clarify its environmental obligations and responsibilities for contamination which spreads to non-Commonwealth land. In particular, it should clarify the capacity of State and Territory environment regulation to apply to its activities.

Government Response

Agreed in part.

Defence has provided further information regarding its environmental obligations and responsibilities within its submission to Part B of the *Senate Inquiry into Contamination of Australian Defence Force Facilities and other Commonwealth, state and territory sites in Australia*. The Defence Environmental Policy and the supporting environmental management framework is available to the public online at:

<http://www.defence.gov.au/estatemangement/governance/Policy/Environment/Contamination/Default.asp>.

Defence is completing a review of its environmental policy and supporting documents. As part of this review process, Defence is ensuring the policy and supporting documentation communicate Defence's responsibilities for the investigation and management of contamination. Updated versions of the environmental policy and other environmental management framework documentation will continue to be made available to the public via the Defence internet site.

Defence is bound by the *Environment Protection and Biodiversity Conservation Act 1999* wherever it operates. The question of the extent to and manner in which the Commonwealth is bound by state or territory environmental legislation is complex. However, it is Defence policy to meet the spirit and intent of state or territory legislation where there is no conflict with obligations under Commonwealth legislation.

Defence is carrying out a Stage 2B Environmental Investigation at Williamstown, which includes the development of a Human Health Risk Assessment and Ecological Risk Assessment. In accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, including 2013 amendments, Defence is collecting over 900 samples of groundwater, surface water, soil, sediment and biota in and around RAAF Base Williamstown as part of the environmental investigation program.

The Department of the Environment will develop and implement nationally consistent guidance and standards for PFOS and PFOA with state and territory governments as soon as possible.

Appendix 7

**Current and historical sites where ARFF services were
provided and foams used at each site**

Table 1: Current ARFF Sites <i>Green represents locations where only PFC-free fire fighting foam has been used</i>			
ARFF Site	Years of Operation	Fluorine-based Foam Used	Non Fluorine-based Foam Used
Adelaide	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Alice Springs	1964 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Avalon	<1959 - 1992	3M Lightwater	Protein
Avalon	2005 - now	Ansulite	Solberg RF6
Ballina	2014 - now		Solberg RF6
Brisbane	1988 - now	3M Lightwater, Ansulite	Solberg RF6
Broome	2008 - now	Ansulite	Solberg RF6
Cairns	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Canberra	<1959 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Coffs Harbour	2014 - now		Solberg RF6
Coolangatta	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Darwin	1950 - now	3M Lightwater, Ansulite	Protein
Gladstone	2014 - now		Solberg RF6
Hamilton Island	2005 - now	Ansulite	Solberg RF6
Hobart	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Karratha	1988 - 2003	3M Lightwater, Ansulite	Protein
Karratha	2010 - now		Solberg RF6

Table 1: Current ARFF Sites <i>Green represents locations where only PFC-free fire fighting foam has been used</i>			
ARFF Site	Years of Operation	Fluorine-based Foam Used	Non Fluorine-based Foam Used
Launceston	<1959 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Mackay	<1964 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Maroochydore	2004 - now	Ansulite	Solberg RF6
Melbourne	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Newman	2014-now		Solberg RF6
Perth	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Port Hedland	1968 - 2003	3M Lightwater	Protein
Port Hedland	2013 - now		Solberg RF6
Rockhampton	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Sydney	1950 - now	3M Lightwater, Ansulite	Protein, Solberg RF6
Townsville	2005 - now	Ansulite	
Yulara (Ayers Rock)	2005 - now	Ansulite	Solberg RF6

Historical ARFF Sites <i>Green represents locations where only PFC-free fire fighting foam has been used.</i>			
ARFF Site	Years of Operation	Fluorine-based Foam Used	Non Fluorine-based Foam Used
Archerfield	1950 - 1991	3M Lightwater	Protein
Bankstown	1950 - 1991	3M Lightwater	Protein
Broken Hill	<1959 - 1974		Protein
Bundaberg	1964 - 1984	3M Lightwater	Protein
Camden	1966 - 1977		Protein
Cloncurry	<1959 - 1966		Protein
Cocos Island	<1959 - 1967		Protein
Cooma	1964 - 1977		Protein
Derby	1966 - 1973		Protein
Devonport	<1964 - 1991	3M Lightwater	Protein
Dubbo	<1959 - 1974		Protein
Eagle Farm	1945 - 1988	3M Lightwater	Protein
Essendon	1956 - 1990	3M Lightwater	Protein
Geraldton	1966 - 1975		Protein
Jandakot	1964 - 1991	3M Lightwater	Protein
Kalgoorlie	<1959 - 1966		Protein
Longreach	1964 - 1972		Protein
Mangalore	<1959 - 1974		Protein
Maryborough	<1964 - 1978		Protein
Mildura	<1959 - 1966		Protein
Moorabbin	1950 - 1990	3M Lightwater	Protein
Mt Isa	1964 - 1990	3M Lightwater	Protein
Narromine	<1959 - 1973		Protein
Norfolk Island	<1959 - 1991	3M Lightwater	Protein
Parafield	<1964 - 1991	3M Lightwater	Protein
Proserpine	1980 - 1986	3M Lightwater	

Historical ARFF Sites <i>Green represents locations where only PFC-free fire fighting foam has been used.</i>			
ARFF Site	Years of Operation	Fluorine-based Foam Used	Non Fluorine-based Foam Used
Tamworth	<1959 - 1991	3M Lightwater	Protein
Tennant Creek	<1959 - <1962		Protein
Wagga Wagga	<1959 - 1979		Protein
Wynyard	1950 - 1988	3M Lightwater	Protein