

Chapter 3

Impacts on the affected community

Introduction

3.1 This chapter will consider the evidence received regarding the impact on the community of the contamination at RAAF Base Williamtown. The majority of submissions received were from persons in this area outlining how they had been affected by the announcement of the contamination. A number of key issues were raised. These included:

- the precautionary measures;
- health issues;
- mental health concerns;
- property value and investment;
- access to water; and
- primary industries and other businesses.

Precautionary measures

3.2 On 8 October 2015, the Expert Panel reviewed preliminary test results from surface water. Based on the results the Expert Panel resolved to extend the current NSW EPA investigation area to include major surface water drains and creeks and the Tilligerry Creek fisheries closure area. All residents located in the investigation area (Figure. 1) have been advised to continue to take precautions while further assessments are undertaken. These precautionary measures include:

- not drinking or preparing food from private water bores, or water from dams, ponds, creeks or drains;
- not consuming eggs from backyard chickens or milk from cows and goats that have been drinking bore water or surface water in the area; and
- not consuming fish, prawns or wild oysters caught in the nearby area.¹

3.3 Several affected residents expressed their concern that there was no clarity regarding the period these precautionary measures would need to be applied. At the public hearing Mr Cain Gorfine from the Williamtown and Surrounds Residents Action Group (WSRAG) articulated these concerns:

[N]ot only has the precautionary approach shut everything down but it has also put our lives on hold. Regardless of what our levels come back as in our water or our surface water, the same precautions still apply indefinitely. Why?...(1) because it is still leaching from the base and they do not know

1 NSW Government, *Williamtown RAAF Base contamination – FAQs*, 12 November 2015, p. 2.

how to contain it and (2) the unique hydrology of the area necessitates, by that very fact, that groundwater and surface water mix according to the charge and discharge rates of the aquifer. So what might be contaminated today may not be contaminated tomorrow, and vice versa. They just do not know.²

3.4 The uncertainty of the situation facing the affected residents was also highlighted by Ms Rhianna Gorfine who observed:

[W]e have been advised that for the last 40 or 50 years these contaminants have been leaving the base. They do not know whether we are at the start of the contamination, the middle of the contamination or the end of the contamination.³

Health issues

3.5 Due to the previous industrial use of PFOS/PFOA there is a background level of these compounds present in the Australian population and wildlife. The medical research regarding the impact of elevated levels of PFOS and PFOA in humans is still developing. However, the NSW Government's information sheet noted that potentially adverse health effects cannot be excluded:

Studies of workers exposed to these chemicals have not consistently shown adverse health effects, though impact on blood cholesterol levels, thyroid function and liver size have been reported in some studies. Mothers exposed to high levels of PFOA in the drinking water did not have an increased risk of birth defects in their children... Where there is not enough scientific evidence to assess health effects in humans, any effects in animals are then assessed. Certain laboratory experiments on rats have indicated some potential to promote cancer, but it is not clear if these results have implications for human health.⁴

3.6 PFOS/PFOA have half-lives in human beings ranging from 2 to 9 years, depending on the study.⁵ The Department of Health's National Industrial Chemicals Notification and Scheme (NICNAS) provided the following:

PFOS and PFOA are eliminated very slowly from the human body, and so concentrations of the chemicals in the body increase over time if they are continuously consumed in food or water. They have been shown to have effects, particularly in the liver, at low doses in animal tests but the scientific literature on their effects in humans does not give clear, unambiguous results.⁶

2 *Committee Hansard*, 22 December 2015, pp 35-36.

3 *Committee Hansard*, 22 December 2015, p. 36.

4 NSW Government, *Williamstown RAAF Base contamination – FAQs*, 12 November 2015, pp 2-3.

5 US EPA, *Emerging Contaminants Fact Sheet – PFOS and PFOA*, March 2014, p. 3.

6 *Submission 47*, p. 2.

3.7 Professor Ravi Naidu from CRC CARE noted that once the pathways to human exposure are closed or minimised then levels of PFCs in the human system will reduce over time. He observed that the 'half life of PFCs in the human system is somewhere between 3.8 to 5.4 years so for it to come out of the system can take that long, although for animals it can vary quite a lot'.⁷ His colleague, Professor Megharaj Mallavarapu noted that because these chemicals were persistent, bioaccumulative and toxic a precautionary approach should be taken in relation to human health while further research is conducted.⁸

3.8 Defence repeatedly emphasised in its evidence to the committee that there was no conclusive evidence regarding the human health effects of PFOS and PFOA. In particular, it highlighted that there were 'no globally accepted peer review studies showing that exposure to PFOS and PFOA affects human health'.⁹ Further, the National Health and Medical Research Council did not specify a level for these chemicals in the Australian Drinking Water Guidelines updated in March 2015. It noted that 'long-term health studies in the USA of the workers that manufactured this product do not show any chronic health effects'.¹⁰ It stated:

Possible health impacts from long term exposure to PFOS or PFOA are not fully understood. The compounds are 'emerging contaminants' and, to date, research into the possible effects on human health is not conclusive.¹¹

3.9 However, the National Toxics Network (NTN), a non-governmental organisation working in the area of toxic chemicals and contamination, disputed the statement that it was unknown whether PFOS/PFOA causes adverse health effects in humans.¹² It noted that, in 2006, the Persistent Organic Pollutants Review Committee of the Stockholm Convention had concluded:

Given the inherent properties of PFOS, together with demonstrated or potential environmental concentrations that may exceed the effect levels for certain higher trophic level biota such as piscivorous birds and mammals; and given the widespread occurrence of PFOS in biota, including in remote areas; and given that PFOS precursors may contribute to the overall presence of PFOS in the environment, it is concluded that PFOS is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and environmental effects, such that global action is warranted.

7 *Committee Hansard*, 22 December 2015, p. 28.

8 For example, Professor Megharaj Mallavarapu, CRC CARE, *Committee Hansard*, 22 December 2015, pp 26-27.

9 Department of Defence, response to question on notice 93, Supplementary Budget Estimates, 21 October 2015, p. 3.

10 *Committee Hansard*, 3 December 2015, p. 2.

11 *Submission 87*, p. 12.

12 *Submission 29*, p. 2.

3.10 NTN stated that '[o]ngoing research after the completion of the PFOS risk profile has only served to confirm the toxicity of this most persistent chemical, including its serious immunotoxicity in humans and its synergistic effects in mixtures with other perfluorinated chemicals, like PFOA'.¹³

3.11 Further, NTN highlighted that PFOA 'has now been nominated for inclusion in the Stockholm Convention due to its dangerous toxicity, extreme persistence, bioaccumulation and long-range transport':

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; 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.¹⁴

3.12 Another area of conflicting views was in relation to the need for health checks and blood testing of affected residents. While Defence has previously funded blood testing of some residents affected by firefighting foam contamination in Oakey in Queensland, it did not support blood-testing for affected residents around RAAF Base Williamtown. It stated:

Defence understands that there are no specific health conditions which have been globally accepted to be directly caused by exposure to PFOS or PFOA. As a result, there are no particular health conditions that could be screened for in a health check. NSW Health has stated that while blood tests can provide a measure of PFOS, they are not recommended because they do not predict the level of health risk.¹⁵

3.13 Dr Mathew Klein from Defence described blood-testing as 'not a good idea'. He told the committee:

Unfortunately, it does not give us an indication of a particular level of risk. It does not give us an indicator of a particular medical management. It also creates a huge degree of anxiety.¹⁶

3.14 In contrast, many residents wished to receive support to undertake blood tests and other health testing. The Williamtown and Surrounds Residents Action Group (WSRAG) articulated the anxiety that many residents already felt:

We...have to live in fear of any past, present and future health effect to not only us, but our pets and livestock. Since day one we have been calling on

13 *Submission 29*, p. 2.

14 *Submission 29*, p. 3.

15 Department of Defence, response to question on notice 95, Supplementary Budget Estimates, 21 October 2015, p. 2.

16 *Committee Hansard*, 22 December 2015, p. 63.

systemic and systematic testing of people, animals, all water sources including surface and ground water and biota within the red zone. Such has been the lack of involvement from Defence that we have been forced to conduct our own testing, at our own expense.¹⁷

3.15 Mr Cain Gorfine from the WSRAG told the committee:

What we have been calling for from the get-go, and what we continue to call for, is proper blood screening to be conducted for residents for use down the track. [W]e note that potentially there is no-one here today representing Hunter New England area health or anyone who can bring a toxicology point of view and provide objective information....¹⁸

[O]ur legal advice would suggest it is vitally important, because we need to reserve our rights in relation to any potential future health consequences later on down the track. The science may be fluid and changing as we speak, but we cannot turn around in 15 years and say, 'Gee, I wish we had had some thorough screening done so we could have some comparative data.'¹⁹

3.16 The Fullerton Cove Residents Action Group (FCRAG) also wished for a health study 'to establish a base line for future health monitoring'. It described the NSW Health's position as 'not convincing' and noted blood testing was being undertaken in other countries in response to potential PFOS/PFOA contamination.²⁰ The NSW Farmers' Association also observed:

The interim report into a current inquiry into a similar PFOS contamination in Victoria...contains a recommendation that the Victorian Government assess the feasibility of providing voluntary testing for PFOS to those affected. The Government, through the Department of Health and Human Services, is to report on the feasibility of this process by September 2015. NSW Farmers understands that these tests would not be considered valid, but such recommendations underline the community concern about testing for human health and the anxieties for those in the immediate vicinity.²¹

3.17 The provision of health advice to affected residents was criticised with many affected residents expressing uncertainty regarding their circumstances. The Port Stephens Council considered it was 'clear that information being disseminated to property owners and the public related to human health has been poorly communicated and managed, has been confusing and entirely inadequate'.²²

17 *Submission 36*, p. 2

18 *Committee Hansard*, 22 December 2015, p. 33.

19 *Committee Hansard*, 22 December 2015, p. 37.

20 *Submission 13*, p. 4.

21 *Submission 35*, p. 9.

22 *Submission 26*, p. 12.

3.18 Concerns regarding the health and welfare of ADF and civilian personnel at RAAF Base Williamtown who were potentially exposed to firefighting foams were also raised during the inquiry.²³ For example, it was noted a study of firefighters working with AFFF at training facilities in Australia found that the concentrations of PFOS were positively associated with years of employment involving AFFF contact.²⁴

3.19 Mr Grzeskowiak from Defence told the committee that the staff who have lived on the base at Williamtown were unlikely to have been significantly exposed to the PFOS/PFOA as RAAF Base Williamtown operates off town water. Further:

The firefighters who would have used these foams are probably the cohort of people who may have had an exposure, although, as I think we have discovered, the main exposure routes are through ingestion. The advice I have received is that dermal contact—that is, contact on the skin—with the firefighting foam is not a route for it to get into the body.²⁵

3.20 However, the Defence submission acknowledged that '[g]iven that Defence used AFFF widely from the 1970s to the early 2000s, there is no accurate way to assess the exact number of Defence personnel who may have been exposed to PFOS and PFOA'. It noted that Defence personnel can access the Defence Exposure Evaluation Scheme (DEES) which open to current and former employees of the Department and Australian Defence Force cadets who suspect that they have been exposed to a hazard.²⁶

Mental health issues

3.21 Many submitters and witnesses were concerned about the impact of the stress and uncertainty caused by the contamination on the mental health of affected residents. For example, Mr Gorfine, who interacts with many Williamtown residents through his role with the WSRAG noted:

People are pacing the halls [at] night. They are fighting with their spouses....People are scared.²⁷

3.22 Mr Lindsay Clout from the FCRAG also made the point that the 'mental-health pressure is mounting on people because there is such little information...because this is an emerging contaminant—about the health impacts':

There is anecdotal information out there and a little bit of hyperbole as well, which is adding to the problem. As soon as an ailment comes onto an individual, what do they think? Whether or not it is associated with this

23 For example, Ms Kate Washington MP, *Submission 32*, p. 5.

24 Anna Rotander et al, 'Elevated levels of PFOS and PFHxS in firefighters exposed to aqueous film forming foam (AFFF)', *Environmental International*, September 2015, pp 28-34.

25 *Committee Hansard*, 22 December 2015, p. 69.

26 *Submission 87*, p. 19.

27 *Committee Hansard*, 22 December 2015, p. 39.

chemical is often secondary, because the mental-health pressures are mounting as time goes on.²⁸

3.23 The local member, Ms Kate Washington MP told the committee that the stress of the contamination had led to 'very real and very concerning' mental health issues in the community and that since the news of the contamination she had witnessed 'many residents in distress'. In particular, she emphasised the need for 'ongoing and accessible mental health services available to all residents affected'.²⁹ Ms Washington stated:

The uncertainty of the nature and extent of the health impacts particularly, is causing deep concern. The loss of livelihoods and the plummeting property values is also, understandably, placing immense pressure on affected families.

I have written to State and Federal Ministers seeking financial support for families who require counselling, together with additional counselling services to meet the need.³⁰

3.24 At the Newcastle hearing, Ms Calvert from the NSW Department of Premier and Cabinet reported that through the community engagement process there 'are significant concerns around individuals in the community that have been impacted by this particular event—certainly mental health'. She stated:

In the community drop-in events, we have had to provide mental health officers that people could go and talk to. We have also provided the non-government sector, such as the Red Cross, who provided psychological first aid in the first instance. Through the EPA fact sheets and through Health, we have been making sure that people know the pathways to have access to support in that area as well, but it has been quite traumatic for a number of individuals in that area, and we recognise that; it is acknowledged.³¹

Property value and investments

3.25 The NSW EPA's investigative area for PFOS/PFOA contamination from RAAF Base Williamstown was frequently referred to as the 'red zone'. When questioned about the selection of the 'red zone', the NSW EPA noted that it was not 'making determinations about a particular level of contamination on an individual lot-by-lot basis'. The investigation area had been determined on the basis on information regarding where the NSW EPA believed there was a higher likelihood of contamination being present.³²

28 *Committee Hansard*, 22 December 2015, p. 40.

29 *Committee Hansard*, 22 December 2015, p. 2.

30 *Submission 32*, p. 4.

31 *Committee Hansard*, 22 December 2015, p. 57.

32 Mr Adam Gilligan, NSW EPA, *Committee Hansard*, 22 December 2015, p. 56.

3.26 The impact on the value of property and investments located within the investigation area was frequently raised. Mr Gorfine from the WSRAG described the worth of properties in the affected area as 'zero'.³³ He commented that '[p]erceptions are reality, properties and businesses within the red zone are worthless'.³⁴

3.27 This sudden change in the value of property and investments was a significant shock to residents. In particular, Mr Gorfine observed that a large percentage of people in the affected area are pensioners or self-funded retirees who 'have built up their nest eggs and their properties'. He noted they have had 'all that taken away' due to the contamination announcement.³⁵ He told the committee:

The impact it is having, regardless of whatever future health effects may arise, is that no-one wants to come and live in our area or touch the area. From an economic point of view we are being crushed. We have a young family, with three kids, and a half-a-million dollar mortgage. The property is worth nothing. If I go and spend \$50 on a tin of paint to paint my gutters I am overcapitalising. I have no future, economically.³⁶

3.28 Similarly, Ms Julienne Curry described how her family had purchased a property in the affected area in 2014:

Our purpose for the move was to substantially improve the property with a view to selling it with a fair capital gain to supplement our retirement funds. We undertook due diligence in relation to researching the area as part of our conveyancing and there were no impediments to suggest this was anything other than a desirable property in a great location...

Full knowledge of this disaster was available to relevant bodies well before we purchased our property but it wasn't made available to us as buyers. Obviously if it had been shared before September 3rd we would never have made the mistake of buying a property in Williamstown. Nor would we have made such a large financial investment in improvements...

Worse than this is the fact we remain in the "Red Zone" with no hope of this changing due to the unpredictable nature of the way the contamination may travel in the future. This translates into a massive financial loss for us, as like others, our property is not desirable to purchasers and is severely reduced in value. While claims that its value is now zero seem extreme it is probably close to the truth.³⁷

3.29 Like many residents, Ms Curry hoped for urgent action 'in the form of compensation or compulsory acquisition at pre-contamination value'.³⁸

33 *Committee Hansard*, 22 December 2015, p. 35.

34 *Submission 36*, p. 2.

35 *Committee Hansard*, 22 December 2015, p. 39.

36 *Committee Hansard*, 22 December 2015, p. 39.

37 *Submission 106*, p. 1.

38 *Submission 106*, p.1.

Water access and use

3.30 Much of the area around RAAF Base Williamtown is currently not on town water or with sewer access. Mr Justin Hamilton from the FCRAAG outlined:

Fullerton Cove and parts of Williamtown are on tank water, and originally bore water. Most farms have one or two bores, and the water aquifers are the same aquifers that pump to Grahamstown Dam when they are on. They have been topped up in people's tanks, and they have been used to drink from for more than 100 years.³⁹

3.31 Defence outlined that if contamination was detected in an area that residents use for drinking water, Defence was providing free drinking water to that household. Currently, 38 households were being provided with drinking water by Defence.⁴⁰ Mr Grzeskowiak from Defence stated:

Our priority has been, and continues to be, that Defence personnel, residents and businesses continue to have access to safe drinking water. We have asked the residents near RAAF Base Williamtown to let us know if and how they are using bore water. Where they are using it for drinking, we are testing their bores. Where it is their only source of drinking water, we are providing fresh potable water free of charge.⁴¹

3.32 However, a number of concerns were raised with sustainability of this approach. Mr Buffier from the NSW EPA noted that 'groundwater that is down gradient from the Williamtown base may remain unfit for domestic use for decades as a result of the contamination'. He recommended 'the Commonwealth should arrange for the provision of reticulated potable water to the affected properties'.⁴²

3.33 Similarly, the Port Stephens Council noted 'the identification of the chemicals of potential concern...in both the surface and groundwater system has significantly restricted the ability of property owners located within the investigation area to utilise a water source that has historically been available to them for drinking, agricultural and other domestic and commercial purposes'. It stated:

It is our view that Defence has an obligation to make available to all affected properties an alternate long term water supply. It is suggested that the water supply should be a reticulated supply managed by Hunter Water Corporation. In that instance, the provision of a reticulated water supply should be funded by Defence with planning to be commenced immediately.⁴³

39 *Committee Hansard*, 22 December 2015, p. 35.

40 Mr Steven Grzeskowiak, Defence, *Committee Hansard*, 22 December 2015, p. 62.

41 *Committee Hansard*, 3 December 2015, p. 2.

42 *Committee Hansard*, 22 December 2015, p. 47.

43 *Submission 26*, p. 9.

3.34 Ms Kate Washington stated:

In addition, families who have experienced positive bore water test results have received only bottled water in response. Initially, there were reports of water tanks being delivered but that appears to have ceased. When a family was recently informed of a positive water tank result, the family has only received bottled water and has been forced to buy their own replacement water tank. I have requested reimbursement for the family and additional assistance. To date, I have had no response.⁴⁴

3.35 Mr Clout from the FCRAg reported some residents were driving to Stockton to the local park to fill drums of water. Mr Hamilton also noted:

[W]e have bottled water being delivered to our residents—[but] we do not have a disposal system yet for the empty bottles—and we have a hotline that our residents ring that does not get answered when they run out of water.⁴⁵

Water supply

3.36 Another impact of on the community was the potential restriction on water supplied from the region. For example the FCRAg described the contamination as putting at risk the Newcastle City water supply. It noted that Hunter Water was now no longer pumping from Tomago Sand Beds bores close to contamination site and the three bores closed off represented two per cent of the city's drinking water.⁴⁶

3.37 Hunter Water outlined that it had ceased drawing water from three bores around RAAF Base Williamtown – PS9, PS7 and PS5. At the hearing on 22 December 2015, Mr Darren Cleary from Hunter Water emphasised the importance of the Tomago Sand Beds to the overall water supply to the lower Hunter region. He indicated that while Hunter Water could manage the embargo of certain bores around RAAF Base Williamtown, the longer term issues were 'of concern'.⁴⁷ He noted:

The Tomago Sand Beds supply approximately 20 per cent of the drinking water to the lower Hunter. We service around 575,000 customers in the lower Hunter. The sand beds are a very important water source for us. We do not run them or extract water from them all the time, but in dry conditions, when the levels in our two major dam storages fall, the sand beds are a particularly important water source for us.⁴⁸

3.38 In its submission Hunter Water noted:

44 Ms Kate Washington MP, *Submission 32*, p. 4.

45 *Committee Hansard*, 22 December 2015, p. 39.

46 *Submission 13*, p. 2.

47 *Committee Hansard*, 22 December 2015, p. 7.

48 *Committee Hansard*, 22 December 2015, p. 5.

Based on the risk of drawing Perfluoroalkyl Substances (PFAS) towards Hunter Water borelines, pumping stations PS5, PS7 and PS9 have been embargoed. In 2015 PFAS contamination has been detected at PS9, presumed to be from a plume of contamination originating from the North East corner of the RAAF Base Williamtown.

The impact of not being able to use these borelines is a reduction in the overall yield of drinking water from the Tomago Sandbeds. Hunter Water estimates that the loss of these bore lines represents around a 10% reduction in the amount of water that can be accessed over the long term from Tomago Sandbeds and around a 15% reduction in the peak production capacity of the Tomago Sandbeds. This represents 1.5 billion litres of water.⁴⁹

Loss of long term production capacity will have an impact on when a new water source will be required as the region grows into the future. It is estimated that this loss will bring forward the required timing of a new water source by 2 to 3 years. The cost of bringing forward the next source augmentation is in the order of tens of millions of dollars...

Given the significant community investment and benefit that is obtained from the Tomago Sandbeds groundwater scheme, it is incumbent on the Australian Government to make every effort to restore Hunter Water's ability to use this important drinking water source. Failing this, Hunter Water will seek financial compensation for the expense that will be incurred in providing alternative water supply capability.⁵⁰

3.39 On water supply issues, Defence noted that it was 'working closely with Hunter Water Corporation and has already committed to share groundwater and modelling results in order to develop any management strategies that may be required for the aquifer'.⁵¹

Primary industries and other businesses

3.40 Evidence regarding the impact on primary industry and other businesses located within the NSW EPA investigation area was limited. While the Commonwealth Government has provided an assistance package for the commercial fishers, other primary producers have not received financial assistance.

3.41 Defence stated that it was 'unaware of any land-based primary producers affected by the contamination in the investigation zone'. It noted that primary producers 'have not been advised to stop using bore water to water vegetables or crops, or as drinking water for stock'.⁵² The local member, Ms Kate Washington MP highlighted the concerns of some primary producers:

49 *Submission 11*, p. 1.

50 *Submission 11*, pp. 1–2.

51 *Committee Hansard*, 3 December 2015, p. 2.

52 *Submission 87*, p. 23.

People are sitting there saying, 'My bores are higher than what is acknowledged as being contaminated water in Queensland. Am I in some way acting inappropriately to use that at all for anything? What if I use it for my beef and it gets contaminated? What do I do about beef? Do I tell people that my cattle are drinking this water? Is my land now contaminated? Should I be notifying the Contaminated Land Register?' It is creating the damage. You can imagine. People are in this moral and legal conundrum: 'What do I do?'⁵³

3.42 The FCRAAG noted that the pollution of the groundwater, leading the NSW EPA to recommend that bore water not be used, has meant that residents and farmers off base have been unable to use this water for growing vegetables and for livestock.⁵⁴ Mr Hamilton from the Fullerton Cove Residents Action Group also stated:

We have some residents who farm fine alpaca wool, others who breeds dairy cows. They feed and breed the dairy cows on the fine pasture, and then send them out to feedlots. We are being told not to eat the eggs or the chickens, but these cows are grazing on the grass in the rich flood plains and then being sent to feedlots to feed milk for all of us and all of you. We have an Angus stud across the road and they are grazing on the grass right now.⁵⁵

3.43 The NSW Farmers' Association recommended that Defence 'provides a clear and accessible format guide for farmers to apply for specific costs in regard to the impact on their business of closures as a result of PFOS/PFOA'.⁵⁶ It noted that it had written to Air Commander Steve Roberton at RAAF Base Williamtown 'to request that [D]efence fully compensates farmers affected by the loss of productivity and costs incurred in relation to the contamination.'⁵⁷

53 *Committee Hansard*, 3 December 2015, p. 19.

54 *Submission 13*, p. 2.

55 *Committee Hansard*, 22 December 2015, p. 36.

56 *Submission 35*, p. 3.

57 *Submission 35*, p. 8.