

PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Inquiry into the management of PFAS contamination in and around Defence bases

Joint Standing Committee on Foreign Affairs, Defence and Trade

© Commonwealth of Australia

ISBN 978-1-74366-909-9 (Printed Version)

ISBN 978-1-74366-910-5 (HTML Version)

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Contents

Forewordvii

Members ix

Terms of Reference xv

Abbreviations.....xvii

List of Recommendations xix

The Report

1 Introduction.....1

 Conduct of the inquiry 2

 Report structure..... 2

 Context of the inquiry..... 3

 About PFAS 3

 Recognition of PFAS as a pollutant 6

 Intergovernmental agreement on PFAS 7

 2016 Senate committee reports..... 8

2 Contamination and remediation13

 Extent of contamination 13

 Defence investigation and management 14

 Extent of contamination around specific bases..... 20

 Contamination of non-Defence related sites 36

	Remediation	38
	The Government's approach to date	41
	Remediation in other jurisdictions	46
	Research into remediation technologies	46
	Continued use of contaminated bore water	48
	Committee comment	50
3	Health advice and testing.....	55
	Concerns about the health effects of PFAS	55
	Health advice to affected communities	58
	Current Australian advice regarding the health impacts of PFAS	58
	Expert health panel	60
	Is Australia's health advice up to date?	63
	Communication of health advice	65
	Response from the Government	67
	Blood testing and epidemiological study	68
	Epidemiological study	68
	Voluntary blood testing program	69
	Concerns about low participation	72
	Adequacy of current blood testing program to meet its objectives	74
	Other proposed studies	75
	Committee comment	76
4	Financial impacts.....	79
	Financial impacts reported by communities	79
	Impacts on businesses	80
	Impacts on individuals	81
	Related impacts on the community	87
	Claims for compensation	90
	Class actions	91
	Non-litigated claims	92

	State, territory and local government submissions	92
	Consideration by the Government	94
	Committee comment	97
5	Communication and coordination	101
	Australian Government response to date	101
	Coordination between government agencies.....	103
	The Intergovernmental Agreement.....	105
	Other communication and coordination between governments	107
	State and territory government submissions	108
	Local government submissions.....	113
	Community views	1145
	Communication with local communities, businesses and other stakeholders.....	116
	The Government's current approach	116
	State, territory and local government views	119
	Notifications to communities	121
	Lack of trust in government information	122
	Community meetings.....	123
	Other communications.....	124
	Committee comment	125
6	Standards and legislation	129
	Environmental and human health standards.....	129
	Health-based guidance values	129
	Food standards.....	131
	Environmental management.....	133
	Measures to regulate and phase out PFAS.....	133
	PFAS regulation in Australia	134
	Current bans and phase-outs	136
	Stakeholder views.....	139

Environmental regulation of Commonwealth land	143
Cross-jurisdictional issues	143
‘Self-regulation’ by Department of Defence.....	145
Response from the Government	147
Committee comment	148
Appendix A. Submissions and Exhibits.....	153
Appendix B. Public hearings.....	157
Appendix C. Correspondence from the Prime Minister received 24 May 2018..	161

List of Tables

Table 2.1	Status of investigation of Defence properties	16
Table 3.1	Estimated 95th percentile for the Australian population, 2011–2012..	70
Table 6.1	Australian health based guidance values for PFAS chemicals.....	130

List of Figures

Figure 2.1	Map of Army Aviation Centre Oakey Management Area.....	22
Figure 2.2	Map of RAAF Base Williamtown Management Area	26
Figure 2.3	Map of RAAF Base Tindal Investigation Area	30

Foreword

The Senate referred the inquiry into the management of PFAS contamination in and around Defence bases to the Joint Standing Committee on Foreign Affairs, Defence and Trade in December 2017. Before deciding how to proceed the Committee sought further information from the Government on its response to PFAS contamination emanating from Defence bases. Upon receiving that information, in a letter from the then Prime Minister, the Hon. Malcolm Turnbull, and in the report of the Independent Expert Health Panel, the Committee established a PFAS Sub-committee to undertake this inquiry.

This report contains significant recommendations with a focus on improving the Government's response to this issue, particularly in relation to the concerns of the affected communities. The Committee has recommended that a Coordinator-General be appointed with the authority and resources necessary to more effectively coordinate the whole of Commonwealth Government effort in respect of PFAS contamination and to ensure a clear and consistent approach to community consultations and to cooperation with state, territory and local governments. The Committee has made recommendations to improve the voluntary blood testing program as a source of longitudinal information on the long term health effects of PFAS exposure and the effectiveness of measures to break PFAS exposure pathways. In many instances, property owners in PFAS contaminated areas have suffered demonstrable and quantifiable financial losses and the Committee has recommended compensation.

This issue has driven many otherwise ordinary citizens to organise, conduct research and develop significant expertise in an effort to be heard. It should not take years of campaigning at this level of effort to adequately address the legitimate concerns of communities of people.

On behalf of all the PFAS Sub-committee members, I would like to thank and pay tribute to the many members of PFAS affected communities across the country who made submissions to the inquiry and who appeared to give evidence at public and in-camera hearings. The hearings at Katherine, Williamtown and Oakey were remarkable for the intensity of the emotion that could not be masked. These communities are hurt and angered by the effects PFAS contamination, and the delays and inadequacies in the response to its discovery, have had on their lives, their families and their communities.

For most citizens, and even expert witnesses, appearing before a parliamentary committee can be a daunting prospect at the best of times. For many of our witnesses it was a particularly distressing experience to explain before strangers how they and their families have been affected by PFAS contamination. I trust that this report honours their effort.

Mr Andrew Laming MP

Chair

PFAS Sub-committee

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Joint Standing Committee on Foreign Affairs, Defence and Trade

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<i>(Chair from 11.9.18 to 6.10.18)</i>	
<i>(Chair from 25.10.18)</i>	

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Terms of Reference

The Commonwealth Government's management of per- and polyfluoroalkyl substances (PFAS) contamination in and around Defence bases, with particular reference to:

- a. the extent of contamination in and around Defence bases, including water, soil, other natural assets and built structures;
- b. the response of, and coordination between, agencies of the Commonwealth Government, including, but not limited to, the Department of the Prime Minister and Cabinet, the Department of Health, the Department of the Environment and Energy, the Department of Defence and the Australian Defence Force;
- c. communication and coordination with state and territory governments, local councils, affected local communities and businesses, and other interested stakeholders;
- d. the adequacy of health advice and testing of current and former defence and civilian personnel and members of the public exposed in and around Defence bases identified as potentially affected by contamination;
- e. the adequacy of Commonwealth and state and territory government environmental and human health standards and legislation, and any other relevant legislation;
- f. remediation works at the bases; and
- g. what consideration has been given to understanding and addressing any financial impact to affected businesses and individuals.

Abbreviations

AFFF	Aqueous Film Forming Foam
AFOEM	Australasian Faculty of Occupational and Environmental Medicine
AFPHM	Australasian Faculty of Public Health Medicine
AICS	Australian Inventory of Chemical Substances
ANU	Australian National University
CRG	Community Reference Group
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DSI	Detailed Site Investigation
EPA	Environmental Protection Agency
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERA	Ecological Risk Assessment
HHRA	Human Health Risk Assessment
IGA	<i>Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination</i>
MFB	Metropolitan Fire and Emergency Services Board

NEMP	<i>PFAS National Environmental Management Plan</i>
NHMRC	National Health and Medical Research Council
NICNAS	National Industrial Chemicals Notification and Assessment Scheme
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
POPs	Persistent Organic Pollutants
RAAF	Royal Australian Air Force
RACP	Royal Australasian College of Physicians
Stockholm Convention	Stockholm Convention on Persistent Organic Pollutants

List of Recommendations

Recommendation 1

- 5.76 The Committee recommends that the Australian Government appoint a Coordinator-General to coordinate the national response to the PFAS contamination issue, supported by an appropriately resourced office. The Coordinator-General's role should include:
- ongoing monitoring of PFAS levels in all management areas, using a range of sampling methods, and publish the results as soon as practicable in a publicly accessible format;
 - providing leadership to drive effective, transparent and consistent responses to PFAS contamination at sites across the country;
 - identifying gaps and priorities for investigation and remediation, based on the extent of contamination and risk to human and environmental health in each area;
 - working across portfolios, and with state, territory and local governments, to overcome barriers to cooperation, coordinate actions and to clearly communicate outcomes and advice to the public; and
 - providing a national point of contact and accountability for the Government's response to the PFAS issue, including annual reporting to the Parliament.

Recommendation 2

2.128 The Committee recommends that the Government continue to upscale its investment in the containment of PFAS contamination plumes, and the remediation of contaminated land and water sources. The Coordinator-General (see Recommendation 1) should:

- publish draft remediation and management plans for each investigation area, and seek public input before finalisation;
- continue support for research into remediation technologies, including disposal of contaminated soil and residue from water treatment plants;
- continue to engage with international stakeholders, including past manufacturers of PFAS chemicals, to ensure best practice approaches are taken to the remediation and disposal of PFAS contamination;
- in collaboration with states and territories, review the effectiveness of current advice regarding the use of contaminated bore water for irrigation purposes and to consider whether restrictions should be put in place; and
- ensure a consistent approach to PFAS contamination across non-Commonwealth sites in consultation with state, territory and local governments.

Recommendation 3

3.75 The Committee recommends that the Australian Government review its existing advice in relation to the human health effects of PFAS exposure, including to acknowledge the potential links to certain medical conditions.

Recommendation 4

3.79 The Committee recommends that the Australian Government, as soon as possible, undertake measures to improve participation in the voluntary blood testing program for PFAS. This should include measures to:

- increase community awareness about the purpose and importance of the tests, and the associated epidemiological study;
- simplify the testing process;

- extend the program to be available in additional areas; and
- ensure Australia's testing strategy is comparable to international studies.

Further, the Committee recommends that the Government consider the potential value of blood testing to monitor the effectiveness of measures being used to break PFAS exposure pathways in affected communities. This will necessitate longitudinal analysis of those who have been previously tested and additional tests being made available, after an appropriate period, to persons who have previously been tested.

Recommendation 5

4.62 The Committee recommends that the Australian Government assist property owners and businesses in affected areas for demonstrated, quantifiable financial losses associated with PFAS contamination that has emanated from Defence bases. Priority for compensation, including the possibility of buy backs, should in the first instance be given to the most seriously affected residents, including:

- property owners who have suffered losses as a result of being unable to use their land for a specific purpose that it was intended for at the time of purchase;
- persons who invested in land between the time that it was known by the Australian Government to be contaminated and the time of that contamination being made public; and
- businesses and other owners of property in the most highly contaminated areas.

The compensation scheme should be flexible enough to accommodate a variety of individual circumstances.

Acceptance of an offer for compensation in respect of their property's utility or value should not preclude the person from a future claim in relation to any human health effects that may be found, as a result of future research, to be attributable to PFAS exposure.

Recommendation 6

- 4.66 The Committee recommends that the Australian Government make available free, individualised case management and financial counselling services to those affected by PFAS contamination.

Recommendation 7

- 6.69 The Committee recommends that the Australian Government implement legislation and policies to:
- ban nationally the use of, contain, and ultimately safely destroy, long chain PFAS-based firefighting foams (including those containing PFOS, PFOA and PFHxS);
 - place appropriate restrictions on the non-essential use of shorter chain PFAS-based foams; and
 - continue to encourage the use of PFAS-free alternatives wherever possible.

Recommendation 8

- 6.70 The Committee recommends that the Australian Government urgently ratify the listing of PFOS under the Stockholm Convention on Persistent Organic Pollutants.

Further, the Committee recommends that the Government expedite the process for ratification of PFOA and PFHxS in the event that they are listed under the Stockholm Convention in the future.

Recommendation 9

- 6.74 The Committee recommends that the Australian Government initiate an independent review of environmental regulation of Commonwealth land. The review should consider:
- the adequacy of current and proposed arrangements to ensure that responses to contamination events originating on Commonwealth land are given appropriate regulatory oversight;

- possible measures to enhance the regulatory response to contamination events that cross jurisdictional boundaries;
- the relative advantages and disadvantages of establishing a Commonwealth Environmental Protection Agency, or similar body, to regulate Commonwealth lands; and
- possible alternative options to enhance regulatory oversight of Commonwealth land, and contamination events emanating from Commonwealth land.

1. Introduction

1.1 On 7 December 2017, the Senate referred to the Joint Standing Committee on Foreign Affairs, Defence and Trade an inquiry into the Commonwealth Government's management of per- and polyfluoroalkyl substances (PFAS) contamination in and around Defence bases, for inquiry and report by 20 June 2018.

1.2 The terms of reference for the inquiry are:

The Commonwealth Government's management of per- and polyfluoroalkyl substances (PFAS) contamination in and around Defence bases, with particular reference to:

- a. the extent of contamination in and around Defence bases, including water, soil, other natural assets and built structures;
- b. the response of, and coordination between, agencies of the Commonwealth Government, including, but not limited to, the Department of the Prime Minister and Cabinet, the Department of Health, the Department of the Environment and Energy, the Department of Defence and the Australian Defence Force;
- c. communication and coordination with state and territory governments, local councils, affected local communities and businesses, and other interested stakeholders;
- d. the adequacy of health advice and testing of current and former defence and civilian personnel and members of the public exposed in and around Defence bases identified as potentially affected by contamination;
- e. the adequacy of Commonwealth and state and territory government environmental and human health standards and legislation, and any other relevant legislation;

- f. remediation works at the bases; and
 - g. what consideration has been given to understanding and addressing any financial impact to affected businesses and individuals.
- 1.3 The Committee resolved to seek further information from the Prime Minister before resuming consideration of the reference. The Chair wrote to the Prime Minister on 12 February 2018 and the Prime Minister's response was provided on 24 May 2018 (see Appendix C).
- 1.4 The Committee commenced its inquiry on 30 May 2018 and established a new sub-committee for the purpose of the inquiry (the PFAS Sub-Committee).
- 1.5 On 9 May 2018 the Senate agreed to extend the reporting date until 23 August 2018. On 14 August 2018, the Senate agreed to further extend the reporting date until 25 October 2018.

Conduct of the inquiry

- 1.6 The Committee announced the commencement of the inquiry by media release on 30 May 2018 and requested submissions from interested members of the public. Submissions were requested by 6 July 2018.
- 1.7 The Committee received 81 submissions, including 4 supplementary submissions, from a range of government agencies, non-government organisations and individuals. Submissions are available on the Committee's website.¹ A full list of submissions received is also included at Appendix A.
- 1.8 The Committee held four public hearings in Katherine, Williamstown, Oakey and Canberra. Transcripts from these hearings are available on the Committee's website.² A full list of public hearings and witnesses is available at Appendix B.

Report structure

- 1.9 This report is divided into seven chapters:
 - The remainder of this chapter briefly introduces PFAS and discusses the context of the inquiry;

¹ <https://www.apf.gov.au/pfas>

² <https://www.apf.gov.au/pfas>

- **Chapter 2** discusses the extent of PFAS contamination in and around Defence bases, and remediation work at the bases (terms of reference a and f);
- **Chapter 3** discusses the adequacy of health advice and testing of defence and civilian personnel and members of the public exposed in and around Defence bases (term of reference d);
- **Chapter 4** discusses the consideration given to understanding and addressing the financial impact on affected businesses and individuals (term of reference g);
- **Chapter 5** discusses the response of, and coordination between, Commonwealth agencies; and communication and coordination with state and territory governments, local councils, affected communities and businesses, and other interested stakeholders (terms of reference b and c); and
- **Chapter 6** discusses the adequacy of Commonwealth and state and territory environmental and human health standards and legislation, and other relevant legislation (term of reference e).

Context of the inquiry

- 1.10 PFAS contamination has been an issue of increasing community concern in recent years, both in Australian and overseas. In Australia, concerns to date have mainly focused on Defence facilities and their surrounding communities. These include the communities surrounding RAAF Base Williamtown (New South Wales), the Oakey Army Aviation Centre (Queensland) and RAAF Base Tindal (Katherine, Northern Territory). In total, as at September 2018, 26 Defence sites are undergoing or have undergone detailed investigation. However, a wide range of other sites around Australia are known to have experienced PFAS contamination and the extent of this contamination is currently under investigation by various Commonwealth, state and territory authorities.

About PFAS

- 1.11 Per-and polyfluoroalkyl substances (PFAS) is the name given to a group of man-made chemicals used since at least the 1950s for a variety of specialty applications. PFAS can be found in:
- some types of firefighting foams;
 - some industrial processes, such as metal plating and plastics etching;
 - some photo-imaging applications, such as X-ray films;
 - aviation hydraulic fluid;

- the manufacture of some non-stick cookware and other products;
- some fabric, furniture and carpet stain protection applications; and
- some food packaging.³

1.12 Concerns about the impacts of PFAS have particularly arisen due to their stable chemical structure and ability to move through the environment. The *PFAS National Environment Management Plan* states:

PFAS resist physical, chemical and biological degradation, and are very stable. This stability creates a problem: PFAS last for a long time.

... Molecules of PFAS are made up of a chain of carbon atoms flanked by fluorine atoms, with a hydrophilic group at their head. Their high solubility in water means that PFAS readily leach from soil to groundwater, where they can move long distances. When the groundwater reaches the surface, the PFAS will enter creeks, rivers and lakes. There it can become part of the food chain, being transferred from organism to organism.⁴

1.13 While at least 4730 different PFAS-related chemicals are known to exist,⁵ the most well-known and studied examples are:

- perfluorooctane sulfonate (PFOS),
- perfluorooctanoic acid (PFOA), and
- perfluorohexane sulfonate (PFHxS).

1.14 Each of these chemicals has been recognised as being persistent in the environment, bio-accumulative, and toxic in certain species.⁶

³ Department of the Environment and Energy, 'Per- and poly-fluoroalkyl substances (PFASs)', <http://www.environment.gov.au/protection/chemicals-management/pfas> viewed 17 August 2018.

⁴ Heads of EPAs Australia and New Zealand (HEPA), *PFAS National Environmental Management Plan*, January 2018, p. 3.

⁵ Organisation for Economic Co-operation and Development (OECD), 'The OECD releases a new list of PFASs', <http://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/> viewed 22 August 2018.

⁶ OECD Environment Directorate, Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, *Co-operation on existing chemicals: Hazard Assessment of Perfluorooctane Sulfonate (PFOS) and its Salts*, 21 November 2002, p. 2; European Chemicals Agency, *Member State Committee Support Document for Identification of Pentadecafluorooctanoic Acid (PFOA) as a Substance of Very High Concern because of its CMR and PBT properties*, 14 June 2013, pp. 4–6; Persistent Organic Pollutants Review Committee, *Perfluorohexane sulfonic acid (CAS No: 355-46-4, PFHxS), its salts and PFHxS-related compounds: Draft Risk Profile*, June 2018, p. 6.

- 1.15 Firefighting foams (also known as Aqueous Film Forming Foams, or AFFFs) containing PFOS and PFOA as active ingredients were once used extensively, including at Defence bases, due to their effectiveness in fighting liquid fuel fires. PFHxS is also commonly found in the legacy firefighting foam as an impurity in the manufacturing process.⁷
- 1.16 The use of PFAS in an ‘environmentally dispersive’ manner, in particular due to their presence in firefighting foams, has led to elevated levels at a number of sites around Australia,⁸ including at a number of Defence properties. To a lesser degree, PFAS have also entered the environment through sewerage discharge and the disposal of trade waste and consumer products to landfill.⁹
- 1.17 Due to the long half-life of PFAS and its past widespread use, PFAS are found at low levels in the environment worldwide, including in locations and wildlife far from direct human sources, such as in the polar regions.¹⁰ The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee advises:

Because of their widespread use, people in Australia commonly have some PFOS, PFOA and PFHxS in their body. PFOS and PFOA are readily absorbed through the gut, and once these chemicals are in a person’s body it takes about two to nine years, depending on the study, before those levels go down by half, even if no more is taken in.¹¹

⁷ Department of Defence, ‘What are PFAS?’, <http://www.defence.gov.au/Environment/PFAS/PFAS.asp> viewed 17 August 2018.

⁸ Department of the Environment and Energy, *National phase out of PFOS: Ratification of the Stockholm Convention amendment on PFOS – Regulation Impact Statement for consultation*, October 2017, p. 17.

⁹ Department of the Environment and Energy, *National phase out of PFOS: Ratification of the Stockholm Convention amendment on PFOS – Regulation Impact Statement for consultation*, October 2017, p. 23.

¹⁰ Department of the Environment and Energy, *National phase out of PFOS: Ratification of the Stockholm Convention amendment on PFOS – Regulation Impact Statement for consultation*, October 2017, p. 24.

¹¹ Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*, updated September 2017, p. 1.

Recognition of PFAS as a pollutant

- 1.18 PFOS is listed under Annex B of the Stockholm Convention on Persistent Organic Pollutants, which requires its use and production to be restricted to only certain acceptable purposes and specific exemptions.¹² Australia has not yet ratified this listing. PFOA and PFHxS are also at varying stages of consideration for listing under the Stockholm Convention.¹³
- 1.19 The European Chemicals Agency lists PFOA as a 'substance of very high concern' due to its persistent, bio-accumulative and toxic characteristics.¹⁴ The European Union has recently introduced measures to regulate the production and use of PFOA due to the 'unacceptable risk to human health and the environment' posed by the chemicals.¹⁵
- 1.20 There are no mandatory restrictions on the use of PFAS in Australia. However, the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) has issued recommendations to industry stakeholders for the phase out of PFAS, and for PFOS and PFOA firefighting products to be restricted to essential use only, and not used for fire training or testing purposes.¹⁶ Queensland and South Australia have also introduced bans on firefighting foams containing PFAS in their jurisdictions.¹⁷
- 1.21 enHealth advises that there is 'currently no consistent evidence that exposure to PFAS causes adverse health effects'. However, due to the

¹² Stockholm Convention, 'The new POPs under the Stockholm Convention', <http://chm.pops.int/TheConvention/ThePOPs/TheNewPOPs/tabid/2511/Default.aspx> viewed 5 September 2018.

¹³ Stockholm Convention, 'Chemicals proposed for listing under the Convention', <http://chm.pops.int/TheConvention/ThePOPs/ChemicalsProposedforListing/tabid/2510/Default.aspx> viewed 5 September 2018.

¹⁴ European Chemicals Agency, *Member State Committee Support Document for Identification of Pentadecafluorooctanoic Acid (PFOA) as a Substance of Very High Concern because of its CMR and PBT properties*, 14 June 2013.

¹⁵ Commission Regulation (EU) 2017/1000 of 13 June 2017, *Official Journal of the European Union*, 150/14–16.

¹⁶ National Industrial Chemicals Notification and Assessment Scheme (NICNAS), Submission 59, pp. 3, 4.

¹⁷ Queensland Government, Department of Environment and Science, *Submission 33*, p. 1; South Australia Environment Protection Agency, 'South Australia bans PFAS', https://www.epa.sa.gov.au/articles/2018/04/16/south_australia_bans_pfes viewed 5 September 2018.

persistence of PFAS in human and the environment, enHealth recommends that human exposure 'be minimised as a precaution'.¹⁸

- 1.22 More recently, an Expert Health Panel for PFAS was established to advise the Australian Government on the potential health impacts associated with PFAS exposure and to identify priority areas for further research. The Panel conducted a review of 20 recently published Australian and international reports and academic reviews that had examined scientific studies on potential human health effects of PFAS exposure. The Expert Panel's report, released in May 2018, while noting the potential links between PFAS exposure and certain health effects identified in previous studies, concluded:

Importantly, there is no current evidence that supports a large impact on a person's health as a result of high levels of PFAS exposure. However, even though the evidence for PFAS exposure and links to health effects is very weak and inconsistent, important health effects for individuals exposed to PFAS cannot be ruled out based on the current evidence.¹⁹

Intergovernmental agreement on PFAS

- 1.23 An *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination* (the IGA) came into effect in February 2018 in order to 'support collaboration and cooperation between the Commonwealth and the States and Territories to respond consistently and effectively to [PFAS] contamination'. The following key areas for action were agreed to under the IGA:

- adopting a *PFAS Contamination Response Protocol*;
- applying the *PFAS National Environmental Management Plan*;
- implementing the *PFAS Information Sharing, Communication and Engagement Guidelines*;
- applying guidance material agreed by relevant national government expert groups, including:
 - Health Based Guidance Values for PFAS;
 - enHealth Guidance Statements on PFAS;
 - Australian Health Protection Principal Committee PFAS Factsheet;
 - Food Regulation Standing Committee Statement on PFAS and the general food supply;

¹⁸ Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*, updated September 2017, p. 1.

¹⁹ *Expert Panel for PFAS: Summary*, p. [2].

- supporting collaboration between agencies and industry stakeholders across jurisdictions; and
- collaborating to advance high quality research into PFAS.²⁰

1.24 The Commonwealth Government's response to the issue is being coordinated by the PFAS Taskforce, which was established in December 2016.

2016 Senate committee reports

1.25 In late 2015, the Senate Foreign Affairs, Defence and Trade References Committee commenced an inquiry into matters related to PFAS contamination at Royal Australian Air Force (RAAF) Base Williamtown and other sites. The terms of reference for the Senate committee's inquiry were similar to the current inquiry, but extended to other Commonwealth, state and territory sites where firefighting foams containing PFAS were used, including non-Defence sites.

1.26 The Senate committee presented Part A of its report in February 2016, focusing on the contamination at and around RAAF Base Williamtown. The Senate committee made 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

²⁰ *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination*, pp. 6-7.

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 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.²¹

1.27 The Government response to Part A of the Senate committee's report was presented in April 2016. The Government agreed with Recommendation 1, 3, and 4, did not agree with Recommendation 7, and 'agreed in part' to Recommendation 8. The Government provided 'interim' responses to Recommendations 2, 5 and 6, pending the results of further investigations and risk assessments. For Recommendation 5, in relation to voluntary property acquisitions, the Government response stated:

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.²²

²¹ Senate Foreign Affairs, Defence and Trade References Committee, *Inquiry into firefighting foam contamination: Part A – RAAF Base Williamtown*, February 2016, pp. xiii–xiv.

²² 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.

- 1.28 On 7 May 2018, shortly after the release of the Expert Health Panel's report, the PFAS Taskforce announced by media release that 'based on the knowledge and evidence available at this time, the Australian Government is not considering a land purchase program as a result of PFAS contamination'.²³
- 1.29 In May 2016, the Senate committee presented Part B of its report, focused on the Army Aviation Centre Oakey and other Commonwealth, state and territory sites. The Senate committee made nine recommendations:
- Recommendation 1 – 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 – 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 – 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 – 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 – 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 – 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

²³ Department of Environment and Energy, PFAS Taskforce, 'Australian Government support for PFAS management', *Media Release*, 7 May 2018.

Stockholm Convention on Persistent Organic Pollutants before the end of 2016.

Recommendation 7 – 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 – 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 – 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.²⁴

- 1.30 At the time of the current inquiry, the Government had not yet provided a response to the recommendations in Part B of the Senate committee's report. In his letter to the Committee of 24 May 2018 (Appendix C), the Prime Minister advised:

The Australian Government is currently finalising its response to the *Senate Inquiry Report part B – Army Aviation Centre Oakey and other Commonwealth, state and territory sites*. I am aware this response is overdue and have urged relevant Ministers to prioritise finalisation.

²⁴ 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, pp. xi–xii.

2. Contamination and remediation

2.1 This chapter addresses the following terms of reference:

(a) the extent of contamination in and around Defence bases, including water, soil, other natural assets and built structures; and

(f) remediation works at the bases.

2.2 The chapter includes:

- a discussion of the overall extent of PFAS contamination in and around Defence bases, including the investigation process followed by the Department of Defence (Defence) and the methods it uses to assess and monitor the extent of contamination at each site;
- a discussion of evidence received by the Committee in relation to contamination in and around specific Defence bases, particularly those at Oakey, Williamtown and Katherine;
- a brief overview of evidence received about contamination at other sites;
- an overview of remediation works undertaken to date in and around Defence bases; and
- the Committee's conclusions and recommendations.

Extent of contamination

2.3 The National Toxics Network summarised the challenge posed by PFAS as follows:

PFAS chemicals cannot and do not break down. They have no environmental degradation mechanisms (eg hydrolysis, photolysis, or biodegradation). PFAS accumulate in the environment and in all living things, including humans. PFAS can damage the endocrine and reproductive system and the immune system of humans and wildlife. While, the focus has been primarily on PFOS,

PFOA and PFHxS, these represent only three of the estimated 4,730 PFAS chemicals in use today. Information on toxic effects and environmental fate exists for only a handful. With the ability of all PFAS to travel via air and water, essentially contaminating the commons, urgent national and international action is warranted and well overdue.¹

- 2.4 The Coalition Against PFAS informed the Committee that Defence had used 3M Lightwater—a firefighting foam containing PFOS, PFHxS and (to a lesser degree) PFOA—since the 1970s.² In 2000, the United States Environmental Protection Agency wrote to the Australian Government to draw attention the long term risks of PFOS to human health and the environment. However, existing stocks of the product continued to be used by Defence until at least 2011.³ The Coalition Against PFAS considered that this usage had been ‘disastrous in the long term’, with contamination plumes modelled to remain present for 100 years or more, in some cases,⁴ and high blood serum levels in affected communities including Oakey, Williamtown and Katherine.⁵

Defence investigation and management

- 2.5 At a public hearing, Defence advised that it had stopped acquiring foam containing PFOS and PFOA (3M Lightwater) from 2004, and phased out its use in preference for an alternative fluorinated foam (Ansulite). Defence also said it had changed its training practices to mainly use water, and noted that when foam was used for training it was collected and taken to a license water treatment facility. While noting it had conducted audits to ensure its remaining stocks of 3M Lightwater were disposed of, Defence could not confirm that it did not hold any more of the product in small amounts.⁶
- 2.6 The Australian Government described the Department of Defence’s PFAS Investigation and Management Program as ‘possibly the largest program of environmental investigations ever conducted in Australia’.⁷ At the time of

¹ National Toxics Network, *Submission 34*, p. 2.

² Coalition Against PFAS, *Submission 40*, pp. 4, 5.

³ Coalition Against PFAS, *Submission 40*, p. 6.

⁴ Coalition Against PFAS, *Submission 40*, p. 6.

⁵ Coalition Against PFAS, *Submission 40*, p. 9.

⁶ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamtown, 24 July 2018, pp. 56, 58.

⁷ Australian Government, *Submission 64*, p. 3.

the Government's submission, the total combined size of the investigation areas was approximately 1150 square kilometres, and Defence had spent in excess of \$130 million on the program.⁸

- 2.7 Investigation areas consist of the relevant Defence property, and its vicinity where relevant, in which detailed environmental investigations, including a sampling program, are carried out to assess the location and extent of PFAS contamination. Investigation areas are intended to encompass the plume of PFAS contamination, and an additional buffer area to allow for changes in PFAS migration pathways.⁹
- 2.8 The process for the Government's assessment of site contamination includes three phases:
- **Phase 1 – Preliminary Site Investigation** – undertaken to determine the presence or absence of PFAS. In cases where PFAS is identified, it provides a baseline understanding of source areas, migration pathways and hydrogeology of the area. It includes a review of previous site reports, an inspection of the site, limited sampling (if any) and an examination of past fire-fighting foam use and storage practices. The results of the Preliminary Site Investigation determine whether the investigation should progress to the next phase.
 - **Phase 2 – Detailed Site Investigation (DSI)** – may include extensive sampling, analysis and interpretation of soil, water, plants, animals and other environmental media which may be impacted by PFAS contamination. A Detailed Site Investigation identifies and confirms the areas where legacy AFFF was used (source areas) and how far, and where, it has spread in the environment (migration pathways). The type and quantity of sampling is different for each environmental investigation and is determined by several factors, including the hydrogeology of the investigation area. All Detailed Site Investigations are undertaken by independent environmental consultants and collected samples are sent to laboratories accredited by the National Association of Testing Authorities for testing and analysis, including the Commonwealth's National Measurement Institute, a division of the Department of Industry, Innovation and Science.
 - **Phase 3 – Human Health Risk Assessment (HHRA) and/or Ecological Risk Assessment (ERA)** – conducted if required following the Detailed

⁸ Australian Government, *Submission 64*, p. 3.

⁹ Australian Government, *Submission 63*, p. 3.

Site Investigation. If the results of the Detailed Site Investigation reveal that humans and/or animals in the food chain have the potential to be exposed to the contamination, an assessment will be undertaken into the risk of PFAS contamination to human health, through a Human Health Risk Assessment. An Ecological Risk Assessment may be conducted if the Detailed Site Investigation identifies that sensitive ecological receptors, such as marine life, plants or animals may be affected.¹⁰

- 2.9 At the conclusion of each investigation, Defence will use the findings to develop a **PFAS Management Area Plan (PMAP)** that addresses the elevated risks identified in the detailed investigation and the risk assessment. PMAPs are currently under development for some sites where the investigation phase has concluded. Further, in some circumstances, response actions may be conducted simultaneously with the investigations to reduce the risk of impacts on human health, communities and/or the environment.¹¹

Defence properties under investigation

- 2.10 At the time the Committee’s inquiry commenced, the Department of Defence was conducting—or had finished conducting—detailed site investigations for PFAS contamination in and around 23 properties.¹² During the inquiry, the Committee was advised that investigations were commencing at a further three properties.¹³ These 26 properties, and the current status of their investigations, are summarised in the below table. Defence publishes information and publications relating to each investigation area on its website.¹⁴

Table 2.1 Status of investigation of Defence properties

State	Site	Investigation status
NSW	RAAF Base Williamtown	Commenced Sep 2015; multiple DSI reports;

¹⁰ Australian Government, *Submission 63*, pp. 4–5.

¹¹ Australian Government, *Submission 63*, p. 6.

¹² Australian Government, *Submission 63*, p. 3.

¹³ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamtown, 24 July 2018, p. 57.

¹⁴ <http://www.defence.gov.au/environment/pfas>

		HHRA Dec 2017; ERA in progress
	HMAS Albatross	Commenced May 2016; DSI Nov 2017; HHRA Jun 2018; ERA in progress
	RAAF Base Richmond	Commenced May 2017; DSI Jun 2018; HHRA and ERA in progress
	RAAF Base Wagga	Commenced May 2017; DSI Jun 2018; HHRA and ERA in progress
	Holsworthy Barracks	Commenced Jun 2017; DSI in progress
	Singleton Military Area	Commenced Jul 2018, DSI in progress
	Blamey Barracks (Kapooka)	Commenced 2017, DSI in progress
Vic.	RAAF Base East Sale	Commenced May 2016; DSI Jun 2017; HHRA/ERA Aug 2018, PMAP Aug 2018
	HMAS Cerberus	Commenced May 2017; DSI in progress; HHRA and ERA not required
	Bandiana Military Area	Commenced Jun 2017, DSI Sep 2018, HHRA and ERA in progress
	RAAF Williams (Laverton)	Commenced 2017, DSI in progress
Qld	Army Aviation Centre Oakey	Commenced Dec 2012; multiple DSI reports; HHRA Dec 2017; ERA in progress
	RAAF Base Townsville	Commenced Mar 2017; DSI May 2018, HHRA and ERA in progress
	RAAF Base Amberley	Commenced Mar 2017; DSI, HHRA and ERA in progress
	Lavarack Barracks	Commenced Oct 2017, DSI in progress
WA	RAAF Base Pearce	Commenced Apr 2016; DSI Jul 2018, HHRA Jul 2018, ERA in progress
	HMAS Stirling	Commenced May 2017, DSI May 2018, ERA in progress, HHRA not required
	RAAF Base Learmonth	Commenced Sep 2017, DSI in progress
	Harold E Holt Area A	Commenced Sep 2017, DSI in progress

	Harold E Holt Area B	Commenced Sep 2017, DSI in progress
	Gingin Satellite Airfield	Commenced Oct 2017, DSI Jul 2018
SA	RAAF Base Edinburgh	Commenced Nov 2016, DSI, HHRA and ERA in progress
ACT	Jervis Bay Range Facility	Commenced Jan 2017, DSI, HHRA and ERA in progress
NT	RAAF Base Tindal	Commenced Mar 2017, DSI Feb 2018 and Sep 2018, HHRA Jun 2018, ERA in progress
	RAAF Base Darwin	Commenced Mar 2017, DSI Feb 2018, HHRA Jun 2018, ERA in progress
	Robertson Barracks	Commenced Jun 2017, DSI Jun 2018, HHRA/ERA Aug 2018

Source: Australian Government, Submission 64, p. 32; www.defence.gov.au/environment/pfas/

- 2.11 The Australian Government advised that the investigations of some sites—including RAAF Base Williamtown and the Army Aviation Centre Oakey—were reaching completion and were transitioning to the PFAS Management Area Plan as part of the ‘Response Management Phase’. Other sites were comparatively early in the process.¹⁵
- 2.12 The Government also noted that while its dataset was ‘not yet complete’, Defence had ‘required significantly condensed timeframes for investigations compared with standard industry practice’. It added:

When Defence commenced its National PFAS Investigation Program, testing capabilities were initially limited, and industry’s level of understanding of PFAS chemicals was still developing. As the program has progressed, testing and analysis capabilities for PFAS continue to improve.¹⁶

Assessing and monitoring the extent of contamination at each site

- 2.13 The Australian Government explained that due to the ‘highly mobile’ nature of PFAS, water is the primary method of PFAS contamination transferring from a source to a receptor, such as a person, animal, plant, eco-system, property or a water body. As such, in addition to soil or water samples at particular locations, it is necessary for the investigations to understand the

¹⁵ Australian Government, *Submission 63*, p. 5.

¹⁶ Australian Government, *Submission 63*, p. 5.

characteristics of soil and rock formations and the distribution and movement of groundwater.¹⁷

- 2.14 On average, between 500 and 2000 samples are taken during the investigation of an area, depending on the complexity of the investigation. Where samples exceed the applicable screening criteria for the intended land use, or for drinking water, then the sample may be described as contaminated.¹⁸
- 2.15 The Australian Government noted that the results of sampling often released a 'patchwork of varying levels of contamination'. It summarised the typical results of investigations as follows:

Investigations have revealed the principal sources of PFAS contamination at or in the vicinity of Defence properties are former and current Fire Training Areas, former and current fire stations, aircraft hangars, incident sites where AFFF was deployed, and AFFF storage/decanting facilities. Groundwater, surface water, and stormwater/drainage and sewerage systems have been identified as potential pathways for PFAS contamination, through which PFAS can move from a source area to a receptor.¹⁹

- 2.16 The Victorian Government noted that any site where there have been regular fire-fighting exercises is likely to have some level of PFAS contamination:

As far as the Victorian Government is aware, all [Department of Defence] sites have undertaken regular fire-fighting activity and therefore all of these sites will have some degree of contamination. However, the extent to which PFAS has migrated from Commonwealth land into surrounding land depends on individual factors, including the concentration of contaminants, their proximity to water tables and the local geology and hydrology.²⁰

- 2.17 A number of submitters to the inquiry expressed a desire for further environmental monitoring of PFAS levels in affected areas, and for the results of this monitoring to be made publicly available in a timely manner.²¹

¹⁷ Australian Government, *Submission 63*, p. 5.

¹⁸ Australian Government, *Submission 63*, p. 6.

¹⁹ Australian Government, *Submission 63*, p. 6.

²⁰ Victorian Government, *Submission 76*, p. 1.

²¹ For example, Jenny Robinson, *Submission 9*, p. [1]; Justin Hamilton, *Submission 13*, p. [2]; Nicole Smith, *Submission 45*, p. 2 (cover letter); Williamtown and Surrounds Residents Action Group, *Submission 51*, pp. [4, 6]; Mrs Sue Walker, *Committee Hansard*, Williamtown, 24 July 2018, p. 10.

- 2.18 The New South Wales Government recommended that Defence publish ongoing monitoring reports and provide a website that includes ‘site by site monitoring data in an accessible format for community members’.²²
- 2.19 The Royal Australasian College of Physicians supported the monitoring of drinking water, soil and food around sites where PFAS contamination is a concern, noting that this can assist with risk communication for concerned communities, as well as assisting population risk assessments and compliance with environmental guidelines and standards.²³
- 2.20 At a public hearing in Williamstown, Defence advised that while it published all the products of its investigations on its website, including summaries to make the information ‘digestible’, it did not publish the specific readings taken during testing on private properties for privacy reasons.²⁴
- 2.21 Defence also advised that one of the changes it had made in its investigation methodology since 2015 is that, rather than starting investigations at the source of the contamination (i.e. on the base) and gradually working its way out, the ‘first thing’ it would do is to ‘go and look outside a Defence property where we thought there might be contamination and just see what’s there, if there’s anything there’.²⁵

Extent of contamination around specific bases

- 2.22 The majority of submissions received by the Committee referred to one or more of the following three investigation areas:
- Army Aviation Centre Oakey (Queensland);
 - RAAF Base Williamstown (New South Wales); or
 - RAAF Base Tindal (Northern Territory).

Army Aviation Centre Oakey

- 2.23 In its May 2016 report, the Senate Foreign Affairs, Defence and Trade References Committee summarised the history of use of PFAS firefighting foams at the Army Aviation Centre Oakey and provided a timeline of how

²² New South Wales Government, *Submission 61*, p. 4.

²³ Royal Australasian College of Physicians, *Submission 69*, p. 7.

²⁴ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamstown, 24 July 2018, p. 58.

²⁵ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamstown, 24 July 2018, p. 57.

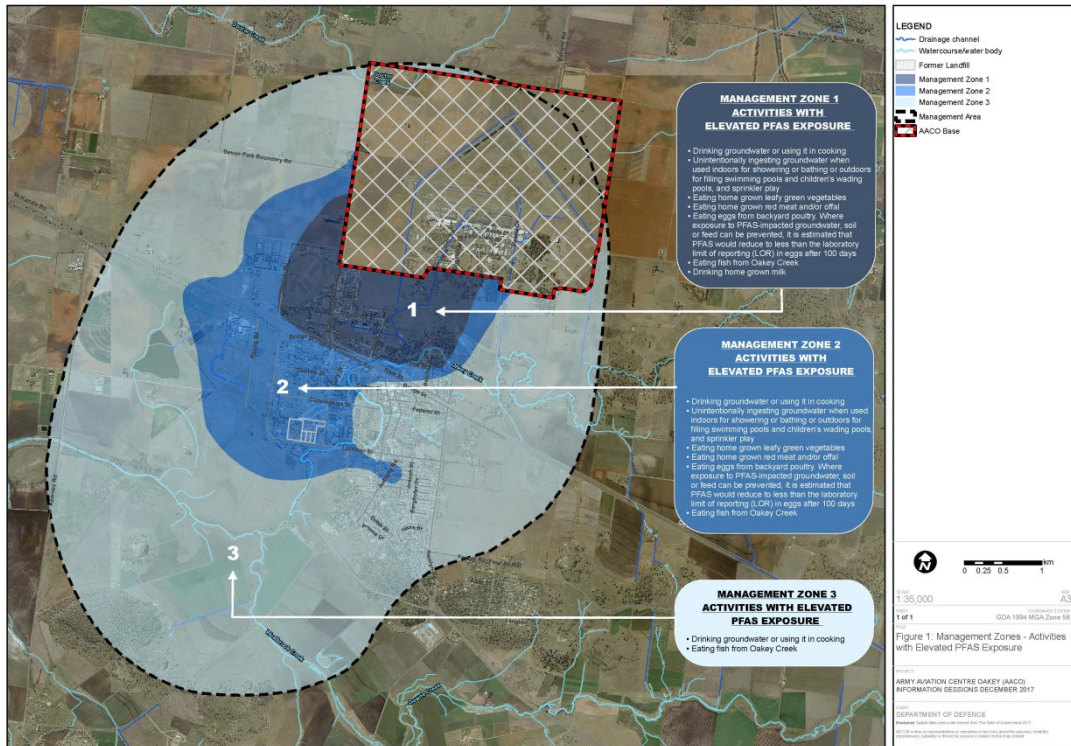
the contamination was investigated. It noted that an estimated 1.2 megalitres of PFAS-containing concentrate had been discharged at the base between 1977 and 2003, largely in firefighting drills, resulting in a contaminated area of approximately 24 square kilometres. Initial investigations in 2010, followed by more comprehensive investigations in 2011, identified the presence of PFOS and PFOA in soil and groundwater at the base. Following an initial community information session in December 2012, and limited targeted sampling during 2013, wider scale testing outside the base to determine the extent of the impact occurred from early 2014. In July 2014, Defence publicly advised Toowoomba Regional Council and affected residents to, as a precaution, not drink water from any underground source in the investigation area until further notice.²⁶

- 2.24 According to the Department of Defence website, Defence is currently in the process of finalising the detailed environmental investigation into PFAS on, and in the vicinity of, Army Aviation Centre Oakey, and the outcomes of the investigation are being used to develop a PFAS Management Area Plan.²⁷ A Human Health Risk Assessment report and an Environmental Site Assessment report were published by Defence in December 2017.²⁸
- 2.25 Oakey Management Area is divided into Management Zones 1, 2 and 3. A map of the management area is provided in Figure 2.1 below.

²⁶ 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, pp. 5–8.

²⁷ Department of Defence, 'Army Aviation Centre Oakey PFAS Investigation', <http://www.defence.gov.au/environment/pfas/oakey/> viewed 21 September 2018.

²⁸ Department of Defence, 'Publications', <http://www.defence.gov.au/environment/pfas/Williamstown/publications.asp> viewed 21 September 2018.

Figure 2.1 Map of Army Aviation Centre Oakey Management Area

Source: Department of Defence

- 2.26 Residents within Management areas 1 and 2 are advised to avoid drinking, using in cooking or unintentionally ingesting groundwater, and to avoid eating home grown leafy green vegetables, eggs from backyard poultry, red meat from home grown cattle or sheep, or fish from Oakey Creek. Residents in Management Zone 1 are additionally advised to avoid drinking home grown milk. Residents in Management Zone 3 are advised to avoid drinking groundwater or using it in cooking, and to avoid eating fish from Oakey Creek.²⁹
- 2.27 At the Oakey public hearing, Toowoomba Regional Council explained to the Committee how the detection of elevated PFAS levels in the groundwater had impacted the town's drinking water supply. Oakey's water had been drawn from nearby bore fields until 1997, at which time a Toowoomba-Oakey pipeline was commissioned (at Defence expense) to improve water quality. The Oakey bore field was then recommissioned in 2008 with the

²⁹ Department of Defence, *Army Aviation Centre Oakey - Stage 2C Environmental Investigation (Fact Sheet)*, December 2017, p. 2.

construction of a reverse osmosis water treatment plant, intended to provide more water security to the town. The new plant was temporarily taken offline in 2012 for unrelated operational reasons, but has not been able to placed back online since due to the PFAS contamination of the groundwater.³⁰ Recent testing found that, despite some remediation work having been done, the levels of contamination in the bores were ‘very similar to what they were a year earlier’.³¹

- 2.28 At the public hearing, Defence told the Committee that, following the initial focus on breaking exposure pathways by providing clean drinking water for people otherwise reliant on groundwater, it was now moving into the longer-term phase of the response:

We’re here for the long haul. We very much see ourselves as part of this community. The base has been here for a long time and will be here for a long time. We’re moving into remediation activities now. The investigation is essentially complete. We’re working on management plans, long-term plans for how we continue to monitor what’s happening in the ground and in the surface waters and the decontamination process that we’ve commenced with water treatment on the base.³²

- 2.29 Defence added that the monitoring wells it had put in place during the investigation would remain in place and continue to be retested into the future.³³ The department elaborated:

Part of the ongoing monitoring plan that we’re now entering into will include developing a further improved view of the aquifer. We’ve built the model over time as we’ve collected samples and understood the aquifer, how the water circulates, the recharge rates and the PFAS levels and speed of movement. As we continue to develop the ongoing monitoring plan and implement it, the model of the aquifer gets more improved and more refined, particularly in terms of the underground geology and how that might be impacting on water flows.³⁴

³⁰ Mr John Mills, Manager of Water Operations, Toowoomba Regional Council, *Committee Hansard*, Oakey, 17 August 2018, pp. 21–23.

³¹ Mr Andrew Murray, Principal Scientist, Toowoomba Regional Council, *Committee Hansard*, Oakey, 17 August 2018, p. 22.

³² Mr Steve Grzeskowiak, Deputy Secretary Estate and Infrastructure, Department of Defence, *Committee Hansard*, Oakey, 17 August 2018, p. 22.

³³ Mr Grzeskowiak, *Committee Hansard*, Oakey, 17 August 2018, p. 28.

³⁴ Mr Chris Birrer, First Assistant Secretary Infrastructure, Department of Defence, *Committee Hansard*, Oakey, 17 August 2018, p. 28.

- 2.30 Residents of Oakey expressed concern to the Committee that there was only limited information released by Defence in relation to the testing of private and government-owned bores, and that private bores appeared to be no longer being tested. However, they referred to evidence that the plume of PFAS contamination was ‘getting heavier’ and moving to the west-south-west, as predicted.³⁵
- 2.31 Mr Craig Commens, while expressing concern about the possible health effects of PFAS exposure and the impact on property prices, submitted to the Committee that ‘hysteria’ associated with the PFAS contamination, particularly in certain media outlets, had ‘caused Oakey way more problems than the contamination’.³⁶ At the public hearing, Mr Commens said that he and some other residents had organised an ‘Oakey Fights Back’ rally in response to the negative media.³⁷

RAAF Base Williamtown

- 2.32 The Senate Foreign Affairs, Defence and Trade References Committee presented timeline of events regarding how the extent of PFAS contamination at RAAF Base Williamtown became known in its February 2016 report. This included initial detections by Defence of PFOS and PFOA on the base in December 2011, and elevated levels being detected in surface water leaving the base in March 2012. While several local authorities, including the New South Wales Environment Protection Agency (EPA), the Port Stephens Council and Hunter Water were notified of the off-site detections as early as May 2012, the contamination and recommended precautionary measures were not publicly announced until 3 September 2015.³⁸
- 2.33 According to the Department of Defence website, Defence is currently in the process of finalising the detailed environmental investigation into PFAS on, and in the vicinity of, RAAF Base Williamtown, and the outcomes of the investigation are being used to develop a PFAS Management Area Plan.³⁹

³⁵ Ms Dianne Priddle and Ms Jennifer Spencer, *Committee Hansard*, Oakey, 17 August 2018, pp. 8–9.

³⁶ Mr Craig Commens, *Submission 74*, p. [1].

³⁷ Mr Craig Commens, *Committee Hansard*, Oakey, 17 August 2018, p. 34.

³⁸ Senate Foreign Affairs, Defence and Trade References Committee, *Inquiry into firefighting foam contamination: Part A – RAAF Base Williamtown*, February 2016, pp. 9–15.

³⁹ Department of Defence, ‘RAAF Base Williamtown PFAS Investigation’, <http://www.defence.gov.au/environment/pfas/Williamtown/Default.asp> viewed 21 September 2018.

An Off-Site Human Health Risk Assessment report and an Environmental Site Assessment report were published by Defence in December 2017.⁴⁰

- 2.34 The Williamstown Management Area is divided into Primary, Secondary and Broader Management Zones. A map of the management area, published by the New South Wales EPA, is provided in Figure 2.2 below.⁴¹
- 2.35 The Coalition Against PFAS noted that the main plume of PFAS contamination emanating from RAAF Base Williamstown is approximately five kilometres long and five kilometres wide. It added that the plumes ‘continue to migrate daily, and are exacerbated by flood events’.⁴² In addition to concerns about human health, the group noted that the PFAS contamination had spread into the Hunter Estuary Wetlands, which are internationally protected under the Ramsar Convention.⁴³
- 2.36 According to the New South Wales Government, the contamination emanating from RAAF Base Williamstown has impacted a community of 600 residents.⁴⁴ The New South Wales EPA recommends that residents within the area follow precautionary advice to minimise their exposure to PFAS chemicals. The advice varies according to each management zone.
- Residents in the Secondary and Broader Management Zones are advised to not use bore water, groundwater or surface water for drinking or cooking, and to avoid swallowing such water when bathing, showering, swimming and paddling. They are advised to avoid eating home grown food produced in the area, including slaughtered meat, eggs, milk, poultry, fruit and vegetables.
 - Residents in the Primary Management Zone are advised that groundwater, bore water and surface water should not be used for *any* purpose, and to not do anything with such water that may lead to

⁴⁰ Department of Defence, ‘Publications’, <http://www.defence.gov.au/environment/pfas/Williamstown/publications.asp> viewed 21 September 2018.

⁴¹ New South Wales Environment Protection Agency, ‘Management Area Map’ <https://www.epa.nsw.gov.au/working-together/community-engagement/community-news/raaf-williamstown-contamination/williamstown-map> viewed 21 September 2018.

⁴² Coalition Against PFAS, *Submission 40*, p. 9.

⁴³ Coalition Against PFAS, *Submission 40*, p. 13.

⁴⁴ New South Wales Government, *Submission 61*, p. 18.

Figure 2.2 Map of RAAF Base Williamtown Management Area



2.37 Port Stephens Council submitted that it was ‘difficult to understand’ the extent of contamination due to ‘results not being communicated in a consistent manner’. It also noted that there was no clear guidance at the start of the investigation as to what constituted contamination, and the related health effects.⁴⁶

2.38 The Williamstown and Surrounds Residents Action Group submitted that the nature of the local environment around Williamstown, Salt Ash and Fullerton Cove is ‘unique’:

⁴⁵ New South Wales Environment Protection Agency, 'Advice to minimise exposure to PFAS' <https://www.epa.nsw.gov.au/working-together/community-engagement/community-news/raaf-williamtown-contamination/williamtown-precautionary-advice> viewed 21 September 2018.

⁴⁶ Port Stephens Council, *Submission 49*, p. 2.

It is all located on top of the once pristine Tomago Sandbed aquifer. The area includes ground water dependent eco systems, a high water table and a high dependency by residents on their bore water supply due to the sandy soils. The area has a documented drain network that has constant interplay with the ground water. This unique setting has provided a platform for the contamination disaster. ... These plumes have created pathways of exposure to both families and livestock, via water, air, soil and dust.⁴⁷

- 2.39 Several submitters told the Committee about the distress that community members had suffered when an expansion to the initial investigation zone was announced in late 2017, taking in significantly more properties that had not previously been given precautionary advice in relation to, for example, consumption of home grown produce.⁴⁸
- 2.40 Justin Hamilton, a community representative living in the Williamstown area, told the Committee that the extent of contamination had still not been defined. He said that Defence had refused requests to conduct soil, drain, air and blood sampling, in addition to water sampling, and cited examples of incorrect information being promulgated that would have benefited from the assistance of the local community.⁴⁹ At a public hearing, Mr Hamilton told the Committee that he had paid for his own testing of water tanks, bores, and the creek and dam on his property that were outside of the original zone in order to prove that the zone was wrong.⁵⁰
- 2.41 Mr Hamilton and fellow resident Lindsay Clout explained to the Committee that there were 'hundreds of kilometres' of interconnected drains on private property that overflow onto properties around Fullerton Cove during rain events that occur at high tide. This results in the contamination spreading across the area and rendering the zones within the management area 'irrelevant'.⁵¹

⁴⁷ Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [2].

⁴⁸ Robyn and Tony Jones, *Submission 8*, p. [1]; Justin Hamilton, *Submission 13*, pp. [5–6]; Port Stephens Council, *Submission 49*, p. 3; Meryl Swanson MP, *Submission 50*, p. [1]; Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [4]; Mr Cain Gorfine, *Committee Hansard*, Williamstown, 24 July 2018, p. 22; Mr Lindsay Clout, *Committee Hansard*, Williamstown, 24 July 2018, pp. 34, 37–38; Mr Brian Byers, *Committee Hansard*, Williamstown, 24 July 2018, p. 47.

⁴⁹ Justin Hamilton, *Submission 13*, pp. [2–3].

⁵⁰ Mr Justin Hamilton, *Committee Hansard*, Williamstown, 24 July 2018, p. 37.

⁵¹ Mr Justin Hamilton and Mr Lindsay Clout, *Committee Hansard*, Williamstown, 24 July 2018, pp. 13–14.

- 2.42 Eileen Clark, of nearby Medowie, expressed concern that PFAS may have contaminated the Tomago Sandbeds, which are an 'integral part' of the region's water supply. She called for a new dam to be built to reduce reliance on the Sandbeds.⁵²
- 2.43 The O'Connell family, long term residents of the area, explained that an expansion to RAAF Base Williamtown in the 1980s had caused stormwater from the base to flow into Moor's Drain, to the east of the base. A new drain and levee system was constructed following a flood event in 1990, which was subsequently modified by the Port Stephens Council to prevent flooding of new subdivisions. The O'Connell family claimed that this action had resulted in PFAS contaminated floodwater being trapped on properties along Nelson Bay Road 'for months on end with nowhere to go', and that Defence had been using these properties as an 'off base retention pond for their PFAS contaminated stormwater runoff for 28 years'.⁵³
- 2.44 Kim-leeanne King wrote to the Committee about how, as children, she had run through bore-water sprinklers at the RAAF base, played in the water in the drains, and enjoyed home grown vegetables watered with bore water. She described an occasion on which RAAF personnel had conducted a demonstration at the Williamtown Public School of using fire fighting foam to extinguish a fire. After the demonstration, children picked up handfuls of excess foam and placed it on their hands and faces. Ms King explained that she and family had since been 'plagued by health issues', despite never having drunk or smoked.⁵⁴
- 2.45 Robert Goldsack, who was based at RAAF Base Williamtown from approximately 1980 to 1985, wrote that he was 'routinely covered in AFFF foams used by the ADF' during firefighting training exercises and drills. He also claimed that he had seen firefighting crews discarding waste foam material from their tankers into the bush and creeks on the western side of the base. Mr Goldsack noted that he had been chronically sick since his discharge from the RAAF in March 1986, suffering from heart problems and trouble healing from any operation or injury.⁵⁵

⁵² Eileen Clark, *Submission 56*, p. [1].

⁵³ Andrew O'Connell, *Submission 43*, p. [1].

⁵⁴ Kim-leeanne King and Colin King, *Submission 62*, pp. [1–2].

⁵⁵ Robert Goldsack, *Submission 67*, p. 1.

RAAF Base Tindal, Katherine

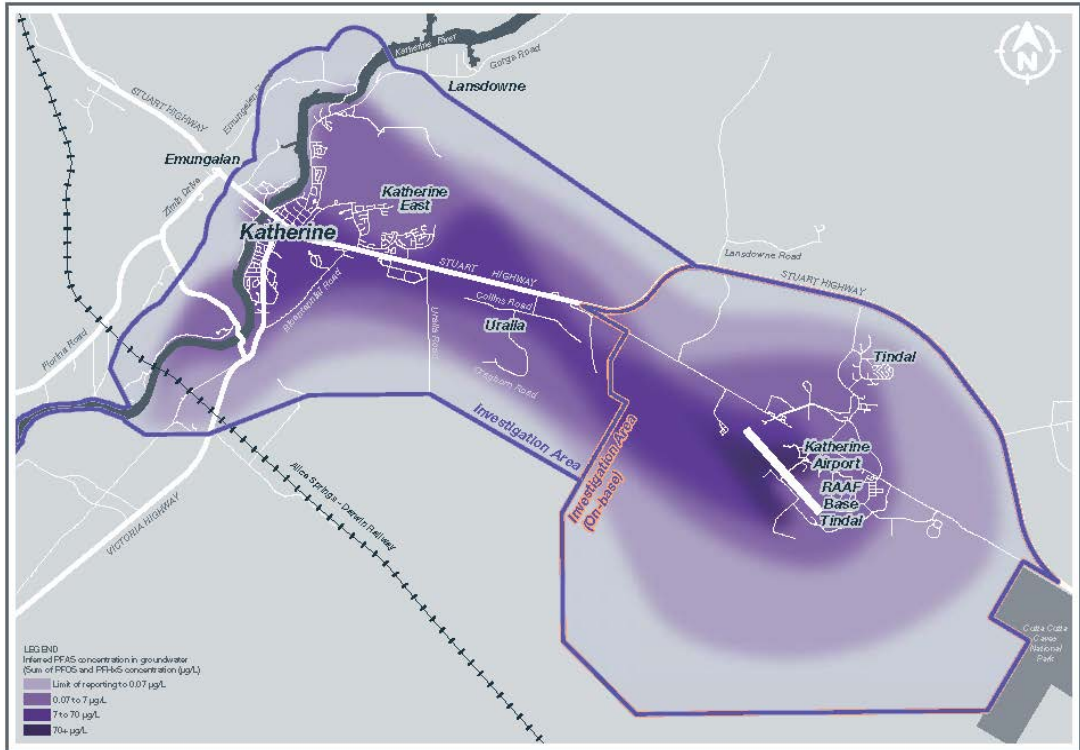
- 2.46 Elevated levels of PFAS were detected in offsite surface water and groundwater near RAAF Base Tindal as part of a Defence preliminary sampling program that reported in September 2016.⁵⁶
- 2.47 In March 2017, Defence commenced a detailed environmental investigation into the presence of PFAS on and in the vicinity of the site.⁵⁷ An interim Human Health Risk Assessment Report was released in January 2018, followed by a report on the Detailed Site Investigation in February 2018, and a final Human Health Risk Assessment Report in June 2018.⁵⁸
- 2.48 The Detailed Site Investigation Report noted that firefighting foams containing PFAS were ‘routinely used for fire training activities, hangar and fuel farm fire suppression system operation and testing, incident response and response equipment testing’. The investigation found that a plume of PFAS contaminated groundwater ‘extends across most of the Base and extends off-Base, migrating in a northwesterly direction towards the Township of Katherine’.⁵⁹ The RAAF Base Tindal investigation area is divided into five zones based on water use. A map of the investigation area is provided in Figure 2.3 below.

⁵⁶ RAAF Base Tindal Preliminary Sampling Program, September 2016; accessed via Department of Defence, ‘Publications’, <http://www.defence.gov.au/environment/pfas/Tindal/publications.asp> viewed 23 September 2018.

⁵⁷ Department of Defence, ‘RAAF Base Tindal PFAS Investigation’, <http://www.defence.gov.au/environment/pfas/Tindal/Default.asp> viewed 23 September 2018.

⁵⁸ Department of Defence, ‘Publications’, <http://www.defence.gov.au/environment/pfas/Tindal/publications.asp> viewed 23 September 2018.

⁵⁹ RAAF Base Tindal Detailed Site Investigation - Per- and Poly-fluoroalkyl Substances (PFAS) – Executive Summary, February 2018; accessed via Department of Defence, ‘Publications’, <http://www.defence.gov.au/environment/pfas/Tindal/publications.asp> viewed 23 September 2018.

Figure 2.3 Map of RAAF Base Tindal Investigation Area

Source: Department of Defence

- 2.49 The Northern Territory Government submitted that routine monitoring had confirmed the presence of PFAS in the groundwater supply for the town of Katherine in 2017. The potential for these PFAS levels to ‘spike’ above the health based guidance value for drinking water:

... rendered the groundwater supply that provided resilience to Katherine water supply as unusable particularly in times of surface water outages due to seasonal flushing of the Katherine River.⁶⁰

- 2.50 In August 2017, the Northern Territory Government implemented compulsory water conservation measures to reduce demand. The water conservation measures included alternate day irrigation for households, the removal of watering of hard surfaces, and the identification and repair of leaks. This allowed PFAS contaminated groundwater to be temporarily removed from service during the September to November peak demand period. A pilot water treatment plant was installed in October 2017, which is

⁶⁰ Northern Territory Government, *Submission 70*, p. 5.

‘now producing up to 1ML/day of PFAS guideline compliant water from the existing PFAS contaminated groundwater source’.⁶¹

- 2.51 The Northern Territory Government advised that another, larger (10 megalitres/day), PFAS groundwater treatment plant had been proposed as part of a ‘long term, sustainable and resilient water strategy’ to ‘future proof the supply and provide for the delivery of safe drinking water’. The estimated cost of this treatment plant was \$11–13 million, and discussions over funding were being held with Defence. Exploration for a new groundwater source was also progressing north of Katherine.⁶²
- 2.52 Nicole Smith, a long term resident of Katherine, noted that RAAF Base Tindal was located directly on top of the Tindal Limestone Aquifer, which had been identified as the ‘main sustainable source of water’ for the town of Katherine.⁶³ She contended that the extent of contamination in the area ‘was not made clear’ to all residents, stakeholders, emergency services and Indigenous communities as soon as the information was known to authorities. She also noted that the results of initial tests were not communicated to some property owners for up to six months.⁶⁴
- 2.53 Dr Peter Spafford questioned why governments had not begun monitoring for PFAS, particularly in underground water, at the time the RAAF stopped using PFAS-based firefighting foams in 2004.⁶⁵ Dr Spafford, a general practitioner who conducts PFAS blood tests for Katherine residents, told the Committee that he had been ‘amazed by the very high levels of PFAS’ in his patients’ blood, in particular PFHxS.⁶⁶
- 2.54 Anthony Bartlett, also a Katherine resident, referred to an environmental management plan produced for Defence in 1987 that stated that waste water containing firefighting foams ‘must be prevented from entering storm water systems, ponds and ground water except in an emergency’. Mr Bartlett submitted that this report ‘highlights the overall evidence that there needed

⁶¹ Northern Territory Government, *Submission 70*, p. 6.

⁶² Northern Territory Government, *Submission 70*, p. 6.

⁶³ Nicole Smith, *Submission 45*, p. 1 (cover letter).

⁶⁴ Nicole Smith, *Submission 45*, p. 1.

⁶⁵ Dr Peter Spafford, *Submission 32*, p. [1].

⁶⁶ Dr Peter Spafford, *Committee Hansard*, Katherine, 29 July 2008, pp. 15, 16, 19.

to be caution and measures to contain the AFFF release into the environment'.⁶⁷ He also referred to:

- a 2002 report which stated that approximately 104 000 litres of waste water containing residual firefighting foams was being released annually into the base's stormwater drain and the evaporation pond;
- a 2005 environmental investigation, and a subsequent 2007 investigation of landfill and burial sites, which documented poor waste disposal practices being undertaken at the base, and
- a 2009 investigation that detected PFOS in drinking water sampled from the base.⁶⁸

2.55 Mr Bartlett considered that, combined with the detailed site investigation released in 2018, these reports 'provide damning evidence in the gross negligence in relation to usage and handling of AFFF's on RAAF Base Tindal'.⁶⁹

2.56 In relation to the 1987 report, Defence told the Committee that although the report 'did advise against discharging the 3M Lightwater product into drainage systems' for environmental reasons, it had recommended discharge to the sewer as the preferred method of disposal. Defence noted that it was now known that sewage treatment plants were ineffective at removing PFAS, and that other parts of the report had stated that the product was biodegradable, had low toxicity, and its components were 'not considered to be dangerous substances'.⁷⁰

2.57 Defence advised that, following the completion of an ecological risk assessment for the RAAF Base Tindal investigation area, it would continue to monitor the long term wells that had been drilled and installed during the investigation process.⁷¹

2.58 Water conservation measures remain in place in Katherine, and residents are advised limit their intake of fish from the Katherine River. Residents within the investigation area are advised that they:

⁶⁷ Anthony Bartlett, *Submission 52*, p. [3].

⁶⁸ Anthony Bartlett, *Submission 52*, p. [3–4].

⁶⁹ Anthony Bartlett, *Submission 52*, p. [4].

⁷⁰ Mr Stephen Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 47.

⁷¹ Mr Grzeskowiak, *Committee Hansard*, Katherine, 19 July 2018, p. 45.

... may wish to manage their consumption of home-grown produce irrigated with bore water to ensure it is balanced with fruit and vegetables from broader sources to manage potential exposure, particularly for young children.⁷²

- 2.59 The Mayor of Katherine, Mrs Fay Miller, described to the Committee how, in 2017, the Katherine public swimming pool was temporarily closed due to the detection of high levels of PFAS:

We were using town water in our pools so we thought that would be perfectly safe. We naturally did testing on that and were absolutely horrified at the reading that came out of there and so we closed the pool.... So we drained it completely and refilled with town water and it was fine.⁷³

- 2.60 Mrs Miller explained that it turn out that one of the pool operators was actually filling the pool with bore water, not town water, and that this situation had now been rectified.⁷⁴

Other Defence bases

- 2.61 A number of submissions addressed the extent of contamination, and the status of current investigations, at other Defence bases around Australia.

- 2.62 In addition to RAAF Base Williamtown, discussed above, the New South Wales Government provided information on PFAS contamination at the six other Defence bases:

- **RAAF Base Wagga** – where PFAS contamination from the base has impacted both surface water and groundwater offsite, and impacts a community of approximately 100 residents.
- **RAAF Base Richmond** – where PFAS contamination from the base has impacted both surface water and groundwater offsite, and impacts a community of approximately 50 residents.
- **HMAS Albatross** – where PFAS contamination from the base has impacted both surface water and groundwater offsite, and impacts a community of approximately 50 residents. Contamination from the base has impacted both the Shoalhaven River and Currambene Creek,

⁷² Northern Territory Government, *KATHERINE - Frequently Asked Questions*, January 2018, p. 7, accessed via 'Fire Fighting Foam (PFAS) Investigation', <https://ntepa.nt.gov.au/waste-pollution/compliance/pfas-investigation#faq> viewed 23 September 2018.

⁷³ Mrs Christina Fay Miller, Mayor of Katherine, Katherine Town Council, *Committee Hansard*, Katherine, 19 July 2018, p. 30.

⁷⁴ Mrs Miller, *Committee Hansard*, Katherine, 19 July 2018, p. 30.

which are popular recreational fishing areas. As a result, the New South Wales Government has released precautionary dietary advice for these two waterways.

- **Holsworthy Army Barracks** – where PFAS contamination from the base has impacted both surface water and groundwater offsite, and impacts a community of approximately 100 residents. A detailed site investigation is currently being undertaken by Defence.
- **Singleton Lone Pine Barracks and Blamey Army Barracks, Kapooka** – where investigations into PFAS contamination began in the second half of 2018.⁷⁵

2.63 In relation to **RAAF Base East Sale**, the Victorian Government advised that that an interim human health and ecological risk assessment had been released in December 2017, following completion of a detailed site investigation in June 2017. A comprehensive human health and ecological risk assessment was in the process of being prepared, including additional work to address data gaps. This report, along with a PFAS Management Area Plan for the site was released on 2 August 2018.⁷⁶ The Victorian Government added that it was aware of PFAS contamination in the Heart Morass and Dowd Morass wetlands, adjacent to RAAF Base East Sale. As a result, the it advised against consumption of ducks, carp and eel taken from these wetlands.⁷⁷

2.64 The Gippsland Lakes, to which the Heart Morass and Dowd Morass wetlands connect, are internationally protected under the Ramsar Convention. The Coalition Against PFAS, noting the ‘alarming levels’ of PFAS detected in duck, eels and fish, submitted:

Since PFAS biomagnify up the food chain, the real extent of the damage caused in these areas seems likely to be far greater that has been revealed by preliminary testing. There is no data on just how many species have been poisoned.⁷⁸

2.65 The Wetlands Environmental Taskforce Public Fund (the WET Trust), which was established for the acquisition, rehabilitation and maintenance of Australian wetlands, described the Heart Morass, which it acquired in 2004, as its ‘showcase property’ and a ‘jewel in the crown of Victoria’s wetlands’.

⁷⁵ New South Wales Government, *Submission 61*, p. 18.

⁷⁶ Victorian Government, *Submission 76*, p. 1.

⁷⁷ Victorian Government, *Submission 76*, p. 1.

⁷⁸ Coalition Against PFAS, *Submission 40*, p. 13.

However, the WET Trust submitted that, due to PFAS contamination caused by stormwater discharge from RAAF Base East Sale, and the detection of PFAS in duck, eel and carp in the area, the commercial value of the property as an asset on the trust's balance sheet had reduced to zero.⁷⁹

- 2.66 In relation to **RAAF Base Williams (Laverton)**, the Victorian Government advised that a preliminary site investigation had recently been completed. A detailed site investigation, including more detailed sampling on-base and in the surrounding region, was expect to commence soon.⁸⁰
- 2.67 In relation to **HMAS Cerberus** and **Bandiana Military Area**, the Victorian Government advised that preliminary site investigations were underway, and that Defence would prepare and share reports on these investigations with relevant government and regulatory bodies, as well as the community.⁸¹
- 2.68 The Government of South Australia addressed the investigation of PFAS contamination at **RAAF Base Edinburgh** in its submission. It noted that while the South Australian EPA had been provided with only limited information on the extent of PFAS contamination around the base, it had received eight formal notifications in relation to identification of PFAS in groundwater located offsite. It was also aware of sediment, surface and soil sampling being undertaken both on and offsite.⁸²
- 2.69 A submission from Mr George Bury, a former motor transport fitter who worked at **RAAF Base Amberley**, submitted that during the 1970s PFAS was 'used like water as we were told it was no risk to health'. He described how, after servicing, fire vehicles were:

... taken onto the outside grass or in-between the runways to pump foam to check its consistency. The method of checking was to scoop a handful of foam and turn it upside down and check its density and ability to stick to the skin. If a tank had to be drained, it was taken to the fire pit on the eastern side of the base where a cocktail of toxic waste was dumped (including kerosene). The fire pit sat above the edge of a river bank above Warrill Creek and would have overflowed on the dumping of liquids, firefighting practise or rain.⁸³

⁷⁹ Wetlands Environmental Taskforce Public Fund, *Submission 46*, pp. 2–3.

⁸⁰ Victorian Government, *Submission 76*, p. 1.

⁸¹ Victorian Government, *Submission 76*, p. 1.

⁸² Government of South Australia, *Submission 71*, p. 2.

⁸³ Mr George Bury, *Submission 14*, p. [1].

- 2.70 Mr Norman Canton, a long term resident living near **RAAF Base Townsville**, explained that investigations have confirmed that PFAS has travelled widely from the base, assisted by 'seasonal pumping of water off base into the nearby lagoon, to keep the runway serviceable during heavy wet season events'. He noted that although the use of PFAS foams in firefighting and training had been superseded, residues were still present in the soil, water and the food chain, as evidenced in samples taken of flora, fish and crustaceans. He described the lack of testing of birds as an 'important oversight given that birds are the most mobile of any fauna, including humans, and feed off plants and/or species further down the food chain'.⁸⁴
- 2.71 The Bullsbrook Residents and Ratepayers Association told the Committee that PFAS had been found in water from private bores, soil and hen's eggs on private land around **RAAF Base Pearce**, and in dolphins downstream in the Swan River. The Association noted the complex hydrology of the area had meant that the future movement of contamination plumes were unpredictable. It also cautioned that not all private bores in West Bullsbrook had been tested, nor had cattle grazing in the investigation area.⁸⁵

Contamination of non-Defence related sites

- 2.72 Although not within the terms of reference for this inquiry, PFAS contamination is known to have occurred in a range of non-Defence related sites.
- 2.73 Associate Professor Robert Niven of the University of New South Wales emphasised the extent of PFAS contamination in his submission, arguing that the problem was 'highly likely to be far larger than that associated with the Department of Defence'. Associate Professor Niven submitted that soils and groundwaters around the following sites were highly likely to be contaminated:
- every airport or airfield, whether national, state or local;
 - every hydrocarbon fuel refining facility, whether in current operation or which operated in the past;
 - every port facility for the import or export of hydrocarbon fuels;
 - every hydrocarbon fuel storage depot;

⁸⁴ Mr Norman Canton, *Submission 1*, p. [1].

⁸⁵ Bullsbrook Residents and Ratepayers Association, *Submission 78*, pp. 1–2.

- every hydrocarbon fuel pipeline;
- every rail facility for the loading and transport of hydrocarbon fuels, including (quite possibly) all holding yards and rail tracks used for hydrocarbon shipments;
- every road tanker fuel loading facility;
- every chemical manufacturing plant, especially those involving the storage or handling of flammable liquids;
- every chemical storage facility;
- every offshore and onshore oil or gas extraction facility;
- every firefighting training facility, training ground or similar, whether in regular or irregular use;
- every landfill, whether in current operation or now closed, regardless of whether in public or private ownership, or under state or council jurisdiction;
- every wastewater treatment plant, regardless of whether in public or private ownership, or under national, state or council jurisdiction;
- every location at which a large fuel or chemical fire has occurred in the past half-century.⁸⁶

2.74 Wilson Consulting noted that, aside from firefighting foams, ‘significant’ PFAS contamination was also ‘occurring daily’ from wastewater treatment plants, landfill leachate and ‘dust in our own homes’. Wilson attributed this to use of PFAS chemicals in stain repellent treatments for upholstery, carpets, clothing, glossy magazines, cleaning agents, cosmetics, food packaging, and other applications.⁸⁷

2.75 At a national level, Airservices Australia is conducting detailed PFAS investigations at a number of airports across Australia as part of its National PFAS Management Program.⁸⁸

2.76 Local investigations are also being undertaken by environment protection agencies and fire and rescue services in several states and territories.⁸⁹ For example, the New South Wales EPA is leading investigations focused on

⁸⁶ Associate Professor Robert Niven, School of Engineering and Information Technology, University of New South Wales Canberra, *Submission 38*, pp. 2-3.

⁸⁷ Wilson Consulting, *Submission 16*, pp. 3-4.

⁸⁸ Australian Government, *Submission 64*, p. 3.

⁸⁹ Information about local investigations in each state and territory can be accessed via the PFAS Portal: <https://www.pfas.gov.au> viewed 18 September 2018.

sites where it is likely that large quantities of PFAS have been used, including certain fire and rescue training facilities, regional airports and industrial sites.⁹⁰

- 2.77 It has been reported that, including Defence sites, there are at least 90 sites around Australia where elevated levels of PFAS are being investigated.⁹¹
- 2.78 Bathurst Regional Council submitted that it was seeking acknowledgement from the Commonwealth of its role in operating the Bathurst Regional Airport up to and including 1992, and that PFAS were used by or under the direction of Commonwealth agencies until that time.⁹²
- 2.79 Dr Geralyn McCarron questioned the limitation of the Committee's inquiry to 'in and around Defence bases', noting that a company had been contracted to dispose of 880 000 litres of PFAS contaminated wastewater from RAAF Base Amberley to be used as 'feedstock' in compost. Dr McCarron suggested that, as a result, the contamination was 'potentially widely distributed in people's home environments'.⁹³
- 2.80 The National Toxics Network noted that while this inquiry focuses on Defence sites, 'there has been no inquiry into the impacts of PFAS contamination from other important sources, such as airports, wastewater treatment plans and sewerage outfalls'.⁹⁴

Remediation

- 2.81 Many participants in the inquiry expressed concern about the small scale and slow pace of efforts to provide remediation of contaminated land, particularly off-base.⁹⁵ Participants in Katherine, Williamtown and Oakey

⁹⁰ New South Wales Environment Protection Agency, 'The NSW Government PFAS Investigation Program', <https://www.epa.nsw.gov.au/your-environment/contaminated-land/pfas-investigation-program> viewed 27 August 2018.

⁹¹ Carrie Fellner and Patrick Begley 'Toxic Secrets: Where the sites with PFAS contamination are near you', *Sydney Morning Herald*, 17 June 2018, <https://www.smh.com.au/national/nsw/toxic-secrets-where-the-sites-with-pfas-contamination-are-near-you-20180616-p4z1xc.html> viewed 19 September 2018.

⁹² Bathurst Regional Council, *Submission 44*, p. 2.

⁹³ Dr Geralyn McCarron, *Submission 53*, p. 2.

⁹⁴ National Toxics Network, *Submission 34*, p. 2.

⁹⁵ Lindsay Clout, *Submission 5*, p. 3; Jenny Robinson, *Submission 9*, p. [3]; *Committee Hansard*, Williamtown, 24 July 2018, pp. 1, 3; Justin Hamilton, *Submission 13*, p. [8]; Coalition Against PFAS, *Submission 40*, p. 35; Port Stephens Council, *Submission 49*, p. 8; Williamtown and

also highlighted that there had been no, or limited, progress to date in containing the migration of PFAS emanating from each base.⁹⁶

2.82 Mr John Donahoo gave evidence to the Committee that, although costly, it was possible to stop the continued contamination of the Williamtown area. His proposal consisted of three components:

- 1 constructing on-site detention ponds capable of storing rain from a one-in-100 years flood,
- 2 installing low-head, high-volume submersible pumps that pump water from the detention ponds into the ocean (potentially after being treated), and
- 3 containing the pollution with the use of polyethylene sheet piling coupled with bentonite slurry and bentonite clay.⁹⁷

2.83 Mr Desmond Maslen similarly referred to a remediation plan that had been discussed with Defence in 2015 for all run-off water from RAAF Base Williamtown to be treated and contained through a 'zeolite-activated charcoal' process, but claimed that this was not acted upon due to cost.⁹⁸

2.84 At a public hearing in Williamtown, Defence assured the Committee that it 'will be able to stop the contamination in due course but it will take time'. Defence was not able to provide an approximate timeline.⁹⁹ Defence noted, however, that its water treatment plants were intercepting and treating water leaving the base, and that it was now examining options for its 'next

Surrounds Residents Action Group, *Submission 51*, pp. [2, 6]; Lindsay Clout, *Committee Hansard*, Williamtown, 24 July 2018, p. 11; Mr John Donahoo, *Committee Hansard*, Williamtown, 24 July 2018, p. 40.

⁹⁶ For example, Justin Hamilton, *Submission 13*, p. [5]; Nicole Smith, *Submission 45*, p. 1; Anthony Bartlett, *Submission 52*, p. [5]; Andrew O'Connell, *Submission 43*, p. [2]; Port Stephens Council, *Submission 49*, p. 8; Meryl Swanson MP, *Submission 50*, p. [1]; Williamtown and Surrounds Residents Action Group, *Submission 51*, p. [3]; EcoNetwork Port Stephens, *Submission 58*, p. 3; Kim Smith, *Submission 66*, p. 1; Mr Lindsay Clout, *Committee Hansard*, Williamtown, 24 July 2018, p. 11.

⁹⁷ Mr John Donahoo, *Committee Hansard*, Williamtown, 24 July 2018, p. 39.

⁹⁸ Mr Desmond Maslen, *Committee Hansard*, Williamtown, 24 July 2018, p. 47.

⁹⁹ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamtown, 24 July 2018, p. 58.

step' to treat and remove contaminant from highly contaminated areas off the base.¹⁰⁰

2.85 The Coalition Against PFAS called for the Government to commit to a 'proper, comprehensive remediation plan for each affected site'.¹⁰¹

2.86 The Government of South Australia submitted that it had 'limited knowledge' of remediation works, including trials, undertaken at RAAF Base Edinburgh and was 'unclear on the communication of remediation activities'. It submitted:

Defence's objectives as it relates to remediation goals, endpoints and long term management of PFAS impacts, including potential offsite disposal of PFAS contaminated material, is currently unknown and is of concern to SA EPA.¹⁰²

2.87 The Victorian Government submitted that to date, limited remediation had occurred, but that development PFAS Management Area Plans were in progress for the investigation areas at RAAF Base East Sale, RAAF Base Williams (Laverton), HMAS Cerberus, and Bandiana Military Area.¹⁰³

2.88 The New South Wales Government noted that there were frustrations within the community about the 'slow pace of work' towards containment and remediation of PFAS contamination, and called for

- Defence to establish and maintain meaningful connections to affected communities over the long term, so that the community's concerns are addressed in an empathetic way; and
- affected communities to have access to regular and robust monitoring information that demonstrates the level and extent of PFAS contamination in a simple manner.¹⁰⁴

2.89 The National Toxics Network wrote that the Australian Government had 'failed to have any PFAS sites remediated or PFAS wastes destroyed' in the past two decades. It argued that this failure had resulted in 'offsite dumping'. It cited examples of 'almost a million litres' of PFAS-

¹⁰⁰ Mr Chris Birrer, First Assistant Secretary, Infrastructure, Department of Defence, *Committee Hansard*, Williamstown, 24 July 2018, p. 62.

¹⁰¹ Coalition Against PFAS, *Submission 40*, p. 41.

¹⁰² Government of South Australia, *Submission 71*, p. [5].

¹⁰³ Victorian Government, *Submission 76*, p. 4.

¹⁰⁴ New South Wales Government, *Submission 61*, pp. 12–13.

contaminated water being used to make NuGrow compost, and reports of Defence ‘giving away’ out of date foams to ‘unsuspecting firefighters’.¹⁰⁵

The Government’s approach to date

- 2.90 The Australian Government submitted that the precautionary principle has been ‘key’ to Defence’s approach to the management of PFAS risks, and that its PFAS Response Management Strategy is:

... consistent with the precautionary principle as set out in the *Environmental Protection and Biodiversity Conservation Act 1999*, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. ...

While there are significant levels of uncertainty around the behaviours of PFAS and its impacts, there is sufficient knowledge to apply the precautionary principle.¹⁰⁶

- 2.91 The Government explained that Defence is taking a ‘tiered approach’ to the management of risks identified in detailed environmental investigations, whereby interim response actions are implemented prior to the conclusion of the investigation phase in order to ‘avoid or mitigate a significant risk to human health or the environment’:

Interim Response Actions may include the provision of alternative water supplies to affected residents and communities, the implementation of water treatment technologies, drain maintenance activities, and management of PFAS source areas in accordance with relevant State and Territory regulations.

At the conclusion of the investigation phase for a site, a comprehensive PFAS Management Area Plan (PMAP) may be developed to respond to any elevated risks identified in the DSI report or a HHRA/ERA. The PMAP for each site will be site-specific and may include remediation actions, depending on the characteristics of the site. Several PMAPs are currently under development.¹⁰⁷

Alternative water supplies

- 2.92 Defence has provided alternative drinking water to properties otherwise reliant on contaminated bores in the areas surrounding the Army Aviation

¹⁰⁵ National Toxics Network, *Submission 34*, p. 9.

¹⁰⁶ Australian Government, *Submission 63*, p. 21.

¹⁰⁷ Australian Government, *Submission 63*, p. 23.

Centre Oakey, and RAAF Bases Williamtown, Tindal and Pearce. The Government explained:

Where possible, eligible residents are connected to reticulated town water, ensuring a long-term supply of safe water. Until the installation of water infrastructure is complete, residents are provided sufficient alternative water (bottled or tank) to meet the domestic requirements of the property.¹⁰⁸

2.93 To date, this has involved Defence:

- funding approximately 350 properties to be connected to town water in the area surrounding RAAF Base Williamtown, and paying the annual service fee and usage charges for three years;
- connecting 40 properties to town water in the Oakey management area, and paying the annual service fee and usage charges for three years;
- providing rainwater tanks to 63 affected properties in the Katherine region, and paying for these tanks to be topped up at Defence expense for a period for three years; and
- providing 130 properties surrounding RAAF Base Pearce with bottled water. Any further decisions regarding the provision of a sustainable source of water for these residents will follow after the completion of the Human Health Risk Assessment for that area.¹⁰⁹

2.94 The Williamtown and Surrounds Residents Action Group submitted that an issue had arisen in relation to water connections being laid using poly pipes, through which PFAS chemicals can penetrate. The group said that it was awaiting information on what would be done to with these pipes to ‘make sure that the town water supply is safe from the groundwater contamination’.¹¹⁰

Water treatment plants

2.95 Water treatment plants are one option available to Defence for managing the risk of groundwater, surface water, and stormwater and drainage systems as potential pathways for PFAS contamination in water supplies. At the time of the Government’s submission, Defence had installed:

- three water treatment plants at RAAF Base Williamtown;
- one water treatment plant at the Army Aviation Centre Oakey;

¹⁰⁸ Australian Government, *Submission 63*, p. 24.

¹⁰⁹ Australian Government, *Submission 63*, pp. 24–25.

¹¹⁰ Williamtown and Surrounds Residents Action Group, *Submission 51*, p. [5].

- one water treatment plant at Katherine to treat bore water to drinking standard as a supplement to the town's water supply;
- water treatment plants to remediate PFAS contaminated water generated from construction or redevelopment projects, including at RAAF Bases Amberley and Williamtown, and Lavarack Barracks.¹¹¹

2.96 Defence was also undertaking contract negotiations for additional water treatment plants at RAAF Bases Edinburgh, Tindal and Williamtown; and had released tender documentation concerning the further remediation of Lake Cochran, Williamtown.¹¹²

2.97 At the public hearing in Katherine, Defence advised that it was signing contracts for two more water treatment plants to be placed in a highly contaminated area on RAAF Base Tindal. This was in addition to the existing (1 megalitre) treatment being used to treat bore water to be PFAS-free and mixed into the town water supply.¹¹³ Although the Katherine town water supply was regarded as 'safe to drink' due to the level of PFAS being within international standards,¹¹⁴ several residents of Katherine told the Committee that they continued to buy bottled drinking water at their own expense.¹¹⁵ Others expressed scepticism about the effectiveness of drawing water from the aquifer, treating it and reinjecting it back into the aquifer,¹¹⁶ or questioned whether water that was designated 'safe' was actually safe for residents with already elevated levels of PFAS in their blood.¹¹⁷ Defence, however, advised that PFAS was only present in Katherine's water supply in 'very, very low amounts ... almost at the limit of detection', and that Power

¹¹¹ Australian Government, *Submission 63*, p. 25.

¹¹² Australian Government, *Submission 63*, p. 25.

¹¹³ Mr Stephen Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 44.

¹¹⁴ Mrs Sandra Nelson (private capacity), *Committee Hansard*, Katherine, 19 July 2018, p. 26; Mr Stephen Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 44.

¹¹⁵ Alena Beznoska, *Submission 37*, p. [1]; Nicole Smith, *Submission 45*, p. 2 (cover letter); Ms Marguerite Smith, *Committee Hansard*, Katherine, 19 July 2018, p. 35; Mrs Jennifer Trew, *Committee Hansard*, Katherine, 19 July 2018, p. 39.

¹¹⁶ Mr Anthony Bartlett, *Committee Hansard*, Katherine, 19 July 2018, p. 39.

¹¹⁷ Nicole Smith, *Submission 45*, p. 1 (cover letter).

and Water Corporation was doing tests weekly or monthly for PFAS chemicals, with the results published on its website.¹¹⁸

- 2.98 In Oakey, Defence advised that it would be installing additional water treatment plants, but noted the practical limitations on what could be achieved:

[O]nce these chemicals are in an aquifer or out and about they become fairly dilute and therefore you have to clean a huge volume of water. ... We're targeting the high-concentration zones because that's where you get the best value for removing the maximum amount of PFAS from the environment.

... My personal view is that it's unrealistic to expect that every molecule of PFAS that has been put in the ground can be removed; that is unrealistic. The question is working with the environmental experts and the like and the various environmental protection agencies on how much we should do and how much we need to do, and that's still an evolving matter.¹¹⁹

- 2.99 Lindsay Clout, a resident of Fullerton Cove in the Williamstown investigation area, told the Committee that during a major rain event (which could occur up to three times a year), the water treatment plant at Lake Cochran could not keep up with the inflow and was turned off, 'allowing untreated contaminated water to leave the base and continue to contaminate our community'. He added that Defence's action to stop contamination leaving the base through Moor's Drain—which flows towards communities east of the base—was 'miniscule' to date. He noted that the 'new technology filtration plant' set up on Moor's Drain was a 'demonstration plant that can only treat 1.2 litres per second' and, even with an intended upgrade, would 'only deal with one of the three drains discharging water from the base into the [Moor's] Drain system'.¹²⁰
- 2.100 Mrs Kim Smith characterised water treatment plants as the 'newest of the stall tactics from Defence', querying their effectiveness and claiming that they only operated during business hours and did not operate on public holidays or during rain. She also raised concerns about the residue left

¹¹⁸ Mr Stephen Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 44.

¹¹⁹ Mr Grzeskowiak, *Committee Hansard*, Oakey, 17 August 2018, pp. 27, 28.

¹²⁰ Lindsay Clout, *Submission 5*, p. 4.

behind after water has been treated, which she said were being stored in 'metre-by-metre containers' on the RAAF Base Williamtown.¹²¹

- 2.101 At the public hearing in Williamtown, Defence advised that it was treating 'the majority' of surface water flowing off the base, but confirmed that some untreated water would flow during heavy rain events.¹²² Defence also confirmed that it was storing residue on the base, in the form of granular activated carbon from its original water treatment plant (which had since been replaced with a plant using resin-based technology).¹²³
- 2.102 Defence advised that underground water was a 'much more challenging' issue than surface water. Based on advice from experts, it had started to 'remove water from the ground there, treat it, then put it back into the ground'.¹²⁴

Removal of soil source areas

- 2.103 To reduce the migration of PFAS in surface and groundwater, Defence has:
- excavated approximately 200mm of sediment from approximately three kilometres of open drains at Williamtown;
 - removed and disposed of 12 000 cubic metres of contaminated soil at Army Aviation Centre Oakey; and
 - stockpiled soil associated with construction redevelopment projects.¹²⁵
- 2.104 At the public hearing in Katherine, Defence explained that existing technologies for the treatment of soil were limited:

There is no machine or process you can buy in the world today that can clean soil. We've looked, we've been to the market, we've sought expressions of interest and we've got some companies now that we're starting to do some trials with. There is a range of techniques which involve injecting chemicals into the soil to lock the PFAS in place. We're very nervous about using techniques like that, unless they're fully understood. ... We've got a trial running at one of our bases, which will commence at the end of the year, for a process that has great potential for taking PFAS from soil, but it's still in the experimental stage. ... We talk to defence departments and other players in Europe and America. They look at what we're doing. They're doing similar

¹²¹ Mrs Kim Smith, *Committee Hansard*, Williamtown, 24 July 2018, p. 48.

¹²² Mr Grzeskowiak, *Committee Hansard*, Williamtown, 24 July 2018, p. 54.

¹²³ Mr Grzeskowiak, *Committee Hansard*, Williamtown, 24 July 2018, p. 55.

¹²⁴ Mr Grzeskowiak, *Committee Hansard*, Williamtown, 24 July 2018, p. 54.

¹²⁵ Australian Government, *Submission 63*, p. 26.

things. We're trying to use the best knowledge we can to get on top of this in terms of our responsibility to clean this up as best we can. But I wouldn't want to leave anybody with the impression that it will be a quick and easy process. It will take a while.¹²⁶

- 2.105 In Williamstown, Defence advised that, along with residue from its original water treatment plant, soil that had been removed from drains was being stockpiled in plastic containers on the base due to the lack of an 'off-the-shelf' solution for cleansing it of PFAS.¹²⁷

Remediation in other jurisdictions

- 2.106 In its submission, Victoria's Metropolitan Fire and Emergency Services Board (MFB) described the process it had undertaken to test and decontaminate its firefighting fleet. This included:
- testing of the fleet, which identified that the majority of trucks were heavily contaminated with PFAS, due to persistent residues from the previous use of fluorinated firefighting foam concentrates;
 - a truck decontamination process overseen by two independent environmental consulting firms, resulting in more than 75 per cent of the fleet being decontaminated to below accepted thresholds; and
 - the cleaning of 4689 lengths of firefighting hose.¹²⁸
- 2.107 MFB noted that it was actively assisting other agencies, including Defence, to 'either advise or provided similar decontamination processes for their respective firefighting appliances'.¹²⁹

Research into remediation technologies

- 2.108 The Australian Government's submission noted that there are currently limited proved remediation technologies available in relation to PFAS.¹³⁰
- 2.109 Defence has financially supported research into remediation technology and, as at June 2018, had funded eight research activities valued at approximately \$1.7 million, which included a new soil washing technology trial. Since November 2017, Defence has also issued requests for information to the

¹²⁶ Mr Grzeskowiak, *Committee Hansard*, Katherine, 19 July 2018, p. 44.

¹²⁷ Mr Grzeskowiak, *Committee Hansard*, Williamstown, 24 July 2018, p. 55.

¹²⁸ Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 9.

¹²⁹ Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 9.

¹³⁰ Australian Government, *Submission 63*, p. 26.

market calling for industry input on technologies for treating PFAS contaminated water and soil.¹³¹

2.110 Separately, the Australian Research Council-administered Special Research Initiative on PFAS provides more than \$13 million to:

... support the development of innovative technologies to investigate and remediate PFAS contaminated areas, including soil and other solid contaminated debris, groundwater, waterways and marine systems.¹³²

2.111 The first round of the initiative was announced in August 2018, with successful research projects including:

- \$999 082 to researchers at Deakin University to create a waste-to-resource remediation strategy for PFAS contamination, including inexpensive and effective treatment of PFAS-contaminated sites and a mechanism to turn waste products into valuable resources.
- \$880 187 to researchers at the University of Queensland to develop a self-contained and portable system for the onsite destruction of PFAS at contaminated sites.
- \$940 000 to researchers at the University of Newcastle to develop new technology to allow for the catalytic destruction of PFAS reactions at elevated temperatures.
- \$1 103 883 to researchers at The University of New South Wales for a new treatment technology to defluorinate PFAS in contaminated water.¹³³

2.112 The Commonwealth Scientific and Industrial Research Organisation (CSIRO) advised the Committee that its research had targeted knowledge gaps that would 'assist in the definition of the risk profile of PFAS and for its treatment', including 'extensive studies across a range of soil types to quantify how mobile PFAS is in soils and groundwater'. CSIRO noted:

Recent research and development by CSIRO and others has challenged and changed traditional understanding regarding these issues. This understanding underpins the risk profile of PFAS to environmental and human health, and its migration rate and treatability. Developing cost-effective approaches to

¹³¹ Australian Government, *Submission 63*, pp. 26–27.

¹³² Australian Government, *Submission 63*, p. 27.

¹³³ Senator the Hon Simon Birmingham, Minister for Education and Training; Senator the Hon Marise Payne, Minister for Defence; Hon Melissa Price MP, Assistant Minister for the Environment, 'Australia's leading research minds to tackle PFAS', *Media Release*, 10 August 2018.

manage and remediate affected environments will depend on such information.¹³⁴

- 2.113 CSIRO advised that it had conducted research into future treatment and remediation technology options for PFAS, including testing the effectiveness of encapsulation and destructive technologies. CSIRO was also developing predictive models of PFAS behaviours in soils and groundwater, which would allow for ‘an assessment of the longevity of the threat of PFAS, the migration of plumes of PFAS in groundwater and the design of remedial and management efforts’.¹³⁵
- 2.114 At a hearing in Canberra, CSIRO advised that while there had been a ‘lot of focus’ removing PFAS from groundwater, there had been ‘very little’ focus on soil, which was the ‘source term’ for the contamination. CSIRO considered that strategies for immobilising, removing or destroying the source term to prevent contamination of ground water should be a ‘high priority research area’.¹³⁶ CSIRO also emphasised the value of coordination mechanisms in order to focus research efforts on the most important areas of science and the knowledge gaps.¹³⁷

Continued use of contaminated bore water

- 2.115 Several residents of Katherine expressed concern that, since there were no restrictions on the use of contaminated bores in the area for irrigation and agriculture, the continued use of bore water was further contaminating soils and adding to exposure pathways.¹³⁸ Dr Peter Spafford, for example, submitted:

Contaminated bore water has been used, and continues to be used, for irrigation both on private properties and government/council land (schools, parks, etc.). This has resulted in ground water contamination to be brought back to the surface, spread widely and seeping back into the ground. This therefore contaminates new ground, effectively increases the load of contamination and further increases the likelihood of persistence in the

¹³⁴ CSIRO, *Submission 39*, pp. 1-2.

¹³⁵ CSIRO, *Submission 39*, p. 2.

¹³⁶ Dr Paul Bertsch, Science Director, Land and Water, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, Canberra, 14 September 2018, p. 20.

¹³⁷ Dr Bertsch, *Committee Hansard*, Canberra, 14 September 2018, p. 21.

¹³⁸ Dr Peter Spafford, *Submission 32*, pp. 1, 2; *Committee Hansard*, Katherine, 19 July 2018, p. 16; Anthony Bartlett, *Submission 52*, p. [2], Nicole Smith, *Submission 45*, pp. 1; 11; Marguerite Smith, *Committee Hansard*, Katherine, 19 July 2018, p. 35.

environment. This issue appears to have been overlooked as bore water can still be freely used.¹³⁹

- 2.116 Mrs Fay Miller, Mayor of Katherine, told the Committee that the continued use of bore water for irrigation of public spaces, such as parks and sports fields, had been discussed at length by the Council. However, she noted that the Council had a responsibility to provide ‘good grassed areas for children to play on’, and that the advice was that the contamination was minimal:

You’d probably have to eat the grass and keep eating the grass for a while for it to have any effect on you. What do you do? Let the town go brown and not do anything about it? No. Our responsibility is to provide good reserves and good parks for our town. We have the belief that we are certainly not contaminating our parks.¹⁴⁰

- 2.117 In Oakey, the Toowoomba Regional Council advised that it was not using bore water for irrigation of parks, showgrounds or other sites controlled by the Council. These sites had been connected to the town’s reticulated water supply. However, the Council was not aware and had not taken any steps to determine whether private residents were using private bores for irrigation.¹⁴¹ Residents of Oakey, however, confirmed that they had not been told to stop using private bores and that such bores were still being used for irrigation.¹⁴²

- 2.118 At its Canberra hearing, the Department of the Environment and Energy advised that the regulation of bores was ‘a state and territory issue’ in which the Commonwealth had no jurisdictional or regulatory role.¹⁴³ The Department also highlighted that the *PFAS National Environmental Management Plan* provided guidance to jurisdictions in relation to identifying risks of potential contamination and ‘what the potential exposure or draw-out points are, including things like bores and surface

¹³⁹ Dr Peter Spafford, *Submission 32*, p. 1.

¹⁴⁰ Mrs Christina Fay Miller, Mayor of Katherine, Katherine Town Council, *Committee Hansard*, Katherine, 19 July 2018, p. 31.

¹⁴¹ Mr Damian Platts, General Manager, Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, Oakey, 17 August 2018, pp. 26–27.

¹⁴² Mr Lester Schmidt and Mr David Jefferis, *Committee Hansard*, Oakey, 17 August 2018, pp. 26–27.

¹⁴³ Mr James Tregurtha, First Assistant Secretary, Environment Standards Division, Department of the Environment and Energy, *Committee Hansard*, Canberra, 14 September 2018, p. 31.

water'.¹⁴⁴ However, the Department acknowledged that there was a potential risk in relation to:

... whether the environmental management guidance that has already been given to those jurisdictions has been effectively provided to the water regulator within that jurisdiction, who would be the responsible party for providing ongoing advice to users of water in that manner.¹⁴⁵

- 2.119 The Department undertook to investigate the matter further, noting that it had constituted forums with states and territories which it used to ensure that 'issues and exposures pathways ... are identified and effectively managed within those jurisdictions'.¹⁴⁶

Committee comment

- 2.120 While this inquiry is focused on PFAS contamination at, and around, Defence bases, the issue is clearly a national problem that is not limited to a single portfolio, and crosses a range of industries and jurisdictional boundaries. The effectiveness of the coordination of the response to this national issue is discussed in Chapter 5.
- 2.121 Many communities around Defence bases have been significantly affected by PFAS contamination, including the communities of Oakey, Williamtown and Katherine. The Committee notes that it has taken some time for Defence to grasp the extent of contamination in each area, and adjustments to management zones have continued to be made. The Committee received evidence of instances where community members with local knowledge of the area could have assisted Defence to more quickly understand the full extent of contamination, but that these community members felt 'ignored'. The Committee encourages Defence to improve its community engagement in future to ensure that community members with particular expertise are listened to.
- 2.122 It is clear that past delays in the communication of information to residents have contributed to the ongoing frustration of community members. While much progress has been made in this area, there is a need to continue to improve transparency to assure communities that they are being kept up to

¹⁴⁴ Mr Andrew McGee, Assistant Secretary, Chemicals Management Branch, Department of the Environment and Energy, *Committee Hansard*, Canberra, 14 September 2018, p. 32.

¹⁴⁵ Mr Tregurtha, *Committee Hansard*, Canberra, 14 September 2018, p. 33.

¹⁴⁶ Mr Tregurtha, *Committee Hansard*, Canberra, 14 September 2018, p. 33.

date with the latest information known to the authorities. The Committee welcomes Defence's commitment to publishing the outcomes of investigations as soon as possible after they are finalised. The Committee also welcomes Defence's commitment to the long term monitoring and management of PFAS contamination emanating from its bases. While the Committee understands that the sampling results cannot always be made public due to privacy concerns, these concerns will not apply in all instances (for example, in relation to sampling on public land or where a landowner consents to their results being published). The Committee recommends that, in order to improve public assurance, Defence commit to publishing results as soon as practicable where there are no such concerns.

- 2.123 Remediation of PFAS contamination at, and around, bases will be a long term challenge for the Australian Government. The priority to date has, rightly, been on breaking exposure pathways for affected communities. A range of precautionary measures have been put in place, including dietary advice and the provision of alternative drinking water, to ensure the most likely exposure pathways are broken. However, the risk of exposure will only be completely eliminated when the PFAS contamination is contained, and ultimately removed from, each base and the communities surrounding them.
- 2.124 The Committee understands the frustration of community members who highlighted that, despite Defence having knowledge of contamination leaving the base for a number of years, there has been little progress to date in remediating contamination land, or even stopping the ongoing contamination. While the Committee appreciates the enormity of the task, containment and remediation will need to become the priority for the Australian Government over the coming years.
- 2.125 The Committee is pleased to hear that investigations in some areas have progressed to point where long term management strategies are being finalised. The Committee encourages Defence to seek public input into these strategies, prior to their finalisation. The Committee also notes Defence's progress to date, in particular in relation to water treatment plants to reduce the amount of contaminated surface water from leaving bases, and to reduce contamination in groundwater. It is important that these efforts continue to be upscaled to the point where the spread of contamination ceases, and begins to reverse. The Committee recognises that sustained investment over the long term will be required to achieve this.

- 2.126 The Committee also welcomes the investments that have been made to date in research into remediation technologies. This should be continued. The Committee notes that there is much to be learned, in particularly in relation to the remediation of contaminated soil, and the disposal of soil and water treatment residue that has been removed from the environment. Australia is not alone in facing these challenges, and the Committee encourages the Government to continue to work with international stakeholders to ensure best practice approaches are taken. International companies, such as 3M, who have been responsible for the past production of PFAS chemicals, bear a particular responsibility to assist with the remediation of PFAS contamination. The Committee encourages the Government to request the assistance of such companies in the remediation of PFAS contaminated areas, including the disposal of contaminated waste.
- 2.127 During the inquiry, the Committee noted varying practices regarding the extent of the use of contaminated bore water for irrigation purposes. While all three sites visited by the Committee had precautionary advice in place recommending against the drinking of bore water in the most affected areas, bore water is still being used by local government in at least one area (Katherine) for watering parks and sports fields, and there do not appear to be any restrictions placed on the use of private bores by state and territory regulatory authorities at any site. The Committee recognises that any restrictions on the use of bore water would be a state and territory responsibility, and that the need for restrictions may vary from site to site. However, the Committee was not assured that sufficient consideration has been given as to the extent to which unrestricted use of bore water is contributing to the spread of PFAS contamination to areas that would otherwise be unaffected. The lack of restrictions may also contribute to unanticipated exposure pathways, for example, by children playing under or even drinking from sprinklers. The Committee recommends that this matter be given further consideration at a national level.

Recommendation 2

- 2.128 **The Committee recommends that the Government continue to upscale its investment in the containment of PFAS contamination plumes, and the remediation of contaminated land and water sources. The Coordinator-General (see Recommendation 1) should:**
- **publish draft remediation and management plans for each investigation area, and seek public input before finalisation;**

- **continue support for research into remediation technologies, including disposal of contaminated soil and residue from water treatment plants;**
- **continue to engage with international stakeholders, including past manufacturers of PFAS chemicals, to ensure best practice approaches are taken to the remediation and disposal of PFAS contamination;**
- **in collaboration with states and territories, review the effectiveness of current advice regarding the use of contaminated bore water for irrigation purposes and to consider whether restrictions should be put in place; and**
- **ensure a consistent approach to PFAS contamination across non-Commonwealth sites in consultation with state, territory and local governments.**

3. Health advice and testing

3.1 This chapter addresses the following term of reference:

(d) the adequacy of health advice and testing of current and former defence and civilian personnel and members of the public exposed in and around Defence bases identified as potentially affected by contamination.

3.2 The chapter includes:

- an overview of concerns about the possible health effects of PFAS exposure;
- an overview of the current health advice and findings of the Expert Health Panel for PFAS;
- a discussion of concerns about the adequacy of the current health advice and suggestions for improvement; and
- a discussion about the Government's voluntary blood testing program for PFAS, and the associated epidemiological study;
- the Committee's conclusions and recommendations.

Concerns about the health effects of PFAS

3.3 Although the evidence has largely been inconsistent, exposure to PFAS has been associated with certain medical conditions in some overseas studies. A 2013 'synthesis paper' published by the Organisation for Economic Development and Co-operation and the United Nations Environment Program summarised the potential adverse effects of PFAS chemicals on humans as follows:

High levels of PFOS and PFOA are toxic for reproduction and development of the fetus (such as reducing birth weight and lowering semen quality) and are potentially carcinogenic in animal tests. In addition, 8:2 fluorotelomer phosphate diesters (8:2 PAPs), 8:2 FTOH, and PFOA show endocrine effects in

different in vitro and in vivo tests. Furthermore, a study with 656 children has demonstrated that elevated exposures to PFOA and PFOS are associated with reduced humoral immune response to routine childhood immunizations in children aged five and seven years.

In addition to toxicity studies, a large epidemiological study of 69,000 persons – the C8-science panel – found probable links between elevated PFOA blood levels and the following diseases: high cholesterol (hypercholesteremia), ulcerative colitis, thyroid diseases, testicular cancer, kidney cancer, preeclampsia, and elevated blood pressure during pregnancy.¹

3.4 In 2016, ‘following evaluation of human epidemiological studies’, the German Human Biomonitoring Commission rated human health effects in the following areas as ‘well proven, relevant, and significantly associated with exposure to PFOA and/or PFOS’:

- 1 Fertility and pregnancy - Time to wanted pregnancy-Waiting period for pregnancies >1 year -gestosis and gestational diabetes
- 2 Weight of newborns at birth
- 3 Lipid metabolism
- 4 Immunity after vaccination, immunological development
- 5 Hormonal development, age at puberty/menarche
- 6 Thyroid metabolism
- 7 Onset of menopause.²

3.5 The United States United States Environmental Protection Agency provides the following advice to the public:

There is evidence that exposure to PFAS can lead to adverse human health effects. ... Studies indicate that PFOA and PFOS can cause reproductive and developmental, liver and kidney, and immunological effects in laboratory animals. Both chemicals have caused tumors in animal studies. The most consistent findings from human epidemiology studies are increased cholesterol levels among exposed populations, with more limited findings related to:

¹ Organisation for Economic Development and Co-operation (OECD) and United Nations Environment Program (UNEP), *Synthesis paper on per- and polyfluorinated chemicals (PFCs)*, 2013, p. 25.

² Announcement of the German Environment Agency (UBA) (2016), HBM I values for Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) in blood plasma, cited by Royal Australasian College of Physicians, *Submission 69*, p. 3.

- infant birth weights,
- effects on the immune system,
- cancer (for PFOA), and
- thyroid hormone disruption (for PFOS).³

3.6 As a result of this evidence, many community members in contaminated areas expressed a high degree of anxiety about the possible health effects of their PFAS exposure. Examples of some of the comments received by the Committee are provided in Box 3.1 below.

Box 3.1 Community concerns about PFAS health effects

My wife and I had several miscarriages before resorting to IVF in Adelaide. I have genuine concerns for my health and that of my wife and now 2-year-old daughter. I keep my fingers crossed that my daughter's tiny little organs have not been exposed to PFAS. This is a fear that I live with every day. Her heart is barely the size of her fist and kidneys smaller than the palm of her hand. It wouldn't take much PFAS to damage her vital organs, although the information we are working with is limited, the balance of probability is that this has done some damage and may limit her quality of life.⁴

The added stress that this brought to our family life has been at times intolerable, to the extent where all of my children have questioned whether these chemicals will kill them. This is not a concern any child should have to ask their parents about.⁵

There seems to be very little accurate advice regarding the health aspect of this contamination in Oakey. Whilst being advised not to consume food or water from the contaminated zone, no-one seems to be able to say definitively what the chemical already in our body can do.

Let me tell you that does not feel good at all. I worry about this every day.⁶

My bore has extremely high levels of PFAS, as does my blood. The various reports that have come out make reference to the numerous ways that we can ingest PFAS by washing, swimming etc but they never make any reference to the likely effect to people who drink the contaminated bore water. We went straight on to town water in 2014 when we learnt of the problem. With a house

³ United States Environmental Protection Agency, 'Basic Information on PFAS', <https://www.epa.gov/pfas/basic-information-pfas> viewed 17 August 2018.

⁴ *Submission 11* (name withheld).

⁵ Anthony Bartlett, *Submission 52*, p. [2].

⁶ *Submission 41* (name withheld), p. [3].

full of teenage children, we lived on bore water not knowing about the contamination until we found out in 2014 and I worry about any long-term health effects (for my children especially).⁷

In 2016 we gave birth to our first child and the full concern of the impact of this contamination really hit home. Although there is no conclusive evidence that these chemicals cause adverse health effects, the existing research which I have seen is consistent with our pregnancy and birth – these being developmental (low birth weight, laryngomalacia and skeletal effects) and pregnancy-induced hypertension. Obviously these things can occur in any pregnancy, but statistically we were at low risk, the skeletal hypermobility is unusual, and to have the collection is worrying.⁸

I worry what health affects the contamination will have on my children that lived there in the past, my young grandchildren that come and visit me and of course any health concerns I may have. I suffer from anxiety, depression and stress due to the worry. I have sleepless nights, there are days I cannot face anything and return to bed, there are days where I feel I have had enough and do not want to go on. How can I continue?⁹

Our daughter and son in law felt compelled to move away from the area when she became pregnant due to the risks involved. After hearing about contamination in the blood levels of babies in the area it wasn't a risk we were prepared to take.¹⁰

- 3.7 Concern about the possible long term health effects of PFAS, in conjunction with other factors, was identified as a major contributor to poor mental health experienced by many residents of contaminated areas. This is discussed further in Chapter 4.

Health advice to affected communities

Current Australian advice regarding the health impacts of PFAS

- 3.8 The Environmental Health Standing Committee of the Australian Health Protection Principal Committee (enHealth) provides the following general advice concerning the health impacts from exposure to PFAS:

⁷ Craig Commens, *Submission 74*, p. [1].

⁸ Mr Nathaniel Roberts, *Submission 24*, p. [1].

⁹ Margaret Cuskelly, *Submission 35*, p. [1].

¹⁰ Julianne and Brian Curry, *Submission 47*, p. [2].

There is currently no consistent evidence that exposure to PFAS causes adverse human health effects.

Because these chemicals persist in humans and the environment, enHealth recommends that human exposure to these chemicals is minimised as a precaution.¹¹

3.9 Underpinning this guidance, which forms the basis of the Government's advice to the public, enHealth explains:

Because the human body is slow to rid itself of PFAS, continued exposure to these chemicals can result in accumulation in the body. Due to the potential for accumulation, and while uncertainty around their potential to cause human adverse health effects remains, it is prudent to reduce exposure to PFAS as far as is practicable. This means that action needs to be taken to address the exposure source or possible routes of exposure. Determination of exposure is best achieved through a full human health risk assessment that examines all routes of exposure.¹²

3.10 The Australian Government's submission summarised the current status of research into the health effects of PFAS exposure as follows:

Some human health studies have found associations between exposure to these chemicals and health effects and others have not. In addition, the studies that found associations were not able to determine with certainty that the health effects were caused by the chemical being studied or other factors, such as smoking. More research is required before definitive statements can be made on causality or risk.¹³

3.11 The Department of Health has established a *PFAS Health Information Service*, including a 1800 number and email address for general enquiries.¹⁴ The Department has also participated in community consultations in affected areas in order to:

¹¹ Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*, updated September 2017, p. 3.

¹² Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*, updated September 2017, p. 2.

¹³ Australian Government, *Submission 64*, p. 13.

¹⁴ Australian Government, *Submission 64*, p. 16.

... provide advice to communities and help inform them of the current evidence related to health effects and exposure as well as programs and services, administered by the Department of Health, that are available.¹⁵

- 3.12 Site-specific precautionary advice in relation to each investigation area (such as water use and dietary advice) is provided by state and territory local government authorities (see Chapter 2) and through community consultation mechanisms (see Chapter 5).

Expert health panel

- 3.13 An Expert Health Panel for PFAS was established by the Government in December 2016 to 'provide independent advice to the Government on potential health impacts of PFAS exposure and to identify priority areas for future research'.¹⁶ The panel was chaired by Professor Nick Buckley of the University of Sydney, and comprised panellists with expertise in the fields of environmental health, toxicology, epidemiology and/or public health.¹⁷
- 3.14 According to its report, the Expert Health Panel undertook a 'comprehensive review of recent literature reviews regarding Australian and international evidence on potential human health effects of PFAS exposure'. It noted:

In order to provide final advice by February 2018, the Panel focussed on identifying and reviewing the *latest* systematic reviews of human epidemiological studies and (inter)national authority/intergovernmental/governmental reviews and reports on potential human health effects of PFAS exposure. This challenging timeframe was set to balance the need for well-informed expert advice on the possible effects of PFAS on human health, and the need for timely advice for the [National Health and Medical Research Council] and affected communities.¹⁸

- 3.15 The Expert Health Panel also conducted a public consultation process in order to 'inform the Panel of the communities' concerns regarding PFAS and their health, as well as their view on priorities for future research'.¹⁹

¹⁵ Australian Government, *Submission 64*, p. 16.

¹⁶ Australian Government, *Submission 64*, p. 13.

¹⁷ Department of Health, 'Expert Health Panel for PFAS Report', <http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas-expert-panel.htm> viewed 13 September 2018.

¹⁸ *Expert Health Panel for Per-and Poly-Fluoroalkyl Substances (PFAS)*, March 2018, pp. 1–2.

¹⁹ *Expert Health Panel for Per-and Poly-Fluoroalkyl Substances (PFAS)*, March 2018, p. 2.

- 3.16 The Expert Health Panel's summary of its findings in relation to the health effects associated with PFAS exposure is contained Box 3.2 below.

Box 3.2

Although the evidence on health effects associated with PFAS exposure is limited, the current reviews of health and scientific research provide fairly consistent reports of associations with several health outcomes, in particular: increased cholesterol, increased uric acid, reduced kidney function, altered markers of immunological response, levels of thyroid and sex hormone levels, later menarche and earlier menopause, and lower birth weight. Differences between those with the highest and lowest exposures are generally small, with the highest groups generally still being within the normal ranges for the whole population. There is mostly limited or no evidence for an association with human disease accompanying these observed differences. There is no current evidence that supports a large impact on an individual's health. In particular, there is no current evidence that suggests an increase in overall cancer risk. The main concerning signal for life-threatening human disease is an association with an increased risk of two uncommon cancers (testicular and kidney). These associations in one cohort were possibly due to chance and have yet to be confirmed in other studies. However, because the evidence is very weak and inconsistent in many respects, some degree of important health effects for individuals exposed to PFAS cannot be ruled out based on the current evidence.

Source: Expert Health Panel for Per-and Poly-Fluoroalkyl Substances (PFAS), March 2018, p. 3.

- 3.17 The Expert Health Panel cautioned that the published evidence was mostly based on studies in just seven cohorts, which have generated 'hundreds of publications'. It considered that there is a 'high risk that bias or confounding is affecting most of the results reported'. The Panel explained:

There are very large numbers of comparisons being done in many studies, such that the risk of random variation in exposures and outcomes being interpreted as real associations is greatly increased. This is compounded by the fact that there are multiple PFAS, and other environmental or occupational hazards, so that there may be interacting toxic effects, and it is hard to isolate the association with one or two analysed compounds. Many of the biochemical and disease associations may be explainable by confounding or

reverse causation. Many studies had limited power to detect important associations.²⁰

3.18 The Expert Health Panel provided the following advice to the Government:

Our advice to the Minister in regards to public health is that the evidence does not support any specific biochemical or disease screening, or health interventions, for highly exposed groups (except for research purposes). Decisions to regulate or avoid specific PFAS chemicals should continue to be largely based on evidence of persistence and accumulation; they should not need to also be justified by strong evidence of adverse health effects.²¹

3.19 The Australian Government submitted that the Expert Health Panel's findings support the existing enHealth advice that there is 'no consistent evidence' that exposure to PFAS causes adverse human health effects. It added:

The Panel's report should reassure communities that they are being provided with up to date and independent advice on the potential health effects of PFAS exposure.²²

3.20 However, some participants in the inquiry criticised aspects of the Expert Health Panel's review.²³ For example, the Williamstown and Surrounds Residents Action Group criticised the Panel's public consultation process and considered that the report 'did not present as an independent report', particularly due to the Government's announcement on the same day as the report's release that it was not considering property buy backs.²⁴

3.21 The Coalition Against PFAS told the Committee that the Expert Health Panel report 'was unnecessarily rushed and opaque, adopted the wrong methodology, and had little to no scientific value'. The group particularly criticised the level of community consultation, the lack of distinguishing

²⁰ *Expert Health Panel for Per-and Poly-Fluoroalkyl Substances (PFAS)*, March 2018, p. 3.

²¹ *Expert Health Panel for Per-and Poly-Fluoroalkyl Substances (PFAS)*, March 2018, p. 3.

²² Australian Government, *Submission 64*, p. 14.

²³ For example, Jenny Robinson, *Submission 9*, p. [1]; Coalition Against PFAS, *Submission 40*, pp. 26-31; Friends of the Earth Brisbane, *Submission 48*, p. 1; Meryl Swanson MP, *Submission 50*, pp. [2-3s]; Williamstown and Surrounds Residents Action Group, *Submission 51*, pp. [4, 5]; EcoNetwork Port Stephens, *Submission 58*, p. 3; Mr Lindsay Clout, *Committee Hansard*, Williamstown, 24 July 2018, p. 17-18; Mr Cain Gorfine, *Committee Hansard*, Williamstown, 24 July 2018, p. 23.

²⁴ Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [5].

between independent studies and those sponsored by industry, and the exclusion of the 'C8 Science Panel' report on a study of blood samples taken from 69 000 people over seven years, which had found 'probable links' to a number of health conditions. It concluded that the results reported by the Expert Health Panel were 'unreliable'.²⁵

- 3.22 The New South Wales Government supported the Expert Health Panel's finding that further research was required to address the insufficient evidence on possible adverse health outcomes. It recommended:

Given these substances persist in the environment for a long period of time it is important to take actions to minimise exposure. The response to PFAS should continue to emphasise messaging regarding minimising exposure, rather than focus on the lack of evidence of health impacts.²⁶

Is Australia's health advice up to date?

- 3.23 The Committee noted that many participants in the inquiry considered the current Australian health advice to be not consistent or up to date with research linking PFAS exposure to a range of diseases²⁷ and the Committee supports the application of the precautionary principle in this case. In particular, many participants pointed out that overseas bodies had appeared to place a greater emphasis than Australia on the potential adverse health effects of exposure to PFAS.²⁸
- 3.24 Dr Geralyn McCarron argued that the current Australian advice was 'based on denial of health harms' and was 'out of step with both the precautionary principle and the body of evidence linking PFAS to impairment of human health':

²⁵ Coalition Against PFAS, *Submission 40*, pp. 26–31.

²⁶ New South Wales Government, *Submission 61*, p. 13.

²⁷ Jenny Robinson, *Submission 9*, pp. 3–4; Nicole Smith, *Submission 45*, p. 7; Dr Andrew Jeremijenko, *Submission 29*, p. [3]; Williamtown and Surrounds Residents Action Group, *Submission 51*, pp. [3–4, 5]; Eileen Clark, *Submission 56*, p. [1]; Ms Kate Washington MP, *Submission 65*, pp. [3–4]; Kim Smith, *Submission 66*, p. 2; Mrs Sue Walker, *Committee Hansard*, Williamtown, 24 July 2018, p. 8; Mr Lindsay Clout, *Committee Hansard*, Williamtown, 24 July 2018, pp. 12, 17.

²⁸ For example, Jenny Robinson, *Submission 9*, pp. 3–4; Coalition Against PFAS, *Submission 40*, p. 20; Dr Geralyn McCarron, *Submission 53*, p. 1; Royal Australasian College of Physicians, *Submission 69*, p. 3; Mrs Sue Walker, *Committee Hansard*, Williamtown, 24 July 2018, p. 8; Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 5; Kate Washington MP, *Submission 65*, p. [1]; Mr Brian Byers, *Committee Hansard*, Williamtown, 24 July 2018, p. 47.

The risks to human health, denied by the Australian Government are acknowledged by the US, Germany, Britain, and the International Agency on Research on Cancer (IARC). Acknowledged health risks of exposure in humans include testicular and kidney cancer, immune impairment, thyroid disorders, impaired fertility, pregnancy induced hypertension and preeclampsia, and altered liver function.²⁹

- 3.25 The National Toxics Network submitted that, based on the ‘overwhelming evidence from independent published scientific research and developed countries regulatory assessments’, the Government’s current health advice is ‘both ill-informed and scientifically unsound’.³⁰
- 3.26 Friends of the Earth Brisbane pointed to a recent review by the United States Agency for Toxic Substances and Disease Registry, which it said suggested that ‘the impacts of PFAS may be far greater than previously predicted and at much lower doses than previously calculated’. The Group called for the Government to ‘acknowledge the wide acceptance of potential health impacts and review all guidelines in light of this recent scientific review’.³¹
- 3.27 The Royal Australasian College of Physicians (RACP)—in a submission led by the Australasian Faculty of Occupational and Environmental Medicine (AFOEM) Policy and Advocacy Committee—also contrasted the Australian advice with advice provided overseas.³² The RACP recommended that the Government’s current health advice be ‘updated to refer to the identified possible health effects outlined in the findings of the Expert Health Panel and the conclusions of international agencies’.³³
- 3.28 Dr Andrew Jeremijenko, a Brisbane-based specialist in occupational and environmental medicine, described the current health advice as ‘inadequate’. He endorsed the previously expressed views of the AFOEM and the Australasian Faculty of Public Health Medicine (AFPHM) that that the existing enHealth advice, as currently worded, was ‘highly problematic’ in that it:

... does not adequately address the entire body of evidence demonstrating the association of PFAS with adverse human health effects; is inconsistent with the

²⁹ Dr GERALYN MCCARRON, *Submission 53*, p. 1.

³⁰ National Toxics Network, *Submission 34*, p. 7..

³¹ Friends of the Earth Brisbane, *Submission 48*, p. 2.

³² Royal Australasian College of Physicians, *Submission 69*, p. 3.

³³ Royal Australasian College of Physicians, *Submission 69*, pp. 4, 7.

guidelines, health advice and classifications as referenced above; and takes the narrow view of evidence for causation alone. This advice is likely to be confusing for the public and could weaken the concurrent approaches in Australia that apply the precautionary principle when advising the public about food and water consumption at sites potentially contaminated with PFAS.³⁴

- 3.29 Dr Jeremijenko elaborated on his comments at a public hearing, where he cited a number of findings from the Expert Health Panel report that noted links, or potential causes and associations between, PFAS exposure and high cholesterol, impaired kidney function, thyroid disease, effects on human reproduction and reproductive hormones, impaired vaccine response, and effects on the immune system.³⁵

Communication of health advice

- 3.30 Dr Jeremijenko considered that the current advice was ‘increasing outrage in the community’ due to its ‘playing down’ of risk.³⁶ He indicated that ‘focusing on the negative’ amounted to poor risk communication:

Basically, when you’re doing risk communication, you don’t go and tell people, ‘There’s nothing wrong. There’s nothing wrong. There’s nothing wrong’, because it makes them concerned that you’re covering up something. It’s actually much better to say: ‘There may be some health effects. We’re still doing research, but we want you to know that we’re taking the precautionary approach. We want you to be aware that we’re not sure, and we want you to be safe’. That’s the advice that should be coming from the government—not this, ‘There’s no consistent evidence of health effects. Don’t worry’, because that makes the community angrier.³⁷

- 3.31 Dr Jeremijenko suggested:

A clearer and more explicit acknowledgement of uncertainty; a greater reference to health associations; and a clearer statement that cancer effects may yet to be seen would all be useful and make the government appear more in touch with community feeling.³⁸

³⁴ Dr Andrew Jeremijenko, *Submission 29*, pp. [2–3], citing an AFPHM and AFOEM submission to the PFAS expert health panel.

³⁵ Dr Andrew Jeremijenko, *Committee Hansard*, Oakey, 17 August 2018, pp. 12, 13.

³⁶ Dr Andrew Jeremijenko, *Submission 29*, p. [3].

³⁷ Dr Andrew Jeremijenko, *Committee Hansard*, Oakey, 17 August 2018, p. 13.

³⁸ Dr Andrew Jeremijenko, *Submission 29*, p. [3].

- 3.32 The New South Wales Government similarly wrote that the advice from the Commonwealth Government that there is no consistent evidence of harm to human health from exposure to PFAS had ‘proved problematic from a risk communication perspective’ and had ‘created considerable concern in impacted communities and a lack of surety for industry’.³⁹
- 3.33 The General Manager of Port Stephens Council told the Committee that, ‘effective and timely guidance and assistance should be prioritised into the future’. He observed that health advice and protection had been ‘seen to be slow and not clearly rolled out or understood by those right across the community’.⁴⁰
- 3.34 The RACP submission made several suggestions for improving the way health information is communicated to the public, including:
- consolidating the relevant advice on PFAS found across sources and websites;
 - developing a list of frequently asked questions for the varying stakeholders to cover the range of issues presented by PFAS;
 - giving clear advice to stakeholders that exposures above recommended levels do not necessarily equate to harm or disease; and
 - a statement outlining that ‘although there is little available evidence that PFAS is associated with the development of specific diseases, the potential long-term effects, including health and environmental effects, are not currently known due to the extremely long elimination half-lives of PFAS from the body which justify the reduction in use and exposure to these chemicals’.⁴¹
- 3.35 The RACP was also concerned that the final Health Based Guidance Values for PFAS (see Chapter 6) were not reflected the current health advice:

The health advice “that there is currently no consistent evidence of health effects” could be interpreted to mean there is no unsafe dose and no health effects even for exposures above the interim values. We suggest that including a statement such as “at levels below the Tolerable Daily Intake (µg/kg/d); Drinking Water Quality Guideline (µg/L) and/or Recreational Water Quality Guideline (µg/L)” would be appropriate when discussing the difference

³⁹ New South Wales Government, *Submission 61*, p. 12.

⁴⁰ Mr Wayne Wallis, General Manager, Port Stephens Council, *Committee Hansard*, Williamstown, 24 July 2018, p. 27.

⁴¹ Royal Australasian College of Physicians, *Submission 69*, p. 7.

between Australian advice for PFAS (as currently constructed) and international advice.⁴²

- 3.36 Further, the RACP identified that that there was a ‘gap’ in terms of a ‘lack of specific guidance on PFAS aimed a medical practitioners’.⁴³
- 3.37 Nonetheless, the RACP concurred with the Expert Health Panel’s recommendation against any routine population-based health monitoring or screening. Instead, the RACP recommended that the ‘main focus’ be on reducing human exposure to below guideline levels, consistent with the precautionary principle.⁴⁴

Response from the Government

- 3.38 At its public hearing in Canberra, the Committee followed up some of the concerns raised about the current health advice with the Department of Health. The Department’s Chief Medical Officer, Professor Brendan Murphy, agreed that the current evidence base on the health effects of PFAS was ‘weak and inconsistent’, and justified a precautionary approach.⁴⁵ He initially emphasised that the known health associations were ‘relatively low-grade’, and that current evidence was that there is ‘no clinically significant adverse health outcome’ associated with PFAS.⁴⁶ However, he agreed that it would take ‘long term studies with large numbers’ to be able to obtain conclusive evidence of the health outcomes associated with PFAS, and that the existing data was ‘certainly insufficient’ to say that clinically significant adverse health outcomes will never be shown.⁴⁷
- 3.39 Later in the hearing, Professor Murphy, while standing by the position that there are ‘no clinically significant health impacts’, acknowledged the Expert Health Panel’s reporting of certain health effects and associations. He indicated that the Department of Health concurred with the RACP’s

⁴² Royal Australasian College of Physicians, *Submission 69*, p. 4.

⁴³ Royal Australasian College of Physicians, *Submission 69*, p. 4.

⁴⁴ Royal Australasian College of Physicians, *Submission 69*, p. 7.

⁴⁵ Professor Brendan Murphy, Chief Medical Officer, Department of Health, *Committee Hansard*, Canberra, 14 September 2018, p. 38.

⁴⁶ Professor Murphy, *Committee Hansard*, Canberra, 14 September 2018, p. 38.

⁴⁷ Professor Murphy, *Committee Hansard*, Canberra, 14 September 2018, pp. 38, 39.

submission, and would ask enHealth to review the wording of its current statement ‘to incorporate those known associations’.⁴⁸

Blood testing and epidemiological study

- 3.40 The National Centre for Epidemiology and Population Health at the Australian National University (ANU) has been commissioned by the Australian Government to undertake an epidemiological study into the potential effects of PFAS contamination on the health of residents surrounding the Williamtown, Oakey and Katherine investigation areas.⁴⁹
- 3.41 Concurrent with the epidemiological study, the Australian Government is offering one free blood test for PFAS to individuals who live and work, or have previously lived and worked, in the Williamtown, Oakey and Katherine investigation areas. The voluntary blood testing program commenced in November 2016 (initially only in Oakey and Williamtown) and is available until 30 April 2019.⁵⁰ In December 2016, a similar blood testing program was also introduced for Australian Defence Force members who have lived in or worked in the Williamtown, Oakey or Katherine investigation areas.⁵¹
- 3.42 Where individual consent is provided, blood samples and test results are provided to the ANU to contribute to the epidemiological study.⁵²

Epidemiological study

- 3.43 The ANU epidemiological study aims to examine whether rates of diseases, including cancers, potentially associated with PFAS are higher among people who have lived in the investigations areas compared to the general population.⁵³
- 3.44 The study is being run over three years, and began with a systematic literature review ‘to identify what health effects had been documented in the

⁴⁸ Professor Murphy, *Committee Hansard*, Canberra, 14 September 2018, p. 44.

⁴⁹ Australian Government, *Submission 64*, pp. 15–16.

⁵⁰ Australian Government, *Submission 64*, p. 16.

⁵¹ Australian Government, *Submission 64*, p. 17.

⁵² Australian Government, *Submission 64*, pp. 15–16.

⁵³ Australian Government, *Submission 64*, p. 15.

literature', published in January 2018.⁵⁴ Professor Martyn Kirk, Principal Investigator for the study, summarised the findings of the review as follows:

The results showed that there was consistent evidence of a health effect around cholesterol and limited evidence of a range of other metabolic effects, also including cancers—testicular cancer and kidney cancer—and immunological effects from vaccines, for a few vaccines.⁵⁵

- 3.45 The research team has since conducted focus groups in Oakey, Williamtown and Katherine. It intends to publish a report on the findings of these focus groups later in 2018.⁵⁶
- 3.46 This will be followed by a blood serum study, which will use samples from the Government's voluntary blood testing program. The research team has also obtained funding for additional blood testing to be conducted, both in affected communities and in some comparison unaffected communities. Complementing the blood testing, the research team will conduct a cross-sectional survey in order to understand the risk and exposure factors of each participant, and their self-reported health effects, including mental health.⁵⁷
- 3.47 Finally, the team will conduct a 'data linkage' study using Medicare data to examine sex-specific and age-adjusted rates of disease in all people who have lived in contaminated areas, in comparison to unaffected communities and the general population.⁵⁸

Voluntary blood testing program

- 3.48 The Government's voluntary blood testing program includes a pre-counselling session, at which doctors are advised to talk to the person taking the limitations of the test—that is, that the test can detect how much of each PFAS is in the person's blood, but not where they came from or what it

⁵⁴ See Kirk et al, *The PFAS Health Study: Systematic Literature Review*, Australian National University, January 2018. Available at <https://rsph.anu.edu.au/files/PFAS%20Health%20Study%20Systematic%20Review.pdf>

⁵⁵ Professor Martyn Kirk, Principal Investigator, PFAS Health Study, National Centre for Epidemiology and Population Health, Australian National University, *Committee Hansard*, Canberra, 14 September 2018, p. 11.

⁵⁶ Dr Katherine Todd, Study Coordinator, PFAS Health Study, National Centre for Epidemiology and Population Health, Australian National University, *Committee Hansard*, Canberra, 14 September 2018, p.11

⁵⁷ Dr Todd, *Committee Hansard*, Canberra, 14 September 2018, pp. 11–12.

⁵⁸ Dr Todd, *Committee Hansard*, Canberra, 14 September 2018, p. 12.

means for the individual’s health. Following the test, a post-counselling session is used for the doctor to provide and explain the results.⁵⁹

3.49 While there is not considered to be any ‘normal’ PFAS range for individuals in Australia or overseas, an individual’s blood result can be compared to historic pooled community levels. Participants in the program are advised that all Australians are expected to have detectable levels of PFAS in their blood, and a broad range of levels would be expected in all communities due to background exposures. Results are benchmarked against the estimated 95th percentile for the Australian population, as set out in the below table.⁶⁰

Table 3.1 Estimated 95th percentile for the Australian population, 2011–2012

Compound	Age group	ng/L
PFOS	0–4 years	13
	5–15 years	18
	16–30 years	20
	31–45 years	25
	46–60 years	29
	61+ years	37
PFOA	0–4 years	9
	5–15 years	8
	16–30 years	8
	31–45 years	8
	46–60 years	8
	61+ years	10

⁵⁹ Mr Steve Grzeskowiak, Deputy Secretary Estate and Infrastructure, Department of Defence, *Committee Hansard*, Oakey, 17 August 2018, p. 29.

⁶⁰ Department of Health, Voluntary Blood Testing Program for PFAS: Post-Test Consultation Advice for GPs: <http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas-blood-testing.htm> viewed 4 September 2018.

Source: Department of Health, Voluntary Blood Testing Program for PFAS: Post-Test Consultation Advice for GPs⁶¹

- 3.50 Participants who return blood results that are below the 95th percentile are reassured that their result is consistent with background exposure in the general population of that specific age-group. Participants whose results exceed the 95th percentile are advised that this is suggestive of previous exposure to PFAS at levels higher than the general population, and are educated on precautionary strategies to limit exposure, 'noting no conclusive evidence of adverse health effects'.⁶²
- 3.51 The Coalition Against PFAS queried why Australian blood tests were benchmarked against the 95th percentile of the population, rather than the 'much lower' 50th percentile that is used in the United States and Canada.⁶³
- 3.52 In its submission, the Australian Government noted that blood testing had limited value at an individual level, but potentially greater benefit at a community level:
- A PFAS blood test will provide an individual with their PFAS blood level at a point in time. It will not provide any information on how or when exposure to PFAS occurred and is of no diagnostic or prognostic value. Frequent blood testing for individuals is of limited value due to the long biological value half-life of PFAS. However, the monitoring of pooled community blood samples over time may help determine the success of exposure reduction measures.⁶⁴
- 3.53 The Queensland Government, while noting the diagnostic limitations of blood testing, stated that its experience was that blood testing has the potential to reduce community anxiety:

For this reason, the Queensland Government offered free voluntary blood testing to people inside the Svensson Heights investigation area of Bundaberg. All results were well within the acceptable background levels of PFAS in

⁶¹ Citing Aylward LL, et al. 'Population variation in biomonitoring data for persistent organic pollutants (POPs): an examination of multiple population-based datasets for application to Australian pooled biomonitoring data', *Environment International*, 68, 2014, pp. 127-138.

⁶² Department of Health, Voluntary Blood Testing Program for PFAS: Post-Test Consultation Advice for GPs: <http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-pfas-blood-testing.htm> viewed 4 September 2018.

⁶³ Coalition Against PFAS, *Submission 40*, p. 19.

⁶⁴ Australian Government, *Submission 64*, p. 16.

Australia. Because of this testing, the community had a tangible means of reassurance that they were not heavily affected.⁶⁵

- 3.54 The Victorian Government reported that no testing for PFAS in blood has been undertaken in communities surrounding Defence sites in Victoria. However, a voluntary health surveillance program is being managed by the Country Fire Authority for individuals who worked at or attended its PFAS contaminated training site at Fiskville, Victoria, and neighbouring property owners. The program:

... consists of an initial health check by an independent medical clinic who determine if further monitoring is required as part of the annual health surveillance program. This may include a blood test to determine PFAS levels in the blood stream.⁶⁶

- 3.55 Victoria's Metropolitan Fire and Emergency Services Board (MFB) separately advised that it had commenced offered a voluntary blood testing program to its employees in 2016, with over 640 employees being tested. MFB considered that early testing provides an opportunity for early detection, monitoring and intervention, and provides for 'increased employee physical, mental and emotional health'.⁶⁷

Concerns about low participation

- 3.56 Nicole Smith, a resident of Katherine, submitted that many people were 'not aware they are even eligible' for the blood testing program. She noted that because the tests were advertised as 'specific to people living in and around the "Tindal RAAF Base Investigation Area"', it was not clear 'who exactly is eligible for the testing'.⁶⁸
- 3.57 Dr Peter Spafford, who helps facilitate the voluntary blood testing program through his general practice clinic in Katherine, advised that only 380 of an anticipated 2000 blood tests had been undertaken to date. Dr Spafford partially attributed this to instructions from the Department of Health and the Primary Health Network that the practice should not promote the service 'in any way, shape or form' because the government would undertake all the advertising and promotion. He noted that there had been

⁶⁵ Queensland Government, *Submission 33*, p. 3.

⁶⁶ Victorian Government, *Submission 76*, p. 3.

⁶⁷ Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 6.

⁶⁸ Nicole Smith, *Submission 45*, p. 4.

some advertising of the program on local community radio and in the *Katherine Times*, but that this advertising did not extend to ‘an official “these are the times and this is where you can go”’.⁶⁹

- 3.58 Dr Spafford also criticised the quality of advice provided to doctors participating in the program when elevated levels are detected:

As a stakeholder in the health industry being asked to assist with the voluntary blood testing and giving advice on the results, the advice was found to be superficial and dismissive, and gave no information on the substance PFHxS that was found to be the major contaminant. Enquiries to obtain information on this contaminant were made, but little or no effort was made by the Department of Health to provide advice considering the very high levels that were being reported. Any advice received was again dismissive and failed to take into account the severity of the level of contamination compared to population studies done elsewhere in Australia and overseas.⁷⁰

- 3.59 At the Oakey hearing, Ms Dianne Priddle told the Committee that a local general practitioner had been ‘verballing people out of having the free blood test done’, allegedly due to a belief that the test ‘serves no purpose’.⁷¹ Ms Jennifer Spencer described the process of getting the test as ‘very harrowing’, and suggested that it should be streamlined:

I believe that you should just be able to walk in to Sullivan Nicolaides Pathology with no referral and tell the lady or the operator there—the phlebotomists—that you would like a PFAS blood test. She would then give you a PFAS blood test, it would be sent off and then you’ll be sent the results to your home, not the GP, and you would then have that available for you to read. If you had trouble deciphering it or were was wondering what it was all about, then you could contact a doctor of your choice or this GP.⁷²

- 3.60 EcoNetwork Port Stephens submitted that many families in the Williamstown area were ‘thoroughly disillusioned with the testing regime’. It said the arrangements were ‘slow and bureaucratic’, and relied on individuals ‘proactively seeking’ tests. It also said that the implications of test results were not being well explained.⁷³

⁶⁹ Dr Peter Spafford, *Committee Hansard*, Katherine, 19 July 2018, p. 23.

⁷⁰ Dr Peter Spafford, *Submission 32*, p. [2].

⁷¹ Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, pp. 7, 8.

⁷² Ms Jennifer Spencer, *Committee Hansard*, Oakey, 17 August 2018, pp. 7–8.

⁷³ EcoNetwork Port Stephens, *Submission 58*, p. 3.

- 3.61 Mrs Samantha Kelly considered that the rollout of the program was ‘disorganised’, with blood tests initially undertaken through one company using a different methodology to tests subsequently undertaken by another company. She said that this had resulted in the test results of some people not being able to be used.⁷⁴
- 3.62 Dr Andrew Jeremijenko expressed concern about people being told not do blood tests, as it ‘takes away from the efficacy of the epidemiological study’. He noted:

We can’t prove these health associations that have been proven overseas if we don’t have the data, so it’s really important that we get these people blood tested and that we know their levels. Then we can follow them up, do the epidemiological studies and get the evidence.⁷⁵

Adequacy of current blood testing program to meet its objectives

- 3.63 Some participants in the inquiry considered there would be more benefit if free blood tests were provided periodically, rather than on a one-off basis.⁷⁶
- 3.64 As noted in Chapter 1, in its two 2016 reports on PFAS, the Senate Foreign Affairs, Defence and Trade References Committee recommended that blood tests be made available to residents of Oakey and Williamstown on an annual basis. It also recommended:
- ... 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.⁷⁷
- 3.65 The Coalition Against PFAS submitted that the ‘obvious and fundamental issue’ with the epidemiological study was that it is ‘too limited in its scope’. In its view, the statistical sample size of the tests in the three communities

⁷⁴ Mrs Samantha Kelly, *Committee Hansard*, Williamstown, 24 July 2018, p. 45.

⁷⁵ Dr Andrew Jeremijenko, *Committee Hansard*, Oakey, 17 August 2018, p. 15.

⁷⁶ For example, Jenny Robinson, *Submission 9*, p. [2]; Mr Anthony Bartlett, *Committee Hansard*, Katherine, 19 July 2018, p. 5; Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [5]; Dr Errol Lawson, *Committee Hansard*, Katherine, 19 July 2018, p. 14; Ms Nicole Smith, *Committee Hansard*, Katherine, 19 July 2018, p. 34.

⁷⁷ Senate Foreign Affairs, Defence and Trade References Committee, *Inquiry into firefighting foam contamination: Part A – RAAF Base Williamstown*, February 2016, p. xiii; *Firefighting foam contamination: Part B – Army Aviation Centre Oakey and other Commonwealth, state and territory sites*, May 2016, p. xi.

would be ‘far too small to draw meaningful conclusions’. The group considered that the study should be extended to survey:

... all PFAS affected communities in Australia, including those near civil airports and firefighting bases, and survey all occupationally exposed individuals such as firefighters.⁷⁸

- 3.66 The Coalition Against PFAS also suggested that data from the Australian study could be combined with that from other international studies in order to increase the sample size further.⁷⁹
- 3.67 Professor Martyn Kirk, Principal Investigator for the ANU’s PFAS Health Study, estimated that there would about around 3000 people included in the blood testing component of the study, as uptake in some communities had been ‘relatively low’. However, he noted that it was common for researchers to share datasets with investigators across the globe in order to increase the power of their research.⁸⁰
- 3.68 Professor Kirk also noted that the data-linkage component of the study would have ‘many more people in it’, including anyone who has ever lived in the community.⁸¹

Other proposed studies

- 3.69 MFB advised that it had provisionally selected Macquarie University as its academic partner to conduct a study of PFAS contaminants in firefighters’ blood. The study would consider whether regular blood and/or plasma donations reduce PFAS levels in the blood:

This research study is a randomized interventional study to compare a number of intervention groups donating blood and possibly plasma and a control group with no intervention. It is anticipated that the study may identify a possible relationship between the interventions and reduced levels of PFAS after 16 months (baseline +12 months intervention period).⁸²

⁷⁸ Coalition Against PFAS, *Submission 40*, p. 16.

⁷⁹ Coalition Against PFAS, *Submission 40*, p. 16.

⁸⁰ Professor Martyn Kirk, Principal Investigator, PFAS Health Study, National Centre for Epidemiology and Population Health, Australian National University, *Committee Hansard*, Canberra, 14 September 2018, pp. 14, 16.

⁸¹ Professor Kirk, *Committee Hansard*, Canberra, 14 September 2018, p. 14.

⁸² Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 6.

- 3.70 The United Firefighters Union of Australia, which had negotiated with MFB to commission the Macquarie University study,⁸³ recommended further research to scientifically identify the incidence of specific illnesses associated with PFAS contamination ‘so that the impact of this exposure is better understood and accepted’. The Union further recommended that all Commonwealth, state and territory career firefighters (and retired firefighters) be offered free voluntary blood testing, with ‘appropriate support and analysis’.⁸⁴
- 3.71 Separately, in the 2017–18 Budget, the Australian Government committed \$12.5 million towards establishing a National Research Program into the Health Effects of PFAS, to be administered by the National Health and Medical Research Council (NHMRC). The program will be informed by the report of the Expert Health Panel. The NHMRC intends to conduct a targeted call for research in late 2018.⁸⁵

Committee comment

- 3.72 The Committee recognises that there is a high degree of anxiety among members of affected communities in relation to the possible health effects of PFAS exposure. This anxiety is particularly acute amongst residents who have experienced themselves, or whose loved ones have experienced, medical conditions that could possibly be attributed to PFAS exposure.
- 3.73 The health advice provided by Australian authorities emphasises that there is currently ‘no consistent evidence’ that PFAS exposure causes adverse human health effects. While this statement may be true, overseas jurisdictions appear to have been more ‘upfront’ in communicating the possible health effects of exposure to PFAS. This presents a confusing message to the Australian public and contributes to an impression amongst community members that the Australian Government is downplaying the risks in order to avoid taking responsibility for the contamination. Furthermore, while many uncertainties remain, it is not clear that the current advice takes into account evidence from international studies, including those reviewed by the Expert Health Panel, of potential links to certain medical conditions.

⁸³ United Firefighters Union of Australia, *Submission 21*, pp. 17-18.

⁸⁴ United Firefighters Union of Australia, *Submission 21*, pp. 19-20.

⁸⁵ Australian Government, *Submission 64*, p. 14.

- 3.74 The Committee notes that there appears to be a broad consensus, including the Department of Health, that the current advice should be updated to acknowledge the known links and associations, while continuing to make clear the many uncertainties. The Committee supports the review of the existing health advice to ensure it is more upfront about the risks of PFAS exposure, while continuing to emphasise the precautionary nature of the advice.

Recommendation 3

- 3.75 **The Committee recommends that the Australian Government review its existing advice in relation to the human health effects of PFAS exposure, including to acknowledge the potential links to certain medical conditions.**
- 3.76 The Committee welcomes the Australian Government's investment in an epidemiological study to help contribute to our understanding of the human health effects of PFAS exposure. The success of the associated voluntary blood testing program will have an important role to play in ensuring that the research is able to produce meaningful results.
- 3.77 The Committee was concerned to hear that participation in the blood testing program has been lower than expected to date. Anecdotal evidence suggests that the reasons for this low participation rate include an inability for participating doctors to promote the service, an overly bureaucratic testing process and a lack of appreciation of the value of the test, including amongst some general practitioners. The Committee considers that measures should be taken to improve participation in the program as soon as possible. This may include extending the blood testing program to more communities affected by PFAS contamination.
- 3.78 The Committee also notes continued calls for blood testing to be made available to residents on a periodic basis, such as annually, rather than a one-off test. The Committee notes that such testing would have little diagnostic value until the human health effects of PFAS exposure are better understood. However, the Committee considers that periodic testing should be considered for its potential role in monitoring the effectiveness of precautionary measures that have been introduced to reduce exposure pathways, in addition to reducing community anxiety.

Recommendation 4

3.79 The Committee recommends that the Australian Government, as soon as possible, undertake measures to improve participation in the voluntary blood testing program for PFAS. This should include measures to:

- **increase community awareness about the purpose and importance of the tests, and the associated epidemiological study;**
- **simplify the testing process;**
- **extend the program to be available in additional areas; and**
- **ensure Australia's testing strategy is comparable to international studies.**

Further, the Committee recommends that the Government consider the potential value of blood testing to monitor the effectiveness of measures being used to break PFAS exposure pathways in affected communities. This will necessitate longitudinal analysis of those who have been previously tested and additional tests being made available, after an appropriate period, to persons who have previously been tested.

4. Financial impacts

4.1 This chapter addresses the following term of reference:

(g) what consideration has been given to understanding and addressing any financial impact to affected businesses and individuals.

4.2 The chapter includes:

- a summary of evidence received in relation to the financial impacts on businesses and in relation to property values;
- an overview of related impacts on community health that are, largely, connected with financial impacts;
- an overview of claims that have been made for compensation to date;
- a brief summary of financial impacts on state, territory and local governments that were identified by some participants;
- the Government's consideration of financial impacts to date; and
- the Committee's conclusions and recommendations.

Financial impacts reported by communities

4.3 The financial impact of PFAS contamination emanating from Defence bases, particularly on the communities surrounding RAAF Base Williamtown, Army Aviation Centre Oakey and RAAF Base Tindal, was a key area of concern and focus during the Committee's inquiry.

4.4 The Committee received strong representations from community members who said that the Australian Government needs to take responsibility for a range of financial impacts, which can be divided into two categories:

- impacts on businesses operating in affected areas, and
- impacts on individuals, primarily in relation to property ownership.

Impacts on businesses

- 4.5 The Committee was given evidence about a range of financial impacts on businesses in PFAS-affected communities. Port Stephens Council, for example, told the Committee about a business survey it had conducted in the Williamstown investigation area in 2015. Over 50 per cent of respondents indicated that they had been impacted by PFAS contamination, of which over 25 per cent were ‘major or significant’ impacts.¹ The Council provided the following example of a specific response to the survey:

As a result of the closure we were unable to harvest oysters from our finishing off oyster leases in the affected area during our prime sales period for approx. 5-6 weeks. This has caused loss of income and considerable expense. Because of the closure we were unable to move stock to other oyster leases resulting in a bank up of oysters on affected leases. Extra infrastructure was required to be built to cater for these oysters. We were also put into a position of having to sell semi mature stock at a lesser price from other oyster leases in order to keep our business operating.²

- 4.6 Mrs Britt Osborne told the Committee that her business had, in 2015, invested \$400 000 into a water park in the Williamstown area. Once news of the PFAS contamination broke, the business was unable to open the park. Mrs Osborne estimated that the business had lost around \$120 000 as a result of not opening, in addition to the lost capital investment.³
- 4.7 Mr Desmond Maslen told the Committee that his business installing environmental mooring systems continued to be affected by the PFAS contamination, due to the purchase of a property in Medowie six weeks before news broke of the RAAF Base Williamstown contamination. Mr Maslen reported that he had needed to drop the rent for the property by nearly two-thirds in order to attract a tenant. Being unable to sell or borrow against the property had reduced his ability of his business to raised money to fulfil contracts.⁴
- 4.8 Mr Wayne Sampson told the Committee about the case of an investor who had arrived in the area intending to sell agricultural produce to the major supermarkets in an operation employing around 200 people. However, the

¹ Port Stephens Council, *Submission 49*, p. 10.

² Port Stephens Council, *Submission 49*, p. 10.

³ Mrs Britt Osbourne, *Committee Hansard*, Williamstown, 24 July 2018, p. 49.

⁴ Mr Desmond Maslen, *Committee Hansard*, Williamstown, 24 July 2018, p. 44.

business had now been for sale for three years without any interest from purchasers.⁵

- 4.9 Ms Dianne Priddle told the Committee about the biosecurity risks that PFAS contamination could pose to the beef industry, and called for producers to be moved from their land ‘like for like’.⁶ The lack of current food standards for PFAS is considered further in Chapter 6.
- 4.10 Similar issues concerning the possibility of PFAS contamination in the food chain were raised by Mr Andrew Bartlett, a resident of Katherine, who said that he had chosen not to irrigate the mango trees on his farm during the dry season in order to minimise the exposure to PFAS from contaminated bore water.⁷
- 4.11 Ms Priddle also told the Committee about the impact of PFAS contamination on own business as a stud producer. She and her partner had made a decision to stop using bore water in order to prevent further contamination, which meant they had to buy in hay and grain. The financial impact of these additional costs caused them to pull back on the genetic work they had previously done work using cattle embryos.⁸
- 4.12 In Victoria, the Wetlands Environmental Taskforce Public Fund (the WET Trust) described the ‘immense financial impact’ of the contamination of its Heart Morass property with PFAS due to its proximity to the RAAF Base East Sale. It noted that the property had a Capital Improved Value of \$2.278 million in a ‘pristine, uncontaminated state’ according to a 2018 property valuation notice issued by the local council. However, the WET Trust submitted that, in its current contaminated state, the property had zero commercial value as an asset on the Trust’s balance sheet. The WET Trust expressed its desire for restitution of the property to its uncontaminated state and for the Trust to be compensated for the economic loss to its asset.⁹

Impacts on individuals

- 4.13 A large number of participants in the inquiry told the Committee about the impact that PFAS contamination in the Oakey, Williamtown, and Katherine

⁵ Mr Wayne Sampson, *Committee Hansard*, Williamtown, 24 July 2018, p. 52.

⁶ Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, pp. 1–2.

⁷ Mr Andrew Bartlett, *Committee Hansard*, Katherine, 19 July 2018, p. 6.

⁸ Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 4.

⁹ Wetlands Environmental Trust Public Fund, *Submission 46*, p. [3].

areas has had on their financial situation, and called for more consideration of these matters by the Government.

4.14 The Coalition Against PFAS told the Committee that property prices had ‘plummeted’. It highlighted a report by the New South Wales Valuer General that property prices at Williamstown had, on average, decreased by at least 15 percent.¹⁰ However, it added that anecdotal evidence suggested that the ‘real decreases are likely to be much higher’ because:

- Banks have refused to lend, for fear of insufficient valuations, and in some cases the “health and safety” risk of attending contaminated properties to conduct valuations.
- The volume of property sales has decreased, and the average length on the market has increased significantly as properties become harder to sell.
- Semi rural acreages are no longer fit for purpose, with no prospect of growing produce, running animals or hobby farming, or using bore water.
- With no prospect of remediation in sight, the contamination as modelled by AECOM is to be present for decades to come.¹¹

4.15 The Coalition Against PFAS added that these reductions in values had created an ‘equity trap’:

Many of our constituents, particularly those with young children, desperately want to move out of the affected areas. But they cannot sell, and they cannot use contaminated property to raise finance to buy elsewhere.¹²

4.16 These, and similar, financial impacts were evident in numerous individual submissions to the inquiry from community members. Due to their inability to sell their properties at a reasonable value or access their equity, community members reported being in a state of financial ‘limbo’,¹³ being

¹⁰ See NSW Valuer General, *Review of land values in the Williamstown contamination investigation area*, http://www.valuergeneral.nsw.gov.au/_data/assets/pdf_file/0016/214225/Review_of_land_values_in_Williamstown.pdf

¹¹ Coalition Against PFAS, *Submission 40*, p. 38.

¹² Coalition Against PFAS, *Submission 40*, p. 38.

¹³ EcoNetwork Port Stephens, *Submission 58*, p. 4

‘stuck’ on their properties,¹⁴ imprisoned,¹⁵ in ‘home detention’,¹⁶ and having ‘no way out’.¹⁷

4.17 Mr Lester Schmidt, of Oakey, told the Committee that he had not even been able to obtain a valuation of his property, which he put down to the valuers being ‘afraid to put anything on paper regarding the contamination’.¹⁸

4.18 Some property owners also told the Committee that the contamination had impacted their ability to attract tenants for investment properties.¹⁹

4.19 Port Stephens Council reported that residents had received ‘mixed messages’ in relation to insurance, banking and mortgage issues:

Anecdotally, Council is aware that some insurance companies are advising residents that they would not be able to rebuild if something was happen to their dwelling while this uncertainty exists. Council has also had reports of lending authorities advising they wouldn’t enable properties within the contaminated area to be used as security at this time.²⁰

4.20 Many residents told the Committee that they lived in, or had moved to their area, for lifestyle reasons, but that this lifestyle was no longer possible due to the precautionary measures associated with the PFAS contamination. For example, Shirley Davis told the Committee that the main reason they had bought their Williamstown property was for a ‘rural lifestyle’ in which her family could grow their own fruit, vegetables and eggs; but due to the PFAS contamination they no longer kept any birds and could not eat their home grown produce.²¹

4.21 A sample of the evidence provided by community members is provided in Box 4.1 below.

¹⁴ Kim Smith, *Submission 66*, p. 3.

¹⁵ Justin Hamilton, *Submission 13*, p. [7].

¹⁶ Mr Craig Commens; *Committee Hansard*, Oakey, 17 August 2018, p. 36.

¹⁷ Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 3.

¹⁸ Mr Lester Schmidt, *Committee Hansard*, Oakey, 17 August 2018, pp. 37–38.

¹⁹ Mr Desmond Maslen, *Committee Hansard*, Williamstown, 24 July 2018, p. 44; Mrs Britt Osbourne, *Committee Hansard*, Williamstown, 24 July 2018, p. 49.

²⁰ Port Stephens Council, *Submission 49*, p. 11.

²¹ Shirley Davis, *Submission 26*, p. [1].

Box 4.1 Property-related financial impacts

[T]he PFAS contamination was announced shortly after we listed our property for sale, and we have had not a single expression of interest from a potential buyer. Furthermore, house prices all throughout the region have dropped dramatically—in fact our real estate agent informed us that owners are typically having to drop their prices by up to 35 percent in order to have a hope of selling. This means that we now find ourselves in the position of having a primary asset which we cannot sell for anywhere near what it is worth, and two mortgages to pay off simultaneously.²²

The value of the properties has dropped and the banks and financial institutions won't lend money for purchasing properties in this area. Agents now tell us that people with cash are willing to buy as the properties are cheap, however, the price we would get if we did sell would not buy us anything anywhere.²³

When we moved from Katherine in April 2018 we had our house evaluated. We purchased in 2014 prior to the PFAS contamination knowledge. House prices were high and we spent \$60,000 renovating. We have invested considerably in our property in Katherine north and have been told recently that our house is valued at less than we purchased it for, merely \$330-345k. This has had a profound effect on our financial situation, especially living off one salary.²⁴

I cannot sell due to the contamination, I cannot afford to maintain the property and fix necessary repairs ie the leaking roof. Banks will not lend on properties in the area – I cannot even obtain a loan to make necessary repairs or updates. I do not have the freedom I am entitled to as an Australian citizen who worked hard, with my late husband, to pay off a home as it is fair to say the property is unsellable for a true value of what it would have sold for and finding a buyer is near impossible.²⁵

We are in financial dire straits. We are paying someone else's mortgage to keep a roof over our heads and we cannot sustain this pressure upon our lives anymore. Here we sit. 5 years Later.²⁶

²² Donald and Jennifer Trew, *Submission 19*, p. [1].

²³ Klaus and Fiona Girnth, *Submission 42*, p. [1].

²⁴ *Submission 11* (name withheld), p. [1].

²⁵ Margaret Cuskelly, *Submission 35*, p. [1].

²⁶ *Submission 36* (name withheld), p. [3].

We have started property searching. Our property, being 32 acres, dual occupancy and two street frontage with the ability for major subdivision with DA consent, so close to beaches and the city we expected quite a large return for our land. However, our home and land is worthless. Recent Realestate agent appraisals indicate that there are NO buyers for this area due to the contamination and we would have to virtually give it away.²⁷

I cannot sell my home, I cannot move or conscionably let renters in, I cannot borrow against the property and no one can borrow to buy it from me. I cannot grow produce on rural zoned land. I am imprisoned by an act of environmental vandalism by a defence organisation chartered to protect me, and whose modus operandi is 'do nothing' off base.²⁸

My mother lived on Sansom Road until she became too ill to live at home anymore. It became necessary to move her to an aged care facility. We could not use her house (now worthless) as the bond required by the nursing home so money was taken from her savings to cover her costs. My mother passed away in mid April, at the age of 93, she spent the last years of her life worried about her home becoming worthless, her money being eaten up by nursing home fees and the drastic decline of the value of her Estate for her family members. This should not be how the last three years of an elderly person's life should be spent.²⁹

The value of the property has been affected severely, and we are completely stuck financially. We can't sell our investment at a loss, and we can't sell the house we live in because the bank would take any profit to pay off the debt on the property in Salt Ash.³⁰

Our desired outcome from this and from the forced litigation that we are under is that we are duly compensated for our losses—our loss of property values, our loss of lifestyle, our loss of a safe and financially stable future and the loss of our ability to provide an inheritance of value to our son. We did not ask for this contamination in our lives. It has been forced upon us by a negligent and guilty polluter.³¹

²⁷ *Submission 27* (name withheld), p. [2].

²⁸ Justin Hamilton, *Submission 13*, p. [7].

²⁹ Michele Sansom, *Submission 2*, p. [1].

³⁰ *Submission 12* (name withheld), p. [1].

³¹ Ms Jennifer Spencer, *Committee Hansard*, Oakey, 17 August 2018, pp. 6–7.

- 4.22 The New South Wales Valuer General provides ‘independent and impartial valuations for use by local government for land tax and rates, and for ensuring landholders are fairly compensated when land is compulsorily acquired’.³² Appearing before the Committee at a public hearing, the Deputy Valuer General, Mr Michael Parker, explained that a review—based on sales in the Williamstown management area before and after the announcement of the PFAS contamination—had determined that land values had reduced by 15 per cent in the 1 July 2016 valuing year, and were maintained at the same level at 1 July 2017.³³ This compared with increases in land values outside the management area of between five and 10 per cent in 2016, and between six and 10 per cent in 2017 (depending on whether it was residential or rural land).³⁴ The Deputy Valuer General also noted there had been a reduction in the volume of sales from an average of 16 per year previously, down to 10 per year in 2016 and 2017, and five in 2018 to date.³⁵
- 4.23 Mr Parker explained that while ‘contamination occurs around the state’, the PFAS contamination in the Williamstown area had an unusually broad impact, in that it had ‘affected more properties than normally would be the case’.³⁶
- 4.24 In contrast, at the Oakey public hearing, the Toowoomba Regional Council advised that it had not seen a reduction in the values assessment the Valuer General in that region.³⁷ Several residents, however, individually expressed concern about depressed prices in the town and the difficulties of selling.³⁸

³² Mr Michael Parker, Deputy Valuer-General, Valuer-General of New South Wales, *Committee Hansard*, Canberra, 14 September 2018, p. 6.

³³ Mr Parker, *Committee Hansard*, Canberra, 14 September 2018, p. 6.

³⁴ Mr Parker, *Committee Hansard*, Canberra, 14 September 2018, p. 7.

³⁵ Mr Parker, *Committee Hansard*, Canberra, 14 September 2018, p. 6.

³⁶ Mr Parker, *Committee Hansard*, Canberra, 14 September 2018, p. 8.

³⁷ Mr Damien Platts, General Manager, Water and Waste Services, Toowoomba Regional Council, *Committee Hansard*, Oakey, 17 August 2018, p. 30. See also Toowoomba Regional Council, *Submission 80*.

³⁸ Nathaniel Roberts, *Submission 24*, p. [1]; *Committee Hansard*, Oakey, 17 August 2018, p. 19; *Submission 22* (name withheld), p. [2]; Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 6; Ms Jennifer Spencer, *Committee Hansard*, Oakey, 17 August 2018, pp. 10–11; Mr Bernard Earsman, *Committee Hansard*, Oakey, 17 August 2018, p. 37; Mr Lester Schmidt, *Committee Hansard*, Oakey, 17 August 2018, p. 37; Mr David Jefferis, *Committee Hansard*, Oakey, 17 August 2018, p. 39.

One Oakey resident blamed ‘negative media stories’ for the slowdown in the local property market.³⁹

- 4.25 Similar concerns about the reduction in property values and ability to sell property, or use it for its intended purpose, were raised by residents of Katherine.⁴⁰

Related impacts on the community

- 4.26 The Coalition Against PFAS submitted that communities in affected areas faced ‘inevitable economic decline’ until the contamination is remedied:

Even businesses which do not use the land or water ... struggle as a result of the contamination, because they can no longer attract staff, and tourists no longer wish to visit the area’.⁴¹

- 4.27 Several residents also told the Committee that the PFAS issue had caused divisions in their communities. For example, Ms Jennifer Spencer told the Committee at Oakey:

We have become a for and against Defence community. We have social media groups, one of which I am an administrator, at war with each other. We have had people shouting at each other at meetings and threatening violence ... We have had members of the community openly mocking and laughing at our suffering. We have had one delightful young lady telling us on an online forum to find a nice long rope and go to hang ourselves. We are being told that this is all our fault. We are being told to shut up and go away. We are told, ‘What are whinging about? Move away, cut your losses and get out of this town. You’re tainting the town.’⁴²

- 4.28 Many community members also talked about the mental health impact that PFAS contamination had had on residents, including increases in stress, anxiety and depression. These impacts were often connected with financial stresses, and the lack of certainty about the future. A sample of evidence from community members is included in Box 4.2 below.

³⁹ Craig Commens, *Submission 74*, p. [2]; *Committee Hansard*, Oakey, 17 August 2018, pp. 35–36.

⁴⁰ *Submission 11*, (name withheld), p. [1]; Donald and Jennifer Trew, *Submission 19*, p. [1]; *Submission 30* (name withheld), p. 1; Alena Beznoska, *Submission 37*, p. [2]; Ms Nicole Smith, *Submission 45*, p. 11; Andrew Bartlett, *Submission 52*.

⁴¹ Coalition Against PFAS, *Submission 40*, p. 39.

⁴² Ms Jennifer Spencer, *Committee Hansard*, Oakey, 17 August 2018, p. 7.

Box 4.2 Mental health of community members

Apart from forcing us to put our retirement on hold and increase the number of hours we work, this has caused us significant mental and emotional stress—something that is compounded by the fact that Defence was aware of PFAS contamination well before we invested so much in this property and used its projected value as the basis of buying another one.⁴³

How can I continue with this amount of anxiety, stress and depression? Why would the Australian Government let honest Australian citizens be in this position, people that worked hard and paid off their home, paid taxes and just wanted to live the life they were entitled to have – Freedom to live off their land, freedom to sell their property.⁴⁴

I struggle to do the basic day to day chores as I am constantly stressed , have trouble sleeping because of depression & can see no end in sight for our future.⁴⁵

The financial damage is enormous. The physical damage—the emotional damage is terrifying. I am so scared of what's going to happen to my property, and I think: 'How dare people put all of us in that position where we don't know: "Hey, If you drop your value by 50 per cent you might sell it."' Well, no. I'll die there if I have to.⁴⁶

You want to know how this makes us feel every day since the RED ZONE has been made public? WELL We have never ever had any mental health issues in our 49 years of marriage—our ages are 74 and 78yrs and full pensioners watching our health decline over the past couple of years has been traumatic to say the least, kidney cancer diagnosed, heart attack x2 and the depression has been just hard daily to manage, so much so that unbeknown to each other suicide has been in each other's thoughts thankfully we respect and care for each other too much to attempt anything this dramatic but sometimes it just feels as though it is the only answer as we feel so helpless.⁴⁷

We've actually had an instance where I've taken my wife away for a few days just to get her away from all of this, and all that happens is that when you

⁴³ Donald and Jennifer Trew, *Submission 19*, p. [1].

⁴⁴ Margaret Cuskelly, *Submission 35*, p. [1].

⁴⁵ Shirley Davis, *Submission 26*, p. [1].

⁴⁶ Mrs Jennifer Trew, *Committee Hansard*, Katherine, 19 July 2018, p. 40.

⁴⁷ Klaus and Fiona Girth, *Submission 42*, p. [1].

come back you're just thrown into the same thing, and it's depressing straightaway. It's like you've never been away.⁴⁸

4.29 The Williamtown and Surrounds Residents Action Group summarised the impact the PFAS contamination had had on its community as follows:

Before the community was aware of the contamination, the community was a thriving area, properties were sought after, property prices were increasing and many residents had dreams and aspirations of setting up or running businesses or raising families in their forever home or at the other end of the life cycle, getting ready to sell their family home, to down size and retire. All of which came to a grinding halt when the contamination finally became public.

Residents now are in a state of unrest and anxiousness, their economic future has been striped and they now live with the fear of possible health effects and the unknown. We have all chosen to live in this area for individual reasons, whether it is a business opportunity, a tree change, our dream home or the rural lifestyle. Whatever it be, the common theme is the location. A rural area close to the beach, half an hour to Newcastle, the Bay and Maitland, the acreage, the farm life and most importantly was the access to unlimited water, a feature that is a necessity with sandy soils. Now everything is uncertain, we have fallen out of love with our homes and have lived under a cloud of bureaucratic garbage for almost three years.⁴⁹

4.30 The Australian Government has established dedicated mental health and counselling support services for the communities of Williamtown, Oakey and Katherine. The Government's submission notes that Primary Health Networks in each of these communities have been commissioned to provide face-to-face services, with telephone and online counselling services also available.⁵⁰ However, elected representatives in Katherine advised the Committee that their community was still waiting for face-to-face services to be provided.⁵¹

⁴⁸ Mr Terry Robinson, *Committee Hansard*, Williamtown, 24 July 2018, p. 5.

⁴⁹ Williamtown and Surrounds Residents Action Group, *Submission 51*, p. [1].

⁵⁰ Australian Government, *Submission 64*, p. 16.

⁵¹ Mrs Fay Miller, Mayor of Katherine, Katherine Town Council, *Committee Hansard*, Katherine, 19 July 2018, p. 32.

Claims for compensation

- 4.31 Across each community, residents called on the Australian Government to take responsibility for the financial impacts and to offer a solution to affected property owners.⁵²
- 4.32 The Coalition Against PFAS called for the Commonwealth Government to provide full compensation for losses suffered in affected communities, including in relation to property, businesses and compensation for emotional harm, stress and inconvenience.⁵³
- 4.33 Some residents were of the view that a program of voluntary land acquisition should be implemented. For example, Mr John Donahoo submitted that voluntary acquisition of affected properties was needed in order to provide hope to ‘tormented and distressed’ landowners. He indicated that the cost of such acquisition must first be quantified, and proposed a finance model that would allow for these costs to be distributed over a 15 year period. Mr Donahoo further recommended that Defence Housing Australia be used to implement the scheme, with some of the acquired land used to develop buffer zones adjacent to Defence bases as part of an Airfield Buffer Zone Policy.⁵⁴
- 4.34 Other residents emphasised the need for a range of compensatory options to suit differing individual circumstances. For example, Mr Craig Commens told the Committee in Oakey that there was no ‘one size fits all’ solution:

[T]here are some people who want to go now but can’t. There are others who might want to sell in a few years when they’ve retired. ... There are a couple of old guys over the road from me, and they couldn’t care less. They’re retired, they’re elderly and they’re going to see the days out.⁵⁵

⁵² For example, Kate Washington MP, *Submission 65*, p. [4]; Ms Kylie Chambers, *Commission Hansard*, Katherine, 19 July 2018, p. 36; Mr Craig Commens, *Committee Hansard*, Oakey, 17 August 2018, pp. 35–36; Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 4; Mrs Jennifer Trew, *Committee Hansard*, Katherine, 19 July 2018, p. 40; Mrs Sue Walker, *Committee Hansard*, Williamtown, 24 July 2018, p. 9; Williamtown and Surrounds Residents Action Group, *Submission 51*, p. [7]. See also Bullsbrook Residents and Ratepayers Association, *Submission 78*, pp. 3–4 in relation to PFAS contamination from RAAF Base Pearce, Western Australia.

⁵³ Coalition Against PFAS, *Submission 40*, p. 41.

⁵⁴ Mr John Donahoo, *Submission 60*, pp. 2–5.

⁵⁵ Mr Craig Commens, *Committee Hansard*, Oakey, 17 August 2018, p. 35.

- 4.35 The Williamstown and Surrounds Residents Action Group emphasised that a range of options needed to be available to residents:

Even though there are similar themes within our area, we all need to be treated with respect and given options that suit the individual. An option must be given to start again in an equivalent position, there cannot be a one size fits all approach to Williamstown or the ever unfolding national issue.⁵⁶

Class actions

- 4.36 Class actions against the Department of Defence have been initiated on behalf of affected residents and businesses in the Oakey, Williamstown and Katherine investigation areas.⁵⁷
- 4.37 Dentons, the law firm representing the applicants in the Williamstown class action, endorsed comments by residents that ‘there is no single or neat solution’ and that there ‘needs to be a shift away from a highly adversarial response from the Commonwealth to genuine consultation with affect communities’. It noted that the Williamstown community had ‘felt compelled’ to commence proceedings against Defence in November 2016 due to ‘over a year of inaction from the Commonwealth in adequately responding to or attempting to remediate the damage cause by the contamination.’⁵⁸ It explained:

Generally, the class members (both residents and business owners in Williamstown and its surrounding areas) seek to be put into the position that they were in had the contamination not occurred, to the extent that money is able to compensate for that loss. Specifically, the class members seek monetary damages in the class action proceedings for loss and damage resulting from substantial and unreasonable interference with their rights or use of their property by Defence (otherwise known as nuisance), damages available pursuant to contravention by Defence of Commonwealth statutory regimes, and compensation arising from Defence breaching its duty of care owed to the residents and business owners of Williamstown. These claims are in addition to

⁵⁶ Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [7].

⁵⁷ Australian Government, *Submission 64*, p. 27; David Estcourt, ‘Government hit with class action for Katherine PFAS contamination’, *Sydney Morning Herald*, 3 August 2018, <https://www.smh.com.au/politics/federal/government-hit-with-class-action-for-katherine-pfas-contamination-20180803-p4zvdv.html> viewed 19 September 2018.

⁵⁸ Dentons, *Submission 75*, p. 1.

claims for inconvenience, distress and vexation, consequential upon the negligent infliction of damage to property.⁵⁹

- 4.38 Dentons wrote that any successful resolution of the class action would only provide monetary compensation to the economic claims pleaded by class members, but that ‘full and proper compensation and remediation extends well beyond mere monetary compensation that the class action can provide’.⁶⁰
- 4.39 The Australian Government noted the class actions in its submission, but considered that, as these matters were before the court, it would be inappropriate to comment further.⁶¹

Non-litigated claims

- 4.40 The Australian Government advised that Defence had also received 33 non-litigated claims for compensation (increased to 37 by the time of the hearing on 14 September 2018),⁶² which were being handled in accordance with the Attorney-General’s Legal Services Directions 2017. It noted that all claims in relation to PFAS are ‘significant legal issues’ under these Directions and are ‘not to be settled without the agreement of the Attorney-General’.⁶³
- 4.41 In response to a question on notice, Defence advised that 19 of the 37 non-litigated claims were in relation to Williamstown. At the time of the response, two non-litigated claims, and two partial claims, had been resolved under existing Departmental policy initiatives. The remaining claims continued to be assessed.⁶⁴

State, territory and local government submissions

- 4.42 State and local governments also brought a range financial impacts to the Committee’s attention.

⁵⁹ Dentons, *Submission 75*, p. 3.

⁶⁰ Dentons, *Submission 75*, p. 3 (emphasis in original).

⁶¹ Australian Government, *Submission 64*, p. 27.

⁶² Mr Steve Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Canberra, 14 September 2018, p. 35.

⁶³ Australian Government, *Submission 64*, p. 27.

⁶⁴ Department of Defence, *Submission 64.1*, p. 1.

- 4.43 The New South Wales Government echoed concerns expressed by the affected residents in the Williamtown community that their property prices have decreased as a result of the PFAS contamination, and that, in many instances, financial institutions will not lend to people wanting to buy in the area and will not recognise equity in properties. The New South Wales Government considered that the Commonwealth's statement that it was not considering a land purchase program as a result of PFAS contamination was 'inconsistent with the "polluter pays" principle'. It recommended:

The Australian Government should consider appropriate compensation for property impacted by PFAS contamination emanating from Defence lands where remediation of the contaminated sites is not possible or is unviable.⁶⁵

- 4.44 The Northern Territory Government similarly submitted:

More resources need to be directed toward understanding and addressing any financial impact to affected businesses and individuals as the visibility on what is being done in this space is not clear.⁶⁶

- 4.45 The Government of South Australia submitted that it was 'not specifically aware' of any considerations of financial impacts to affected businesses and individuals in relation to the RAAF Base Edinburgh investigation area. However, it noted that the Salisbury Council had closed its 'managed aquifer recharge' scheme—which captures stormwater which is injected into the aquifer, retrieved and on sold to irrigators—due to the identification of PFAS in the water. This had impacted the Council's recycled water business, potentially leading to a need for infrastructure upgrades to ensure the wetland system does not cause local flooding.⁶⁷

- 4.46 Toowoomba Regional Council told the Committee that, due PFAS contamination, it had lost the ability to use 750 megalitres of water per annum. It estimated the commercial value of this water at \$1.5 million per year. To improve water security at Oakey, it was also considering building an additional reservoir at an estimated cost of \$3 million, duplicating the single pipeline from Toowoomba at an estimated cost of \$12 million, and/or accessing and treating an alternative bore field for Oakey also at an

⁶⁵ New South Wales Government, *Submission 61*, p. 16.

⁶⁶ Northern Territory Government, *Submission 70*, p. 5.

⁶⁷ Government of South Australia, *Submission 71*, p. [5].

estimated cost of \$12 million.⁶⁸ The Council was considering its options in relation to any request for compensation from the Australian Government.⁶⁹

- 4.47 Port Stephens Council acknowledged that it had ‘limited ability and resources to effect significant measures’ to mitigate the financial impacts, but noted that it had provided a 50 per cent reduction in rates to affected residents and farmland in the Williamstown Management Area.⁷⁰ The \$90 293 cost of this measure in 2018–19 was being made up for by the remaining ratepayers in the area, who were paying an additional \$2.71 per year.⁷¹
- 4.48 The Port Stephens Council also noted that the PFAS contamination was having an impact on the future development of the area around Newcastle Airport. This included increasing costs of development ‘on the basis of additional resources for assessments and, in many cases, additional mitigation and controls required’, and uncertainty around the ability to conduct drainage works that are necessary for the full development of the Council’s Defence and Airport Related Enterprise Zone.⁷²
- 4.49 Although not related to a Defence site, Bathurst Regional Council submitted that it was seeking compensation from the Commonwealth Government for remediation works and for other costs associated with its investigation of PFAS contamination at Bathurst Regional Airport, which was operated by the Commonwealth until 1992.⁷³

Consideration by the Government

- 4.50 The Australian Government’s submission acknowledged concerns that had been raised about the impacts of PFAS contamination on businesses and individuals in investigation areas, including in relation to business losses,

⁶⁸ Mr John Platts, Manager of Water Operations, Toowoomba Regional Council, *Committee Hansard*, Oakey, 17 August 2018, pp. 32–33. See also Toowoomba Regional Council, *Submission 80*

⁶⁹ Ms Lelia Fallon, General Counsel, Toowoomba Regional Council, *Committee Hansard*, Oakey, 17 August 2018, p. 33.

⁷⁰ Port Stephens Council, *Submission 49*, p. 11.

⁷¹ Port Stephens Council, *Submission 49.1*, p. 2.

⁷² Port Stephens Council, *Submission 49*, p. 12.

⁷³ Bathurst Regional Council, *Submission 44*, p. 2.

property values, and the measures required to be undertaken to live in accordance with the recommended precautionary measures.⁷⁴

4.51 The Government noted that a financial assistance package had been provided to eligible fishers and businesses affected by the temporary closure of waterways near the Williamstown investigation area in 2015. The package included an Income Recovery Subsidy for individuals, Business Assistance and Business Hardship Payments for businesses, and an additional Business Transition Payment in April 2016. Total financial assistance payments under the package amounted to \$2.174 million. Free financial counselling was also available to affected businesses.⁷⁵

4.52 The submission stated the Government's current position in relation to land purchases as follows:

Based on the knowledge and evidence available at this time, the Australian Government is not offering a land purchase program, as a result of PFAS contamination.

The Australian Government, through relevant Commonwealth departments will continue to review PFAS management practices and adjust its response as necessary, in accordance with any new evidence that arises.⁷⁶

4.53 The Government advised, however, that the PFAS Taskforce had met with key financial institutions in late 2017 to 'gain a better understanding of the basis of the anecdotal reports' in relation to loss of equity in property, financial institutions not lending against equity in property, and financial institutions not lending for property being purchased in investigation areas.

Financial institutions advised that there is no blanket policy on lending in PFAS-affected areas – assessment is on a case-by-case basis, however, the independent valuation reports are a key driver of risk assessment. Valuers have a key role, as they are required to reflect local market sentiment in their valuations.⁷⁷

4.54 The Government outlined a number of previous occasions in which Defence had engaged with financial institutions, valuation companies and peak bodies to discuss lending practices and policies. It explained that while

⁷⁴ Australian Government, *Submission 64*, p. 27.

⁷⁵ Australian Government, *Submission 64*, p. 27.

⁷⁶ Australian Government, *Submission 64*, p. 29.

⁷⁷ Australian Government, *Submission 64*, p. 28.

‘decisions on lending and valuations continue to remain commercial decisions for individual firms based on financial risk’ it had focused these engagements on ‘education and raising awareness about PFAS and the status of Defence’s environmental investigations’.⁷⁸

- 4.55 Defence explained further at a public hearing that, while it does not ‘track or record or have valuation information’ itself, it had been:

... seeking to ensure that valuers and lending institutions have available to them the best and most credible information available on the investigations, particularly the information that’s contained in the reports by our environmental consultants. So we have reached out to lending institutions and to valuers to ensure that they’re aware that these reports are available and to seek to update them on information so they’re not working off erroneous information or lack of information but have the information that is available to us in these environmental investigations and understand the health advice that is available.⁷⁹

- 4.56 At the public hearing in Canberra, the Department of the Environment and Energy provided the following response when asked about the assistance the Government could offer to residents who feel they are trapped in their properties due to an inability to sell or borrow against their property:

In developing responses to PFAS contamination, a number of principles underpin the approach that the Commonwealth has pursued with responses: fiscal responsibility; based on the best available science and information; risk appropriate; and manageable in the longer term. The extensive work that’s been undertaken by the government, particularly at particular sites, has informed views and decisions in this space, and it’s also informed the nature of the support that the government has provided to particular communities. In particular, we look at: the particular information that the government’s drawn on; outcomes of detailed site investigations; the very detailed human health and environmental health risk assessments that are undertaken; and the information and inputs that are obtained from community engagement from state and territory agencies and other Commonwealth bodies. All that information has been looked at by the Commonwealth and, based on the knowledge, information and evidence available at the time, the Australian

⁷⁸ Australian Government, *Submission 64*, p. 28.

⁷⁹ Mr Chris Birrer, First Assistant Secretary, Infrastructure, Department of Defence, *Committee Hansard*, Oakey, 17 August 2018, p. 30.

government has not decided to implement a program of buybacks at this point.⁸⁰

Committee comment

- 4.57 The Committee acknowledges the anguish and stress experienced by many residents of areas affected by PFAS contamination—both due to uncertainties associated with the contamination event itself, but extended and made worse by the financial difficulties many have faced and the inability to move into unaffected areas. Many residents have reported feeling ‘trapped in their homes’ due to an inability to sell their property, or access their equity. Many have reported suffering from anxiety and depression due to their inability to change their situation. Many also reported increased divisions within their communities. Many have chosen to support class actions as a means of rectifying their financial circumstances.
- 4.58 Provision of mental health services will be an important ongoing part of the Australian Government’s response to communities affected by PFAS contamination. However, it is even more important that the underlying causes of the stress and anxiety being experienced by communities members are addressed as far as possible.
- 4.59 The Committee considers that the Australian Government needs to act swiftly to offer hope to property owners caught up by the PFAS crisis. The Committee received compelling evidence of instances where businesses and other property owners in PFAS contaminated areas have suffered demonstrated and quantifiable losses as a result of Defence’s use of PFAS-based firefighting foams on its bases. The Committee therefore considers that, in addition to its responsibility to remediate contaminated land, the Australian Government bears a responsibility to provide financial compensation to these businesses and property owners.
- 4.60 The precise nature of the compensation scheme will require detailed consideration by the Government. However, the Committee considers that the scheme should prioritise the most seriously affected residents in the first instance, and that the scheme should be flexible enough to accommodate a variety of individual circumstances.
- 4.61 Importantly, given the current uncertainties as to the nature and extent of any health effects attributable to PFAS exposure, the compensation scheme

⁸⁰ Mr Andrew McGee, Assistant Secretary, Chemicals Management Branch, Department of the Environment and Energy, *Committee Hansard*, Canberra, 14 September 2018, p. 34.

should initially be limited to businesses and property-related losses. A person's acceptance of an offer for compensation under this scheme should not preclude the person from a future claim in relation to any human health effects that may be found, as a result of future research, to be attributable to PFAS exposure.

Recommendation 5

4.62 The Committee recommends that the Australian Government assist property owners and businesses in affected areas for demonstrated, quantifiable financial losses associated with PFAS contamination that has emanated from Defence bases. Priority for compensation, including the possibility of buy backs, should in the first instance be given to the most seriously affected residents, including:

- **property owners who have suffered losses as a result of being unable to use their land for a specific purpose that it was intended for at the time of purchase;**
- **persons who invested in land between the time that it was known by the Australian Government to be contaminated and the time of that contamination being made public; and**
- **businesses and other owners of property in the most highly contaminated areas.**

The compensation scheme should be flexible enough to accommodate a variety of individual circumstances.

Acceptance of an offer for compensation in respect of their property's utility or value should not preclude the person from a future claim in relation to any human health effects that may be found, as a result of future research, to be attributable to PFAS exposure.

4.63 The Committee recognises the complex and difficult financial circumstances that many property owners find themselves in as a result of PFAS contamination in their area. The question of how, and whether, to access the compensation scheme will add another layer of complexity to these circumstances.

4.64 The Committee notes that there are other instances in which the Australian Government has provided free financial counselling services to individuals

and businesses. For example, the Department of Agriculture and Water Resources' Rural Financial Counselling Service provides 'intensive, individualised support' to primary producers and small rural businesses who are suffering financial hardship. The support available under that program includes help to identify financial and business options, negotiate with lenders, and develop an action plan; help accessing support payments; providing information about other assistance schemes; and referrals to other services.⁸¹

4.65 The Committee recommends that a similar service be developed for property owners and businesses in PFAS contaminated areas. The support provided should be individually tailored to each person's circumstances, and include:

- information and advice in relation to the financial options available;
- assistance with understanding and accessing (if eligible) the compensation scheme;
- information and referrals in relation to other services available; and
- assistance with navigating the process of selling their property, where desired, including discussions with valuers and lending institutions.

Recommendation 6

4.66 The Committee recommends that the Australian Government make available free, individualised case management and financial counselling services to those affected by PFAS contamination.

⁸¹ Department of Agriculture and Water Resources, 'Rural Financial Counselling Service (RFCS)', <http://www.agriculture.gov.au/ag-farm-food/drought/assistance/rural-financial-counselling-service> viewed 2 October 2018.

5. Communication and coordination

5.1 This chapter addresses the following terms of reference:

(b) the response of, and coordination between, agencies of the Commonwealth Government, including, but not limited to, the Department of the Prime Minister and Cabinet, the Department of Health, the Department of the Environment and Energy, the Department of Defence and the Australian Defence Force;

(c) communication and coordination with state and territory governments, local councils, affected local communities and businesses, and other interested stakeholders.

5.2 The chapter includes:

- a summary of the Australian Government's response to date to issues associated with PFAS contamination in, and around, Defence bases;
- a discussion of the effectiveness of coordination between government agencies, both at the Commonwealth level and with state, territory and local governments;
- a discussion of the effectiveness of communications with local communities, businesses and other interested stakeholders; and
- the Committee's conclusions and recommendations.

Australian Government response to date

5.3 In his 24 May 2018 letter to the Committee (Appendix C), the Prime Minister provided the following overview of the Government's response to date to PFAS contamination emanating from Defence properties:

On 7 May 2018, the PFAS Taskforce announced that the Australian Government is supporting local communities affected by PFAS contamination

with a new \$73.1 million package of measures. This package includes \$55.2 million for a drinking water program, which has commenced in communities surrounding Army Aviation Centre Oakey and RAAF Bases Williamtown, Tindal and Pearce. The program provides alternative drinking water for property owners in these communities who use bores as their primary source of drinking water, and where PFAS is present at levels above the drinking water guidance value.

The package also included \$17.9 million to support the continued operation of the PFAS Taskforce within the Department of the Environment and Energy. This is consistent with the role Australia's environment ministers are playing in overseeing the implementation of the recently agreed *Intergovernmental Agreement on a Framework for National Responding to PFAS Contamination*, which is available on the COAG website.

This new package builds on the Government's extensive investments towards managing PFAS contamination of over \$100 million, which includes:

- \$55m for affected communities of Williamtown, NSW and Oakey, Qld to reduce exposure, manage the environmental impacts, and provide additional dedicated mental health and counselling services (\$3.5m), a voluntary blood testing program (\$4.5m), and an epidemiological study into potential health effects from exposure to PFAS (\$4m);
- \$5.7 million to support the Katherine community through access to the voluntary blood testing program, epidemiological study and additional dedicated mental health and counselling services;
- \$12.5 million for a National Research Program into the Human Health Effects of Prolonged Exposure to PFAS;
- over \$13 million for a National Research Grants Program to fund research into clean-up technologies to remove PFAS from the environment;
- investing a large amount of resources in a wide range of intensive activities, including:
 - conducting extensive investigations at Defence sites and other Commonwealth-owned sites where fire-fighting foams have been in use;
 - reducing exposure pathways from contaminated drinking water in investigation areas by providing alternative sources of drinking water; and
 - trialling water filtration and other remediation activities at multiple Defence sites;

- collaborating with state and territory governments to develop the PFAS National Environmental Management Plan (publicly released on 16 February 2018); and
- working on management options for a phase out of Perfluorooctane Sulfonate (PFOS) and related compounds as part of Government's decision-making on ratifying amendments to the Stockholm Convention on Persistent Organic Pollutants.

5.4 The Prime Minister also advised that the independent Expert Health Panel, established to advise the Australian Government on the potential health impacts associated with PFAS exposure, had publicly released its report. The letter stated:

The report supports the enHealth advice that there is no consistent evidence that exposure to PFAS causes adverse human health effects. These findings support the approach taken to date by the Australian Government in responding to PFAS contamination.

Coordination between government agencies

5.5 At the Commonwealth level, a PFAS Interdepartmental Committee (IDC) was established in September 2015 and continues to meet regularly. The purpose of the IDC is:

... to ensure relevant Commonwealth agencies are sharing information, coordinating activities, and working together to develop, and continually review, policies and practices for managing PFAS contamination.¹

5.6 The following Commonwealth departments and agencies are represented on the IDC:

- Department of the Environment and Energy;
- Department of Defence;
- Department of Health;
- Department of the Prime Minister and Cabinet;
- Department of Infrastructure, Regional Development and Cities;
- Airservices Australia;
- Department of Agriculture and Water Resources;
- Department of Foreign Affairs and Trade;
- Department of Industry, Innovation and Science;
- Attorney-General's Department;

¹ Australian Government, *Submission 64*, p. 6.

- Department of Human Services;
- Department of Veterans' Affairs;
- Department of Finance; and
- Treasury.²

- 5.7 Responsibility for chairing the IDC is currently held by the PFAS Taskforce, which was established in the Department of the Prime Minister and Cabinet in December 2016 and transferred to the Department of the Environment and Energy in April 2018.³
- 5.8 Subcommittees of the IDC have also been established in relation to specific issues; and bilateral or multi-lateral discussions between agencies are frequently held outside of formal IDC meetings 'on an as-needs basis'.⁴
- 5.9 The Department of the Environment and Energy told the Committee that the role of the PFAS Taskforce is 'to provide oversight and coordination of Australian government responses to PFAS contamination'. The task force was resourced with approximately \$1.5 million in 2018–19, with a staff of between seven and eight people located within the Department's Chemicals Management Branch. The Department said the role of the taskforce, and the Chemicals Management Branch more broadly, was 'to provide guidance and best-practice PFAS responses based on lessons learned and experiences shared through PFAS investigation and management processes'.⁵
- 5.10 The Department noted that the work of the taskforce had 'clear synergies' with the broader work of the Department, and advised that the transition of the taskforce from the Department of the Prime Minister and Cabinet to the Department of the Environment and Energy:
- ... reflects the ongoing important role that the environment ministers actually have in some of the key activities for the taskforce and, in particular, for managing the roles of the intergovernmental agreement.⁶
- 5.11 Defence explained that the Department of the Environment and Energy had the 'day-to-day' relationships with the key state agencies, and had a mechanism for formal consultations between the Commonwealth and state

² Australian Government, *Submission 64*, p. 7.

³ Australian Government, *Submission 64*, p. 7.

⁴ Australian Government, *Submission 64*, p. 7.

⁵ Mr James Tregurtha, First Assistant Secretary, Environment Standards Division, Department of the Environment and Energy, *Committee Hansard*, Canberra, 14 September 2018, pp. 24–25, 40.

⁶ Mr Tregurtha, *Committee Hansard*, Canberra, 14 September 2018, p. 25.

EPAs through the ‘Heads of EPAs’ meeting. It described this mechanism as a ‘good way of taking forward’ the work that the Department of the Prime Minister and Cabinet had done in establishing the *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination*:

It’s that intergovernmental agreement which the task force established to help coordinate across the Commonwealth and state levels of government—particularly those agencies like EPAs—on PFAS issues in recognition that there was a gap in terms of there not being a nationally agreed framework on how to engage on PFAS issues across jurisdictions.⁷

- 5.12 According to the Australian Government’s submission, the operation of the IDC and the ‘coordinating activities’ of the PFAS Taskforce have ‘greatly improved’ relationships between Commonwealth agencies, and their understanding of each other’s PFAS-related roles and responsibilities and the intersections between them.⁸

The Intergovernmental Agreement

- 5.13 The *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination* (the IGA) came into effect in February 2018. As at June 2018, the Commonwealth and all states and territories except Western Australia had signed the IGA.⁹
- 5.14 The IGA is intended to support collaboration and cooperation between the Commonwealth and states and territories to respond consistently and effectively to the issue.¹⁰ The IGA outlines principles for responding to PFAS contamination, key areas for action, and roles and responsibilities. As was outlined in Chapter 1, the IGA also brings together a number of other pieces of work across the levels of government, including a *PFAS contamination response protocol*, the *PFAS National Environmental Management Plan*, and the *PFAS information sharing, communication and engagement guidelines*.
- 5.15 The principles outlined in the IGA to guide responses to PFAS contamination are:

- a. The primary focus of governments should be:

⁷ Mr Chris Birrer, First Assistant Secretary, Infrastructure, Department of Defence, *Committee Hansard*, Williamstown, 24 July 2018, p. 60.

⁸ Australian Government, *Submission 64*, p. 7.

⁹ Australian Government, *Submission 64*, p. 8.

¹⁰ *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination*, p. 3.

- i. action to protect the environment
 - ii. precautionary action to minimise human exposure
- b. Cooperation between governments will deliver a more effective and efficient response, especially where contamination crosses jurisdictional boundaries
- c. Governments should be transparent in their communication with affected communities and each other
- d. Government responses to PFAS contamination should:
 - i. acknowledge that a polluting Party will generally hold responsibility for identification and investigation of sites, assessment of risks, engagement with stakeholders, and management and remediation of the affected land as required (including associated costs), subject to the Party's legal rights and obligations
 - ii. be informed by available scientific evidence, consultation, risk assessment and good practice environmental management
 - iii. be financially and logistically sustainable for those responding
 - iv. allow continued provision of public services
 - v. provide a balanced response to community and industry concerns, acknowledging the need for transparency, and early and direct communication
- e. Governments acknowledge that responses to PFAS contamination should consider the varying characteristics and needs of affected communities, taking into account both short and longer term community expectations and needs
- f. All governments acknowledge the varying characteristics, responsibilities and needs of each jurisdiction
- g. Public land and government activities should be subject to the same requirements for managing PFAS as private landholders and enterprises.¹¹

5.16 The Australian Government's submission outlined the process by which the Commonwealth developed the IGA:

The IGA was developed in close consultation with all relevant state and territory agencies, all Commonwealth PFAS IDC agencies, and the Australian Local Government Association. To ensure the IGA is robust and

¹¹ *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination*, pp. 5-6.

implementable, and to foster increased cross-jurisdictional collaboration and cooperation, the Commonwealth hosted two national PFAS workshops to inform development of the National Framework. Both workshops were attended by all relevant agencies in every jurisdiction.¹²

Other communication and coordination between governments

5.17 The Australian Government's submission also outlined a range of other actions that have been undertaken to enhance communication and coordination with state, territory and local government, including:

- the PFAS Taskforce writing, in December 2017, to all local councils across Australia to provide them with information about PFAS contamination and the work of Australian governments to-date, and advise them that national guidance on PFAS management is available;
- the PFAS Taskforce establishing, in January 2017, an informal First Ministers departments' forum to discuss PFAS matters, with teleconferences hosted monthly, or more frequently on an 'as-needs basis', by the Department of the Prime Minister and Cabinet;
- regular communication and collaboration between the Department of Health and state and territory health departments through multijurisdictional committees, including the Australian Health Protection Principal Committee (AHPPC) and its Environmental Health Standing Committee (enHealth);
- partnering with EPA Victoria, supported by all state and territory environment departments, on the development of the *PFAS National Environmental Management Plan*, which establishes a 'practical basis for nationally consistent management guidance and standards for PFAS';
- engagement by Defence with state and territory regulatory authorities, state and territory health authorities and local councils in relation to the management of PFAS contamination emanating from Defence bases;
- communication between Defence and a range of state, territory and local government agency stakeholders through Projection Control Groups, which are established for most investigation sites to coordinate reporting and information-sharing for the site;
- Defence work with a range of state and territory-facilitated working groups to support the development and implementation of policies to respond to PFAS contamination, to collaborate at an operational level,

¹² Australian Government, *Submission 64*, p. 8.

and to ensure key technical information is shared in a ‘timely and transparent manner’.¹³

- 5.18 Defence said that, on average, it had ‘quite good’ relationships with agencies in each jurisdiction, and that any disagreements that arose were dealt with ‘in a professional way’.¹⁴ Defence noted that, despite its prominent role in the community, it did not seek to be ‘experts’ on health or environmental issues:

We promote the advice that comes from [agencies responsible for health and the environment], but we don’t promote it as Defence advice. If there is advice about the consumption of fish out of the Katherine River, that would come from the Northern Territory Department of Health; it wouldn’t come from Defence. We might telegraph and promote that advice, but we don’t see ourselves as qualified in those sorts of spaces.¹⁵

State and territory government submissions

- 5.19 The Queensland Government reported that Defence had made improvements both in its investigation and management of PFAS contamination, and in its collaboration with stakeholders, since the 2015–16 Senate inquiry:

Since the last Senate Inquiry, the Department of Defence has consulted with State and local government, as well as local interest groups, on the approach to investigating off-site contamination. In most circumstances where the Queensland Government has identified a cause for concern, the Department of Defence has accepted and acted upon recommendations made by Queensland’s technical experts. This effort and willingness to collaborate has led to many significant findings, including the June 2018 identification of PFAS in biota in the Bremer River and Warrill Creek around RAAF Amberley.¹⁶

- 5.20 The Queensland Government particularly noted that, since the implementation of the National Environmental Management Plan, there has been a ‘significant increase in the cohesiveness of investigations’ and ‘a

¹³ Australian Government, *Submission 64*, pp. 8–12.

¹⁴ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 48.

¹⁵ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 43.

¹⁶ Queensland Government, *Submission 33*, p. 2.

better understanding from polluters of their basic obligations to assess risk'.¹⁷

- 5.21 The Government of South Australia similarly noted that the level of engagement and communication with the South Australian EPA had 'improved in recent times',¹⁸ and described the introduction of the IGA on PFAS as a 'positive development'.¹⁹ However, the EPA 'continued to be concerned with the degree, depth and timeliness of information shared by Defence'. The South Australian Minister for Environment and Water submitted:

I understand that sharing of factual information has often been limited or de-identified. As a result, the SA EPA is unable to fully understand if the most appropriate PFAS management and responses, commensurate with risks identified through detailed assessment and analysis of all available information/ have been undertaken adequately by Defence. This is exacerbated by the cross jurisdictional and legislative environment that does not allow the SA EPA to actively regulate the offsite impacts from Commonwealth land.

... Adoption of full disclosure principles with the state government would ensure consistent, appropriate responses that are in the best interests for effective management and communication of outcomes to the Australian public.²⁰

- 5.22 The Government of South Australia's submission went on to state that Defence's investigation at RAAF Base Edinburgh did not meet the expectations of its EPA in relation to 'adequate and timely information sharing as it relates to disclosure of potential human health and environmental risks'. In particular, the South Australian EPA was concerned that:

- the timeliness of the investigations and reporting was 'at disparity with' the regulatory priority assigned if the site was regulated by the South Australian EPA. The EPA noted that the site was classed as 'medium' by Defence, and described the time take to undertake the investigation as of 'unnecessarily long duration to undertake a relatively simple site contamination assessment program';

¹⁷ Queensland Government, *Submission 33*, p. 3.

¹⁸ Government of South Australia, *Submission 71*, p. [1].

¹⁹ Government of South Australia, *Submission 71*, p. [4].

²⁰ Government of South Australia, *Submission 71*, p. [1].

- the time taken to provide the EPA with a figure depicting the PFAS groundwater concentrations onsite was ‘unnecessarily long’; and
- Defence had ‘not indicated its intent on the future use of PFAS chemicals in South Australia’, despite the state’s ban on PFAS-containing firefighting foams.²¹

5.23 The Northern Territory Government reported a largely positive relationship with the Commonwealth Government in relation to the coordination and communication on its investigations at RAAF Bases Darwin and Tindal, and Robertson Barracks. Its Department of Health, for example, commended Defence’s provision of open and transparent advice, its responsiveness to questions and requests, and the Commonwealth Department of Health’s provision of information through its website and participation in community meetings.²² The Northern Territory Department of Primary Industry and Resources, however, noted that messaging between Human Health Risk Assessments and Environmental Risk Assessments ‘could have been handled more coherently by consultants’, and that it should have been informed about a Commonwealth investigation into export consignments ‘in a timely way’.²³

5.24 Mrs Sandra Nelson, the Northern Territory Member for Katherine, explained that the Northern Territory Government had ‘filled the gaps that the federal government has failed to deliver on’, including water testing and health information.²⁴ She praised the role of the Department of Defence in engaging with local communities and criticised the lack of a similar response from other Commonwealth agencies:

From the very beginning it has been the Defence Force—a Department of Defence agency—that has publicly stood up, fronted communities and said, ‘It’s our fault’. They have been the only agency that has stood up and said, ‘This is ours. We’re responsible for it. We’re going to do what we can to support the communities where this has happened.’ It is unfortunate though that we haven’t had the same sort of response from some of the other federal government agencies, in particular the federal Department of Health.²⁵

²¹ Government of South Australia, *Submission 71*, pp. [3–4].

²² Northern Territory Government, *Submission 70*, p. 4.

²³ Northern Territory Government, *Submission 70*, p. 7.

²⁴ Mrs Sandra Nelson (private capacity), *Committee Hansard*, Katherine, 19 July 2018, p. 25.

²⁵ Mrs Sandra Nelson (private capacity), *Committee Hansard*, Katherine, 19 July 2018, p. 26.

- 5.25 The Northern Territory EPA, in relation to PFAS contamination at airports, noted that its relationships with the Commonwealth Department of Infrastructure, Regional Development and Cities and Air Services Australia had been ‘less productive’.²⁶ It expressed support for the establishment of a national regulator that, in addition to having an overarching environmental regulatory role over activities on Commonwealth land, would provide coordination of ‘major issues such as PFAS rather than the current approach of dealing with it in an ad hoc way by a variety of agencies’.²⁷
- 5.26 The New South Wales Government similarly stated that ‘more work is needed by the Commonwealth’ to improve engagement with the state Government on PFAS investigations at airports, including improving transparency around the findings.²⁸
- 5.27 In relation to Defence sites, the New South Wales Government noted that, while it had previously expressed concerns with the Commonwealth’s management of the PFAS contamination, the two governments had worked more effectively together since the adoption of the IGA and the National Environment Management Plan.²⁹ Improvements included:
- coordination of community engagement, with representatives of Defence and NSW Government attending local door knocks, community information and drop in sessions;
 - quicker response times to the EPA’s requests for reports, data and information;
 - greater cooperation with the EPA Investigation Program objectives and timeframes;
 - regular face to face meetings between Defence and the EPA; and
 - advanced notice to the EPA of Defence priorities and upcoming work and submissions.³⁰
- 5.28 The New South Wales Government’s submission outlined a series of initiatives it had undertaken to assist communities affected by PFAS

²⁶ Northern Territory Government, *Submission 70*, p. 5.

²⁷ Northern Territory Government, *Submission 70*, p. 5. Proposals for a Commonwealth environmental regulatory body to be established are discussed in more detail in Chapter 6.

²⁸ New South Wales Government, *Submission 61*, p. 11.

²⁹ New South Wales Government, *Submission 61*, p. 3.

³⁰ New South Wales Government, *Submission 61*, p. 7.

contamination.³¹ Expressing its support for the ‘polluter pays’ principle, the New South Wales Government noted that it had unsuccessfully requested reimbursement of \$3.5 million from Defence ‘on numerous occasions’ in 2017 in relation to the Williamstown contamination response, and was continuing to request this. It called on the Commonwealth Government to implement a funding mechanism to allow states and territories to recover their costs in assessing and managing the issue.³²

- 5.29 The Victorian Government reported that its EPA’s engagement with Defence had been ‘positive, open and transparent’, with regular meetings and sharing of information and advice. It noted that the IGA on PFAS enables cooperation and supports collaboration between agencies, and that the National Environmental Management Plan provides states, territories and the Commonwealth with a ‘consistent, practical, risk-based framework’ for assessment, remediation and management of PFAS contamination.³³
- 5.30 The Victorian Government also referred to the Project Control Groups established with the relevant state agencies for each investigation. It noted that, due to the differing agency responsibilities between jurisdictions, it is important for Defence ‘to determine how communications will be handled and which agencies must be engaged’ at the start of each investigation.³⁴ While the Victorian Government considered that investigations have been ‘well organised, transparent and thorough’, it added:

The Victorian Government was informed about any potential for livestock and other primary production impact via this [Project Control Group] involvement. However, some of the resultant communication requirements to the public have not been proactively supported by [the Department of Defence], which then required ad hoc, reactive collaboration with other state government departments and agencies ... Increased support by [the Department of Defence] of scientific activities to enable evidence-based decision making, and coordination of data sharing and collaboration between jurisdictional investigations, would also have been desirable. In general, more clarity is required about roles and responsibilities associated with PFAS in relation to ongoing compliance, monitoring, sampling, remediation works and potential compensation claims.³⁵

³¹ New South Wales Government, *Submission 61*, p. 8.

³² New South Wales Government, *Submission 61*, p. 15.

³³ Victorian Government, *Submission 76*, p. 2.

³⁴ Victorian Government, *Submission 76*, p. 2.

³⁵ Victorian Government, *Submission 76*, p. 3.

Local government submissions

- 5.31 Port Stephens Council noted that the process of identifying the extent of contamination off RAAF Base Williamstown had been primarily left to the New South Wales EPA, on the basis of testing and advice developed by the Commonwealth. It said that this ‘separation of responsibilities’ had ‘further contributed to a lack of a consistent and coordinated dissemination of this critical information to Council or the community’.³⁶
- 5.32 While the Port Stephens Council reported that it had a good relationship with Defence,³⁷ and acknowledged some improvements in the Commonwealth’s response since 2015,³⁸ it cited the length of time taken for the Department of Health to develop health-based guidance values for PFAS as ‘an indication of a lack of coordination between the agencies of the Commonwealth’:

In consideration that the issue of potential contamination was effectively known from 2012, the five (5) year delay in the establishment of relevant guidance on risk based values for PFAS contamination is a major deficiency in the Commonwealth’s response to this matter. As established previously in this submission, this misalignment on timing and consistency of advice to the community on this matter continues to be of significant concern to the community.³⁹

- 5.33 More generally, Port Stephens Council reported that the ‘chain of command and hierarchy across government agencies’ had been unclear and confusing for the community. From the Council’s own perspective, it considered there were no clear strategies or project plans, and ‘too many players, too many subcommittees and no clear and defined leadership and ultimate accountability’.⁴⁰ The Council made the following recommendation for an independent coordinating body to be established ‘in order to rectify these issues and improve the process going forward’:

Council strongly urges the Commonwealth to establish an appropriately defined and resourced body with the authority to genuinely coordinate

³⁶ Port Stephens Council, *Submission 49*, p. 2.

³⁷ Mr Wayne Wallis, General Manager, Port Stephens Council, *Committee Hansard*, Williamstown, 24 July 2018, p. 31.

³⁸ Port Stephens Council, *Submission 49*, p. 4.

³⁹ Port Stephens Council, *Submission 49*, p. 5.

⁴⁰ Port Stephens Council, *Submission 49*, pp. 5–6.

between agencies of the Commonwealth in relation to the management of this issue. These coordinating powers should also be extended to a range of regulatory powers to ensure not only consistency in the definition of the extent of contamination but to enforce the corrective actions to remediate and mitigate impacts.⁴¹

- 5.34 Port Stephens Council's General Manager elaborated on this proposal at a public hearing:

This body should determine and allocate the necessary actions in a whole-of-government approach—federal and state—ensuring that each agency knows exactly what is expected of it and that information is communicated consistently and in a timely way. We certainly believe that there are very real opportunities to improve the legislative links between the Commonwealth and the states to ensure matters like environmental pollution and contamination incidents on Commonwealth land are appropriately managed.⁴²

- 5.35 The submission from Toowoomba Regional Council outlined Defence's interactions with the Council in relation to connecting additional Oakey residents to the town's reticulated water network between 2016 and 2018. The submission also outlined the Council's participation in Defence's community information sessions and walk-in sessions that had been held in Oakey.⁴³
- 5.36 Bathurst Regional Council stated that there had been 'little communication' from the Commonwealth Government on the issue. It expressed its disappointment in the 'lack of acknowledgement by Commonwealth Government agencies of their actions and responsibilities for sites formerly operated by the Commonwealth Government, and in particular Airport facilities'⁴⁴

⁴¹ Port Stephens Council, *Submission 49*, p. 5.

⁴² Mr Wayne Wallis, General Manager, Port Stephens Council, *Committee Hansard*, Williamtown, 24 July 2018, p. 27.

⁴³ Toowoomba Regional Council, *Submission 80*, pp. 1–2.

⁴⁴ Bathurst Regional Council, *Submission 44*, p. 1.

Community views

- 5.37 A number of submitters criticised the perceived lack of coordination between government agencies in responding to the PFAS issue.⁴⁵ Some called for a specific organisation to be established or an individual to be appointed to coordinate the response.⁴⁶ For example, Mr Cain Gorfine, President of the Williamstown and Surrounds Residents Action Group, told the Committee:

We still need to this day an overarching, independent individual to oversee all of the departments and cut through the departments to make decisions. It's similar to how I think Angus Houston oversaw the search for MH17. We need somebody like that to sit as an umbrella over all of these organisations, to cut through and make decisions.⁴⁷

- 5.38 Anthony Bartlett suggested that there needed to be a Commonwealth entity that is supported by a local presence:

There needs to be a local PFAS committee that directly feeds to a Commonwealth taskforce. The NT EPA do not have the resources to deal with PFAS contamination within the NT. They do not have the authority to take action needed on Commonwealth lands. They need to stop working with Defence and start directing Defence. Defence cannot be the perpetrator of and the solution to the PFAS contamination.

... Obviously they're not prepared for what this has been and the magnitude of the issue in town. I think that Defence executives should be relied on to run a RAAF base, as opposed to having to deal with such an enormous issue.⁴⁸

- 5.39 Dr Errol Lawson described the management of the PFAS contamination issue to date as having 'the characteristics of a failing large-scale sociotechnical project. He criticised what he called the 'totally reactive' response to date with 'very little advance thinking'. Dr Lawson called for a

⁴⁵ Dr Andrew Jeremijenko, *Submission 29*, p. [1]; Lindsey Clout, *Submission 5*, p. 3; Coalition Against PFAS, *Submission 40*, pp. 17–18; Port Stephens Council, *Submission 49*, p. 5; EcoNetwork Port Stephens, *Submission 58*, p. 2; Mrs Sue Walker, *Committee Hansard*, Williamstown, 24 July 2018, p. 8; Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 17

⁴⁶ Michele Sansom, *Submission 2*; Lindsey Clout, *Submission 5*, p. 5; Port Stephens Council, *Submission 49*, p. 5; Mr Cain Gorfine, *Committee Hansard*, Williamstown, 24 July 2018, p. 22; Mr John Donahoo, *Committee Hansard*, Williamstown, 24 July 2018, p. 40.

⁴⁷ Mr Cain Gorfine, *Committee Hansard*, Williamstown, 24 July 2018, p. 22.

⁴⁸ Mr Anthony Bartlett, *Committee Hansard*, Katherine, 19 July 2018, pp. 2, 6.

‘genuine PFAS taskforce to undertake management of the Australia-wide problem’.⁴⁹

- 5.40 Mr Justin Hamilton similarly pointed to a lack of strong program management and leadership in relation to the clean-up operation. He claimed that the Department of the Prime Minister and Cabinet had been ‘missing in action’ and that there had been a ‘revolving door’ of Defence personnel.⁵⁰
- 5.41 The Williamstown and Surrounds Residents Action Group questioned the role and objectives of the PFAS Taskforce, and why there is not greater transparency. It described the taskforce as ‘yet another layer of bureaucracy’ and ‘a front to make it appear that the Government is doing something about the issue’.⁵¹
- 5.42 The Coalition Against PFAS similarly considered the PFAS Taskforce to be ‘no more than an empty shell’, and suggested that the lack of coordination between the Department of Health and health-related agencies on one hand, and other Government Ministers and Departments on the other, was the most concerning.⁵² At a public hearing, the group’s President, Mr Lindsay Clout, expanded on his concerns about the taskforce:

[T]his task force seems to be quite invisible. We have difficulty communicating with them. We don’t know when they meet. We don’t know what their direction is.⁵³

Communication with local communities, businesses and other stakeholders

The Government’s current approach

- 5.43 At its Katherine hearing, Defence told the Committee that it tries to be as ‘open and transparent’ as it can with the communities that it deals with:

We make all of the information that is produced available. It goes on our websites. We have hard copies available at the various information sessions

⁴⁹ Dr Errol Lawson, *Committee Hansard*, Katherine, 19 July 2018, p. 10.

⁵⁰ Justin Hamilton, *Submission 13*, pp. [4–5].

⁵¹ Williamstown and Surrounds Residents Action Group, *Submission 51* p. [3].

⁵² Coalition Against PFAS, *Submission 40*, p. 17.

⁵³ Mr Lindsay Clout, *Committee Hansard*, Williamstown, 24 July 2018, p. 16.

that we run. ... We have a range of mechanisms for engaging. I have a couple of people on the ground who are here more or less full time, and have been for about a year and a half, to engage with community members about what we're doing, the issues and what we need to address.⁵⁴

5.44 As noted above, the IGA, which came into effect in February 2018, includes an agreement for the Commonwealth and states and territories to implement the *PFAS Information Sharing, Communication and Engagement Guidelines*.⁵⁵ The main goals of the guidelines are for the community to 'feel confident' that:

- governments are clearly focused on their wellbeing;
- they have all the available information relevant to them, provided in a timely manner and in a way they can easily understand;
- they are being heard by their government and their concerns are acknowledged and understood;
- in dealing with them, governments are being transparent and honest and acting with integrity;
- they understand what is happening in their local area in relation to PFAS and how it may or may not affect them, as well as what steps they can take to manage this for themselves (e.g. reducing their exposure, keeping themselves abreast of the latest research developments and investigation results);
- their concerns are being addressed by governments who are working together and taking action; and
- they will be kept informed of any significant developments in government policies and activities.⁵⁶

5.45 In early 2018, the PFAS Taskforce developed [PFAS.gov.au](https://www.pfas.gov.au) as a central portal of PFAS information, for a 'wide range of interested audiences'. The purpose of the website is:

... to ensure that up-to-date data, scientific literature, government reports, guidance materials and other PFAS-related information is easily accessible to

⁵⁴ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 43.

⁵⁵ *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination*, p. 6.

⁵⁶ *National Framework for Responding to PFAS Contamination: PFAS Information sharing, Communication and Engagement Guidelines*, p. 7.

affected local communities and businesses, local councils, state and territory governments, and other interested stakeholders.⁵⁷

- 5.46 With the exception of the PFAS website (which directs users to other government websites), communication with the general public at the Commonwealth level has primarily been undertaken by individual departments on matters relevant to their specific roles. In relation to contamination emanating from Defence properties, Defence has been responsible for the majority of communication directly with affected communities. The Government's submission outlined the objectives of this communication:

Defence aims to provide PFAS-affected communities with transparent, early and direct communication about site investigations, and to promote precautionary advice issued by state and territory governments. Defence conducts face to face community engagement activities at the commencement of each investigation and at key milestones during investigations.⁵⁸

- 5.47 As at the end of June 2018, Defence had held 95 community engagement events for PFAS-affected communities, primarily to update residents on the release of investigation outcomes, to provide residents with an opportunity to discuss their concerns, and to inform communities about how to access further information. Events have included formal presentations, walk in sessions and shopfront information sessions. Defence also operates dedicated community telephone lines for each site.⁵⁹
- 5.48 Defence's website for its National PFAS Investigation and Management Program hosts publications released through the program, as well as site-specific Frequently Asked Questions, information on investigation areas, links to precautionary advice issued by state and territory governments, and links to other agency websites.⁶⁰
- 5.49 Defence has engaged with Indigenous land councils and development groups, as well Indigenous communities affected by contamination emanating from a Defence property. The aim of this engagement is to 'identify the specific impacts PFAS contamination may have on their

⁵⁷ Australian Government, *Submission 64*, p. 9.

⁵⁸ Australian Government, *Submission 64*, p. 11.

⁵⁹ Australian Government, *Submission 64*, p. 11.

⁶⁰ Australian Government, *Submission 64*, p. 11. See also <http://www.defence.gov.au/Environment/PFAS/>.

lifestyles or custodial land’ and to consult on the ‘cultural and heritage impacts of sampling, construction and remedial work’.⁶¹

5.50 Other examples of where Commonwealth departments have engaged directly with the public outlined in the Government’s submission include:

- the Department of Health’s involvement in face-to-face consultations with affected communities through community walk-in sessions, and establishment a dedicated national telephone and online counselling services for people affected by PFAS contamination. The Department of Health website also hosts a number of factsheets, information on health-related Government initiatives in relation to PFAS, and links to other agency websites.⁶²
- members of the public were consulted on a draft of the *PFAS National Environmental Management Plan*, with written submissions accepted and consultation meetings held by EPA Victoria and the Department of the Environment and Energy during 2017.⁶³
- Community Liaison Officers from the Department of Human Services have been appointed in Oakey, Williamtown and Katherine ‘to support community engagement, link residents with support services and facilitate local coordination with government authorities’.⁶⁴

State, territory and local government views

5.51 State, territory and local government bodies have also played a key role in communications with communities, businesses and other stakeholders affected by PFAS contamination emanating from Defence bases. For example, the NSW Government established a Community Reference Group (CRG) in Williamtown to ‘enable the community to engage directly with government agencies and experts’ about the contamination and to provide:

... a voice for the community to raise concerns; a further means to communicate new information to residents and consumers; and facilitate ongoing communication between the government and local community.⁶⁵

⁶¹ Australian Government, *Submission 64*, p. 13.

⁶² Australian Government, *Submission 64*, pp. 9–10. See also www.health.gov.au/pfas/.

⁶³ Australian Government, *Submission 64*, p. 10.

⁶⁴ Australian Government, *Submission 64*, p. 11.

⁶⁵ New South Wales Government, ‘Community engagement: Williamtown Community Reference Group’, <https://www.epa.nsw.gov.au/working-together/community-engagement/community-news/raaf-williamtown-contamination/williamtown-engagement> viewed 4 October 2018.

- 5.52 Port Stephens Council noted that while the Williamstown CRG provided an ‘appropriate forum for the coordination and communication of government responses’, there had been ‘a number of issues in relation to misalignment in release of information’ by Defence outside of this process.⁶⁶
- 5.53 The New South Wales Member for Port Stephens, Kate Washington MP, told the Committee that the establishment of separate Community Reference Groups and Elected Representative Groups had ‘created a gap between local residents, their elected representatives and the information being received by both groups’. She noted that both these groups had ‘since been abandoned’, with a new group formed with no elected representation.⁶⁷
- 5.54 The Northern Territory Government similarly established a PFAS community consultation group in Katherine, comprising members of the community and various Territory departments, and the Department of Defence.⁶⁸ Mrs Sandra Nelson, the Northern Territory Member for Katherine, told the Committee that a local task force should be based in Katherine full time to provide a ‘point of contact’ to residents and provide reassurance that they are ‘not being forgotten’.⁶⁹
- 5.55 The Northern Territory Government advised that it had engaged with the business community through Small Business Champions in the Katherine and Darwin regions. The broad response from business was that there has been ‘inconsistent messages’ in relation to the ‘levels, distribution and dangers of PFAS to humans through contact with water, soil and the consumption of food produced in the regions’. The Northern Territory Government recommended that a clearer and more consistent message be provided to the business community to ‘alleviate any misconceptions of the dangers of PFAS, and the impacts to the community and visitors to the region’.⁷⁰
- 5.56 The New South Wales Government submitted that, in many cases, the initial response by Defence to the PFAS issue had been ‘slow’ and ‘did not meet community expectation’. However, it reported that there had been a ‘significant improvement’ in Defence’s responsiveness and willingness to

⁶⁶ Port Stephens Council, *Submission 49*, p. 6.

⁶⁷ Ms Kate Washington MP, *Submission 65*, p. [2].

⁶⁸ Mrs Sandra Nelson (private capacity), *Committee Hansard*, Katherine, 19 July 2018, p. 26.

⁶⁹ Mrs Sandra Nelson (private capacity), *Committee Hansard*, Katherine, 19 July 2018, p. 29.

⁷⁰ Northern Territory Government, *Submission 70*, p. 7.

engage, particularly through the use of drop in sessions, an enquiry line and one-on-one engagement with landowners.⁷¹

Notifications to communities

- 5.57 Many submitters, particularly in the Williamstown area, expressed dissatisfaction with the time taken for Defence and other government authorities to notify the broader community about the PFAS contamination in their area.⁷² For example, the Williamstown and Surrounds Residents Action Group submitted:

The news of the contamination of Williamstown was broken to the community by the Newcastle Herald after the NSW EPA released the information on September 4, 2015. During this time Defence was still trying to silence the NSW EPA. Sadly the community was the last to know about the toxic contamination. Defence had already advised Hunter Water, Port Stephens Council and the NSW EPA in May 2012. At this time the contamination was 30 times the safe level, over a kilometre away from the base in Dawsons Drain.⁷³

- 5.58 Nicole Smith reported a ‘general feeling and impression’ that the public were being told information solely on a ‘need to know’ basis. She described the community information sessions as ‘not inclusive, RSVP only, at different locations, with key speakers at times quite defensive rather than helpful and didn’t appear to be actively listening to residents’. Ms Smith also advised that the local Indigenous communities were not included in initial consultations, and were only informed ‘closer to 12 months after property owners were told’.⁷⁴
- 5.59 At the public hearing in Williamstown, Defence said that one of the key changes it had made since 2015 was that, upon starting a new investigation,

⁷¹ New South Wales Government, *Submission 61*, p. 12.

⁷² Justin Hamilton, *Submission 13*, p. [1]; Wayne and Mary Sampson, *Submission 25*; *Submission 27* (name withheld); Coalition Against PFAS, *Submission 40*, pp. 11–12. Andrew O’Connell, *Submission 43*, p. [2]; Williamstown and Surrounds Residents Action Group, *Submission 51*, p. 2; Kate Washington MP, *Submission 65*, pp. [1, 2]; Mrs Sue Walker, *Committee Hansard*, Williamstown, 24 July 2018, p. 6; Mrs Samantha Kelly, *Committee Hansard*, Williamstown, 24 July 2018, p. 45; Mr Brian Byers, *Committee Hansard*, Williamstown, 24 July 2018, p. 46.

⁷³ Williamstown and Surrounds Residents Action Group, *Submission 51*, p. 2.

⁷⁴ Nicole Smith, *Submission 45*, pp. 1–2.

the ‘first thing’ it would do was to talk to local councils and authorities, and put out information to communities ‘at about the same time’.⁷⁵

Lack of trust in government information

- 5.60 Many participants in the inquiry described a breakdown of trust between affected residents and their governments, including in relation to the accuracy of information being communicated.⁷⁶ For example, EcoNetwork Port Stephens submitted:

Despite significant resources being devoted to so-called community consultation, those affected in the Williamstown area have consistently felt under-informed and in some cases actively misled. The local community has lost all confidence in the authorities at all levels of government and see the efforts made by those authorities as largely about issues management and protecting the financial and reputational interests of government rather than dealing with the problem.

... There has been significant blame-shifting and ‘buck-passing’ on required actions both between and within the Commonwealth and State Governments, with affected communities often unable to get straight answers to important questions, firm timelines for action or even any assurances about solutions being in sight.⁷⁷

- 5.61 Dr Errol Lawson noted the ‘extreme’ level of stress being experienced Katherine residents. He emphasised the need for governments to ‘keep it simple and talk often’ in order to gain the confidence of residents.⁷⁸
- 5.62 Dr Andrew Jeremijenko submitted that risk communication and coordination had been ‘particularly poor’ and that this had ‘increased outrage from local communities’. He suggested that if the risk

⁷⁵ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamtown, 24 July 2018, p. 57.

⁷⁶ Michele Sansom, *Submission 2*; Kim Forward, *Submission 3*; Justin Hamilton, *Submission 13*, p. [2]; Andrew O’Connell, *Submission 43*, p. [2]; EcoNetwork Port Stephens, *Submission 58*, p. 2; Kate Washington MP, *Submission 65*, pp. [1, 2]; Kim Smith, *Submission 66*, p. 2; Mr Donald Trew, *Committee Hansard*, Katherine, 19 July 2018, p. 39; Mr Nathaniel Roberts, *Committee Hansard*, Oakey, 17 August 2018, p. 40; Dr Andrew Jeremijenko, *Committee Hansard*, Oakey, 17 August 2018, p. 14; Mrs Jenny Robinson, *Committee Hansard*, Williamtown, 24 July 2018, p. 5; Mr Wayne Wallis, General Manager, Port Stephens Council, *Committee Hansard*, Williamtown, 24 July 2018, p. 26.

⁷⁷ EcoNetwork Port Stephens, *Submission 58*, p. 2.

⁷⁸ Dr Errol Lawson, *Committee Hansard*, Katherine, 19 July 2018, p. 11.

communication had been handled better, there would have been ‘less public outrage and potentially fewer litigation cases’.⁷⁹

- 5.63 Anthony Bartlett suggested that there was a need for more direct communication between senior members of the Government and the community:

Certainly, what we want to see is more government coordination; more honesty; transparency that is transparent, that doesn’t turn translucent. There needs to be communication between community members and the government directly, rather than the Chinese whispers that seem to be happening. There needs to be a message given directly from the community to people like Marise [Payne] and Nigel [Scullian], and the Prime Minister especially.

... we need to know, as a community, that the government are doing everything that they can to fix the issue. I don’t think that’s coming through clearly enough.⁸⁰

Community meetings

- 5.64 Some participants in the inquiry expressed a lack of satisfaction in the conduct or format of community meetings.⁸¹ For example, Jenny Robinson, of Williamstown, wrote that the meetings ‘have been almost a complete waste of our time’, and that the times of the meetings are ‘when many have work commitments or have the inability to travel’.⁸² The Williamstown and Surrounds Residents Action Group submitted that there had been a ‘revolving door’ of Defence personnel attending the meetings, that it was ‘hard to gain any commitment’ from Commonwealth agencies, that questions could be ignored or were taken on notice and ‘rarely followed up’, and that public servants did not come prepared.⁸³

⁷⁹ Dr Andrew Jeremijenko, *Submission 29*, p. [1].

⁸⁰ Mr Anthony Bartlett, *Committee Hansard*, Katherine, 19 July 2018, p. 3.

⁸¹ Jenny Robinson, *Submission 9*, p. [2]; *Committee Hansard*, Williamstown, 24 July 2018, p. 3; Andrew O’Connell, *Submission 43*, p. [2]; Kim Smith, *Submission 66*, p. 2; *Committee Hansard*, Williamstown, 24 July 2018, p. 48; Williamstown and Surrounds Residents Action Group, *Submission 51*, p. 3; Kate Washington MP, *Submission 65*, p. [1]; Mrs Rhianna Gorfine, *Committee Hansard*, Williamstown, 24 July 2018, p. 22; Mr Justin Hamilton, *Committee Hansard*, Williamstown, 24 July 2018, p. 37.

⁸² Jenny Robinson, *Submission 9*, p. [2].

⁸³ Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [3].

- 5.65 Mr Nathaniel Roberts, a resident of Oakey, described the information provided by Defence as ‘always inconsistent’, and said that they are ‘very vague and won’t answer questions’ at community meetings. He concluded:

There are a whole lot of different reasons why the community has built this distrust in what Defence is doing. No-one really believes that they are interested in fixing the issue. It’s seemed more like an exercise in limiting liability.⁸⁴

- 5.66 Defence told the Committee that, in response to comments from community members, it had moved away from doing only ‘town hall’ style meetings to also offer one-on-one ‘drop in’ sessions.⁸⁵

Other communications

- 5.67 The Royal Australasian College of Physicians (RACP) noted that the PFAS portal is mainly a link to other websites, but that those other websites do not provide a link back to the portal. It also commented that the portal does not ‘indicate who has responsibility for the information provided’ and that ‘there are no contact details or ability to provide feedback’. The RACP submitted that there was a need to consolidate the relevant advice found across government websites, and to develop a list of frequently asked questions covering the range of issues associated with PFAS.⁸⁶
- 5.68 The National Toxics Network criticised the consultation process for the *PFAS National Environmental Management Plan*, stating that meetings to develop the plan were ‘closed to civil society including firefighters’ but ‘actively involved the polluters ... and their consultants’.⁸⁷
- 5.69 Dr Peter Spafford, a general practitioner and business owner in Katherine, submitted that he had not had a ‘single piece of information from any source directed at small business which would allow me to formulate alterations to my business plan’.⁸⁸

⁸⁴ Mr Nathaniel Roberts, *Committee Hansard*, Oakey, 17 August 2018, p. 40.

⁸⁵ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence, *Committee Hansard*, Williamtown, 24 July 2018, p. 60.

⁸⁶ Royal Australasian College of Physicians, *Submission 69*, pp. 4–5.

⁸⁷ National Toxics Network, *Submission 34*, p. 6.

⁸⁸ Dr Peter Spafford, *Submission 32*, p. [1].

Committee comment

- 5.70 The scale of the issue of PFAS contamination in Australia should not be underestimated. As was noted in Chapter 2, the Australian Government describes Defence's investigation program alone as 'possible the largest program of environmental investigations ever conducted in Australia'.⁸⁹ In addition to Defence bases, PFAS contamination is being investigated and managed in a range of other locations across Australia, including many airports and other fire training facilities. Effective coordination of effort will be crucial for the success of these investigations.
- 5.71 It was clear to the Committee during the inquiry that the Australian Government's response to the PFAS issue to date has suffered from a lack of coordination, both between portfolios and between jurisdictions. Mistakes have also been made in relation to the way information has been communicated to the public, both in the way information and advice has been presented and in respect of the timeliness of that information being provided. These mistakes have, unfortunately, contributed to a distinct lack of trust amongst community members in the information provided by governments at all levels.
- 5.72 The Committee was encouraged to hear of slow but steady improvements that have been made to coordination and communication in recent times. This has included Defence's responsiveness to feedback about the way in which community meetings are conducted, and the appointment of local points of contact for community members. More broadly, the work of the PFAS Taskforce, and the interdepartmental committee on PFAS, has contributed to greater coordination across the Australian Government and between jurisdictions. In particular, the *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination* has helped to clarify roles and responsibilities, as well as providing a nationally agreed PFAS contamination response protocol, a PFAS National Environmental Management Plan, and information sharing, communication and engagement guidelines.
- 5.73 The Committee considers, however, that there is a need for stronger national leadership to respond to the PFAS issue. The Committee was concerned to hear that the lessons learned in the investigation of Defence sites may not be being replicated across government, with some submitters pointing to a

⁸⁹ Australian Government, *Submission 64*, p. 3.

relative lack of transparency and stakeholder engagement in relation to the investigations of airports being overseen Department of Infrastructure, Regional Development and Cities and Airservices Australia.

- 5.74 PFAS contamination is a national problem that, due to the persistence of PFAS in the environment, will take many years to resolve. PFAS contamination plumes are not contained within the confines of Defence bases or other facilities, but spread widely through the surrounding soil and water substrates. A range of communities will continue to be affected, various portfolios will continue to be involved, and cross-jurisdictional issues will continue to complicate responses. Coordinating responses across government will require more than just an exchange of ideas and the development of guidance: it will require leadership.
- 5.75 The Committee considers that this leadership can best be achieved through the establishment of a dedicated, and appropriately resourced, office to coordinate the Australian Government's response to the PFAS contamination issue, and to work with other jurisdictions to drive effective, transparent and nationally consistent responses. The office should be headed by an appropriately qualified Coordinator-General to provide a national point of contact and accountability for the Government's response.

Recommendation 1

- 5.76 **The Committee recommends that the Australian Government appoint a Coordinator-General to coordinate the national response to the PFAS contamination issue, supported by an appropriately resourced office. The Coordinator-General's role should include:**
- **ongoing monitoring of PFAS levels in all management areas, using a range of sampling methods, and publish the results as soon as practicable in a publicly accessible format;**
 - **providing leadership to drive effective, transparent and consistent responses to PFAS contamination at sites across the country;**
 - **identifying gaps and priorities for investigation and remediation, based on the extent of contamination and risk to human and environmental health in each area;**

- **working across portfolios, and with state, territory and local governments, to overcome barriers to cooperation, coordinate actions and to clearly communicate outcomes and advice to the public; and**
- **providing a national point of contact and accountability for the Government's response to the PFAS issue, including annual reporting to the Parliament.**

6. Standards and legislation

6.1 This chapter addresses the following term of reference:

(e) the adequacy of Commonwealth and state and territory government environmental and human health standards and legislation, and any other relevant legislation.

6.2 The chapter includes:

- a discussion of human health and environmental standards that have been developed, or are under consideration, in relation to PFAS;
- a discussion of existing measures and proposals for the regulation of PFAS chemicals in Australia;
- a discussion of issues that were brought to the Committee's attention in relation to the environmental regulation of Commonwealth land; and
- the Committee's comments and recommendations.

Environmental and human health standards

Health-based guidance values

6.3 Food Standards Australia New Zealand has developed health based guidance values for PFOS, PFOA and PFHxS for use in site investigations and human health risk assessments in Australia. These guidance values were published by the Department of Health in 2017, and replaced interim human health reference values adopted by enHealth in June 2016.¹ The current guidance values are provided in Table 6.1.

¹ Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*, updated September 2017, p. 3.

Table 6.1 Australian health based guidance values for PFAS chemicals

Toxicity reference value	PFOS and PFHxS		PFOA	
	ng	µg	ng	µg
Tolerable daily intake (ng or µg / kg bw/day)	20	0.02	160	0.16
Drinking water quality value (ng or µg /L)	70	0.07	560	0.56
Recreational water quality value (ng or µg /L)	700	0.7	5 600	5.6

Source: Department of Health, *Health Based Guidance Values for PFAS*

- 6.4 The Australian Government advised that the health based guidance values are for use ‘specifically in site investigations and if required, human health risk assessments, in Australia’. It described the values as:

... a precautionary measure to ensure information is available to communities to reduce their exposure to PFAS whilst further research is undertaken to understand any potential human health effects.²

- 6.5 The Government also reported that it had commissioned the National Health and Medical Research Council to consider the health based guidance values for PFOS, PFOA and PFHxS for inclusion in the *Australian Drinking Water Guidelines* and the *Guidelines for Managing Risks in Recreational Water*. It expected this work to be completed by the end of 2018.³
- 6.6 The Coalition Against PFAS cautioned that since there had been multiple changes to the tolerable daily intake levels used by Australian authorities since 2016, communities felt sceptical about these levels. It noted that many people were of the view that exposure should be reduced to zero so far as

² Australian Government, *Submission 64*, p. 18.

³ Australian Government, *Submission 64*, p. 19.

possible, as no one could say with any certainty that any amount of PFAS in the body is ‘safe’.⁴

Food standards

- 6.7 Some residents raised concerns that, while they were advised against consuming home grown produce, tolerable daily intake values were not relevant to them due to the already high levels of PFAS in their blood. They noted that they had no way of knowing whether products bought at a supermarket were contaminated, as there are no labelling requirements or restrictions on selling such produce.⁵
- 6.8 The Coalition Against PFAS described this situation as ‘contradictory and illogical’, and noted that some farmers had elected to stop selling altogether in order to prevent contaminated produce from entering the nation’s food supply. The group also highlighted biosecurity risks faced by livestock producers in some areas, and attached correspondence from three separate cattle breeders associations who had written to the Government to warn of ‘potentially catastrophic’ consequences to producers’ livelihoods, Australia’s export markets and the beef industry as a whole.⁶ The Coalition Against PFAS called for the Government to ‘take a clear and reasonable position on biosecurity’.⁷
- 6.9 Ms Dianne Priddle, a stud cattle producer in Oakey, told the Committee that consumers had a right to know whether products were contaminated by PFAS:
- We all trade on our image which is clean and green within Australia and the world. ... The consumers have the right to know—and they want to know—what they are eating in Australia and how we produced that item. Yet at assessments and walk-in sessions given by Defence and AECOM, the question has been asked and the answer given that the public does not have the right to know if PFAS contamination is in the product. This is a double standard.⁸
- 6.10 Tracey Anton, of the Latrobe Valley in Victoria, similarly raised concerns that either the Government was allowing PFAS contaminated agricultural

⁴ Coalition Against PFAS, *Submission 40*, pp. 18–19, 22.

⁵ Jenny Robinson, *Submission 9*, p. [2]; *Committee Hansard*, Williamstown, 24 July 2018, p. 2; Mrs Sue Walker, *Committee Hansard*, Williamstown, 24 July 2018, p. 9.

⁶ Coalition Against PFAS, *Submission 40*, p. 39.

⁷ Coalition Against PFAS, *Submission 40*, p. 41.

⁸ Ms Dianne Priddle, *Committee Hansard*, Oakey, 17 August 2018, p. 1.

produce to be exported, or it was being distributed in the domestic market while ‘denying a person a right to choose between contaminated and non-contaminated foodstuff’.⁹

- 6.11 The Victorian Government submitted that a ‘lack of nationally regulated maximum levels for PFAS in foods complicates the provision of defensible advice to agriculture producers, including livestock producers and meat processors’. However, it noted that the health-based guidance values developed by Food Standards Australia New Zealand had provided some clarity and consistency across jurisdictions.¹⁰
- 6.12 Food Standards Australia and New Zealand conducts the Australian Total Diet Survey approximately every two years as part of its role to monitor the food supply to ensure that existing food regulatory measures provide adequate protection of consumer health and safety. The Government informed the Committee that PFAS are to be included in the next survey, to be conducted in 2019.¹¹
- 6.13 At the public hearing in Canberra, the Department of Agriculture and Water Resources advised that there were currently no internationally set maximum residue levels for PFAS in any food, including meat exports. As such, no countries had reporting on PFAS as a trade requirement.¹²
- 6.14 Food Standards Australia and New Zealand told the Committee that currently, there was not enough data in the general food supply to establish legal PFAS limits. It noted that, based on overseas studies and the ‘little amount of data that we have’, the background levels of PFAS ‘are extremely low’. As a result, it questioned whether a standard, which would be set for general population exposures, would be beneficial to public health. However, Food Standards Australia and New Zealand noted that the 2019 Total Diet Survey would ‘inform more discussion on whether or not standards are warranted and whether or not they could be set for these chemicals’.¹³

⁹ Tracey Anton, *Submission 57*, p. [2].

¹⁰ Victorian Government, *Submission 76*, p. 3.

¹¹ Australian Government, *Submission 64*, p. 19.

¹² Ms Melissa McEwan, Assistant Secretary, Department of Agriculture and Water Resources, *Committee Hansard*, 14 September 2018, p. 36.

¹³ Dr Scott Crerar, General Manager, Science and Risk Assessment Branch, Food Standards Australia and New Zealand, *Committee Hansard*, Canberra, 14 September 2018, p. 36.

Environmental management

- 6.15 The Australian Government advised that Commonwealth Environmental Management Guidance on PFOS and PFOA had first been developed by the Department of Environment and Energy in December 2016. The Guidance aimed to establish a ‘nationally consistent framework for diagnosis and action on environmental contamination’, and set proposed investigation levels for soil, ecological water resources and waste management. The Guidance was used in the subsequent development of national guidance.¹⁴
- 6.16 The *PFAS National Environmental Management Plan* (NEMP) was jointly developed by Commonwealth, state and territory agencies, and agreed by all Australian environment ministers in January 2018. The NEMP provides environmental guideline values, guidance on environmental assessment and information on recommended approaches to storage, transport and waste management of contaminated materials. As noted earlier in this report, the NEMP is incorporated into the *Intergovernmental Agreement on a National Framework for Responding to PFAS Contamination*.¹⁵
- 6.17 Participants in the inquiry generally expressed support for the NEMP as a means for improving the coordination of investigations between the Commonwealth and state and territory governments, and to make clear the responsibilities of polluters.¹⁶

Measures to regulate and phase out PFAS

- 6.18 In May 2000, the 3M company—reportedly the largest worldwide producer of PFOS—announced a voluntary phase-out of PFOS in light of emerging scientific evidence about its persistence in the environment. Since then, the Organisation for Economic Co-operation Development (OECD) has led international collaboration on a number of activities relating to the identification, assessment and management of PFAS chemicals. Since 2002, there has been a trend amongst global manufacturers and downstream users

¹⁴ Australian Government, *Submission 64*, pp.19-20.

¹⁵ Australian Government, *Submission 64*, p. 20.

¹⁶ Queensland Government, *Submission 33*, p. 3; New South Wales Government, *Submission 61*, p. 3; Royal Australasian College of Physicians, *Submission 69*, p. 4; Victorian Government, *Submission 76*, p. 2.

to replaced long-chain PFAS with shorter-chain PFAS, which are less toxic and less bioaccumulative.¹⁷

PFAS regulation in Australia

National Industrial Chemicals Notification and Assessment Scheme

- 6.19 Within Australia, the risks associated with the introduction and use of chemicals are assessed under the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). The Australian Inventory of Chemical Substances (AICS)—a legal device that distinguishes new from existing industrial chemicals—is maintained under NICNAS. New chemicals that are not listed on AICS must be notified and assessed before being manufactured or imported into Australia. Due to their history of use in Australia, PFOS and PFOA were ‘grandparented’ onto AICS on its establishment in 1990, without further assessment.¹⁸
- 6.20 In 2002, NICNAS identified the importers and users of PFOS in Australia and provided them with information about the hazards that had been identified. It subsequently made recommendations to phase out the use of PFOS and to improve its safe handling. In particular, on 30 April 2003, NICNAS released an alert recommending that PFOS and PFOA firefighting products be restricted to essential use only, and not used for fire training or testing purposes.¹⁹ NICNAS continues to recommend that industry stakeholders ‘actively seek alternatives’ to PFOS, PFOA and their precursors, that existing PFAS stocks be disposed of responsibly on expiry, and that introducers ensure that alternative chemicals are ‘less toxic and less bioaccumulative’.²⁰
- 6.21 The Australian Government described the role of NICNAS as follows:
- NICNAS aids in the protection of the Australian people and the environment by assessing the risks of industrial chemicals. NICNAS assessments inform decisions made by a wide range of Commonwealth, state and territory

¹⁷ National Industrial Chemicals Notification and Assessment Scheme (NICNAS), *Submission 59*, p. 3.

¹⁸ NICNAS, *Submission 59*, pp. 1–3.

¹⁹ NICNAS, *Submission 59*, pp. 3, 4.

²⁰ NICNAS, *Submission 59*, p. 5.

government agencies involved in regulating the control, use, release and disposal of industrial chemicals.²¹

- 6.22 NICNAS noted in its submission that legislation to implement reforms to the Scheme had been introduced into the Parliament in 2017. NICNAS stated that the reforms (if passed) would allow it to impose conditions on the introduction of higher risk chemicals, including prohibition on the introduction of a chemical if the risks associated with it were unable to be managed.²²
- 6.23 At a public hearing, NICNAS advised that it was now looking to apply scrutiny to all chemicals that were ‘grandparented’ in 1990, and confirmed that the proposed reforms would give its Executive Director new powers to be able to ban a chemical ‘if the risks can’t be managed’.²³

National Standard for Environmental Risk Management of Industrial Chemicals

- 6.24 The Australian Government described environmental risk management as a ‘gap in Australia’s regulatory system’. In recognition of this gap, it noted that Commonwealth, state and territory environment agencies had been:
- ... working actively for some time to address weaknesses in environmental regulation of industrial chemicals and enable a robust and nationally consistent framework for managing industrial chemicals throughout their lifecycle.²⁴
- 6.25 To achieve this, the Government reported that a National Standard for Environmental Risk Management of Industrial Chemicals would be established under Commonwealth legislation to ‘implement a decision making framework supported by standards for the management of the ongoing use, storage and disposal of industrial chemicals’. The National Standard would be ‘underpinned by’ risk assessments undertaken by NICNAS, and would have a primary focus on prevention of future

²¹ Australian Government, *Submission 64*, p. 18.

²² NICNAS, *Submission 59*, pp. 1-2.

²³ Dr Kerry Nugent, Principal Scientist, Existing Chemicals Program, NICNAS, *Committee Hansard*, Canberra, 14 September 2018, pp. 1, 9.

²⁴ Australian Government, *Submission 64*, p. 20.

contamination events. The Government planned for the National Standard to commence on 1 July 2019, and to be implemented in each jurisdiction.²⁵

- 6.26 At a public hearing, the Department of the Environment and Energy explained that, while primary responsibility for responding to contamination events would continue to rest with the polluter, the proposed national standard would improve the regulatory standards to which polluters would need to comply and improve the ‘tools’ the Department could use to bring about management responses.²⁶ It noted that the framework was a commitment of the Council of Australian Governments and had been recommended by the Productivity Commission.²⁷
- 6.27 The New South Wales Government expressed a willingness to work with the Commonwealth to develop a National Framework to establish management controls throughout the full chemical cycle.²⁸

Current bans and phase-outs

- 6.28 There is currently no nationwide ban or mandatory restriction on the use of PFAS chemicals. However, in 2016, Queensland introduced (through its Environmental Management of Firefighting Foam Operational Policy) a ban on firefighting foams containing PFOS and PFOA, and a requirement for the products to be phased out by July 2019.²⁹ South Australia also banned the use of fluorinated fire-fighting foams in the state in early 2018, following amendments to its Environment Protection (Water Quality) Policy 2015.³⁰
- 6.29 Victoria’s Metropolitan Fire and Emergency Services Board (MFB) reported that its formal incident response arrangements with Defence for the delivery of emergency services to Defence bases had, in the past, involved the use of firefighting foams containing PFOS. It noted that, although these foams had

²⁵ Australian Government, *Submission 64*, p. 20.

²⁶ Mr James Tregurtha, First Assistant Secretary, Environment Standards Division, Department of the Environment and Energy, *Committee Hansard*, Canberra, 14 September 2018, p. 27.

²⁷ Mr Tregurtha, *Committee Hansard*, Canberra, 14 September 2018, p. 29. See also Productivity Commission, *Chemicals and Plastics Regulation Research Report*, July 2008, www.pc.gov.au/inquiries/completed/chemicals-plastics/report

²⁸ New South Wales Government, *Submission 61*, p. 17.

²⁹ Queensland Government, Department of Environment and Science, *Submission 33*, p. 1.

³⁰ South Australia Environment Protection Agency, ‘South Australia bans PFAS’, https://www.epa.sa.gov.au/articles/2018/04/16/south_australia_bans_pfes viewed 5 September 2018.

‘proved to be effective in the control or flammable liquid fires’, it had phased out the use of PFAS-containing foams across its operations.³¹ MFB explained:

MFB found that the flourine-free foam consistently performed well in extinguishing B Class fires and provided MFB firefighters with a proven ‘safer’ alternative extinguishing medium. This work provided MFB with an operational firefighting foam solution that could be effectively used at Department of Defence sites, such as RAAF Airbases at Point Cook and Laverton. This enables MFB to meet its obligations for the delivery of emergency services to Defence bases using firefighting foam that does not contain PFAS.³²

- 6.30 MFB recommended a ‘national coordinated approach’ to PFAS issues, and for the Australian Government to consider banning the use of PFAS-containing foam in Australia. MFB also recommended ratification of the Stockholm Convention on Persistent Organic Pollutants.³³

International regulation under the Stockholm Convention

- 6.31 The Stockholm Convention on Persistent Organic Pollutants (the Stockholm Convention) is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment. The Convention requires its parties to take measures to eliminate or reduce the release of Persistent Organic Pollutants (POPs) into the environment. The Convention was adopted in 2001 and entered into force in 2004.³⁴
- 6.32 Australia is a party to the Stockholm Convention, which it ratified on 20 May 2004. However, Australia’s ratification was subject to a declaration by which any amendment to the chemicals included in Annex A, B or C of

³¹ Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 2.

³² Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 3.

³³ Metropolitan Fire and Emergency Services Board, *Submission 73*, p. 9.

³⁴ Stockholm Convention, ‘Overview’, <http://chm.pops.int/TheConvention/Overview/tabid/3351/Default.aspx> viewed 17 August 2018.

the Convention would need to be individually ratified before entering into force.³⁵

- 6.33 PFOS was listed under Annex B ('restriction') of the Stockholm Convention in May 2009.³⁶ Australia has not yet ratified the listing of PFOS, or any other chemicals that have been added to the Convention since it initially came into force.³⁷ However, in October 2017 the Department of the Environment and Energy released a Regulation Impact Statement (RIS) on options for a national phase out of PFOS and related chemicals to inform the Government's decision on ratification of the PFOS amendment to the Convention. The RIS indicated that, out of the four options presented in the document, ratifying the listing of PFOS under the Stockholm Convention and phasing out all non-essential uses would achieve the greatest reduction in emissions at the lowest cost.³⁸ The consultation on this process closed on 26 February 2018.³⁹
- 6.34 PFOA is not currently listed under the Stockholm Convention. However, in October 2017, the POPs Review Committee (a subsidiary body supporting the Convention) recommended that the Council of Parties to the Convention consider listing the chemical in either Annex A ('elimination') or B ('restriction'), subject to certain exemptions.⁴⁰ The next meeting of the Council of Parties is scheduled from 29 April to 10 May 2019.⁴¹

³⁵ Stockholm Convention, 'Status of ratification', <http://chm.pops.int/Countries/StatusofRatifications/PartiesandSignatoires/tabid/4500/Default.aspx>, viewed 17 August 2018.

³⁶ Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants, *Report of the Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants on the work of its fourth meeting*, Geneva, 4–8 May 2009, pp. 68–69.

³⁷ Stockholm Convention, 'Amendments to Annexes to the Stockholm Convention' <http://chm.pops.int/Countries/StatusofRatifications/Amendmentstoannexes/tabid/3486/Default.aspx> viewed 17 August 2018.

³⁸ Department of the Environment and Energy, *National phase out of PFOS – Ratification of the Stockholm Convention amendment on PFOS: Regulation Impact Statement for consultation*, October 2017, p. 3.

³⁹ Department of the Environment and Energy, 'Consultation on the Regulation Impact Statement for a national phase out of PFOS', <http://www.environment.gov.au/protection/chemical-management/pfas/ris-phase-out-pfos-consultation> viewed 17 August 2018.

⁴⁰ Persistent Organic Pollutants Review Committee, *Report of the Persistent Organic Pollutants Review Committee on the work of its thirteenth meeting*, Rome, 17–20 October 2017, p. 10.

⁴¹ Stockholm Convention, 'Ninth Meeting of the Conference of the Parties to the Stockholm Convention',

- 6.35 Also in October 2017, the POPs Review Committee agreed that PFHxS, its salts and related compounds met the screening criteria in Annex D to the Convention,⁴² and established an intersessional working group to prepare a draft risk profile.⁴³ This draft risk profile was adopted by the POPs Review Committee at its most recent meeting in September 2018.⁴⁴

Stakeholder views

- 6.36 Many participants in the inquiry called for the Australian Government to ratify the listing of PFOS under the Stockholm Convention.⁴⁵
- 6.37 For example, the National Toxics Network expressed concern that Australia had still not ratified the listing of PFOS on the Stockholm Convention after nearly a decade. It noted that PFOA and PFHxS were likely to be also listed on the Convention in 2019 and 2021 respectively, and that there are ‘thousands of PFAS chemicals to address, many with little or no information on their toxic effects or environmental fate’. The Network described the time taken for Australia to come to a decision about a single PFAS chemical—PFOS—as ‘simply unsustainable and dangerous’.⁴⁶ The Network also criticised decisions to replace PFOS based firefighting foams with other

<http://chm.pops.int/TheConvention/ConferenceoftheParties/Meetings/COP9/tabid/7521/Default.aspx> viewed 17 August 2018.

- ⁴² The criteria include persistence, bioaccumulation, potential for long-range environmental transport and adverse effects.
- ⁴³ Persistent Organic Pollutants Review Committee, *Report of the Persistent Organic Pollutants Review Committee on the work of its thirteenth meeting*, Rome, 17-20 October 2017, p. 12. See also Persistent Organic Pollutants Review Committee, *Perfluorohexane sulfonic acid (CAS No: 355-46-4, PFHxS), its salts and PFHxS-related compounds: Draft Risk Profile*, June 2018.
- ⁴⁴ Persistent Organic Pollutants Review Committee, ‘Fourteenth meeting of the Persistent Organic Pollutants Review Committee (POPRC.14)’, <http://chm.pops.int/TheConvention/POPsReviewCommittee/Meetings/POPRC14/Overview/tabid/7398/Default.aspx> viewed 2 October 2018.
- ⁴⁵ Dr Andrew Jeremijenko, *Submission 29*, p. [5]; National Toxics Network, *Submission 34*, p. 3; Coalition Against PFAS, *Submission 40*, p. 41; Williamstown and Surrounds Residents Action Group, *Submission 51*, p. [4]; Dr GERALYN McCARRON, *Submission 53*, p. 1; EcoNetwork Port Stephens, *Submission 58*, p. 3; New South Wales Government, *Submission 61*, p. 3; Ms Kate Washington MP, *Submission 65*, p. [2]; Mr Lindsay Clout, *Committee Hansard*, Williamstown, 24 July 2018, p. 11; Mr Justin Hamilton, *Committee Hansard*, Williamstown, 24 July 2018, p. 36.
- ⁴⁶ National Toxics Network, *Submission 34*, p. 3.

PFAS based chemicals, which it said ‘remain secret under government commercial confidentiality regimes’.⁴⁷

- 6.38 Dr Andrew Jeremijenko similarly supported ratification of PFOS on the Stockholm Convention, and ratification of the listing of PFOA when it is listed in May 2019. He called for a national ban on PFOS and PFOA, and highlighted a suggestion in the RIS that the Government’s proposed National Standard for Environmental Risk Management of Industrial Chemicals could provide an ‘effective framework’ to control and manage chemicals throughout their lifecycle and an ‘efficient way’ to implement Australia’s obligations.⁴⁸
- 6.39 Although anticipating opposition from industry to a ban, Dr Jeremijenko noted that many large companies and most state firefighting departments, with the exception of Western Australia, had already changed to fluorine-free foams due to concerns about health effects and financial risks associated with PFAS foams. He described Defence as being ‘really behind the game here’.⁴⁹
- 6.40 The New South Wales Government advised the Committee that it had made a submission to the Commonwealth on the national phase-out of PFOS, and had supported the ratification of PFOS on the Stockholm Convention and the phase out of its non-essential uses.⁵⁰ It noted that Defence continued to use PFAS-based firefighting foams, but ‘may have modified fire training activities to reduce the further impact on the environment’. The New South Wales Government suggested that Defence should consider only using PFAS-based foams in emergency situations, and that it consider the merits of changing to PFAS-free foam, ‘or at the very least, changing to ... foams that do not contain (or degrade to) the more hazardous long chain PFASs such as PFOA’.⁵¹
- 6.41 The Royal Australasian College of Physicians called for firefighting foam containing PFOA and PFOS to be banned nationally, including a Defence bases, to removed inconsistencies between states, territories and the Commonwealth. It noted that as part of this process, ‘any remaining PFAS

⁴⁷ National Toxics Network, *Submission 34*, p. 9.

⁴⁸ Dr Andrew Jeremijenko, *Submission 29*, p. [4–5].

⁴⁹ Dr Andrew Jeremijenko, Committee Hansard, Oakey, 17 August 2018, pp. 11–12.

⁵⁰ New South Wales Government, *Submission 61*, p. 17.

⁵¹ New South Wales Government, *Submission 61*, p. 11.

material will need to be safely destroyed' and that 'contaminated sites will need to be managed according to best practice' in accordance with the NEMP.⁵²

- 6.42 The United Firefighters Union of Australia expressed concern that some fire services continue to expose firefighters with the use of PFAS foams, despite a number of warnings being issued since 2000 and effective alternatives being identified.⁵³ The Union recommended ratification of Annex B of the Stockholm Convention, and the introduction of legislation to enforce firefighting water standards; a mandatory ban on the use of PFAS foams; and soil and water testing of all firefighting training sites and other sites where firefighting foams have been used.⁵⁴
- 6.43 Wilson Consulting emphasised the duty of care of major hazard facilities to 'not only protect the environment, but also to protect their facility and the community from fire'.⁵⁵ Wilson pointed to limitations and dangers in the use of fluorine free foams in certain types of fires, and argued that short-chain PFAS based firefighting foams (i.e. those containing less than or equal to six carbon atoms) were 'the key way forward across Australia in the future' due to their effectiveness in fighting fires and minimisation of environmental impacts.⁵⁶ Wilson was critical of the policies implemented in Queensland and South Australia, under which short-chain fluorinated chemicals were 'likely to be incorrectly caught up with' persistent, bioaccumulative and toxic long-chain chemicals.⁵⁷ Wilson recommended that short-chain and long-chain PFAS be treated as separate categories, enabling legacy long-chain chemicals to be restricted, while allowing 'significantly more environmentally benign' short-chain agents to continue to be used.⁵⁸
- 6.44 The national peak industry body representing the fire industry—Fire Protection Association Australia—supported the phase out of all firefighting foam containing PFOS, in line with the Stockholm Convention. However, the Association submitted that it was 'essential' that responsible use of

⁵² Royal Australasian College of Physicians, *Submission 69*, p. 7.

⁵³ United Firefighters Union of Australia, *Submission 21*, pp. 10-12.

⁵⁴ United Firefighters Union of Australia, *Submission 21*, p. 20.

⁵⁵ Wilson Consulting, *Submission 16*, p. 3.

⁵⁶ Wilson Consulting, *Submission 16*, pp. 3, 4.

⁵⁷ Wilson Consulting, *Submission 16*, p. 2.

⁵⁸ Wilson Consulting, *Submission 16*, pp. 4-5.

foams containing C6 fluorotelomer—a shorter chain PFAS that is an alternative to PFOS—continue to be allowed in high risk firefighting applications. The Association advised that C6 fluorotelomer-based foams retained strong firefighting performance ‘unmatched by most current fluorine free alternatives’ and:

- do not break down into chemicals currently listed or suspected of being Persistent Organic Pollutants (POPs) and are not listed by the Stockholm Convention or European Chemicals Agency current (2014) list of substances of very high concern (VHC);
- do not contain or break down into PFOS;
- are not made with chemicals currently considered to be bio-accumulative or toxic by environmental authorities.⁵⁹

6.45 However, the Association considered that the use of these C6 fluorotelomer foams in training or system testing should be ‘avoided and eliminated where possible’. It noted:

FPA Australia contends that the widespread historical contamination resulting from foams containing PFOS and PFOA is the result of poor past practice in training and testing of systems in which these foams were used frequently with no present fire hazard, not the result of use in responding to actual fire incidents. Consequently, most of this historical contamination could have been prevented by merely changing practices related to training and system testing.⁶⁰

6.46 At a public hearing, NICNAS confirmed that PFOS, PFOA and PFHxS were ‘at the bad end of the PFAS category’ due to their persistent, bio-accumulative and toxic properties. It advised that there had been a ‘lot of activity’ in moving to ‘semi-substitution’ of those chemicals with shorter chain PFAS chemicals (those containing four or six carbon atoms) that were not as toxic or bio-accumulative.⁶¹

6.47 LPG Fire Australia advised that while current National Fire Protection Association standards mandate the use of foam concentrates for Defence hangars, there had been ‘environmentally friendly’ and ‘highly effective’ water-based alternatives installed in several NATO hangars overseas.⁶² It

⁵⁹ Fire Protection Association Australia, *Submission 28*, p. 2.

⁶⁰ Fire Protection Association Australia, *Submission 28*, p. 2.

⁶¹ Dr Kerry Nugent, Principal Scientist, Existing Chemicals Program, NICNAS, *Committee Hansard*, Canberra, 14 September 2018, pp. 1–2.

⁶² LPG Fire Australia Pty Ltd, *Submission 20*, p. 1.

considered that Defence has a 'duty of care to investigate all bone fide, environmentally friendly and equally effective alternative fire systems' to the current foam systems:

Whilst we openly acknowledge that not all firefighting foams contain PFAS, and that fixed fire fighting foam systems have been globally effective for years in this application, we would like to highlight that the use of water only in a fire tested, approved hangar fire protection system eliminates any potential PFAS contamination risks generated by the firefighting medium itself.⁶³

Environmental regulation of Commonwealth land

Cross-jurisdictional issues

- 6.48 The Government of South Australia submitted that it has 'serious concerns' relating to the public disclosure and availability of information held in its EPA Public Register when dealing with Commonwealth land:

The SA EPA currently cannot record any information pertaining to Commonwealth land and this is of particular concern in instances when the land becomes non-Commonwealth and can be on sold repeatedly.

As the SA EPA administers the provision of environmental information (including potential PFAS reporting) during the sale process (section 7 search), the omission of information due to legislative constraints could lead to a false sense of security which increases with each change of ownership (form of data cleansing).⁶⁴

- 6.49 Port Stephens Council similarly advised the Committee that the land in the Williamstown Management Area is 'not identified as contaminated in relation to the relevant NSW legislation and established management and mitigation requirements'. The Council submitted:

This creates significant disconnect and confusion, particularly in cases where landowners have been advised their land is contaminated, without the formal requirements for remediation and mitigation works under the relevant NSW legislation. This disconnect only serves to create further confusion and concern for the community.⁶⁵

⁶³ LPG Fire Australia Pty Ltd, *Submission 20*, p. 2.

⁶⁴ Government of South Australia, *Submission 71*, p. [4].

⁶⁵ Port Stephens Council, *Submission 49*, p. 3.

- 6.50 The Government of South Australia noted that its EPA has limited jurisdiction to regulate site contamination identified on Commonwealth land or arising from Commonwealth land. It recommended that the Commonwealth consider either establishing an independent Commonwealth regulator, or that states to be given this jurisdiction.⁶⁶
- 6.51 The Northern Territory EPA similarly highlighted the lack of national laws to address ‘off-site impacts’ from activities emanating from Commonwealth land. It described the lack of an environmental regulator at the national level as the ‘missing link in environmental regulation in Australia’:

This national regulator would have an overarching environmental regulatory role over activities on Commonwealth land amongst other functions such as co-ordination of major issues such as PFAS rather than the current approach of dealing with it in an ad hoc way by a variety of agencies.⁶⁷

- 6.52 In order to improve the legislative link between the Commonwealth and the states and ‘to ensure environmental pollution and contamination incidents are appropriately managed’, the Port Stephens Council recommended that:

- Consideration should be given to the appointment of a Commonwealth environmental regulator and implementation of an environmental regulatory framework overseeing [Department of Defence] activities on Commonwealth land. This regulator should have the necessary provisions to enforce specific remediation and mitigation measures to be implemented for contaminated land similar to the provisions of relevant NSW legislation.
- Consideration should be given to a comprehensive review of Commonwealth and state legislation relating to mandatory notifications to environmental agencies across all states when pollution and contamination incidents result from Commonwealth activities.
- Consideration should be given to a comprehensive review of legislative provisions to allow state-based environmental agencies (i.e. NSW EPA) to have a greater regulatory role in environmental and contamination incidents where incidents have originated from Commonwealth land. This review must consider a broader regulatory role for the state environmental agencies in the investigation and management of pollution and contamination situations where the pollution and contamination has caused significant impacts off Commonwealth land.⁶⁸

⁶⁶ Government of South Australia, *Submission 71*, p. [4].

⁶⁷ Northern Territory Government, *Submission 70*, p. 5.

⁶⁸ Port Stephens Council, *Submission 49*, p. 8.

- 6.53 At a public hearing, Port Stephens Council's General Manager further explained the rationale behind their proposal for a Commonwealth environmental regulator:

My understanding is the state has no jurisdiction over Commonwealth lands and cannot, as it would with a normal organisation, dictate how things are done. It is treated more as if the Commonwealth were an obliging citizen, rather than it being mandated how it should undertake any remediation program. If there were an environmental regulator or some such organisation that could operate and be seen to be operating with relevant authority and the coordination of all the various agencies that are trying to do their bits and pieces, we may be further advanced than we are.⁶⁹

- 6.54 The New South Wales Member for Port Stephens, Kate Washington MP, said that the absence of jurisdiction of state agencies for environmental contamination of Defence property, or caused by Defence off their property, was a source of confusion:

This absence of jurisdiction has created a situation where multiple agencies appear to be trying to reach agreement in order to take action. When agreement is not reached, action is compromised or not being taken at all. Defence as the polluter appears to be controlling all of the outcomes. This is an unacceptable power imbalance, leaving families, residents and businesses at the mercy of the agency that failed them from the outset.⁷⁰

- 6.55 Defence told the Committee that, although in 'a legalistic and technical way' it could not be regulated by state environmental protection agencies, it sought to comply with the regulations that exist in each state and territory:

So if we're disposing of soil and there is an issue, whether it's PFAS or lead or any other issue, and we need to take it off a base we always go to EPAs and get the relevant permissions and licences before we do that sort of work.⁷¹

'Self-regulation' by Department of Defence

- 6.56 Several participants in the inquiry expressed concern that, due to deficiencies in the environmental regulation of Commonwealth land, the

⁶⁹ Mr Wayne Wallis, General Manager, Port Stephens Council, *Committee Hansard*, Williamtown, 24 July 2018, p. 28.

⁷⁰ Ms Kate Washington MP, *Submission 65*, p. [2].

⁷¹ Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, Department of Defence, *Committee Hansard*, Katherine, 19 July 2018, p. 48.

Department of Defence was effectively ‘self-regulating’ or ‘investigating itself’.⁷²

- 6.57 Some suggested that there was a need for a Commonwealth EPA, or similar Commonwealth regulatory body, to be established.⁷³ For example, Associate Professor Robert Niven, an environmental contamination expert from the University of New South Wales, recommended the establishment of a Commonwealth EPA with a role that would be limited to lands and responsibilities under Commonwealth jurisdiction.⁷⁴
- 6.58 Associate Professor Niven submitted that Australia has a ‘strong framework’ for the investigation and remediation of contaminated land, including soils and groundwater, underpinned by the national Environment Protection (Assessment of Site Contamination) Measure 1999. He described this regulatory instrument as ‘technically demanding and nationally consistent’, and the broader framework as ‘greatly beneficial for the nation, enabling the orderly conversion of old industrial land into new housing developments, under a process which is trusted by all parties’.⁷⁵
- 6.59 However, Associate Professor Niven considered that the current arrangement was ‘seriously flawed’ in that the Commonwealth Department of Environment and Energy did not appear to have a regulatory division equivalent to a state or territory EPA, meaning that ‘each Commonwealth department has become—in effect—its own unofficial environmental regulator’.⁷⁶ Associate Professor Niven considered:
- that this arrangement ‘does not provide sufficient separation between the regulated and the regulator’;
 - that ‘many departments ... have not held sufficient expertise in environmental contamination to recognise an oncoming problem’;

⁷² For example, Nicole Smith, *Submission 45*, p. 5; Anthony Barlett, *Submission 52*, p. [1]; Port Stephens Council, *Submission 49*, p. 7; Williamtown and Surrounds Residents Action Group, *Submission 51*, pp. [3, 7]; Mr Anthony Bartlett, *Committee Hansard*, Katherine, 19 July 2018, p. 2; Mr Cain Gorfine, *Committee Hansard*, Williamtown, 24 July 2018, p. 19.

⁷³ Associate Professor Robert Niven, School of Engineering and Information Technology, University of New South Wales Canberra, *Submission 38*, p. 4; Coalition Against PFAS, *Submission 40*, p. 33; Williamtown and Surrounds Residents Action Group, *Submission 51*, pp. [4, 6]; Dentons, *Submission 75*, p. 1; Mr Lindsay Clout, *Committee Hansard*, Williamtown, 24 July 2018, p. 37.

⁷⁴ Associate Professor Niven, *Submission 38*, p. 4.

⁷⁵ Associate Professor Niven, *Submission 38*, p. 3.

⁷⁶ Associate Professor Niven, *Submission 38*, pp. 3-4.

- that ‘for most departments, environmental regulation is not their primary role’; and
- ‘it does not make sense to create two such unofficial regulatory agencies scattered across two (or possibly more) Commonwealth departments’.⁷⁷

6.60 At a public hearing, Associate Professor Niven acknowledged that there were responsibilities for the protection of the environment under certain Commonwealth legislation, over which the Department of the Environment and Energy had administrative responsibility. However, he said the Department ‘seems to be missing in action from its regulatory responsibilities’, causing those responsibilities to fall to other departments ‘by default’. He considered this situation to be a ‘severe conflict of interest’.⁷⁸

Response from the Government

- 6.61 In the Australian Government’s submission, Defence agreed that it ‘does not have an environmental management role’ and that it ‘relies on advice from federal, state or territory environmental and health authorities’.⁷⁹
- 6.62 The Department of the Environment and Energy told the Committee that it already has regulatory powers over Commonwealth agencies and lands under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) ‘insofar as the whole environment is affected’. However, it acknowledged that the EPBC Act only applies to new actions, with actions undertaken consistent with past practice having been ‘grandfathered’ when the Act commenced in 2000.⁸⁰
- 6.63 The Department expressed a concern that, if a Commonwealth EPA were to be established, there would potentially be a ‘reverse problem’ in that there would be ‘a question mark over our jurisdiction in relation to state and territory lands because of the way the Constitution sets out those responsibilities’.⁸¹ On the other hand, the Department considered that the National Standard for Environmental Risk Management of Industrial

⁷⁷ Associate Professor Niven, *Submission 38*, pp. 3-4.

⁷⁸ Associate Professor Niven, Researcher, University of New South Wales, *Committee Hansard*, Canberra, 14 September 2018, pp. 40-41.

⁷⁹ Australian Government, *Submission 64*, p. 21.

⁸⁰ Mr James Tregurtha, First Assistant Secretary, Environment Standards Division, Department of the Environment and Energy, *Committee Hansard*, Canberra, 14 September 2018, p. 29.

⁸¹ Mr Tregurtha, *Committee Hansard*, Canberra, 14 September 2018, p. 29.

Chemicals ‘would go some way’ to meeting the ‘sort of outcome’ that a Commonwealth EPA would be intended to achieve.⁸²

Committee comment

- 6.64 The Committee welcomes recent work undertaken across government to finalise Health Based Guidance Values for PFAS, and to develop and implement the *PFAS National Environmental Management Plan*. These measures provide important nationally consistent standards to guide the ongoing development of policies across a range of agencies at all levels of government.
- 6.65 The Committee notes concerns raised during the inquiry that the lack of national standards for the regulation of PFAS in food has complicated the provision of advice to agricultural producers. The Committee also notes concerns about the right of consumers—particularly those subject to precautionary advice in relation to PFAS intake—to know when commercially sold produce is contaminated by PFAS. The Committee considers that more work is required in this area, and welcomes the commitment of Food Standards Australia and New Zealand to further examine this issue following the conduct of the 2019 Total Diet Survey.
- 6.66 The Committee is supportive of measures to permanently ban the use of firefighting foams containing long chain PFAS chemicals, including PFOS and PFOA, at a national level.
- 6.67 The Committee notes that there appeared to be a broad consensus amongst participants in the inquiry that long-chain PFAS based foams are no longer required for use in firefighting foams. Shorter chain PFAS based foams, which are less toxic and bio-accumulative, have been found to be equally effective and are readily available. Additionally, while there were differing views in regards to their effectiveness, PFAS-free foams also appear to be viable alternatives and are already being used in many instances. While the Committee recognises that there may be some applications where PFAS based foams provide the most effective firefighting performance, it is important that the use of such foams be restricted to essential uses only and that alternatives continue to be explored.
- 6.68 There also appears to be broad support for Australia’s ratification of the listing of PFOS under Annex B of the Stockholm Convention. This was

⁸² Associate Professor Niven, *Committee Hansard*, Canberra, 14 September 2018, pp. 40–41.

evidenced both in submissions to this inquiry, and in the public consultation process completed by the Government in February 2018 in relation to the Regulation Impact Statement for a national phase out of PFOS.⁸³ Despite this support, the Committee notes that more than nine years have passed since PFOS was initially listed under the Convention. Given that PFOA, and potentially PFHxS, are likely to be also listed on the Convention in the near future, the Committee recommends that the ratification of these chemicals be considered far more promptly should these listings occur.

Recommendation 7

6.69 The Committee recommends that the Australian Government implement legislation and policies to:

- **ban nationally the use of, contain, and ultimately safely destroy, long chain PFAS-based firefighting foams (including those containing PFOS, PFOA and PFHxS);**
- **place appropriate restrictions on the non-essential use of shorter chain PFAS-based foams; and**
- **continue to encourage the use of PFAS-free alternatives wherever possible.**

Recommendation 8

6.70 The Committee recommends that the Australian Government urgently ratify the listing of PFOS under the Stockholm Convention on Persistent Organic Pollutants.

Further, the Committee recommends that the Government expedite the process for ratification of PFOA and PFHxS in the event that they are listed under the Stockholm Convention in the future.

6.71 More generally, the issue of PFAS contamination at defence bases has highlighted deficiencies in the environmental regulation of Commonwealth land. While the Department of the Environment and Energy holds some

⁸³ Department of the Environment and Energy, 'Consultation on the Regulation Impact Statement for a national phase out of PFOS: Submissions received', <http://www.environment.gov.au/protection/chemical-management/pfas/ris-phase-out-pfos-consultation> viewed 2 October 2018.

regulatory responsibilities under the EPBC Act, this does not appear to extend to an active role in overseeing the response to contamination events and issuing remediation orders—roles that would be undertaken by state and territory EPAs if a contamination event was to occur on non-Commonwealth land. Despite PFAS contamination emanating from Defence land into surrounding communities, state EPAs have been unable to fill this gap due to jurisdictional limitations. As a result, Defence has been perceived to be self-regulating its own response, and the Department of the Environment and Energy has been described as ‘missing in action’.

- 6.72 The Committee has considered suggestions that a Commonwealth EPA, or similar, be established to perform this role. Such a body would help pool environmental expertise and resources across the Commonwealth, enabling it to take a more proactive role in responding to contamination. However, it was not clear whether a Commonwealth EPA will solve the jurisdictional issues that occur when contamination extends across Commonwealth and state boundaries. The Committee notes the Department of the Environment and Energy’s apparent preference for the proposed National Standard for Environmental Risk Management of Industrial Chemicals to be used to improve regulation of chemicals throughout their lifecycle.
- 6.73 As this issue extends beyond PFAS alone and the terms of reference for the inquiry, the committee was not well positioned to come to a conclusive recommendation about how these issues can be rectified. The Committee recommends that the Government initiate an independent review to further examine the issue of environmental management of Commonwealth land, including the adequacy of current and proposed arrangements and possible options for improvement.

Recommendation 9

- 6.74 **The Committee recommends that the Australian Government initiate an independent review of environmental regulation of Commonwealth land. The review should consider:**
- **the adequacy of current and proposed arrangements to ensure that responses to contamination events originating on Commonwealth land are given appropriate regulatory oversight;**
 - **possible measures to enhance the regulatory response to contamination events that cross jurisdictional boundaries;**

- the relative advantages and disadvantages of establishing a Commonwealth Environmental Protection Agency, or similar body, to regulate Commonwealth lands; and
- possible alternative options to enhance regulatory oversight of Commonwealth land, and contamination events emanating from Commonwealth land.

Mr Andrew Laming MP
Chair
PFAS Sub-Committee

28 November 2018

Senator the Hon Ian Macdonald
Chair
Joint Standing Committee on
Foreign Affairs, Defence and Trade

28 November 2018

A. Submissions and Exhibits

Submissions

- 1 Mr Norman Canton
- 2 Ms Michele Sansom
- 3 Mr Kim Forward
- 4 *Confidential*
- 5 Mr Lindsay Clout
- 6 *Name Withheld*
- 7 Mr David Dyball
- 8 Mrs Robyn Jones
- 9 Mrs Janice Robinson
- 11 *Name Withheld*
- 12 *Name Withheld*
- 13 Mr Justin Hamilton
- 14 Mr George Bury
- 15 *Confidential*
- 16 Willson Consulting
- 17 *Confidential*
- 18 Ms Dianne Priddle, Berwick Stud
 - 18.1 Supplementary to submission 18
- 19 Mrs Jennifer Trew

- 20 LPG Fire Australia
- 21 United Firefighte's Union
- 22 *Name Withheld*
- 23 *Confidential*
- 24 Mr Nathaniel Roberts
- 25 Mr Mary & Wayne Sampson
- 26 Mrs Shirley Davis
- 27 *Name Withheld*
- 28 Fire Protection Association Australia
- 29 Dr Andrew Jeremijenko
- 30 *Name Withheld*
- 31 Pat Coleman
- 32 Dr Peter Spafford
- 33 QLD Department of Environment and Science
- 34 National Toxics Network
- 35 Mrs Margaret Cuskelly
- 36 *Name Withheld*
- 37 Ms Alena Beznoska
- 38 School of Engineering and Information Technology, UNSW
Canberra
- 39 CSIRO
 - 39.1 Supplementary to submission 39
- 40 The Coalition Against PFAS
 - 40.1 Supplementary to submission 40
- 41 *Name Withheld*
- 42 Klaus and Fiona Girth
- 43 Mr Andrew O'Connell
- 44 Bathurst Regional Council
- 45 Ms Nicole Smith

- 46 Wetland Environmental Taskforce
- 47 Ms Julie Curry
- 48 Friends of the Earth Brisbane
- 49 Port Stephens Council
- 50 Ms Meryl Swanson
- 51 WSRAG Inc
- 52 Mr Anthony Bartlett
- 53 Dr Geralyn McCarron
- 54 *Name Withheld*
- 55 *Confidential*
- 56 We Need Water, We need Tilleggra Dam
- 57 Tracey Anton
- 58 EcoNetwork Port Stephens Inc
- 59 National Industrial Chemicals Notification and Assessment Scheme
- 60 Mr John Donahoo
- 61 NSW Government
- 62 Ms Kim-leeanne King
- 64 Australian Government
 - 64.1 Supplementary to submission 64
 - 64.2 Supplementary to submission 64
- 65 Ms Kate Washington MP, NSW Parliament
- 66 Mrs Kim Smith
- 67 Mr Robert Goldsack
- 68 *Confidential*
- 69 The Royal Australasian College of Physicians
- 70 Northern Territory Government
- 71 Mr David Speirs MP, Government of South Australia
- 72 *Confidential*
- 73 Metropolitan Fire and Emergency Services Board

- 74 Mr Craig Commens
- 75 Dentons Australia Pty Ltd
- 76 Victorian Government
- 77 Ms Lindy Smith
- 78 Bullsbrook Residents and Ratepayers Association Inc
- 79 Mr Colin Butland
- 80 Toowoomba Regional Council
- 81 National Centre for Epidemiology & Population Health, ANU

Exhibits

- 1 Map of Williamtown (*presented by Mr Justin Hamilton of the Williamtown Contamination Investigation Reference Group (WCICRG), Coalition Against PFAS (CAP) member and Fullerton Cove Residents Action Group Inc at the Public Hearing on 24 July 2018*)
- 2 Map of Williamtown (*presented by Mr Justin Hamilton of the Williamtown Contamination Investigation Reference Group (WCICRG), Coalition Against PFAS (CAP) member and Fullerton Cove Residents Action Group Inc at the Public Hearing on 24 July 2018*)

B. Public hearings

Thursday, 19 July 2018 - Katherine

Mr Anthony Bartlett, Private capacity

Dr Erroll Lawson, Private capacity

Dr Peter Spafford, Private capacity

Ms Sandra Nelson MLA, Private capacity

Her Worship Fay Miller, Private capacity

Mrs Jennifer Trew, Private capacity

Mr Donald Trew, Private capacity

Open Forum:

- Ms Kylie Chambers
- Mr Braedon Earley
- Ms Marguerite Smith
- Ms Nicole (Merlyn) Smith

Department of Defence

- Mr Steve Grzeskowiak, Deputy Secretary Estate and Infrastructure

Tuesday, 24 July 2018 - Williamtown

Mrs Janice Robinson, Private capacity

Mr Terry Robinson, Private capacity

Mrs Sue Walker, Private capacity

The Coalition against PFAS

- Mr Lindsay Clout, President
- Mr Justin Hamilton, Member

Ms Lindsay Clout, Private capacity

Williamstown and Surrounds Resident Acton Group

- Mrs Rhianna Gorfine
- Mr Cain Gorfine

Port Stephens Council

- Mr Wayne Wallis, General Manager

***Williamstown Contamination Investigation Community Reference Group
WCICRG***

- Mr Justin Hamilton
- Mr John Donahoo, Private capacity

Open Forum:

- Mr Brian Byers
- Ms Linden Drysdale
- Mr David Gaddes
- Mr Neville Jelfs
- Mrs Samantha Kelly
- Ms Kathryn Lucy (Kassia) Klinger
- Mr Stephen Kuehn
- Mr Desmond Maslen
- Mrs Britt Osborne
- Ms Susan Peak
- Mr Wayne, Sampson
- Mrs Kim Smith
- Ms Meryl Swanson MP
- Mr David Vial
- Ms Kate Washington MP

Department of Defence

- Mr Chris Birrer, First Assistant Secretary, Infrastructure
- Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure

Friday, 17 August 2018 – Oakey

Ms Dianne Priddle, Private capacity

Ms Jennifer Spencer, Private capacity

Mr Nathaniel Roberts, Private capacity

Mr Robert Knauth, Private capacity

Dr Andrew Jeremijenko, Private capacity

Toowoomba Regional Council

- Mr John Mills, Manager of Water Operations
- Mr Andrew Murray, Principal Scientist

Department of Defence

- Mr Chris Birreer, First Assistant Secretary Infrastructure
- Mr Steve Grzeskowiak, Deputy Secretary Estate and Infrastructure

Open Forum:

- Mr Craig Commens
- Mr Bernard Earsman
- Mr David Jefferis
- Mr Nathaniel Roberts
- Mr Lester Schmidt

Friday, 14 September 2018 - Canberra***NICNAS***

- Dr Kerry Nugent, Principal Scientist, Existing Chemicals Program
- Dr Sneha Satya, Program Head, Targeted Assessments Program

Valuer General of NSW

- Mr Michael Parker, Deputy Valuer General

Department of Finance, Services and Innovation

- Mr Josh Etherington, Valuation Manager, Valuation Services, Property NSW

ANU College of Health and Medicine

- Professor Martyn Kirk, Principal Investigator, PFAS Health Study, National Centre for Epidemiology and Population Health
- Dr Katherine Todd, Study Coordinator, PFAS Health Study, National Centre for Epidemiology and Population Health

CSIRO

- Dr Paul Bertsch, Science Director, Land and Water
- Dr Rai Kookana, Team Leader, Emerging Contaminants and Risk Assessment, Land and Water

PFAS Taskforce – representatives from Department of Defence, Health, Environment, Infrastructure and Agriculture

- Ms Melissa McEwen, Assistant Secretary, Department of Agriculture & Water Resources
- Ms Jo Grainger, Assistant Secretary, Department of Agriculture and Water Resources
- Ms Sharon Appleyard, First Assistant Secretary, Department of Health
- Professor Brendan Murphy, Chief Medical Officer, Department of Health
- Dr Scott Crerar, General Manager, Science and Risk Assessment Branch, Food Standards Australia New Zealand
- Mr Christopher Birrer, First Assistant Secretary, Infrastructure, Department of Defence
- Mr Steve Grzeskowiak, Deputy Secretary, Estate and Infrastructure, Department of Defence
- Mr James Tregurtha, First Assistant Secretary, Environment Standards Division, Department of the Environment and Energy
- Mr Andrew McNee, Assistant Secretary, Chemicals Management Branch, Department of the Environment and Energy
- Ms Leonie Horrocks, Assistant Secretary, Airports Branch,
 - Department of Infrastructure, Regional Development and Cities

Coalition Against PFAS

- Mr Lindsay Clout, President

The University of New South Wales

- Associate Professor Robert Niven, , Researcher

C. Correspondence from the Prime Minister received 24 May 2018



PRIME MINISTER

Reference: MC18-009123

24 MAY 2018

Senator David Fawcett
Chair
Joint Standing Committee on Foreign Affairs,
Defence and Trade
PO Box 6021
Parliament House
CANBERRA ACT 2600

Dear Senator Fawcett

Thank you for your letter dated 12 February 2018, regarding the Senate's December 2017 referral to your Committee of an inquiry into the management of per- and polyfluoroalkyl substances (PFAS) contamination. I apologise for the delay in responding.

As I am sure you appreciate, PFAS contamination is a highly complex issue. The whole-of-Government response has evolved as our understanding increases, further developments occur, and new complexities arise. I can assure you the relevant Ministers are working together to deliver activities that manage PFAS contamination and support affected communities.

On 7 May 2018, the PFAS Taskforce announced that the Australian Government is supporting local communities affected by PFAS contamination with a new \$73.1 million package of measures. This package includes \$55.2 million for a drinking water program, which has commenced in communities surrounding Army Aviation Centre Oakey and RAAF Bases Williamtown, Tindal and Pearce. The program provides alternative drinking water for property owners in these communities who use bores as their primary source of drinking water, and where PFAS is present at levels above the drinking water guidance value.

The package also included \$17.9 million to support the continued operation of the PFAS Taskforce within the Department of the Environment and Energy. This is consistent with the role Australia's environment ministers are playing in overseeing the implementation of the recently agreed *Intergovernmental Agreement on a Framework for National Responding to PFAS Contamination*, which is available on the COAG website.

This new package builds on the Government's extensive investments towards managing PFAS contamination of over \$100 million, which includes:

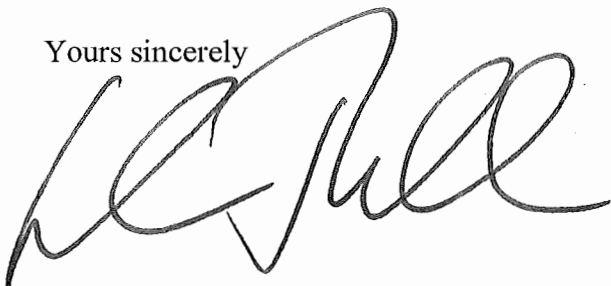
- \$55m for affected communities of Williamstown, NSW and Oakey, Qld to reduce exposure, manage the environmental impacts, and provide additional dedicated mental health and counselling services (\$3.5m), a voluntary blood testing program (\$4.5m), and an epidemiological study into potential health effects from exposure to PFAS (\$4m);
- \$5.7 million to support the Katherine community through access to the voluntary blood testing program, epidemiological study and additional dedicated mental health and counselling services;
- \$12.5 million for a National Research Program into the Human Health Effects of Prolonged Exposure to PFAS;
- over \$13 million for a National Research Grants Program to fund research into clean-up technologies to remove PFAS from the environment;
- investing a large amount of resources in a wide range of intensive activities, including:
 - conducting extensive investigations at Defence sites and other Commonwealth-owned sites where fire-fighting foams have been in use;
 - reducing exposure pathways from contaminated drinking water in investigation areas by providing alternative sources of drinking water; and
 - trialling water filtration and other remediation activities at multiple Defence sites;
- collaborating with state and territory governments to develop the *PFAS National Environmental Management Plan* (publicly released on 16 February 2018); and
- working on management options for a phase out of Perfluorooctane Sulfonate (PFOS) and related compounds as part of Government's decision-making on ratifying amendments to the Stockholm Convention on Persistent Organic Pollutants.

In relation to your request for information on the progress of health research, I can advise that the Independent Expert Health Panel, established to advise the Australian Government on the potential health impacts associated with PFAS exposure, has publicly released its report. The report supports the enHealth advice that there is no consistent evidence that exposure to PFAS causes adverse human health effects. These findings support the approach taken to date by the Australian Government in responding to PFAS contamination.

The Australian Government is currently finalising its response to the *Senate Inquiry Report Part B – Army Aviation Centre Oakey and other Commonwealth, state and territory sites*. I am aware this response is overdue and have urged relevant Ministers to prioritise finalisation.

I have copied this letter to the Minister for Environment and Energy, the Minister for Defence and the Minister for Health.

Yours sincerely



MALCOLM TURNBULL