



Contaminated Sites Review Stage One Interim Chronology - MP Taylor & I Cosenza, 14 Dec 2015

Stage One of Review of the NSW Environment Protection Authority’s (EPA) Management of Contaminated Sites Interim Chronology of Williamtown RAAF Base Contamination

Terms of Reference 3

Provide an interim report with any recommendations deemed appropriate regarding the EPA’s past management of the Williamtown RAAF Base by 14 December 2015.

Disclaimer: This is an interim chronology subject to change. It is based on the documents and information the Review has been able to receive and review in the strict timeframe leading to this interim report. The chronology is comprised thus far of a review of documents obtained by the Review’s research as well as documents and information provided by the EPA for the period 2012–2015. The EPA has not yet produced documents for the period prior to 2012, with the exception of an Operations Manual for Williamtown RAAF Base Sewage Treatment Works dated 1 April 2008. The Commonwealth Department of Defence and the Department of the Environment are yet to produce documents that have been sought by the Review. Documents that pre-date 2012 have been sourced primarily from the Review’s own research. The Review will continue to consult and liaise with the EPA and other relevant agencies in finalising this chronology for the final Report.

Date	Event	Source
1970s to mid-2000s	AFFF (aqueous film forming foam) which contained PFOS/PFOA ‘was in general use in fire training activities at the [RAAF Williamtown] base between early 1970s and mid-2000s’.	FAQ attached to letter dated 21 Oct 2014 from the Department of Defence (Defence) to the Office of Environment and Heritage (OEH).
1991	The EPA was established under the <i>Protection of the Environment Administration Act 1991</i> (NSW).	
1996	National Industrial Chemical Notifications and Assessment Scheme (NICNAS) <i>Full Public Report on Amphoteric Fluoroalkylamide Derivative (5965P)</i> stated: The fate of [AMF] Derivative (5965P) in fighting “real fires” is problematical as it will depend on the size of the fire and the amount of water and foam needed to control the fire ... For situations in which the AFFF or ATC products are used in training or testing of equipment the resultant foam/water mix would likely be contained in pits or other type of bunding. One situation that might be less well controlled is on airport tarmacs. In this instance the chemical may enter airport drains which could lead to storm water drains. It is the Federal Airports Corporation’s responsibility to ensure that airport drains conform to local regulations. In effect, this requires an airport to install drains, traps and interceptor pits to prevent the loss of fuels, oils and other contaminants from the airport in any uncontrolled fashion’.	
1997	Council of Australian Governments <i>Heads of Agreement on Commonwealth and State roles and</i>	<i>Heads of Agreement on Commonwealth</i>

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	<p><i>responsibilities for the Environment.</i> Governments agreed to inter alia increased compliance by Commonwealth and State departments, statutory authorities, agencies, business enterprises and tenants with the relevant State's environment and planning laws in accordance with Attachment 3. Certain exemptions are specified in Attachment 3.</p> <p>Where exemptions are permitted pursuant to Attachment 3, Commonwealth activities will, as far as possible, be undertaken in a way that seeks to achieve at least the equivalent requirements of State legislation. The relevant Commonwealth Minister(s), in consultation with the Commonwealth Environment Minister, will be responsible for determining the means of achieving those requirements.</p>	<p><i>and State roles and responsibilities for the Environment.</i></p>
1998	<p>Tomago Aquifer is classified as a High Risk Aquifer by the Department of Land and Water Conservation.</p>	<p>Referred to in Stage 1 Report March 2013 Transfield Services – Conceptual Site Model for AFFF Contamination (page 16).</p>
1999	<p>First known date of MBAS sampling at Williamtown RAAF Base. This includes sample IDs B101 (first sample date 1/11/1999) and W27 (first sample date 1/01/2002) that, according to maps provided to the Review by the EPA, are more than 100 m from the SW edge of the Williamtown RAAF Base sewage treatment ponds, which form part of 38 Cabbage Tree Road, Williamtown.</p>	<p>Listed in Appendix D – Historical AFFF Data MBAS of the Stage 1 Report March 2013 Transfield Services – Conceptual Site Model for AFFF Contamination. See attached Maps 1 and 2 provided by the EPA. Map 2 is an enlargement of the sewage treatment ponds area.</p>
4 June 2002	<p>EPA advised URS that, as advised in the EPA's letter of 14 November 2001¹, the EPA does not regulate any activities carried out on the RAAF Base Williamtown. Letter reminded URS that if Defence identifies any contamination on Williamtown RAAF Base/Salt Ash Air Weapons Range (SAAWR) or any other site owned or occupied by Defence which leads URS to believe that the contamination is posing significant risk of harm to human health or the environment, URS must report under s 60 <i>Contaminated Land Management Act 1997</i> (CLM Act).</p>	<p>Letter dated 4 June 2002 from the EPA to URS Australia in regard to the Draft EIS on the Introduction of Hawk Lead-In Fighter at RAAF Williamtown Base and SAAWR.</p>
July 2002	<p>Supplementary Report to the Draft EIS Introduction Into Service of the Hawk Lead-In Fighter at RAAF Williamtown and SAAWR identified as 'Issue 30' the disposal of wash down water from aircraft and firefighting foam. A submission was received questioning whether firefighting foam is collected in line drains and sent to</p>	<p>Supplementary Report to the Draft EIS Introduction Into Service of the Hawk Lead-In Fighter at RAAF Williamtown and SAAWR.</p>

¹ The EPA's letter of 14 November 1991 has not been sighted by the Review. The letter of 4 June 2002 was obtained via the Review's own research.

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	<p>the Treatment System in accordance with the requirements of a 1983 Parliamentary Standing Committee.</p> <p>Methods of collecting and treating firefighting foam will not change with the replacement of the Maachi with the Hawk. Firefighting foam that is released during foam tests (hangar and fire truck tests) is captured in a pipe system and piped to the trade waste treatment plant. This is standard Base infrastructure.</p>	
2003	EPA incorporated with other environment-related agencies including NSW Parks and Wildlife Service into a new Department of Environment and Conservation.	EPA Submission into Inquiry of EPA Performance (Aug 2014).
2003–2012	EPA's functions were exercised 'within a succession of larger government agencies that were responsible for administering other government legislation and prioritising actions in line with broader range of responsibilities. This decreased the visibility of the EPA's regulatory profile'. For example, the EPA was part of the Department of Premier and Cabinet during the 2011–2012 reporting year.	EPA Submission into Inquiry of EPA Performance (Aug 2014).
30 Apr 2003	NICNAS released an alert that products containing PFOS/PFOA such as AFFF be restricted to essential use only, and that AFFF should not be used for fire fighting training.	<p>See http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/pfc-derivatives-and-chemicals-on-which-they-are-based-alert-factsheet</p> <p>Alert referred to in May 2003 Report <i>Environmental Issues Associated with Defence Use of AFFF</i>.</p>
May 2003	<i>Environmental Issues Associated with Defence Use of AFFF</i> completed by Environmental Stewardship Directorate, Defence. Key findings included that PFOS/PFOA implicated with a variety of cancers and toxic health effects in humans with long term exposure to products containing them, and that use and management of AFFF across Defence facilities fall below the management practices of other Australian and international organisations. Report recommended that Defence take appropriate measures to ensure firefighting foam/waste water does not reach streams, creeks, wetland, dams, ground water or storm water drains. Authors said Defence should consider undertaking site testing to determine if its facilities are contaminated by PFOS/PFOA.	<i>Environmental Issues Associated with Defence Use of AFFF</i> .

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	The Report found there was no Australian regulatory action in place for use and disposal of PFOS/PFOA products although regulations were currently being developed by NICNAS. Appendix 2 sets out AFFF disposal regulations.	
2006	Defence undertook groundwater monitoring at RAAF Williamtown from 2006 to 2013. ²	Letter dated 17 May 2013 from Defence to the EPA.
2006	‘Direction was given by Defence to only use AFFF without PFOS/PFOA’.	This is the answer to the FAQ ‘When did Defence stop using foams containing PFOS/PFOA at the Williamtown base?’ attached to letter dated 21 Oct 2014 from Defence to the NSW OEH. ³
June 2006	<p>Stage 1 Environmental Investigation at RAAF Base Williamtown SMEC Report.</p> <p>This document has not been sighted by the Review but it is referred to in the Stage 2 Environmental Investigations RAAF Base Williamtown Report of 24 September 2007 prepared by HLA-Envirosciences Pty Limited for Defence. The 2007 Report noted (at Section 5.4.1) that:</p> <p style="padding-left: 40px;">The purpose of the SMEC (June 2006) Stage Environmental Investigations was to initially assess risks of potential contamination to ecological and human receptors within identified Areas of Environment Concern (AEC).</p> <p>The 2007 Report noted that the 2006 Report rated the fire pit (contaminated site number CNN0551) as an AEC having a risk of ‘Medium 14’ and that it stated that the fire training site consisted of ‘a brick lined pit but has very poor integrity and readily leaches to groundwater’ (Summary Sheet Site 10).</p>	
June 2007	<p>Defence published <i>Environmental Guidelines for Management of Fire Fighting Aqueous Film Forming Foam (AFFF) Products</i>.</p> <p>Defence FAQ stated that these ‘guidelines support the AFFF policy, which restricts use of AFFF products to those that do not contain PFOS and PFOA’.</p>	The Guidelines and AFFF policy are referred to in FAQ attached to letter from Defence to OEH dated 21 Oct 2014.

² Information in Appendix D of the Stage 1 Report March 2013 Transfield Services – Conceptual Site Model for AFFF Contamination shows that groundwater sampling on the RAAF Williamtown Base occurred as early as 1999.

³ Note that letter dated 17 May 2013 from Defence to the EPA stated that Defence commenced phasing out PFOS/PFOA at Williamtown in 2008.

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24 Sept 2007	<p>Stage 2 Environmental Investigations RAAF Base, Williamtown Report prepared by HLA-Envirosciences for Defence identified as an area of concern (at Section 6.1) spills and leakage of PFOS from the fire training pit to soil and groundwater.</p> <p>Note in relation to the fire training pit, the Report stated (at Section 9.5.2 /pdf page 78/408): MBAS has been used as an indicator to identify potential AFFF impacts. This test is a non-specific test for anionic surfactant, a component of AFFF.</p>	Stage 2 Environmental Investigations RAAF Base, Williamtown prepared by HLA-Envirosciences for Defence.
2008	Defence commenced phasing out the use of AFFF products containing PFOS/PFOA. ⁴	Letter dated 17 May 2013 from Defence to the EPA.
1 Apr 2008	Operations Manual for Williamtown RAAF Base Sewage Treatment Works recommended (in Appendix G) monitoring for MBAS twice monthly.	Williamtown RAAF Base Sewage Treatment Works Operation Manual prepared for Spotless P&F Pty Ltd by Maunsell Australia Pty Ltd.
May, Aug, Nov 2008 and Feb 2009	<p>GHD was commissioned by Defence to carry out quarterly groundwater monitoring at RAAF Base Williamtown.</p> <p>Annual Report stated (at Section 6.6) that groundwater monitoring could be improved by using the field test kit developed by CRC CARE, and subsequent laboratory analysis for species of AFFF.</p> <p>The field test determines the concentrations of anionic surfactants, if they are present in groundwater. If anionic surfactants are present, Defence can send the groundwater samples to the University of South Australia for AFFF species analysis.</p> <p>Report also noted (at Section 6.13) that analysis for MBAS or AFFF had not yet been undertaken at the Trade Waste Treatment Plant.⁵</p>	Department of Defence RAAF Base Williamtown and Salt Ash Air Weapons Range Groundwater Monitoring Program 2008–2009 Annual Report.
26 Aug	PFOS added to Annex B of Stockholm Convention on Persistent Organic Pollutants. ⁶	See

⁴ This information is inconsistent with that provided in Defence FAQ attached to letter dated 21 Oct 2014 from Defence to the NSW OEH, which stated that in 2006 'Direction was given by Defence to only use AFFF without PFOS/PFOA'.

⁵ Information in Appendix D of the Stage 1 Report March 2013 Transfield Services – Conceptual Site Model for AFFF Contamination shows that groundwater sampling on the RAAF Williamtown Base occurred as early as 1999 in the vicinity of the sewage treatment ponds (sample ID B101) and at least as early as 1 January 2002 in the treatment pond (see sample ID W26 and **attached** Maps 1 and 2).

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2009		http://chm.pops.int/Implementation/NewPOPs/TheNewPOPs/tabid/672/Default.aspx . Also referred to in Executive Summary Transfield Services: RAAF Williamtown Stage 1 – Conceptual Site Model for AFFF Contamination March 2013, and letter dated 20 May 2013 from Defence to NSW OEH.
Oct 2009	Sinclair Knight Merz was engaged to undertake a Public Environment Report covering environment, noise and social impacts associated with the JSF operations in Australia at RAAF Williamtown. The report included, <i>inter alia</i> , fire training, sewage treatment plant and legacy sites that pose a high risk of contamination. Groundwater quality results were provided to Hunter Water Corporation (HWC) on a quarterly basis. Report noted the RAAF base is located entirely within the Tomago Sand Beds Aquifer which is listed as a ‘ High Risk ’ Aquifer and is used by HWC to extract potable water for the City of Newcastle, and by Defence for irrigation.	Draft report prepared by Sinclair Knight Merz: <i>Operation of JSF Aircraft as New Air Combat Compatibility at RAAF Base Williamtown</i> .
Aug 2010	Date of publication of UNEP booklet, Stockholm Convention on Persistent Organic Pollutants (POPs): <i>The 9 new POPS</i> .	UNEP, <i>Stockholm Convention on Persistent Organic Pollutants: The 9 new POPS</i> .
Dec 2011	PFOS/PFOA detected in groundwater monitoring event (at Williamtown).	Letter dated 17 May 2013 from Defence to the EPA and in FAQs attached to letter dated 21 Oct 2014 from Defence to the OEH.
2012	‘Further groundwater monitoring in 2012 indicated that groundwater contamination did not extend beyond the boundaries of the RAAF Base Williamtown’. ⁷	FAQ sheet attached to letter of 21 Oct 2014 from Defence to the OEH.

⁶ Note that FAQ attached to letter dated 21 October 2014 from Defence to the OEH notes that PFOS was added in 2010 to the Stockholm Convention on Persistent Organic Pollutants to which Australia is a party.

⁷ An email dated 2 May 2012 from Defence to the EPA requested a meeting to discuss recent results of water monitoring relating to elevated levels of PFOS ‘in the stormwater leaving the Base and in the groundwater at various locations around the base’. It is worth noting that Defence had omitted this information in its FAQ document for the local community. At this stage the source report/data revealing that PFOS was found ‘in the stormwater leaving the Base’ as reported in the email of 2 May 2012 is not known to the Review.

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Feb 2012	NSW Government established the EPA as an independent statutory authority rather than as part of the OEH.	EPA Submission to Inquiry on Performance of the EPA (Aug 2014).
May 2012	Defence commissioned GHD through Transfield Services to do Stage 1 investigation of contamination associated with AFFF product 3M Light Water at RAAF base Williamtown. ⁸	Executive Summary Transfield Services Report RAAF Williamtown Stage 1 – Conceptual Site Model for AFFF Contamination. See also letter dated 17 May 2013 from Defence to the EPA (received by the EPA) on 24 May 2013.
2 May 2012	Email from Defence to the EPA requesting meeting to discuss recent water monitoring results indicating elevated levels of PFOS in the stormwater leaving the base and groundwater in various locations under the base, and to discuss Defence’s plans for further investigation.	Email 2 May 2012 from Defence to the EPA.
10 May 2012	<p>Meeting between Defence and EPA where Defence gives verbal advice of potential groundwater contamination at RAAF Williamtown.</p> <p>Internal EPA email of 7 May 2012 indicates meeting was to take place at EPA Newcastle not at Williamtown.</p> <p>Three internal EPA emails (11 May 2012) indicate that:</p> <ul style="list-style-type: none"> • At the meeting Defence advised of the elevated levels of PFOS and PFOA in the stormwater on the base and in the groundwater in various locations under the base. • Defence was planning a Phase 1 investigation and then Phase 2 sampling. • Defence insisted on confidentiality. <p>Subsequent to the meeting</p> <ul style="list-style-type: none"> • An EPA officer did a Wikipedia search of PFOS and PFOA. • EPA expressed reservations internally about Defence’s insistence on confidentiality given ‘events in August last year in that part of the world’ and noted intention to instruct staff member to speak to HWC, stating ‘If there is a risk it may be better for early public communication, although at this point there is no indication it has moved offsite’.⁹ • Internally, EPA stated ‘Now that we know we need to find out the possible ramifications for drinking water supply from HWC and NSW Health so would be good to follow this up quickly’. 	Meeting referred to in internal EPA emails of 11 May 2012 and in letter dated 28 March 2013 from the EPA to Defence. See also letter dated 18 Nov 2013 from EPA to Commonwealth Department of the Environment. See also EPA chronology, provided to the Review on 4 Dec 2015.

⁸ The document commissioning the Stage 1 investigation has not been sighted by the Review.

⁹ This contradicts the email from Defence dated 2 May 2012 that stated PFOS was detected ‘in the stormwater leaving the Base’.

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	EPA has advised the Review that at the 10 May 2012 meeting with Defence the EPA requested data and reports to be provided as soon as possible.	
14 May 2012	Internal EPA direction to make discreet inquiries with HWC and NSW Health in relation to matters raised at 10 May 2012 meeting.	Internal EPA email 14 May 2012.
June 2012	EPA rang Defence to get an update and was told Defence only had preliminary results from some samples but not all results were back yet. Defence advised it did get some elevated levels in surface water sites.	Phone call referred to in internal EPA of 27 March 2013. The file note of the telephone conversation has not been sighted by the Review.
10 Aug 2012	Original s 60 CLM Act Notification for 178 Cabbage Tree Road Williamtown (replaced with notification for 38 Cabbage Tree Road on 26 October 2012) dated 10 August 2012 (received by the EPA on 13 August 2012). Notification was by Hunter Land Pty Ltd 'due to trade waste infiltrating the sewer effluent ponds that are situated within the easement lands'.	
7 Sept 2012	Sewage Treatment Plant Lagoon Investigation Report & Sewage Treatment Plant Overflow Area Investigation Report, prepared by John Holland (AECOM Australia) for Defence. They concern Lot 11 DP1036501 (owned by an individual) with an easement to Defence & Lot 201 in DP101749 (Commonwealth-owned land). Reports identify PFOS/PFOA contamination.	Reports referred to in letter dated 20 Jan 2013 from Defence to the EPA.
26 Oct 2012	Section 60 CLM Act Notification Form for 38 Cabbage Tree Road Williamtown. Notification by Hunter Land Pty Ltd 'due to trade waste infiltrating the sewer effluent ponds that are situated within the easement lands'. Contaminants of concern are listed as lead, mercury and zinc.	Section 60 CLM Notification Form.
3 Dec 2012	Correspondence between Defence and Hunter Water Pty Ltd re PFOS/PFOA contamination at Williamtown.	This letter has not been sighted by the Review but is referred to in letter dated 20 May 2013 from Defence to Hunter Water Pty Ltd.

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<p>29 Jan 2013</p>	<p>EPA received letter from Defence dated 20 Jan 2013 enclosing the Sewage Treatment Plant (STP) Lagoon Investigation Report and Sewage Treatment Plant Overflow Area Investigation Report prepared by John Holland for Defence and advising that groundwater at STP sites is contaminated by PFOS/PFOA (pollutants under Stockholm Convention). Defence noted it relied on the <i>Minnesota Guidelines 2009</i> and welcomed the opportunity to discuss with the EPA the appropriate criteria to use for PFOS/PFOA when developing a remediation action plan for the site in absence of Australian guidelines. Defence advised it was also undertaking a separate investigation into the source and extent of PFOS/PFOA contamination across the RAAF base.</p>	<p>Letter dated 20 Jan 2013 from Defence to EPA.</p>
<p>Feb 2013</p>	<p>Stage 1 Report Transfield Services: RAAF Williamtown Stage 1 – Conceptual Site Model for AFFF Contamination.</p>	<p>Copy of Stage 1 Report provided by the EPA to the Review is dated February 2013. It is unclear to the Review at this stage if the EPA received the March 2013 version of the report.</p>
<p>Mar 2013</p>	<p>Stage 1 Report Transfield Services: RAAF Williamtown Stage 1 – Conceptual Site Model for AFFF Contamination.</p> <p>Defence summarised the findings of the investigation as follows:</p> <ul style="list-style-type: none"> • Detectable PFOS and PFOA concentrations in groundwater are widespread at RAAF Williamtown. The highest concentrations are associated with the fire training pit and fire training pad, trade waste facilities, Lake Cochran/Sewer Treatment Plant and a former landfill. • Off-site groundwater samples including those nearby to Hunter Water Corporation (HWC) extraction points reported no detectable PFOS or PFOA. • On-site and off-site sampling results of surface water and drain sediments at RAAF Williamtown indicated detectable concentrations of PFOS and PFOA. • No evidence of PFOS or PFOA was detected at Salt Ash Weapons Range. <p>The report also included the following information:</p>	<p>Completion month of report referred to in letter dated 17 May 2013 from Defence to the EPA.</p> <p>Summary of findings provided in letter dated 17 May 2013 from Defence to the EPA.</p>

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	In January 2012, Defence conducted tissue sampling from rabbits at various locations in the north of RAAF WLM. A total of 25 samples were submitted to CRC Care for analysis for AFFF compounds. PFOS was detected in 20 of the samples at concentrations ranging from 1.21 µg/kg to 193.47 µg/kg. PFOA and 6:2 FtS were not detected above the laboratory level of reporting (LOR). Although there is no published data indicating toxicity of PFOS to rabbits, the data indicated that rabbits have absorbed PFOS into their bodies and therefore, a complete exposure pathway exists for rabbits at RAAF WLM.	
26 Mar 2013	Internal EPA comments provided on STP Report and Stage 2 (sic) Report.	Internal EPA email dated 26 March 2013.
26 Mar 2013	Officer of EPA instructed to look at [STP] investigation reports [re Williamstown] for Hg [mercury] and 'any other contaminants of concern to see whether there is any justification for us to consider regulation of the site'.	Internal EPA email dated 26 March 2013.
28 Mar 2013	In an internal email of 28 March 2013 commenting on draft letter to Defence of 28 March 2013 the following comment is provided ' Usually the notification to registered users of the groundwater is undertaken by NOW and EPA once we have identified that contamination is within 0.5km of a registered groundwater bore and it's usually undertaken once there is some information about the extent of the plume but you are welcome to leave it in if you disagree'.	Internal EPA email dated 28 March 2013.
28 Mar 2013	EPA thanked Defence for the 2 Sept 2012 Reports on the STP and stated that the Reports are provided under s 60 of the CLM Act and that the EPA is undertaking an assessment under s 12 of the CLM Act to determine whether the contamination is significant enough to warrant regulation. EPA noted it had not received formal advice from Defence re levels of PFOS/PFOA recorded and actions taken to assess and manage contamination since meeting of 10 May 2012. EPA assessed investigation of PFOS/PFOA contamination at RAAF as high priority . The EPA requested Defence to provide a summary of action by 30 April 2013 re notification to potential down-gradient receptors of potential groundwater quality and summary of all testing and investigations undertaken including any notification to Commonwealth Department of Sustainability, Environment, Waters, Population and Communities (SEWPaC) and public health authorities.	Letter dated 28 March 2013 from the EPA to Defence.
30 Apr 2013	Email from Defence to EPA thanked the EPA for consideration of extension of time for Defence to respond to the EPA's letter of 28 March 2013. The new revised date of response was 16 May 2013 . Defence advised STP investigations undertaken through Capital Facilities and Infrastructure; Stage 1 was managed by Defence regional representation and Stage 2 transferred to Defence Environmental	Email dated 30 April 2013 from Defence to the EPA.

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	Remediation Programs in Canberra. Stage 1 draft report was being considered by a Defence Technical Auditor. Defence expected the final Report to be available by the end of June. Defence stated its intent was to engage a consultant to commence Stage 2 'early in next financial year'.	
20 May 2013	Defence advised the NSW OEH that it had encountered PFOS/PFOA historically used in AFFF in routine groundwater monitoring, enclosed Stage 1 Investigation Report and set out summary of findings. It advised it planned to undertake Stage 2 Investigation to commence early in 2013/2014 financial year and expected to be completed by mid-2014. Advised that as PFOS/PFOA has been found off the base boundary it had provided the report to the EPA, Port Stephens Council (PSC) and other NSW agencies.	Letter dated 20 May 2013 from Defence to the NSW OEH. ¹⁰
20 May 2013	Defence stated that further to correspondence with Hunter Land Pty Ltd of 3 December 2012 it could provide further information about PFOS and PFOA contamination at Williamtown. It stated the source of chemicals was AFFF product called 3M Light Water. A Stage 1 Investigation Report was attached to the letter (though the letter does not expressly refer to the report being attached) and a summary of the findings was set out. Advised it planned to undertake a Stage 2 Investigation to commence early in 2013/2014 financial year and expected to be completed by mid-2014. Advised that as PFOS/PFOA had been found off the base boundary Defence had provided the report to the EPA, PSC and other NSW agencies.	Letter dated 20 May 2013 from Defence to Hunter Land Pty Ltd.
24 May 2013	EPA received the Report Transfield Services: RAAF Williamtown Stage 1 – Conceptual Site Model for AFFF from Defence (sent under cover of letter dated 17 May 2013 from Defence to the EPA). Letter provided formal advice on PFOS/PFOA investigations and a summary of the Report's findings. Defence noted PFOS/PFOA encountered in other Defence sites and that PFOS/PFOA are recognised as 'significant and emerging contaminants of concern internationally'. Defence proposed Stage 2 investigation within Williamtown and offsite to commence early 2013/2014 with expected completion date of mid-2014 . Defence advised it had sent Stage 1 Report to HWC, PSC, the EPA, NSW Office of Water and NSW Department of Primary Industries but not to the Commonwealth Department of SEWPaC (because there was no significant impact to the environment under the EPBC Act). Defence advised the EPA that biota sampling would occur, such as oysters in Tilgerry Creek, fish, crustaceans and frogs.	Letter dated 17 May 2013 from Defence to the EPA.
29 May	EPA advised Defence it was considering the Stage 1 Report and suggested that Defence also send it	Letter dated 29 May 2013 from the EPA

¹⁰ Note that the EPA has advised the Review that, in respect of this letter, there was confusion regarding the name change from OEH to the EPA, as the individual to whom the letter was addressed was an officer of the EPA.

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2013	to the Department of Health.	to Defence.
4 June 2013	Internal EPA email indicates EPA officers were considering whether EPA could issue a notice to Defence, whether EPA had authority over Defence, and whether such a notice was enforceable, with one officer noting ‘notice may be appropriate to deal with off-site issues from the groundwater/stormwater migration’.	
4 June 2013	Internal EPA email summarised key findings of Stage 1 Report dated March 2013 and received by EPA on 24 May 2013. A request was made for report to be reviewed internally and for advice to be provided on any issue in the Report and, in particular, the implications under the CLM Act.	
6 June 2013	Comment on an internal EPA Briefing Document Action Sheet made on 6 June 2013 stated ‘given past experience with Commonwealth in addressing contamination legacies that migrate to NSW I would recommend we formally outline suggested milestones for them, as this will better position NSW to pursue this if reasonable progress is not forthcoming’.	Internal EPA Briefing Note Document Action Sheet about ground water contamination at RAAF Williamtown.
12 June 2013	EPA briefed (the then) Minister for the Environment providing information about Williamtown RAAF base PFOS contamination issue. Briefing note refers to previous advice from Defence that it is regulated by Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC). EPA noted it had no regulatory role because of Commonwealth jurisdiction.	EPA Briefing Note 12 June 2013.
July 2013	Department of Primary Industries Office of Water/Catchment Management Authority Hunter-Central Rivers <i>Groundwater Vulnerability Mapping</i> High vulnerability ranked groundwater resources are found primarily along the coast lines with a high concentration between Newcastle and Bulahdelah (including the Tomago Tomaree Stockton Groundwater Sources).	Department of Primary Industries Office of Water/Catchment Management Authority Hunter-Central Rivers <i>Groundwater Vulnerability Mapping</i> .
17 July 2013	Internal EPA email follows up on email of 4 June 2013 re Stage 1 Report: any news on this one and in particular any issues identified by the Report and ... and implications under the CLM Act? ¹¹	Internal EPA email dated 17 July 2013.
16 Sept 2013	The EPA briefed an Interagency Planning Strategic Liaison Group meeting (EPA/Workcover/NSW Health). Briefing noted groundwater at the Williamtown site is contaminated with PFOS/PFOA; that	

¹¹ The Review has not sighted a response to this email.

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	<p>the site is located within the Tomago sand aquifer from which Hunter Water extracts water drinking supplies and that while no groundwater contamination has been detected offsite ... this contaminant is able to migrate large distances with little attenuation.</p>	
23 Sept 2013	<p>EPA emailed the NSW Office of Water regarding groundwater contamination. It stated that PFOS/PFOA contamination has not been detected in offsite water bores but has been detected in offsite water samples. It stated that while no groundwater contamination has been detected offsite ... this contaminant is able to migrate large distances with little attenuation. It also requested the NSW Office of Water to 'please consider in relation to the groundwater use in the region'.</p>	<p>Email dated 23 September 2013 from the EPA to the NSW Office of Water.</p>
25 Sept 2013	<p>EPA advised Defence that it had reviewed the two September 2012 Reports in relation to the STP and the Stage 1 Report and agreed with the conclusions in those reports that there is a potentially unacceptable risk to human health and the environment posed by PFOS/PFOA at the site. It proposed that Defence convene a meeting of stakeholders as soon as practicable and stressed the need for a Stage 2 Investigation to be commenced as soon in the 2013/2014 financial year as possible as committed to by Defence in its letter of 17 May 2013.</p>	<p>Letter dated 25 September 2013 from the EPA to Defence.</p>
18 Nov 2013	<p>EPA notified the Commonwealth Department of the Environment of site contamination issue at RAAF base Williamtown and noted that Defence notified the EPA in 2012 of this potential contamination.¹² EPA noted it received the Stage 1 Report on 24 May 2013 and that Defence had proposed in covering letter that it would commence Stage 2 early in 2013/2014 financial year. EPA noted it wrote to Defence on 26 Sept 2013 (sic-actually wrote on 25 Sept 2013) requesting an update on Stage 2 and proposing meeting of relevant stakeholders and, to date, had not received a response from Defence to that letter. EPA noted that as Defence is Commonwealth Government agency, the EPA has no regulatory role and that the Department of the Environment may wish to be a part of future discussions between agencies.</p>	<p>Letter dated 18 Nov 2013 from the EPA to the Commonwealth Department of the Environment.</p>
5 Dec 2013	<p>Defence advised that the environmental investigations [Stage 2] planned to commence in late 2013 have been 'slightly delayed' and, following establishment of a new Defence Environmental and Heritage Panel, would commence in early 2014.</p>	<p>Letter dated 5 Dec 2013 from Defence to NSW OEH.</p>

¹² The EPA has advised the Review that it is not aware of a response to this letter by the Department of the Environment. On 8 December 2015 the Review wrote to the Commonwealth Department of the Environment seeking information in this regard.

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15 Apr 2014	The EPA emailed advice to Defence consultant (URS) regarding biota sampling/testing protocols. URS responded stating that that the EPA, DPI and OEH had been very helpful and advised that URS would be developing a sampling plan ‘in the next few weeks’.	Email chain between the EPA and URS dated 15 April 2014.
13 May 2014	Defence wrote to OEH and advised it had contracted URS to undertake the Stage 2 Investigation and stated that when planning is sufficiently advanced Defence would provide relevant information on the scope of Stage 2 to OEH.	Letter dated 13 May 2014 from Defence to NSW OEH.
July 2014	CRC for Contamination Assessment and Remediation of the Environment Technical Report No 32: <i>Development of Guidance for Contaminants of Emerging Concern</i> . This report referred to PFOS/PFOA (inter alia) and aimed to progress guidance on contaminants that were of significance to stakeholders. Guidance development includes the development of screening criteria and remediation and management approaches.	
8 Aug 2014	Internal EPA email records that URS contacted EPA Newcastle requesting a meeting with the EPA re Stage 2 investigation regarding PFOS for 15 August 2014.	Internal EPA email dated 8 August 2014.
11 Aug 2014	Meeting at EPA Newcastle office to discuss results of investigations with consultants of Defence. ¹³	Internal EPA email chain dated 27 August 2015.
4 Sept 2014	Meeting at EPA Sydney office with Defence and URS. Meeting notes under the heading ‘Future’ stated: <ul style="list-style-type: none"> • Offsite sampling next month • Community consultation • Lessons learnt from Oakey site. <p>File notes stated that PFOS usage stopped in 2010 and that ‘old PFOS stock incinerated. Where?’</p> <p>EPA advised the Review that the purpose of this meeting was to discuss further studies to evaluate off site impacts of PFOS and PFOA and Defence’s proposed community consultation process.</p>	File notes of EPA officers dated 4 Sept 2014. See also EPA chronology, provided to the Review on 4 Dec 2015.
25 Sept 2014	Defence advised the EPA re Stage 2 that URS was preparing to collect data for aquifer modelling purposes and installing a number of off-bases monitoring wells in the vicinity of RAAF base Williamtown. It enclosed a flyer to be given to residents in close proximity to monitoring wells	Letter dated 25 Sept 2014 from Defence to NSW OEH.

¹³ The Review has not sighted the file notes from this meeting.

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	(including those along Cabbage Tree Road). Defence stated it would shortly provide an information pack including a map and FAQs.	
21 Oct 2014	Defence advised the NSW OEH that URS intended to commence offsite works for Stage 2 on 27 October 2014 to install off-site monitoring wells in the vicinity of RAAF Base Williamtown. It advised that residents in close proximity to the wells (along Cabbage Tree, Richardson and Nelson Bay Roads) were recently provided with flyers and that the project team to date had not received any enquiries from these residents. It enclosed a map of location of monitoring wells and FAQs. Note the FAQ stated that the investigation was expected to be complete by the end of 2014 and the ‘analysis of the data and reporting of assessment will be completed by the first quarter of 2015’ .	Letter dated 21 Oct 2014 from Defence to NSW OEH.
3 Mar 2015	Email from NSW Health to Defence and URS (cc EPA, HWC, PSC). Email referred to understanding that offsite monitoring was to be established at end of October 2014 and that analysis of data and reporting was to occur at end of current quarter. NSW Health requested a meeting for URS/Defence to keep NSW agencies up to date and noted: ‘We are all very keen to understand the extent of the contamination and what it means for our respective organisations’.	Email dated 3 March 2015 from NSW Health to Defence. Email correspondence is referred to in letter of August 2015 from Defence to the EPA.
13 Mar 2015	Defence email to NSW Health (cc EPA, HWC, PSC) advised the project [Stage 2] ... has been expanded to address data gaps found during the initial investigation. We are currently in the process of installing our last set of off-site monitoring wells this coming week and expect to have a final set of results in April ... At this stage, we anticipate providing relevant stakeholders with a draft report in late May, after which we would be happy to hold a meeting to discuss the outcomes of the work completed. ... We are dealing with an emerging contaminant and collating and collating and interrogating this amount of data, and understanding its interaction with the environment, has taken longer than anticipated ... it would be premature of Defence to present an incomplete interpretation of the data beforehand’.	Email dated 13 March 2015 from Defence to NSW Health.
May 2015	The EPA has advised the Review that Defence emailed it Defence Contamination Directive #8 on Interim Screening Criteria dated 19 May 2015. ¹⁴	EPA chronology, provided to the Review on 4 Dec 2015.
26 May 2015	Internal EPA document that recorded sites, projects and issues that a departing EPA officer was ‘involved with’ in relation to ‘Williamtown AFB-PFCs’ stated that the matter involved a ‘watching brief’. While some projects on the document had an EPA officer nominated to take carriage of the project following the officer’s departure, there was no one nominated to take carriage of the departing officer’s duties in relation to Williamtown. The document records the name of another existing EPA	

¹⁴ The Review has not sighted the covering email.

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	officer assigned to the project.	
3 Aug 2015	Draft URS Report Stage 2 Environmental Investigation (EI) AFFF PFAS, RAAF Base Williamtown, Williamtown NSW.	
4 Aug 2015	Defence advised the EPA that the Stage 2 EI Report prepared by URS is currently being finalised and that a draft is available for EPA's information at a provided website link. Defence invited the EPA to a presentation by Defence and URS on the investigation to be held on 12 Aug 2015 and advised that a community meeting was to be held on 2 Sept 2015. Defence apologised for the short notice.	Letter of 2015 (otherwise undated) from Defence to EPA. Letter attached to an email dated 4 Aug from Defence to the EPA.
12 Aug 2015	<p>Presentation by Defence and URS regarding the Stage 2 Investigation (to which the EPA was invited).</p> <p>The EPA has advised the Review that at the briefing:</p> <ul style="list-style-type: none"> • It expressed concern at the information presented and the need to consult with NSW Health and NSW Water. • It advised Defence that it should consult with local print and electronic media regarding the findings of the investigation. • Defence proposed community consultation meeting on 2 September 2015 (but this meeting was subsequently cancelled). <p>Notes of briefing show that the EPA said to Defence it needed to consider for transparency purposes notifying under s 60 CLM Act. Defence inferred it did not need to because it was not its land off-site. EPA said its understanding was there was a duty to report because of the off-site impacts and that Defence's solicitors should look at this issue.</p>	Presentation referred to in letter of 2015 (otherwise undated) from Defence to the EPA, in EPA chronology, provided to the Review on 4 Dec 2015, and in EPA notes of briefing.
18 Aug 2015	EPA requested OEH to assess PFC limits proposed in VIC EPA factsheet 1611 and advise if it is appropriate for use in NSW. OEH prepared Draft Review (date XX September 2015) of Soil Screening Values for PFOS and PFOA (which were not for circulation).	Email dated 18 August 2015 from the EPA to OEH for a Science Request for advice (High Priority) and subsequent emails in September 2015 refining this request.
20 Aug 2015	<p>Draft URS Report on Stage 2 prepared for Defence discussed at multi-agency briefing convened by the EPA.</p> <p>Draft minutes from the meeting, which the EPA has advised the Review were never finalised, stated: The application of the <i>Contaminated Land Management Act 1997</i> (CLM Act) or the</p>	<p>Draft minutes of briefing provided by the EPA.</p> <p>Briefing also referred to in letter dated 10 Sept 2015 from the EPA to Defence.</p>

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	<p><i>Protection of the Environment Operations Act 1997</i> (POEO Act) to Commonwealth land is uncertain as it remains an untested constitutional issue. To date the Commonwealth has not acted on regulatory instruments issued to it.</p> <p>Historically, where offsite issues resulting from contamination on Commonwealth land arise, the Federal Department of Environment (FDE) is approached on a case by case basis noting that their regulatory framework under the <i>Environment Protection Biodiversity and Conservation Act 1999</i> (EPBC Act) is not directly relevant.</p> <p>Draft minutes also noted the EPA and/or Health were to write to the Department of Primary Industries (DPI) - Water confirming the appropriate criteria to use in the absence of any Australian criteria.</p>	
20 Aug 2015	Defence emailed the EPA stating community meeting for 2 September 2015 had been cancelled and that a revised date was yet to be provided.	Email dated 20 August 2015 from Defence to the EPA.
31 Aug 2015	EPA briefing note to the Minister for the Environment providing information about Williamtown RAAF base PFOS contamination.	
31 Aug 2015	The EPA prepared a draft Notice to Defence to Take Preventative Action under s 96 of the <i>Protection of Environment Operations Act 1997</i> (the POEO Act) as 'part of the dialogue and available in the event 3 rd parties ask what we have done'.	Internal EPA email chain dated 31 August 2015.
31 Aug 2015	Internal EPA email refers to DPI Water's 'apparent ongoing reluctance to notify their downgradient licensed (and unlicensed) water users'.	Internal EPA email chain dated 31 August 2015.
2 Sept 2015	A community meeting organised by Defence was to be held. (This meeting was subsequently cancelled).	Meeting referred to in letter of 2015 (otherwise undated) from Defence to the EPA. See EPA chronology, provided to the Review on 4 Dec 2015.
2 Sept 2015	NSW Health and NSW Agencies teleconference.	EPA chronology, provided to the Review on 4 Dec 2015.
3 Sept 2015	Draft URS Report on Stage 2 prepared for Defence discussed at multi-agency briefing. This took place by teleconference.	Briefing referred to in letter from the EPA to Defence dated 10 Sept 2015. Teleconference referred to in letter dated 7 Sept 2015 from the EPA to Defence.
3 Sept 2015	EPA Media Release issued on behalf of NSW agencies announcing fisheries closures and restrictions on bore water use.	

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	Email from Defence of 3 Sept 2015 indicates Defence provided comments on the media release but thought more time was required before going public on the issue.	
3 Sept 2015	Defence media release issued.	
4 Sept 2015	EPA conducts letterbox drop to properties in Williamstown affected by the contamination.	EPA chronology, provided to the Review on 4 Dec 2015.
7 Sept 2015	<p>EPA provides whole of government response to draft URS Stage 2 Report (on behalf of Department of Premier and Cabinet, NSW Health, NSW EPA, Food Authority, Marine Park Authority, DPI-Water, DPI-Fisheries, Hunter Water Corporation. EPA requested Defence provide Action Plan ASAP and no later than 4 October 2015 on five items:</p> <ol style="list-style-type: none"> 1. Spatial extent of contamination 2. Human health risk assessment 3. Environment risk assessment 4. Limiting further environment pollution 5. Communication strategy <p>EPA also noted (as item 6) immediate priorities to establish 24-hour contact line, convene community consultation by 18 Sept 2015 and another meeting of Commonwealth/NSW agencies by 18 Sept 2015.</p> <p>The letter noted ‘significant knowledge gaps’ regarding the extent of PFOS/PFOA contamination in groundwater, surface water and biodata.</p>	Letter dated 7 Sept 2015 from EPA to Defence.
10 Sept 2015	EPA wrote to Defence and stated it understood Defence was in the process of providing a response to the six issues identified in the EPA’s letter of 7 Sept 2015 outlining a whole of government response to the Stage 2 Report. EPA urged Defence to finalise the draft Report and make it available on the Williamstown website. EPA noted the report is over 2000 pages long and that NSW agencies will have opportunity to discuss it in context of the multi-agency panel being established.	Letter dated 10 Sept 2015 from the EPA to Defence.
11 Sept 2015	<p>NSW multi-agency meeting (NSW EPA, NSW Health, DPI (Fisheries, Biosecurity, Water, HWC, Food Authority) with Defence</p> <ul style="list-style-type: none"> • NSW agencies and Defence agree to weekly updates. • EPA to coordinate NSW attendance at the Defence Community Information Session on 16 	EPA chronology, provided to the Review on 4 Dec 2015, and supporting documents.



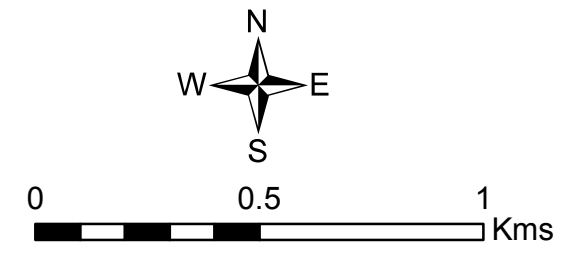
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	<p>Sept 2015.</p> <ul style="list-style-type: none"> EPA takes over the coordination role from DPC with continued support from the Hunter DPC office. 	
14 Sept 2015	Final URS Report Stage 2 Environmental Investigation AFFF PFAS, RAAF Base, Williamtown.	
14 Sept 2015	Terms of Reference for Expert Panel finalised with Office of the Chief Scientist and Engineer. EPA sent draft to NSW agencies to inform and request nomination of Director-level representatives.	EPA chronology, provided to the Review on 4 Dec 2015, and supporting documents.
15 Sept 2015	EPA's coordination of NSW representation for the Defence Community Information Session continued. Presentations and final running sheets delivered to Defence	EPA chronology, provided to the Review on 4 Dec 2015, and supporting documents.
16 Sept 2015	Community meeting at Stockton RSL. Community information session coordinated by Defence. NSW agencies presented.	EPA chronology, provided to the Review on 4 Dec 2015.
16 Sept 2015	Minister for Environment announced: <ul style="list-style-type: none"> Establishment of Expert Panel (chaired by Chief Scientist Mary O'Kane). Independent Review by Prof Mark Taylor. 	
17, 18 Sept 2015	EPA sampling of registered bores scheduled to take place on 17 and 18 September 2015 (depending on access).	Referred to in EPA email dated 15 Sept 2015.



-  MBAS sample site
-  Cadastre (Lot/DP)

Williamtown MBAS & PFOS, PFOA Sample Sites Map 1





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Base imagery: Newcastle 24/4/2014 10cm orthophoto

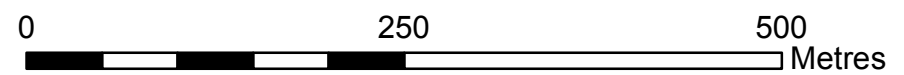
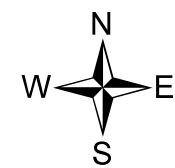




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-  MBAS sample site
-  Cadastre (Lot/DP)

Williamstown MBAS & PFOS, PFOA Sample Sites Map 2



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Stage One of Review of the NSW Environment Protection Authority's (EPA) Management of Contaminated Sites Interim Findings on Williamtown RAAF Base Contamination Terms of Reference 3

Provide an interim report with any recommendations deemed appropriate regarding the EPA's past management of the Williamtown RAAF Base by 14 December 2015.

Disclaimer: These interim findings are subject to change. They are based on the documents and information the Review has been able to research, receive and review in the strict timeframe leading to this interim report, as reflected in the interim chronology of the Williamtown RAAF Base contamination. The findings are based thus far on a review and assessment of documents obtained by the Review's research as well as documents and information provided by the EPA for the period 2012–2015. The EPA has not yet produced documents for the period prior to 2012, with the exception of an Operations Manual for Williamtown RAAF Base Sewage Treatment Works dated 1 April 2008. The Commonwealth Department of Defence and the Department of the Environment are yet to produce documents and information that have been sought by the Review. Documents that pre-date 2012 have been sourced primarily from the Review's own research. The Review will continue to consult and liaise with the EPA and other relevant agencies in finalising findings for the final Report.

Interim Findings

Assessment and evaluation of the documents and information reflected in the interim chronology on Williamtown RAAF Base contamination indicates that the activities, knowledge and associated responses of government authorities can be separated into three distinct phases: pre-2012, 2012 until August 2015, and from August 2015 to the present. Findings for each of these time periods are set out below.

Pre-2012

1. The exact date when Defence ceased to use AFFF (aqueous film forming foam) at Williamtown RAAF Base is not known.

The information gathered thus far by the Review shows that Defence has not been clear about when it ceased using AFFF at Williamtown RAAF Base with three different dates provided (2006 – 'Direction was given by Defence to use only AFFF without PFOS/PFOA'; 2008 – Defence commenced phasing out the use of AFFF products containing PFOS /PFOA; EPA file notes from a meeting with Defence and URS in 2014 stated PFOS usage was stopped in 2010).¹

2. Defence and relevant NSW Government authorities including the EPA knew or should have known that Williamtown RAAF Base was surrounded by an important potable water source high risk aquifer.

The Tomago Aquifer area surrounding Williamtown RAAF Base was known to Defence and NSW Government agencies as a high risk aquifer. They also knew or should have known that Hunter Water Corporation extracted potable water for the City of Newcastle. The high risk nature of the aquifer was reconfirmed in a Sinclair Knight Merz 2009 Public Environment

¹ The Review notes the evidence provided by Defence on 3 December 2015 to the Foreign Affairs, Defence and Trade References Committee on *Contamination caused by firefighting foams at RAAF Base Williamtown and other sites* that 'Between 2004 and 2011, Defence transitioned to a training product known as Ansul training foam, and that does not contain any PFOS or PFOA'.

Report for Defence in relation to JSF (Joint Strike Fighter) operations at the Williamtown RAAF Base.

3. Defence and relevant NSW Government authorities including the EPA knew or should have known that the lands draining from the Williamtown RAAF Base were physically, biologically and chemically linked to the adjoining wetlands of international significance.

The Review notes that the Tomago Wetlands, which represent the surface component of area of the Tomago Aquifer abut, and are physically connected to, the international Ramsar-listed Hunter Estuary Wetlands. The Kooragang Nature Reserve was designated as a Ramsar Site in 1984 and the Hunter Wetlands Centre Australia was added in 2002.

(<http://www.ramsar.org/wetland/australia>). These facts were available to Defence and NSW authorities during this period. Although various Defence reports (for example, the Sinclair Knight Merz Public Environment Report of October 2009) during this period acknowledged the connectivity of the Base to the Hunter Wetlands along with the presence of threatened species around the Base, the connection between contaminants, particularly AFFF emanating from the base, and these environments and communities does not appear to have triggered any specific response.

4. The information received and evaluated by the Review thus far indicates that the EPA had very limited contact with Defence in the period prior to 2012 in relation to the Williamtown RAAF Base.

The only document sighted by the Review is a letter of 4 June 2002 from the EPA to URS Australia (contracted by Defence) in relation to the Draft EIS—Hawk lead-in-fighter at Williamtown RAAF Base and SAAWR (Salt Ash Air Weapons Range). In this letter the EPA noted that it had raised the issue of potential metal contamination of groundwater associated with the training activities undertaken at the SAAWR on several occasions. The EPA also advised URS that it did not regulate any activities carried out on the Williamtown RAAF Base. It stated that if Defence identified any contamination on the Base or at SAAWR which led URS to believe that the contamination posed significant risk of harm to human health or the environment, URS had to report under s 60 of the *Contaminated Land Management Act 1997*.

5. From 1999 Defence engaged a range of consultants to undertake ground water sampling on and at the boundaries of the Williamtown RAAF Base.

To date the Review has not been able to ascertain if any of these reports were made available to the public or relevant NSW Government authorities including the EPA, Department of Land and Water Conservation and Hunter Water Corporation.

6. Analysis of groundwater samples collected on the Williamtown RAAF Base and beyond its boundaries revealed elevated levels of MBAS as early as 1999. MBAS was used as a surrogate test for the presence of AFFF.

In the absence of specific PFOS/PFOA measurements, it is clear from various Defence reports that the presence of AFFF in groundwater across the base was assessed using MBAS (Methylene Blue-active substances), which is used as an indicator to identify potential AFFF

impacts. The Review understands that MBAS is a non-specific test for anionic surfactant, a component of AFFF.

2012 until August 2015

7. The seeming lack of clarity about whether the EPA has the authority to regulate Defence under the *Contaminated Land Management Act 1997 (CLM Act)* or the *Protection of the Environment Operations Act 1997 (POEO Act)* in relation to Commonwealth-owned land or where Defence is the polluter on non-Commonwealth owned land stymied the ability of EPA officers to act decisively and in a timely fashion.

There was significant indecision in the EPA about the application of the CLM Act to Defence and whether notices under the CLM Act or the POEO Act could or should be issued (even in the absence of having any possible legal effect). Although it was generally accepted that the EPA could not formally regulate the Williamtown RAAF Base because of its Commonwealth jurisdiction, several EPA officers made comment in internal emails (for example on 4 June 2013) about the possibility of issuing notices to Defence. However, it appears that no notices of any kind were issued by the EPA to Defence from 2012 to 16 September 2015 nor is there evidence of any formal regulatory action in this period.

That some officers of the EPA considered that the CLM Act applied to Defence is evidenced by the following: (a) the letter dated 4 June 2002 from the EPA to URS Australia in which the EPA advised that URS must report any site owned or occupied by Defence which lead URS to believe that the contamination is posing a significant risk of harm to human health or the environment under s 60 of the CLM; (b) the EPA's letter to Defence dated 28 March 2013 in which it stated that the EPA considered the 2 September 2012 STP Reports were provided under s 60 of the CLM Act and that the EPA was assessing them under s 12 of the CLM to determine whether the contamination was significant enough to warrant regulation; (c) internal EPA notes of the briefing with Defence on 12 August 2015 which indicate that the EPA said to Defence that, for the purpose of transparency, Defence needed to consider notifying under s 60 of the CLM Act.

That some EPA officers were uncertain about the application of the CLM Act is evidenced by an internal EPA email of 4 June 2013 in which advice is sought about the 'implications' of the CLM Act in relation to the EPA's review of the Stage 1 Report.

That the EPA considered it did not have a regulatory role in relation to Defence is evidenced inter alia by its letter to the Commonwealth Department of the Environment dated 18 November 2013.

8. It is unclear to whom Defence is accountable for environmental issues not falling within the *Environment Protection Biodiversity and Conservation Act 1999 (EPBC Act)*.

On 26 March 2013 the EPA requested Defence to inform it of any notification Defence had made to the Commonwealth Department of Sustainability, Environment, Waters, Population and Communities (SEWPaC). On 24 May 2013 Defence responded it had not notified SEWPaC because there was no significant impact to the environment under the EPBC Act.

On 18 November 2013 the EPA notified the Commonwealth Department of the Environment of the contamination at Williamstown RAAF Base. The EPA has advised the Review it is not aware of a response to this letter.

On 25 November 2015 the Review requested Defence to provide it with an explanation of how Defence's management of contamination at Williamstown RAAF Base is regulated together with any supporting policy documents in light of the 1997 Council of Australian Governments *Heads of Agreement on Commonwealth and State roles and responsibilities for the Environment*. The Review is yet to receive a response to this question.

9. The internal EPA correspondence indicates that there was a lack of proper ownership of the Williamstown RAAF Base contamination issue.

The lack of ownership may have contributed to the slow EPA responses, unresolved notifications and indecision with respect to resolving the appropriate legal responses. For example, internal EPA emails (see email of 28 March 2013) indicate there was some debate about whether it was the responsibility of Defence, the EPA or the NSW Office of Water to notify registered users of groundwater about the contamination. An internal EPA email also refers to the 'apparent ongoing reluctance' of DPI Water to notify licensed and unlicensed water users of contamination as late as 31 August 2015.³

10. The Stage 1 Report *Transfield Services: RAAF Williamstown Stage 1—Conceptual Site Model for AFFF Contamination* completed in March 2013 documented the presence of PFOS in rabbits at Williamstown RAAF Base. This should have indicated it was reaching higher order species, it was bioavailable, domestic livestock were at risk of contamination and a pathway into the human food chain was highly likely or imminent.

The Review understands that the EPA relies on a polluter pays principle, which would include the polluter paying for, and undertaking, field work. However, an application of the precautionary principle in the case of Williamstown RAAF Base should ideally have included EPA field sampling of waters, soils, biota and domestic livestock to understand the community and related socio-economic activities at risk.

August 2015–present

11. Following the EPA's receipt and evaluation of the Stage 2 Report in August 2015 and its decision to issue a media release on 3 September 2015, the actions of the EPA along with other relevant NSW Government agencies have been responsive, timely and appropriate.

Unlike the period 2012 up until August 2015, the most recent period since and including August 2015, has seen the EPA respond quickly and decisively, committing significant resources and effort to addressing the contamination problem at Williamstown RAAF Base. However, the Review finds that the lack of NSW EPA PFOS/PFOA guidelines (even interim values) for environmental samples means that any values returned from ongoing sampling retain an element of uncertainty as to their significance because of the absence of guideline values. In this regard, the Review remains concerned that the Office of Environment and Heritage (OEH) was

³ The Review notes that DPI Water has not had an opportunity to comment on this aspect.

not engaged formally until 18 August 2015 to provide guidance on PFC limits proposed by the Victorian EPA and to prepare a draft review of soil screening values for PFOS/PFOA.⁴ While the Review finds that the EPA actions in the post August 2015 period have been appropriate, it notes that these actions are reactive. The public could have been informed earlier in a comprehensive fashion had action been taken sooner by the EPA. Specifically, these actions should have focussed on the extent of contamination in the community where the EPA has carriage of responsibility.

⁴ The Review notes that in the letter dated 20 Jan 2013 from Defence to the EPA (received by the EPA on 29 Jan 2013) Defence stated that it welcomed the opportunity to discuss with the EPA the appropriate criteria to use for PFOS/PFOA when developing a remediation action plan for the site in the absence of Australian guidelines. The Review has not sighted thus far any evidence that the EPA engaged in this discussion with Defence.

Stage One of Review of the NSW Environment Protection Authority's (EPA) Management of Contaminated Sites Interim Recommendations on Williamtown RAAF Base Contamination Terms of Reference 3

Provide an interim report with any recommendations deemed appropriate regarding the EPA's past management of the Williamtown RAAF Base by 14 December 2015

Disclaimer: These interim recommendations are subject to change. They are based on the documents and information the Review has been able to research, receive and review in the strict timeframe leading to this interim report (as reflected in the interim chronology on the RAAF Base contamination), as well as on the interim findings. The recommendations are based thus far on a review and assessment of documents obtained by the Review's research as well as documents and information provided by the EPA for the period 2012–2015. The EPA has not yet produced documents for the period prior to 2012, with the exception of an Operations Manual for Williamtown RAAF Base Sewage Treatment Works dated 1 April 2008. The Commonwealth Department of Defence and the Department of the Environment are yet to produce documents and information that have been sought by the Review. Documents that pre-date 2012 have been sourced primarily from the Review's own research. The Review will continue to consult and liaise with the EPA and other relevant agencies in finalising recommendations for the final Report.

Interim Recommendations

- 1. The EPA, in consultation with relevant government authorities and scientific experts, should set interim guidelines for PFOS/PFOA for a range of environmental samples including soil, sediment and groundwater, as a matter of priority, pending finalisation of national guidelines.**

This would benefit decision-making for the EPA and related NSW Government agencies.

- 2. The NSW Government should engage with the Commonwealth Government, to consult with other relevant government agencies and scientific experts, to develop and set national guidelines for PFOS/PFOA for a range of environmental samples, including soil, sediment groundwater and surface water.**

The Review notes that surface waters fall under the Australian and New Zealand guidelines for fresh and marine water quality, for which the Commonwealth Department of Agriculture and Water Resources is responsible.

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

It needs to be clear and transparent to whom the Department of Defence is accountable for contamination caused by it on non-Commonwealth land. This would have flow-on benefits for NSW. The Review notes that there are multiple military and airport sites across NSW (and Australia) that are likely to be similarly affected.

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

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

- 5. The NSW Government should resource the EPA with a team to undertake assessments and sampling of emerging contaminants, such as PFOS/PFOA.**

Such a team could provide the EPA with the level of responsiveness and knowledge-gathering commensurate with its objectives under the *Protection of the Environment Administration Act 1991* to protect the environment and reduce the risks to human health.

- 6. The EPA should make available on its website, on the completion of this Review, a summary of its chronology of events leading up to the Williamstown RAAF Base contamination as well as actions taken since the contamination was made public.**

Provision of this information will assist the public to understand the history of the contamination, and the actions undertaken to protect the public and remediate the environment.

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